

Corruption and Economic Growth in Nigeria

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Abstract

This study investigates the causality between corruption and economic growth in Nigeria. Johansen co-integration test, ADF unit root test, Granger causality test and Ordinary Least Square methods were employed on time series (secondary) data, covering 1990 and 2010. FDI inflow, Corruption Index, Gross Domestic Product, gross fixed capital formation, openness/globalisation of the economy and government expenditure were the variables employed. Five models were specified; the first four models examined the relationship between corruption and various economic growth determinants, while the last model examined the relationship between corruption and the Economic Growth (GDP) determinant, openness of the economy and globalization (OEG). While economic growth and the other variables such as government expenditure (GOV), foreign direct investment (FDI), Gross capital formation (GCF) has significant relationship with corruption, thus indicating that corruption exhibited a positive relationship with economic growth (GDP). The result of Granger causality tests shows that corruption Granger cause FDI inflow, government expenditure, gross capital formation, openness and globalisation of the economy. Also, there is uni-directional causality from corruption to Economic growth (GDP). This confirms the existing arguments that the level of corruption in a country is a relevant determinant of the level of economic growth. The study therefore recommends among others that the activities of the anti-corruption agencies in Nigeria such as the Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices and Related Offences Commission (ICPC) should be strengthened and that our youths need to be re-orientated on moral values.

Keywords: corruption, economic growth, co-integration, unit root test.

1. Introduction

Corruption involves securing wealth or power through illegal means for private gain at public expense; or a misuse of public power for private benefit. Corruption has coexisted with human society for a long time and remains as one of the problems in many of the world's developing economies with devastating consequences. Corruption is a global phenomenon which exists in varying degrees in different countries and it consists of one of the impediments of economic growth (Agbu, 2001). Corruption is not only found in democratic and dictatorial politics, but also in feudal, capitalist and socialist economies. Christian, Muslim, Hindu, and Buddhist cultures are equally bedevilled by corruption (Dike, 2005). Corruption is directly connected with rent-seeking behaviour of people that have administrative or market power (Ogunlana, 2011). The World Bank has estimated that over 1 trillion is paid in bribe for business transactions in less developed countries. Corruption is the single greatest obstacle to economic and social development. It undermines development by distorting the role of law and weakening the institutional foundation on which economic growth depends (World Bank). It is one of the greatest challenges of the contemporary world. It undermines good government, fundamentally distorts public policy, leads to the misallocation of resources, harms the private sector and private sector development and particularly hurts the poor (Transparency International). Empirical studies have shown that African countries exhibit relatively high level of corruption which institute a major constraint to efforts aimed at effectively allocating resources to growth enhancing project. Funds that would have been invested in infrastructural and development projects are seriously depleted through kickbacks, over and under invoicing of contract amounts, etc. which accounts for why the grants and aids which are given by richer and developed countries are suspended or sometimes outrightly cancelled when it was discovered that these funds are embezzled and end up in corrupt hands (Ogunlana, 2011). In Nigeria, it is one of the many unresolved problems that have critically hobbled and skewed development (Ayobolu, 2006). It remains a long-term major political and economic challenge for Nigeria (Sachs, 2007). It is a canker worm that has eaten deep in the socio-economic fabric of the nation. It ranges from petty corruption to political / bureaucratic corruption or Systemic corruption (International Center for Economic Growth, 1999). Corruption is endemic as well as an enemy within (Agbu, 2003). It had stunted growth in all sectors. It has been the primary reason behind the country difficulties in developing fast. This is evident in consistent Transparency International's rating of Nigeria as one of the top three most corrupt countries in the world (Ribadu, 2003). The corruption trend in the country is alarming as the list of corrupt practices in Nigeria as well as the people involved is endless. Although, the present civilian Government has embarked on massive war against corruption via Independent Corrupt Practices Commission (ICPC) and Economic and Financial Crime Corruption (EFCC), such effort is yet to have a significant positive impact. Consequently, it

seems that corruption has defied all the necessary solution (Folorunsho, 2007). Therefore, the main objective of this paper is to analyse the effects of corruption on economic growth and development of Nigeria since 1990 to date. The remaining part of this paper has been divided into four sections. Section one reviews the relevant literature, section two is the research methodology, while section three presents and interprets the result. Section four concludes and offer policy recommendations.

2. Literature Review

Corruption is a term that has been perceived in various ways by various scholars. Its conceptualisation has attracted in recent past competing and numerous views and approaches. It is therefore seen as a worldwide phenomenon which has long been with every society in the world. It has been identified as the bane of most political and economic problems in societies. Corruption is again considered as an enemy of economic development because of its various vices. A nation that condones corruption is often besieged with a lot of economic, political and social vices. According to Eigen (2001) corruption is seen as a “daunting obstacle to sustainable development”, a constraint on education, health care and poverty alleviation, and a great impediment to the Millennium Development Goal of reducing by half the number of people living in extreme poverty by 2015. The World Bank defines corruption as the abuse of public office for private gains. Public office is abused through rent seeking activities for private gain when an official accepts, solicits, or extorts a bribe. Public office is also abused when

