

The Transmission Channels of Corruption and Economic Growth in Nigeria from 1987 to 2017

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Abstract. While there is a plethora of empirical studies on the relationship between corruption and economic growth, the transmission channels through which corruption affects economic growth have not been well documented in the literature. This study therefore investigates the effects of corruption on economic growth in Nigeria especially with respect to the transmission channels using Seemingly Unrelated Regression (SUR) model (SUR). Secondary time series data sourced from Transparency International, Central Bank of Nigeria (CBN) Statistical Bulletin and World Development Indicators (WDI) for the periods of 1987 to 2017 were used. The result reveals that corruption affects economic growth through investment (GFCF), human capital (HC) and ICT expenditure channel and recommends that government should strengthen the anti-corruption agencies in order to holistically fight corruption at all levels.

Keywords: Corruption, economic growth and seemingly unrelated regression model.

1. Introduction

The structure of the Nigerian economy with the current output level has not attained the desirable economic growth with equivalent welfare package considering its huge natural resources (Clement & Ighodaro, 2010). No doubt, corruption has being a clog in the value system responsible for many unresolved problems with slow growth which afflicted economic value of the endowed natural resource (Ayobolu, 2006). This menace is a canker worm which reduced socio-economic growth in all sectors whose problem is rampant and has remained unabated in Nigeria Shuaib, Augustine & Frank, (2016) thereby stymieing the government from fulfilling its major functions of efficient allocation of economic resources in all the sectors of the economy (Ogunlana, 2016).

Prior to the independence of Nigeria, there have been cases of official misuse of economic resources for personal enrichment, without appropriate sanctions. Without mincing words, the challenges of corruption during that era became a devastating issue in Nigeria (Ogbonnaya, 2018). It was widespread after independence, whereby government officials looted public funds with impunity which prompted a gang of middle-rank army officers to stage a military coup d'état on 15th January, 1966 to take over power from the first Republic politicians in order to eradicate the ill and put an end to corrupt habits and other related issues such as tribalism, bribery, regionalism or sectionalism, and free the masses from poverty and misery (Mainasara, 1982). Corruption later became institutionalized during the military regime where those leaders who were found guilty made their way back in order to reclaim their confiscated property. Corruption became pronounced during this era and transmitted into the democratic regime where wealth is the most important measure of success at the expense of the societal welfare (Adeola, 2015). It became pronounced during this era and transmitted into the democratic regime where wealth is the most important measure of success at the expense of the societal welfare. Economically, the existence of corruption in any economic system brings about economic stagnation, recession and retarded growth of the economic agents (Household, firm and government) which contributes to inefficient allocation of resources and slowed down economic activities (Egunjobi, 2013). The effect of corruption on the Nigerian economy has geared government efforts and commitment to raise the standard of tackling this social menace. This informed the establishment of government anti-graft agencies such as; Economic and Financial Crimes Commission (EFCC), Independent Corrupt Practices and Other Related Offences Commission (ICPC), Special Anti-Fraud Unit and other agencies responsible for fight against corruption through

robust Whistle-Blower policy targeted at stemming widespread of the menace. Its effectiveness is evidenced in the year 2017 appraisal of the Whistle-Blower policy which led to the recovery of about #11.6bn (Adeosun, 2017).

Conversely, in the 2014 Nigeria GDP rebasing and subsequent gross domestic product growth rate recorded in 2017 which stood at 0.84 percent, its societal effect was on contraction of -1.58 percent recorded in the previous year (NBS, 2017). This evidence further substantiates in the positions of Nigeria as the poverty capital in the world (Demuren, 2018). Also, according to 2017 corruption index rating, Denmark and New Zealand were listed as most free corrupt nation in the world, closely followed by Finland and Sweden while Nigeria was ranked among the most corrupt nations where Somalia was taking the lead followed by Nigeria (CPI, 2017). According to EFCC (2019), a total of 1.3 trillion were being stolen through public procurement. This report is quite degrading, and has made people to lose hope in the ability of the Nigerian government to get out of this difficult situation as economic growth indices are poor despite her natural endowment. Transparency International (2018) ranking of Nigeria stood at 148 out of 180 countries with a score of 27 percent. This is worse compared to 2014 and 2016 Transparency International ranking when corruption was perceived to be on the increase with proportional gross domestic product. This proportional increase in the output nevertheless does not reduce spread of social vices. One will wonder how corruption flows into the economy as many unresolved questions are begging for answer in the literature hence the need to investigate the transmission channel through which corruption affects economic growth in Nigeria.