private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit. Public office can also be abused for personal benefit even if no bribery occurs, through patronage and nepotism, the theft of state assets or the diversion of state resources (World Bank 1997). A public official is corrupt if he accepts money for doing something that he is under duty to do or that he is under duty not to do. Corruption is a betrayal of trust resulting directly or indirectly from the subordination of public goals to those of the individual. Thus a person who engages in nepotism has committed an act of corruption by putting his family interests over those of the larger society (Gire 1999). In Asian Development Bank perspectives of corruption as cited by Agbu (2001), corruption is defined as the behaviour of public and private officers who improperly and unlawfully enrich themselves and/or those closely related to them, or induce others to do so, by misusing the position in which they are placed. Systemic corruption also referred to as entrenched corruption, occurs where bribery (money in cash or in kind) is taken or given in a corrupt relationship. These include kickbacks, pay-off, sweeteners, greasing palms, etc) on a large or small scale. It is regularly experienced when a license or a service is sought from government officials. It differs from petty corruption in that it is not as individualized. Systemic corruption is apparent whenever the administration itself transposes the expected purposes of the organizations; forcing participants to follow what otherwise would be termed unacceptable ways and punishing those who resist and try to live up to the formal norms (International Center for Economic Growth, 1999). According to Obayelu (2007), different vocabularies used to describe corruption and typology of corruption in the Nigerian society includes bribery, extortion (money and other resources extracted by the use of coercion, violence or threats), embezzlement (theft of public resources by public officials), financial malpractices, egunje, dash, gratification, brown envelopes, tips, emoluments, greasing, softening the ground, inducements, sub-payments, side payments, irregular payments, payment under the table, undocumented extra payments, facilitation payments, mobilisation fees, “routine governmental action,” revised estimates, padded contracts over(under)-invoicing, cash commissions, kickbacks, payoffs, covert exchanges, shady deals, cover-ups, collusion, 10% rule (bribe surcharge), 50% rule” (sharing bribe within the hierarchy), let’s keep our secret- secret. Alatas (1990) divided corruption into seven distinct types: AUTOGENIC, DEFENSIVE, EXTORTIVE, INVESTIVE, NEPOTISTIC, SUPPORTIVE, AND TRANSACTIVE. Autogenic corruption is self-generating and typically involves only the perpetrator. A good example would be what happens in cases of insider trading. A person learns of some vital information that may influence stocks in a company and either quickly buys or gets rid of large amounts of stocks before the consequences arising from this information come to pass. Defensive corruption involves situations where a person needing a critical service is compelled to bribe in order to prevent unpleasant consequences being inflicted on his interests. For instance, a person who wants to travel abroad within a certain time frame needs a passport in order to undertake the journey but is made to pay bribes or forfeit the trip. This personal corruption is in self-defense. Extortive corruption is the behavior of a person demanding personal compensation in exchange for services. Investive corruption entails the offer of goods or services without a direct link to any particular favor at the present, but in anticipation of future situations when the favor may be required. Nepotistic corruption refers to the preferential treatment of, or unjustified appointment of friends or relations to public office, in violation of the accepted guidelines. The supportive type of corruption usually does not involve money or immediate gains, but involves actions taken to protect or strengthen the existing corruption. For example, a corrupt regime or official may try to prevent the election or appointment of an honest person or government for fear that the individual or the regime might be probed by the successor(s). Finally, transactive corruption refers to situations where the two parties are mutual and willing participants in the corrupt practice to