2. Literature Review

Farida (2010) maintains that the word corruption comes from the Greek word “corruptus” meaning an aberration or a misnomer. Alliyu, Kalejaye and Ogunnola, (2014) opine that the word corruption comes from the Latin verb ‘rumpere’ which means to break. This implies breaking of certain code of conduct for the personal benefit of the perpetrator.

Transparency International (2015) defines corruption as the misuse of entrusted power for private benefit. World Bank (1997) and Ngouo (2000) define corruption as the exploitation of public office for private or personal benefits. They explain further that the lack of civil spirit among civil servants leads to corrupt practices and misappropriation of public

funds. Bertrand (2013) provides a definition synonymous to World Bank (1997) as a sale of government property for private gain. It stressed further that corruption is a betrayal of trust by public office holders. When the economic key players lack public trust, it could be a barrier to investors, with less investment leading to slower economic growth. Mo (2001) supported this argument and opines that corruption reduces the level of human capital and, investors are discouraged and the multiplier effects transmit to low productivity and private investment in an economy. This reduction in the level of human capital further stressed the perception of the Transparency International. For instance, since 1996, Nigeria has been labeled as one of the most corrupt nation three times viz: 1996, 1997, and 2000; and placed in the bottom five four more times: fourth from the bottom in 1998 and second in 1999, 2001, 2002 and 2003 (Goodling 2003; Ajie & Oyegun, 2015). Transparency International (1996) ranked Nigeria as the most corrupt nation, among 54 nations with Pakistan as the second highest (Moore 1997). In 1998 Transparency International corruption perception index (CPI) of 85 countries, Nigeria ranked 81 out of the 85 countries pooled. In 1999 Transparency International (TI) released its annual report through Corruption Perceptions Index (CPI) ranking where Nigeria stood at number 98 out of 99 selected countries and was only one ranked above its neighbor Cameroon. In the 2001 corruption perception index (CPI), the position remained unchanged as the second corrupt nation in the World (ranked 90, out of 91 countries pooled) with Bangladesh coming first. In October 2003 reports released in London, Nigeria stood at number 132 and only one ranked above Bangladesh, even though the number of countries in the latter poll had increased to 133 countries. In the year 2004, Corruption Perceptions Index, released by Transparency International (TI), the watchdog on global corruption again ranks Nigeria as the third most corrupt country in the world. Up till June 2007 Nigeria has not been exonerated from the list of the top ten leading countries on corruption. It assumes 121 positions in 2008 and 130, 134 143 in 2009, 2010 and 2011 respectively. It assumed 136 positions in 2014 through 2016 while the Gross Domestic Product worth 405.10 billion US dollars in 2016. This value represents 0.65% of the world economy. Nigeria recorded average of 92.65 billion dollars from 1960 and reaches 568.50 billion dollars in 2014 while recorded as low as 405.1USD in 2016 (WBR, 2016).

2.1 Classification of Corruption

Corruption is classified as follows; Moral, economic, electoral, educational, religious, family and

bureaucratic corruption. **Moral Corruption** is a form of corruption which manifests in the likes of greed, sexual seduction, leaking of official secrets, indecent dressing or appearance of male or female gender and all manners of corrupt communications between genders. **Economic Corruption** is a form of corruption that manifests in the form of rent seeking or imposition of excess tax on the price of goods and services to exit those producers who lack resources to bribe bureaucrats, manufacturing fake drugs with law enforcement agent coverage, adulteration of drinks, piracy and economic fraud at all levels. **Electoral Corruption** involves electoral malpractices or frauds during election such as rigging, manipulations, ballot snatching, and registration of underage and over voting.

Educational Corruption manifests in the institutions of learning from the primary to tertiary among the teachers or lecturers and students. It is a situation whereby teachers and lecturers are found soliciting for bribe from the students, students dressing illicitly to attract marks from the lecturers or teachers particularly at the higher institutions and Plagiarism.

Religious Corruption relates to the manipulation of postings amongst the Pastors in the Christianity and imam in the Islam, and boycotting evangelism which is their cardinal function. **Family Corruption** is a societal problem whereby children are being bribed with biscuit, Bobo and other juicy fruits to stop crying and host lot of what it is termed pampering children. **Political and Bureaucratic corruption** involves exploitation of one's political or official position for personal gain. It has to do with public affairs such as goods, fortunes, agencies and resources (Nageri, Guru and Abdul, 2013).