the advantage of both parties. For example, a corrupt businessperson may willingly bribe a corrupt government official in order to win a tender for a certain contract. The focus in this research work will be on the extortive, nepotistic, and transactive corruption, not only because they appear to be at the core of the corruption phenomenon, but also because the other forms appear to be the offshoot of these three fundamental types. There would be no defensive corruption in the absence of the extortive type. Lambsdorff (1999) characterised corruption into; bribery, embezzlement, fraud and extortion. Kaufman (1997) opines that there was an old myth that corruption by its “intrinsic nature” is impossible to measure and this has led to lack of serious empirical analysis on corruption. In the past, there was a consensus that real magnitude of corruption cannot be measured. According to Farida and Ahmadi-Esfahani (2007) the obvious difficulties in measuring corruption have not kept a number of entrepreneurs, multilateral development banks, and academics from attempting to do so. Lambsdorff (1999) stresses that it is often difficult to accept the many limitations of the various measures of corruption and that all widely used 'scientific' methods in the field of corruption evaluation hold value in achieving the goal, that is, to estimate the spread and map the structure of corruption. The first was identified by Akerlof (1985) as general perception which is regularly used as a sensitive core indicator to measure corruption through the feeling such as 'lack of justice' in public transactions. Also, the incidence-based approach as identified by Knack (1995), Murphy (1993), Bardhan (1997) and Mandapaka (1995). The approach taken now is to transform the computation of corruption perception index (CPI) as a common index derived from different general polls and expert interviews. Bardhan (1997) is of the opinion that experience-based indicators offer the greatest potential for comparability, since they avoid some of the problems associated with perception-based indicator. A number of factors have been identified as instrumental to enthrone corrupt practices all over the world. First of the factors identified by Brunetti and Weder (1998) is Government Institutions. In their study they regressed various measures of corruption on indicators of press freedom and found out that a free press effectively deters corruption. An approach by the World Development Report (1997) focuses on the quality of the judiciary. While controlling for other explanatory variables, an index of the predictability of the judiciary from WB/UB significantly influences the level of corruption in 59 countries. A similar correlation between corruption and the independence of the judicial system is proposed by Ades and Di Tella (1996). The impact of the Gastil index for democracy on corruption was tested by Paldam (1999). While the correlation between these variables is large, in multivariate regressions this relationship breaks down as soon as GDP per head enters into the equation. He argues that the effect of democracy is ambiguous. This ambiguity is also reported by Treisman (1999), using the same index on democracy in his study of 64 countries, a small but significant influence was found with countries which have been practising democracy without interruption since 1950, thus, a long period of exposure to democracy lowers corruption. Bardhan (1997) identifies recruitment and salaries of civil servant as another causal factor of corruption. Evans and Rauch (1996) investigated the impact of merit-based recruitment on corruption in 35 developing countries and discovered that higher values in the merit-based recruitment index are associated with a greater proportion of higher-level officials in the core economic agencies to be either in possession of a university degree or to enter the civil service through a formal examination system. While controlling for income, this index is negatively associated with corruption. The extent to which salaries is linked to the amount of corruption was examined by Rijkceghem and Weder (1997) in their study of 28 developing countries found a significant negative influence on the level of corruption of civil service wages relative to manufacturing wages. They argue that low salaries force public servants to supplement their incomes illicitly. La Porta et al. (1997) has also identified Level of trust, religious, tribal and gender differences as factors responsible for corruption. In a sample of 33 countries, the authors show that trust has a significant negative impact on corruption, while controlling for GDP per head. A strong association between religion and corruption is also obtained by Treisman (1999), he regressed corruption on the percentage of Protestants in the total population in a sample of 64 countries and obtains a highly significant negative impact of this index on corruption, controlling for other variables such as GDP per head. A more in-depth analysis of the impact of religion is provided by Paldam (1999). He identified 11 different groups of religions and tests their impact on corruption. While in countries with a large fraction of Reform Christianity and Tribal religion, corruption is lower, while a higher level of corruption was found in countries with a large influence of Pre- Reform Christianity, Islam, Buddhism and Hinduism. The impact of gender on corruption has also been investigated by Swamy et al. (1999). The percentage of women in the labour force and in parliament was found to impact negatively on the level of corruption in a cross-section of up to 66 countries. He therefore suggested that policies designed to increase the role of women may help in lowering the level of corruption. A clear conclusion drawn by Folorunsho (2007) is that effective measures to fight corruption are dependent on culture; countries with a large power distance or a strong desire for material wealth will require different treatment than other. Leite and Weidemann (1999) argue that abundance of natural resources creates opportunities for rent-seeking behaviour and gives rise to corruption.

2.1 Concept of Economic Growth

The concept of economic growth has been used synonymously with economic development and is associated with such things as growth in population, development of resources, technological advancement and increasing

capital formation. Economic growth means growth in the level of output produced by a country over a certain period of time. It is a useful measure of economic performance of a country. Performance here means the degree of correspondence between actual output and the maximum output that could be realized if, given the pattern of demand, all the resources and the most advanced technology available were used to full advantage.

According to Olamide (1999), economic growth is defined as long-term change in an economy's productive capacity. The productive capacity of the economy is the output that could be produced if all of the economy's resources were fully and efficiently employed. The definition links economic growth to rate of growth of potential output which is related to the rate of growth of labour force and of productivity. The determinants of economic growth in the long run include technological progress and population growth and accumulation of capital. The Wikipedia Free Encyclopedia (2012) defines economic growth as an increase (or decrease) in the value of goods and services that a geographic area produces and sells compared to an earlier time. If the value of an area's goods and services is higher in one year than the year before, it experiences positive growth, usually simply called "economic growth". In a year when less value than the year before is produced and sold, it experiences "negative economic growth," also called "recession" or "depression". Economic growth can occur due to an increase in the number of goods or services but such an increase must be sustained over a long time. It can also occur due to production of more expensive goods and services. A body of literature has carried out a cross-country theoretical and empirical research on corruption (Farida and Ahmadi-Esfahani 2007, Acemoglu, D., and Verdier, T., 2000, Mauro, P. 1995, Swamy, A., 1999, Tanzi, V. and H. Davoodi 1997). Another approach has been taken by Goel and Nelson (1998) and Shabbir and Anwar (2008), who used the number of public officials convicted for abuse of public office in various states of the USA as an indicator for actual levels of corruption. Goel and Nelson (1998) relate this variable to the real per capita total expenditures of the local government, arguing that state intervention and public spending give rise to rent-seeking activities and hence corruption. Many literatures have found a strong negative correlation between GDP per head and corruption. (Husted 1999, Hall and Jones 1999, Shabbir and Anwar 2008, Keefer and Knack 1995). This notwithstanding, Keefer and Knack (1995) reports that a variable of institutional quality by PRS, which incorporates corruption among other factors, exerts a significant negative impact. Dike (1997) produced insignificant results. Mauro (1995) found a slightly significant impact in a bivariate regression, but as soon as the ratio of investment to GDP was included as an explanatory variable, this impact disappeared. On the basis of mixed evidence, it is sometimes argued that corruption primarily impacts on the accumulation of capital, which can be derived from the ratio of investment to GDP, but it does not clearly affect the productivity of capital. Tanzi and Davoodi (1997) examined the impact of corruption on the quality of investments and found out that corruption lowers the quality of the infrastructure as measured by the condition of paved roads and power outages.