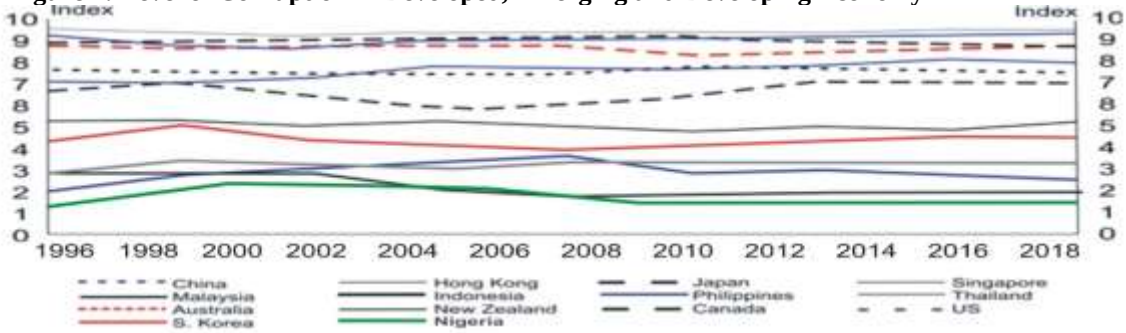
Petty Corruption is associated with smaller scale or low-income earners who often experience frustration and self-doubt in their places of employment. They are compelled to resort to corrupt practices very often in a desperate attempt survive. Supplementing of these lower income earners is affected through the creation of artificial bottlenecks especially at public service points such as tax offices, motor licensing offices, passport issuing offices and police motor registry unit to extort third party. **Grand Corruption** involves a large scale by government officials and occurs in the highest levels of government in a way that requires significant subversion of the political, economic and legal system. It involves senior executives and others in positions of power and authority. One of the distinguishing elements of this

type of corruption is its high potential for tremendous social consequences. A common example is office of the security adviser of 2.1 billion dollars. Thus, it is Paradoxical that corruption, when it involves the proverbial rich men; it is not often receiving serious sanction. Indeed, in a developing country like Nigeria, status determines the nature of impunity enjoyed. The rich that involves in corrupt practices gets richer while the poor gets punished.

White-Collar Corruption is associated with the ruling class and bureaucrats. It is the misappropriation of public resources by those at the positions of authority both in the civil service and the private sector. **Ivory Tower Corruption** is associated with favoritism, nepotism and other acts, which border on misconduct of public officers. The universities, polytechnics, colleges and other higher educational institutions which involve in admission rackets, illicit sexual harassment, and examination malpractice and staff promotion delay are categorized under this classification (Samson, 2011).

However, the due to the endemic nature of corruption in Nigeria, the position of Nigeria market in the international market has been ranked low. This is illustrated in the figure 1, with index ranges from 0 to 10. From the graphical illustration, the developed and emerging markets viz United State of America, China, Canada, Singapore occupy the high index which implies low level of corruption within the limit of control of the economic system. The developing market with Nigeria inclusive operates at the lower index level of implying high level of corruption. Nigeria is located at the very lower level with green thick line which characterized it as one of the most corrupt countries. This was corroborated by Transparency International (2018) in their perception. The index of United State of America and other thick black dotted lines at high index is an indication corruption is less persistence in the advanced and emerging markets. The Blue and green thick lines depict high level of corruption which is attributable to the developing countries including Nigeria, Philippines, Thailand and others. The faraway of the index from the origin (0) implies low level of corruption and those under these categories are the advanced and emerging economies such as United State, New Zealand and Japan. Malaysia and other countries located within lower index signify high level of corruption. Nigeria, Philippines, South Korea and Thailand are within this region

Figure 1: Level of Corruption in Developed, Emerging and Developing Economy



Source: Author 2019, adapted from Gordon (2003).

The Nigeria level of corruption when compared to other developed, emerging and developing has an average corruption score of 24.949% with Human development index of 0.504 and life expectancy of 49/50 (Demuren 2018). This has reduced the social welfare measured in Human Development Index as low as 0.504 as compared to Australia of 0.931, Japan at 0.888, and China at 0.70 and USA at 0.913. This economic effects brings about (1) Low labour productivity; (2) Low capital formation; (3) Inequity and poverty; (4) Low economic growth, (5) High level of unemployment and (6) Price instability. Others are; social insecurity, including crime, money laundering as well as trafficking in person and drugs. It leads to additional costs reflecting in the delay of policies and increases the capacity of bribes .corruption is an ailment in the Nigeria system, and regarded as a bane of social –economic growth and development. It has not only permeated the government and oil fields of Nigeria, but it has also attacked the entire nation (Hadi, 1999). Its effect rendered Nigeria public sector performance less efficient while the private sectors more efficient (Amadi, 2004).