3. Methodological Framework

Mauro (1995) has modelled the influence of corruption on economic growth using economic growth models, while Acemoglu (2000) also modelled corruption using the game theory approach with three players: principle, agent, and hidden principal. Also, SWARM (as programming language) has also been widely used method (Turnovsky 1995; Jain 1998; Stapenhurst 1999) to simulate corruption models, and analyse the dynamic and evolutionary process of corruption on various parameters. Falling short of empirical evidence and profound experience, there is not even a theory available that may potentially assist in putting the various approaches into comparative perspective. Every approach has strengths and weaknesses. Different models (Lucas type, Keynesian, Agent-based ...) and methods (Ordinary Least Square (OLS), 2 stage LS, Maximum Likelihood Estimator (MLE) etc) have been used. Only few who used the economic growth approach were able to empirically support the negative relationship between corruption and growth. This may be due to the endogeneity bias, subjective surveys and sample size sensitivity according to Shabbir and Anwar (2008). On the other hand, although utilizing the game theory yields some useful insights into the notion of corruption, this approach ignores government involvement, models only the demand side of corruption, and involves one stage game while corruption occurs in continuing relationships. As for the MIMIC (Multiple Indicators Multiple Causes), the output is a time-series index that can be used to construct ordinal and cardinal time series of corruption, this model lacks structural interdependence in addition to co-linearity between indicators. Finally, simulation models show the strength of the cause-effect relationship between corruption and growth, but cannot detect unstable equilibrium, and the total convergence cannot be achieved in finite time. The economic growth approach has the ability to test the relationship between economic growth and corruption, but its main limitation lies in using the correct index of corruption in the objective function. According to Mauro (1995), Most of indices of corruption that had been used were based on surveys. These indices reflect either the general perception of the people on the level of corruption present in the country or the perception of expert, and they fail to reflect the actual level of corruption present in the country. According to Obayelu (2007), the current literature on the impact of corruption lacks a theoretical framework that incorporates the potential effect of corruption on output through its impact on the arguments to the production function, nor does it address the

effect of corruption through its impact on economic growth and development. The literatures available to date, has only examined the hypothesised influences separately, ignoring the larger potential aggregate impact of corruption on output. To overcome the shortcomings in the theoretical reviews, neoclassical model of economic growth that explicitly includes human capital accumulation and the direct and indirect effects of corruption on economic growth have been developed. This approach is superior to previous studies employing a variety of approaches that ignore the potential indirect effect of corruption on economic growth and development. The theoretical model suggests that output and growth are influenced by the level of corruption. If one of the physical inputs in the production function suffers a quality loss in the presence of corruption, then this will also affect growth and the steady state level. None of these models have been adopted in the analysis of corruption in Nigeria. This is largely due to want of data on corruption.

3.1 The Model

The research techniques employed is based on econometric analysis which tends to develop or builds models of relationship between explained variables (dependent) and explanatory variables (independent). However, unit root test, pairwise granger causality and co-integration test were also carried out to show the significance of estimated parameters and the viability or otherwise of the various formulated models. In justifying the choice of the explanatory variables, a simple linear regression model was specified for the 4 models and only the Ordinary Least Square (OLS) Technique was used for analysis in order to investigate the contribution of corruption to some component and determinant of economic growth in Nigeria.

3.2 Sources of Data

The data used in this study are annual time-series secondary data on the variables covering thirty one year period 1980-2010 obtained from various institutions and publications such as CBN Statistical bulletin, CBN Annual reports, Nigerian Bureau of Statistics bulletins and annual report, Internet, Journals, Textbooks, Newspapers, Seminar papers, Anti-corruption agencies reports and bulletins.

3.3 Model Specification and Statement of Hypothesis

The econometric model in this study takes government expenditure, openness of the economy/globalisation, capital formation and foreign direct investment as the dependant variable and level of perceived corruption as independent variable. Based on this, four models have been specified as follows:

Model 1

$$GOV = f(CORR)$$

$$GOV_t = b_0 + b_1 CORR_t + \mu$$

Testing the hypothesis that:

H_O: Corruption does not have a significant influence on level of government expenditure in Nigeria

H_A: Corruption has a significant influence on level of government expenditure in Nigeria.