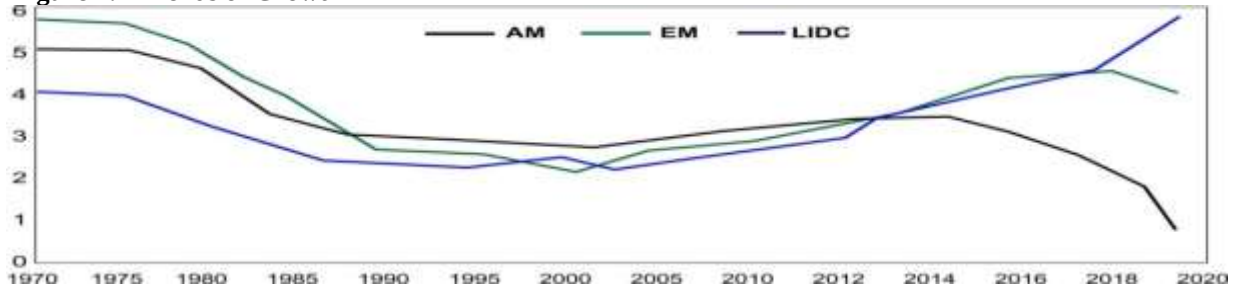
2.2 Economic Growth

Economic growth is often described as an increase in the volume of output in a given current fiscal year compared to the output in a given previous year. It is widely used in all fields of human endeavour synonymously with economic development, as it associates with growth in population, per capita, development of resources, technological advancement and increasing capital formation. Anyanwu and Oaikhenan (1995) define economic growth as the increase, over time, of a country's output level or an economic capacity to produce those goods and services needed to improve the well-being of the citizens. This definition is considered to be the crudest form and does not take into consideration vital issues such as whether or not the increased expenditure is accompanied by a corresponding increase in the real value of output in the reference period. Under the real value of output definition, the nominal value of output is deflated by an appropriate price index. Thus, applying this definition, an economy is said to have grown in real terms when there is an increase in aggregate output at constant prices over time. This is the transformation and increase in the output level of a country over a given period.

It implies more output Jhingan, (2007) and a steady change in the long-run which comes about by a gradual increase in the rate of savings and population (Schumpeter 1934). It is the steady process by which the productive capacity of the economy is increased over time which brings about rising levels of national output and income (Todaro and Smith, 2003). Ochejele, (2010) defines economic growth as the quantitative and sustained increase in the county's per capita output or income accompanied by expansion in labour force, consumption, capital and volume of trade. This 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. It also relates to growth in per capita income.

According to international monetary fund (2015), as growth is experienced in the developing market including Nigeria with projected growth of speed convergence, it's also being experienced in other economies of the world: Advanced and emerging. This implication is that the developing market will converge at their steady state to measure up with the advanced and the emerging markets. It is expected that by 2020, the developing and less developed countries would converge at a steady state given a strong institutional quality that will make impossible for corruption to thrive. This shows a sustained increase in the county's per capita output. The international monetary fund IMF, 2015 depicted this projection in figure 2.5 to establish the rate of growth of various economies.

Figure 2: Trends of Growth



Source: Adapted from IMF 2015.

2.3 Corruption Transmission Channels

Corruption has both direct and indirect effect on economic growth Mo, (2001), and the variables identified in the transmission channels are investment (GFCF), human capital (HC), government expenditures on information and communication technology (ICT) and education (EXPED), Trade Openness (TRADE) and savings (GNS) which is an improvement on the work of Mo, (2001). These variables are identified because the effect of corruption on economic growth in Nigeria is mostly obscured when disaggregating economic growth into its component parts showing the direction of impact.

Economically, corruption as economic issues permeates through all these growth components and the end result is reflected in growth. The channels in figure 3 help to identify various possible medium through which resources are being diverted from societal function for private use. It essentially flows through misappropriation and expenditures on socio economic needs of individuals as against the entire population. The result of misappropriation of economic resources directly affects productivity, domestic and foreign investment and international trade through the growth components which has effect on economic growth. The schema below explains the transmission of corruption through the growth components.

Figure 3: Corruption Transmission Channels



Source: Author 2019, adapted from Ghua et al (2015).

2.4 Empirical Review

Obayelu, (2007) investigates the effects of corruption and economic reforms on economic growth and development with lessons from Nigeria, the study found a negative correlation between levels of corruption and economic growth in Nigeria. Shehu and Akanni, (2008) investigate the impact of corruption on economic growth in Nigeria from 1986 to 2007 using Barro-type endogenous growth model

wand Cointegration and error correction mechanism (ECM) techniques. The results show that corruption exerts significant direct effect on economic growth and indirectly via some critical variables which include Government Capital Expenditure, Human Capital Development and Total employment. Adewale, (2011) examines the crowding-out effects of corruption and its destabilizing implications on the economic growth of Nigeria, using parsimonious error correction mechanism and Barro endogenous

model. The results of the regression show a negative relationship between corruption and output growth in Nigeria.

Fabayo et al. (2011) investigate the consequences of corruption on investment in Nigeria between 1996 and 2010 using the Ordinary Least Square technique. The result reveals that corruption lowered investment and economic growth in Nigeria. Nageri et al. (2013) investigate the impact of corruption on economic development in Nigeria. Secondary data were sourced from World Bank reports on Nigeria and corruption reports from Transparency International on Nigeria. The data are analysed using the Ordinary Least Square (OLS) regression technique and result indicates that corruption negatively affects economic development. Rotimi, Obasaju Lawal and Ise, (2013) investigate corruption and economic growth analysis in Nigeria and introduce new perspective on the role of corruption in economic growth and provides quantitative estimates of the impact of corruption on the economic growth in Nigeria as well as their causal relationship. This study uses the ordinary least squares (OLS) to determine the relationship between corruption and economy growth and applies the granger causality method to measure the causal relationship that exists between corruption and the gross domestic product (GDP). The results reveal that corruption impairs economic growth. Egunjobi (2013) investigates the impact of Corruption on economic growth in Nigeria on an annual time series data from 1980-2009 using regression analysis. The study also used the Granger causality test and impulse response function. The empirical results reveal that corruption per worker exerts a negative influence on output per worker directly and also indirectly on foreign private investment, expenditure on education and capital expenditure per worker. Odunbumi and Agbelade (2014) examine the causality between corruption and economic growth in Nigeria and employed Johansen cointegration test, ADF unit root test, Granger causality test and Ordinary Least Square methods using time series secondary data 1990 and 2010. FDI inflow, Corruption Index, Gross Domestic Product, Gross fixed capital formation, openness of the economy and government expenditure were the variables employed. Five models were specified; the first four models examine the relationship between corruption and various economic growth determinants, while the last model examines the relationship between corruption and economic growth. The results reveal that there was no significant relationship between corruption and openness in the economy. The result reveals further that economic growth and other variables such as government expenditure, foreign direct investment, and Gross capital formation have

positive significant relationship with corruption. The result of Granger causality tests show that corruption Granger cause FDI inflow, government expenditure, gross capital formation, openness and globalization of the economy. The result also shows that there is uni-directional causality from corruption to Economic growth and 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 Nigerian youths need to be re-orientated on moral values. Alege et al. (2014) examine the effect of corruption on economic development in Nigeria and the result shows that there is a significant reduction in the level of corruption in Nigeria through the introduction of government anti-corruption instruments. The study in addition found a negative correlation between levels of corruption and economic growth which obstructed the growth of the Nigeria economy with recommendation that orientation should be a watch word in all the facet of the institution in Nigeria and reverse the prevailing culture in which corruption is viewed as permissible.

Ubi and Udah, (2014) investigate the impact of corruption, institutional quality on economic performance in emerging economy using Augmented Dickey-Fuller and co-integration econometric techniques and results indicate that corruption and institutional quality have significant effect on economic performance in Nigeria.

Ajie and Oyegun, (2015) investigate the impact of corruption on economic growth in Nigeria for the period 1996 – 2013 employing Ordinary least square of regression. Findings show that there is a negative relationship between the dependent variable (GDP) and corruption level in Nigeria and recommends that anticorruption 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. Ogunlana, (2016) investigates the relationship between government spending, corruption and output growth in Nigeria and employs aggregated data from 1980 to 2011 with Barro (1990) model. The result shows that corruption influenced output growth negatively. Shuaib et al. (2016) examine the impact of corruption on the growth of Nigerian economy using time series data from 1960 to 2012 and employs Cointegration analysis test for the time series and error correction mechanism (ECM) to determine the short run relationship among the variables .The results of the findings show an inverse relationship with growth.