Model 2

$$OEG = f(CORR)$$

$$OEG_t = b_0 + b_1 CORR_t + \mu$$

Testing the hypothesis that:

H_O: There is no significant relationship between globalization/openness of the economy and corruption in Nigeria.

H_A: There is significant relationship between globalization/openness of the economy and corruption in Nigeria.

Model 3

$$GCF = f(CORR)$$

$$GCF_t = b_0 + b_1 CORR_t + \mu$$

Testing the hypothesis that:

H_O: Corruption does not contribute significantly to the growth of capital formation in Nigeria.

H_A: Corruption contributes significantly to the growth of capital formation in Nigeria

Model 4

$$FDI = f(CORR),$$

$$FDI_t = b_0 + b_1 CORR_t + \mu$$

Testing the hypothesis that:

H_O: Corruption does not have a significant impact on foreign direct investment in Nigeria.

H_A: Corruption has a significant impact on foreign direct investment in Nigeria.

Model 5

$$GDP = f(CORR, GOV, OEG, GCF, FDI).$$

$$GDP_t = b_0 + b_1 CORR_t + b_2 GOV_t + b_3 OEG_t + b_4 GCF_t + b_5 FDI_t + \mu$$

Testing the hypothesis that:

H_O: Corruption does not impact significantly on economic growth in Nigeria.

H_A: Corruption impacts significantly on economic growth in Nigeria.

Where GDP= represents gross domestic product,
CORR =level of perceived corruption,
OEG = openness of economy/ globalization (proxy by ratio of export to import),
GCF = gross capital formation,
FDI =foreign direct investment inflow.
 b_0 = the constant term,
 b_1 = the parameter estimate of Corruption index.
 b_2 = the parameter estimate of Government expenditure.
 b_3 =the parameter estimate of openness of the economy/ globalisation.
 b_4 = the parameter estimate of gross capital formation.
 b_5 = the parameter estimate of foreign direct investment inflow
 μ = stochastic or random error term (with usual properties of zero mean and non-serial correlation). Apriori-specification: the expected sign of the coefficient of the explanatory variable is: $b_1 < 0$ for model one to four. In model 5, it is expected that signs of the coefficients of the explanatory variables are: $b_1 < 0$, $b_2 > 0$, $b_3 > 0$, $b_4 > 0$, $b_5 > 0$

3.4 Analysis and Interpretation of Results

MODEL ONE

GOV= -776.55 + 2813.59 CORR

S.E = (1540.138) (971.659)

T- Statistic = (-0.504201) (2.895659)

R = 0.553

R²= 0.2306

Adjusted R² = 0.269

F- ratio = 8.384

Durbin Watson = 2.367

T- table = 2.08

F - table = 4.38

Analysis and Interpretation

The result of the regression analysis shows that there is a positive relationship between the explained variable (Government expenditure) and the explanatory variable. This negates the a priori theoretical expectation. The coefficient of corruption gives 2813.59, indicating that there is a positive relationship between corruption and government expenditure, which means that as the level of corrupt activities increase, government expenditure increases. The Correlation co-efficient (R) is 0.5532 which signifies that there is 55.32% degree of relationship between government expenditure and corruption level. The co-efficient of determination (R²) is 0.2306 which signifies that 23.06% of total variation in foreign direct investment can be attributed to corruption while 76.94% is for by the random terms. The Durbin Watson test result is 2.367, this shows absence of Auto Correlation because 2.367 is less than 2.5 benchmark i.e. $2.367 < 2.5$. The Standard error of the estimate is (1540.138) (971.659). At the 5% level of significance and 20 Degree of freedom, the T- statistics from the statistical table is 2.08. Therefore the value of the T- Cal which is (2.89) is greater than T-Tab (2.08), we therefore reject the Null hypothesis (H₀) and accept the Alternative hypothesis (H₁) which signify that Corruption has a significant influence on government expenditure in Nigeria. In addition, F- Statistic value from the Analysis of Variance (ANOVA) table at 5% level of significance with 1/19 degree of freedom. The F-Statistics (8.384) is greater than the F-table value (4.38), this further supports that we reject the null hypothesis and accept the alternative hypothesis.

Model Two

OEG= 66.244 - 2.739 CORR

S.E = (4.6118) (2.90914)

T- Statistic = (14.36601) (-0.94167)

R = 0.211,

R²= 0.044,

Adjusted R² = -0.0056

F- ratio = 0.886

Durbin Watson = 1.913

T- table = 2.08

F - table = 4.38

Analysis and Interpretation

The result shows that there is a negative relationship between the explained variable (Globalisation / openness of the economy) and the explanatory variable. This conforms with a priori theoretical expectation. The coefficient of corruption gives -2.739, indicating that there is a negative relationship between corruption and globalisation / openness of the economy, which means that as the level of corrupt activities increase, the level or ratio of export to import reduces. The Correlation co-efficient (R) is 0.211 which signifies that there is 21.1% degree of relationship between globalisation and corruption level. The co-efficient of determination (R²) is 0.044 which signifies that 4.4% of total variation in foreign direct investment can be attributed to corruption while 93.6% is contributed to the random terms. The Durbin Watson is 1.913, which shows absence of Auto Correlation because 1.913 is significantly below the 2.5 benchmark i.e. $1.913 < 2.5$. The Standard error of the estimate is (4.6118) (2.90914). At the 5% level of significance, the T- statistics is 2.08 at 20 degree of freedom. Therefore the value of the T- Cal which is (-0.9416) is less than T-Tab (2.08), we therefore reject the alternative hypothesis (H₁) and

accept the null hypothesis (H_0) which signify that there is no significant relationship between globalization/openness of the economy and corruption in Nigeria. In addition, F-Statistic value from the Analysis of Variance (ANOVA) table at 5% level of significance with 1/19 degree of freedom is (0.886) which is less than the F-table value (4.38). With this, we accept the null hypothesis and reject the alternative hypothesis.

Model Three

$$GCF = -9675.87 + 304037.5 \text{ CORR}$$

$$S.E = (137303.7) (86623.68)$$

$$T\text{-Statistic} = (-0.070471) (3.509866)$$

$$R = 0.62,$$

$$R^2 = 0.39,$$

$$\text{Adjusted } R^2 = 0.36$$

$$F\text{-ratio} = 12.319$$

$$\text{Durbin Watson} = 2.32$$

$$T\text{-table} = 2.08$$

$$F\text{-table} = 4.38$$

Analysis and Interpretation

The result of the regression analysis shows that there is a positive relationship between the regressant (Gross capital formation) and the regressor variable. This negates the a priori theoretical expectation. The co-efficient of corruption gives 304037.5, indicating that there is a positive relationship between corruption and gross capital formation, which means that as the level of corrupt activities increase, government expenditure increases. The Correlation co-efficient (R) is 0.62 which signifies that there is 62% degree of relationship between gross capital formation and corruption level. The co-efficient of determination (R^2) is 0.39 which signifies that 39% of total variation in Gross capital formation can be attributed to corruption while 61% is contributed to the random terms. The Durbin Watson test result is 2.32, this represents absence of Auto Correlation because 2.32 is less than the 2.5 benchmark i.e. $2.32 < 2.5$. The Standard error of the estimate is (137303.7) (86623.68) At the 5% level of significance and 20 Degree of freedom, the T- statistics from the statistical table is 2.08. Therefore the value of the T- Cal which is (3.50) is greater than T-Tab (2.08), we therefore reject the Null hypothesis (H_0) and accept the Alternative hypothesis (H_1) which states that Corruption contributes significantly to the level of gross capital formation. In addition, F-Statistic value from the Analysis of Variance (ANOVA) table at 5% level of significance with 1/19 degree of freedom. The F-Statistics (12.319) is greater than the F-table value (4.38). With this, the null hypothesis is rejected and the alternative hypothesis accepted.

Model Four

$$FDI = 8418.825 + 14770.58 \text{ CORR}$$

$$S.E = (8312.640) (5244.370)$$

$$T\text{-Statistic} = (1.012774) (2.816463)$$

$$R = 0.542$$

$$R^2 = 0.294,$$

$$\text{Adjusted } R^2 = 0.257$$

$$F\text{-ratio} = 7.932$$

$$\text{Durbin Watson} = 1.177$$

$$T\text{-table} = 2.08$$

$$F\text{-table} = 4.38$$

Analysis and Interpretation

The result of the regression analysis shows that there is a positive relationship between the dependent variable (foreign direct investment) and the independent variable. This negates the a priori theoretical expectation. The co-efficient of corruption gives 14770.58, indicating that there is a positive relationship between corruption and foreign direct investment, which means that as the level of corrupt activities increases, foreign direct investment increases. The Correlation co-efficient(R) is 0.542 which signifies that there is 54.2% degree of relationship between foreign direct investment and the independent variable. The co-efficient of determination (R^2) is 0.294 which signifies that 29.4% of total variation in foreign direct investment can be attributed to corruption while 71.6% is contributed to the random terms. The Durbin Watson test result is 1.177, this represent absence of Auto Correlation among the variables because 1.177 is significantly less than the 2.5 benchmark i.e. $1.177 < 2.5$. The Standard error of the estimate is (8312.640) (5244.370) At the 5% level of significance and 20 degree of freedom, the T- statistics from the statistical table is 2.08. Therefore the value of the T- Cal which is (2.816) is greater than T-Tab (2.08), we therefore reject the Null hypothesis (H_0) and accept the Alternative hypothesis (H_1) which states that Corruption has a significant impact on foreign direct investment in Nigeria. In addition, F-Statistic value from the Analysis of Variance (ANOVA) table at 5% level of significance with 1/19 degree of freedom. The F-Statistics (7.93) is greater than the F-table value (4.38), thus the null hypothesis is rejected and the alternative hypothesis accepted.