3. Methodology

This study is based on Endogenous Growth Theory developed in the 1990s by (Romer, 1986; Lucas, 1988; Jones & Manelli, 1990; Barro, 1990; Rebelo, 1991) as a reaction to this omissions and deficiencies to attain long run growth. This theory enumerates the policy variables that can have significant impact on long-run economic growth. Unlike the Solow that considers technological change as an exogenous factor, the new growth model notes that technological change has not been equal nor has it been exogenously transmitted to long run growth in the most developing countries (World Bank 2000). Essentially, Barro (1990) emphasizes the role of corruption as it affects growth which possible enter through and its expressed thus:

$$Y = AK^\beta G^{(1-\beta)} Lg_t \dots\dots\dots(1)$$

where Y=output a proxy economic growth which is measure in per capita income, A= Total factor productivity, K=investment measures by gross fixed capital formation and G= government expenditure which is disaggregated into health, education and ICT as an improvement over Barro (1990) model. Meanwhile, Based on the specific of the study as it

$$y_{ir} = x_{ir} \beta_i + \epsilon_{ir}$$

Where i represents the equation number, r is the number of observation which is assumed to be large while x and β are parameters estimate. By representing the channel, equation 27 further decomposes to form;

$$\begin{aligned} y_{t1} &= \alpha_1 + \alpha_1 y_{1t} + \alpha_2 y_{2t} + \alpha_3 y_{3t} + \alpha_4 y_{4t} + \alpha_5 y_{5t} + \alpha_6 y_{6t} + \alpha_7 y_{7t} + \epsilon_{1t} & 3 \\ y_{t2} &= \beta_1 + \beta_1 y_{1t} + \beta_2 y_{2t} + \beta_3 y_{3t} + \beta_4 y_{4t} + \beta_5 y_{5t} + \beta_6 y_{6t} + \beta_7 y_{7t} + \epsilon_{2t} & 4 \\ y_{t3} &= A_1 + A_1 y_{1t} + A_2 y_{2t} + A_3 y_{3t} + A_4 y_{4t} + A_5 y_{5t} + A_6 y_{6t} + A_7 y_{7t} + \epsilon_{3t} & 5 \\ y_{t4} &= C_1 + C_1 y_{1t} + C_2 y_{2t} + C_3 y_{3t} + C_4 y_{4t} + C_5 y_{5t} + C_6 y_{6t} + C_7 y_{7t} + \epsilon_{4t} & 6 \\ y_{t5} &= D_1 + D_1 y_{1t} + D_2 y_{2t} + D_3 y_{3t} + D_4 y_{4t} + D_5 y_{5t} + D_6 y_{6t} + D_7 y_{7t} + \epsilon_{5t} & 7 \\ y_{t6} &= B_1 + B_1 y_{1t} + B_2 y_{2t} + B_3 y_{3t} + B_4 y_{4t} + B_5 y_{5t} + B_6 y_{6t} + B_7 y_{7t} + \epsilon_{6t} & 8 \\ y_{t7} &= F_1 + F_1 y_{1t} + F_2 y_{2t} + F_3 y_{3t} + F_4 y_{4t} + F_5 y_{5t} + F_6 y_{6t} + F_7 y_{7t} + \epsilon_{7t} & 9 \end{aligned}$$

4. Result/Findings

Table 1 Time Series Properties of Data Set

Variables	Augmented Dickey Fuller (ADF)		Philips Perron (PP)		Order of Integration @ 5% using ADF
	Level	First Diff	Level	First Diff	
LOG(PCI)	2.80	-3.77	2.65	-3.81	I(1)
LOG(GFCF)	1.89	-4.97	2.47	-4.97	I(1)
LOG(GNS)	1.76	-7.33	3.62	-7.34	I(1)
EDEXP	0.25	-4.84	0.24	-4.84	I(1)
HEXP	1.19	-5.79	2.73	-5.82	I(1)
ICTEXP	6.33	-6.62	5.63	-9.61	I(1)
HC	4.15	-2.53	3.49	-2.49	I(1)
CORR	0.92	-5.62	1.58	-5.64	I(1)
TRADE	-1.39	-4.83	-1.60	-7.41	I(1)
CRV					
1%	-2.65	-2.65	-2.65	-2.65	
5%	-1.95	-1.95	-1.95	-1.95	
10%	-1.61	-1.61	-1.61	-1.61	