Model 5

$$GDP = 242386.8 + 73456.61 \text{ CORR} + 2.393942 \text{ FDI} + 0.255903 \text{ GCF} - 12.73259 \text{ GOV} - 831.3077 \text{ OEG}$$

$$S.E = (107737.2) (28039.18) (0.860431) (0.126756) (11.42139) (1582.711)$$

$$T\text{-Statistic} = (2.249797) (2.619784) (2.782259) (2.018855) (-1.114802) (-0.525243)$$

$$R = 0.91$$

$$R^2 = 0.84,$$

$$\text{Adjusted } R^2 = 0.79$$

$$F\text{-ratio} = 15.95$$

$$\text{Durbin Watson} = 1.33$$

$$T\text{-table} = 2.08$$

$$F\text{-table} = 1.39$$

Analysis and Interpretation

Ordinary Least Square Result and Analysis

The result of the regression analysis shows that there is a positive relationship between the dependent variable Economic growth (GDP) and corruption, foreign direct investment, gross capital formation, are negatively related to government expenditure and openness of the economy/ globalisation. The co-efficient of corruption gives 73456.61, indicating that there is a positive relationship between corruption and economic growth, which means that as the level of corrupt activities increases, economic growth increases significantly. The Correlation co-efficient(R) is 0.91 which signifies that there is 91% degree of relationship between economic growth and the independent variables. The co-efficient of determination (R^2) is 0.84 which signifies that 84% of total variation in economic growth (GDP) can be attributed to corruption and other explanatory variables, while 16% is contributed to the random terms. The Durbin Watson test result is 1.33, this further shows absence of Auto Correlation because 1.33 is less than 2.5 benchmark i.e. $1.33 < 2.5$. The Standard errors of the estimates are (107737.2) (28039.18) (0.860431) (0.126756) (11.42139) (1582.711). At the 5% level of significance and 20 degree of freedom, the T- statistics from the statistical table is 2.08. Therefore the value of the T- Cal for corruption which is 2.62 is greater than T-Tab (2.08), we therefore reject the Null hypothesis (H_0) and accept the Alternative hypothesis (H_1) which states that Corruption has a significant impact on Economic growth (GDP) in Nigeria. In addition, F- Statistic value from the Analysis of Variance (ANOVA) table at 5% level of significance with 5/15 degree of freedom. The F-Statistics (15.95) is greater than the F-table value (1.39), thus the null hypothesis is rejected and the alternative hypothesis accepted. The F statistic test is statistically significant, thus showing that the explanatory variables are statistically significant.

Unit Root Test

This involves testing for the stationarity of the individual variables using the Augmented Dickey Fuller (ADF) test to find the existence of unit root in each of the time series. The results of the ADF test are reported in SECTION 2 of the appendix.

All the variables apart from GOV were not found stationary in levels. This can be seen by comparing the observed values (in absolute terms) of the ADF test statistics with the critical values (also in absolute terms) of the test statistics at the 5% level of significance. Result from tables 2.01, 2.04, 2.06, 2.08 provides strong evidence of non stationarity. Therefore, the null hypothesis is accepted and it is sufficient to conclude that there is presence of unit root in the variables GDP, GCF, OEG, and CORR at levels. Only GOV was found stationary at levels with the result in table 2.10. We can therefore reject the null hypothesis and conclude that there is absence of unit root in variable GOV at levels and it is stationary. As a result of the above result, the variables GDP, GCF, OEG, and CORR were differenced once and the ADF test was conducted on them as shown in tables 2.02, 2.05, 2.07, 2.09. The coefficients compared with the critical value 5% reveals that all the variables apart from GDP were stationary at first difference and on the basis of this, the null hypothesis of non-stationary is rejected and it is safe to conclude that the variables are stationary. This implies that the variables GDP, GCF, OEG, and CORR are integrated of order one, I (1). Considering the above results, GDP was differenced again and the ADF test was carried out as shown in table 2.03 and compared with the critical value 5%, GDP is now stationary and on this basis, the null hypothesis of non stationarity is rejected and it is safe to conclude that it is stationary at second difference i.e. at I(2).

Co- integration Test Result and Analysis

The results of the co-integration (that is the existence of a long term linear relation) is presented in Table 3.1 (Trace Statistics) and 3.2 (Maximum Eigen value) using methodology proposed by Johansen and Juselius (1990). In the co integration tables, both trace statistic and maximum Eigen value statistic indicate co integration at the 5 percent level of significance, suggesting that there is co-integrating (or long run) relationship between corruption, FDI, gross domestic product, openness, government expenditure and gross capital formation. Specifically, the result of the co integration test suggests that gross domestic product has equilibrium condition with corruption, government expenditure, openness of the economy, gross capital formation which keeps them in proportion to each other in the long run. This evidence of co-integration among the variables rules out spurious correlations and applies that one direction of influence can be established among the variables. It is important to note that the existence of co integration vectors among a group of variables may not imply that there is causal influence between pairs of variables in the model of co-integration test.

Granger Causality Test Analysis

Causality does not necessarily imply correlation in the sense that the result obtained may not explain whether the relationship is positive or negative. However, Economic growth (GDP) and corruption, as widely suggested by many scholars in the literature reviewed are known to relate both negatively and positively. In other words, the dimension of the relationship is unclear. In any case the result shown in table 4.1 reveals the direction of causality between GDP and corruption at lag two (2). The results show that at a level of significance of 0.05 ($p = 0.05$), there is one-way causality relationship flowing from corruption to GDP (Economic growth) in Nigeria thus, it could be construed that corruption causes GDP. Following the result in table 4.1, the null hypothesis that

FDI inflow does not Granger Cause Corruption is rejected and it is safe to conclude that uni-directional causality run from Corruption to FDI Inflow at lag two (2). In the same result shown in table 4.1, the null hypothesis that openness/globalisation does not Granger cause Corruption is rejected, but in the reverse that Corruption in-turn Granger cause openness/globalisation. The result suggests a unidirectional causality from corruption to openness/globalisation at lag 2. Also, the results shown in table 4.1 affirm the null hypothesis that government expenditure and gross capital formation do not Granger cause corruption is rejected. The result suggests directional causality from corruption to both government expenditure and gross capital formation at lag 2.

4. Summary of Findings

This study has found out that there is no significant relationship between corruption and the Economic Growth (GDP) determinant, openness of the economy and globalization (OEG). While economic growth and the other variables such as government expenditure (GOV), foreign direct investment (FDI), Gross capital formation (GCF) has significant relationship with corruption, thus indicating that corruption exhibited a positive relationship with economic growth (GDP). The result of Granger causality tests shows that corruption Granger cause FDI inflow, government expenditure, gross capital formation, openness and globalisation of the economy. Also, there is uni-directional causality from corruption to Economic growth (GDP). This confirms the existing arguments that the level of corruption in a country is a relevant determinant of the level of economic growth. The empirical analysis reveals the existence of a long-run relationship between reduction in level of corruption, FDI inflow, government expenditure, gross capital formation, globalisation/openness of the economy and economic growth. Particularly, the trace test has three (3) co-integrating equations while the maximal eigenvalues has two (2) cointegrating equations at 5 per cent level of significance. The finding shows that there is a significant relationship between the level of Corruption and the level of economic growth and development within the period of 1990- 2010

5. Policy Implications

As a result of our findings, we therefore suggests for policy implementation that;

The activities of the anti-corruption agencies in Nigeria such as the Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices and Related Offences Commission (ICPC) should be strengthened. The rule of law must be upheld to instil sanity in the administration of justice. Equal treatment of corrupt officials should be adopted and there should not be any exceptions to the rules as the law is no respecter of persons. Nigerians should put in leadership positions honest individuals who would serve as role models to minimize the negative consequences of corruption with its negative impact on the development and growth of Nigeria. Beyond this, Nigeria's legal and judicial system should be reviewed and restructured to handle swiftly the cases of people that are engaged in corrupt practices. There is a need to put in place social security programs such as; social insurance as obtainable in the United States of America and other advanced nations of the world should be instituted among the non-working class in order to reduce the worry about basic survival in the face of growing insecurity about the job situation. Our youths also need to be re-orientated to a good value system; this will go a long way in fighting war against corruption.

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Appendix

4.5 Data Used for the Regression.

YEAR	GDP AT CONSTANT PRICES (billion ₦)	FOREIGN DIRECT INVESTMENT (billion ₦)	GOVERNMENT EXPENDITURE (billion ₦)	OPENNESS OF THE ECONOMY	GROSS CAPITAL FORMATION (billion ₦)	CORRUPTION INDEX
1990	267,550	10,450.2	60.3	57.23	30,626.8	0
1991	265,379.1	5,610.2	66.7	66.64	35,423.9	0
1992	271,365.5	11,730.7	93.9	65.03	58,640.3	0
1993	274,833.3	42,624.9	136.7	55.86	80,948.1	0
1994	275,450.6	17,825.5	156.8	40.8	85,021.9	0.99
1995	281,407.4	55,999.3	307.2	88.16	114,476	0.63
1996	293,745.4	5,672.9	283	69.24	172,106	0.69
1997	302,022.5	10,004	428.2	74.5	205,553	1.76
1998	310,890.1	32,434.5	487.1	58.4	192,984	1.9
1999	312,183.5	4,035.5	947.7	61.91	175,736	1.6
2000	329,178.7	16,453.6	701.91	62.5	268,895	1.2
2001	356,994.3	4,937	1,019.1	62.5	371,898	1
2002	433,203.5	8,988	1,188.7	55.57	438,115	1.6
2003	477,533	13,531.2	1,225.9	79.94	429,230	1.4
2004	527,576	20,064.4	1,384	80	456,970	1.6
2005	561,931.4	26,083.7	17,443.2	60.5	1,780,040	1.9
2006	595,821.4	41,734	1,942.3	45.4	227,270	2.2
2007	634,251.1	56,854.73	6,923.17	61.96	821,426	2.2
2008	674,889	63,436.91	8,769.56	55.95	942,912	2.7
2009	654,570.1	69,726.1	5,878.34	54.43	663,869	2.5
2010	723,849.9	74,685.1	7,190.36	57.44	809,402	2.3

SOURCES: National Bureau Statistics bulletin, Annual statistical bulletin of central Bank of Nigeria 2010, Federal ministry of finance annual report and www.transparency.org