Note: CRV implies Critical Value

Source: Author, 2019

relates to transmission channels through which corruption affects growth therefore, Seemingly unrelated regression (SUR) model which was proposed by Arnold Zellner (1962) is considered most appropriate. It is a generalized linear regression model which consists of several regression equations, each having its own dependent variable and different sets of independent variables. This model amounts to feasible generalized least squares (FGLS) with a specific form of covariance matrix. The transmission channels in this study are disaggregated into three economic effects viz; direct effect, total effect and Indirect/ Feedback effect. It considers a number of independent variables which ordinary least square method can no longer do justice to. Meanwhile, each of the channels shows a significant effect of corruption and the feedback relationship between corruption and economic growth. This feedback effect usually creates simultaneity problem, which will invariably renders OLS inappropriate to estimate the parameters of each equation individually. When a number of equations are identified Zellner's (1962) Seemingly Unrelated Regression (SUR) model is considered most appropriate (Achike, Onaja and Agu, 2009). Thus, it's expressed as;

2

From Table 1 above, it is observed that all the variables are stationary at first difference, I(1) (such as PCI, gross fixed capital formation, gross national savings, education expenditure, health expenditure, and corruption) at 1% significance level using the Augmented Dickey Fuller Test. However, human capital is significant at first difference I(1) but at 5% significant level. ICT expenditure was stationary at first difference I(1) at 1% significant level.

Similarly, the results of Philips Perron Unit Root Test indicate that all the variables are stationary at first difference, I(1) (PCI, gross fixed capital formation, gross national savings, education expenditure, health expenditure, and corruption) at 1% significance level. However, human capital is significant at first difference I(1) but at 5% significant level. ICT expenditure was stationary at first difference I(1) at 1% significant level.

4.1.1 Co-integration Test and Vector Error Correction Model

Having established the order of integration of our series, the study determined the number of long-run equilibrium relationships or Co-integrating vectors between the variables. The variables are found to be integrated of the same order, such as I (1) as shown in the unit root tests. The study therefore conducted long-run co-movement test using Johansen Cointegration technique and error correction mechanism to determine the short run speed of adjustment as presented in table 2 and 3. Thus, the result of the co-integration test revealed that there were four co-integrating vectors based on Trace statistic and Eigen values since the hypotheses of no co-integration were rejected at 5% level for both test using Mackinnon-Haug Michelis (1999) p-values.

Consequently, after establishing the long-run relationship among the variables, the study investigated the short-run dynamics of the model using Error Correction Mechanism (ECM). This shows the speed of convergence towards equilibrium among the variables. The coefficient of the ECM is negatively signed and statistically significant as expected. Thus, this indicates that the speed of convergence among the variables towards equilibrium exists.

The value of -0.57 for the coefficient of error correction term suggested that the fiscal policy variables and per capital income will converge towards its long-run equilibrium level in a moderate speed after the fluctuation in corruption and economic growth. Eliminating for instance, 95% of a fluctuation in corruption and economic growth would take a little more than 6 years or precisely 24.16 quarters.

Table 2 Johansen Maximum likelihood test for Cointegration (PCI, CORR, HEXP, ICT, TRADE, GNS)

Hypotheses	Trace Test	5% Critical values	Max-Eigen Statistic	5% Critical values
$R = 0$	347.75	159.53	182.42	52.36
$R \leq 1$	295.33	129.62	167.16	48.23
$R \leq 2$	138.17	55.75	63.11	42.08
$R \leq 3$	78.07	49.82	44.86	33.28
$R \leq 4$	32.21	47.86	28.81	29.58

Source: Author, 2019

Table 3 Parsimonious Dynamic Regression Result

Variables	Coefficients	Standard Error	t-Statistic
ECM(-1)	-0.57	0.21	-2.71**
$\Delta \ln \text{GFCF}(-1)$	0.32	0.11	2.91**
ΔCORR	0.42	0.60	0.70
$\Delta \ln \text{HEXP}$	-0.06	0.02	-3.01**
$\Delta \ln \text{GNS}$	0.85	0.15	5.67*
$\Delta \ln \text{TRADE}$	0.52	0.12	4.33*
$\Delta \ln \text{ICT}$	-0.55	0.19	-2.89*
Adjusted R-square: 0.76			
Durbin-Watson stat: 2.05			
F-statistic: 16.09			

Note: *(**) *** implies 1% (5%) 10% significance level. ΔPCI is the dependent variable

Source: Author, 2019

Results of the Transmission Channels through which Corruption affects Economic Growth
Table 4 Channel Model Result: Direct Effect

Explanatory Variables	Dependent Variables						
	GFCF	GNS	EDU	HC	HEXP	TRADE	ICT
C	25.17 (19.47)	17.34 (6.37)	-0.11 (-0.06)	3.05 (4.03)	1.55 (0.21)	6.81 (0.73)	-5.36 (-2.51)
CORR	0.69* (5.23)	0.83 (1.68)	0.14 (0.65)	0.24* (3.29)	-0.28 (-1.17)	-0.18 (-0.52)	0.90* (4.46)
EXPED				0.02 (0.27)	0.90 (12.57)		-0.53** (-2.26)
GNS	0.05 (0.79)		0.08 (1.07)	-0.04 (-1.11)	0.04 (0.49)	-0.26 (-2.43)	0.14 (1.43)
ICTEXP			-0.25 (-1.94)	0.24* (3.53)	0.39* (3.05)		
GFCF					-0.10 (-0.37)	-0.33 (-0.92)	
HEXP			0.97 (13.22)	-0.07 (-0.82)			0.62** (2.75)
HC		-0.90 (-0.81)					
TRADE	-0.10 (-0.92)	-0.96** (-2.77)					-0.53* (-3.12)
Combined Effect	0.62* (62.00)	-0.87 (-1.16)	0.94* (4.09)	0.39* (3.90)	0.95* (5.94)	-1.19 (-1.32)	0.60* (4.62)
R-squared	0.89	0.92	0.99	0.89	0.99	0.96	0.98
Adjusted R-squared	0.88	0.91	0.98	0.86	0.99	0.95	0.97
F-stat	52.29*	73.72*	450.81*	38.16*	494.70*	135.93*	216.55*
DW	1.61	2.02	1.45	0.41	1.53	1.81	1.13

*** represents 1% (5%) Level of Significance

Values in () are t - statistic

Source: Author, 2019

The channel result presented above revealed that the coefficient of corruption was positive and significant at 1% level of significance in gross fixed capital formation channel, human capital channel and government expenditure on ICT channel and this implies that corruption has positive and significant effect on gross fixed capital formation channel, human capital channel and government expenditure on ICT channel. The adjusted R- squared showed that total variation in all the identified growth variables is above 80% explained by corruption. The model however, has goodness of fit and no presence of serial correlation as the values of DW are within 2. This result shows that the coefficient of corruption was positive and significant at 1% level of significance in all the growth variables except for health expenditure and trade openness that exerts negative relationship. Hence the urgent needs for government to be aggressive in its fight against corruption as virtually all the growth variables were polluted by corruption.

5. Conclusion

The significant positive relationship between corruption and gross fixed capital formation, human capital and ICT expenditure observed in this study

further validates the roles of bureaucrats' in circumventing government policies in the investment process and clearly discusses the possible channels through which corruption affects economic growth. Corruption does not only hinder welfare improvement but also hampered domestic and foreign investors in the economy due to bureaucratic policy. This has discouraged the engines of growth-small and the medium scale enterprises to critically focus on productivity and economic activities and has a great influence in welfare reduction of Nigerian. The outcome of this study has no doubt reflected the detrimental effect of corruption and its position in the transparency international despite Nigeria huge resources. The identified channels of transmission of corruption to growth further validate the **Greaser and Policy Oriented theories** of corruption. The improvement in the economy observed recently could be traced to the government efforts in improving the health expenditure and trade pattern through diversification of the economy in targeting agricultural products as export products in order to improve the strength of Nigeria currency. This has reduced the level of over invoicing and out of pocket expenditure. This achievement is sequel to the efficient government health policy and trade

openness policy through the single treasury account to check the inflow and outflow of currency and assists to overcome the problem of trade barriers and other corrupt practices.

6. Recommendation

From this study the following recommendations are suggested:

- There is need to strengthened the anti-corruption agencies (EFCC and ICPC) in the fight against corruption in Nigeria.
- There is need for government to establish strong institution that is ICT-driven to block every hole in the investment, human capital and ICT expenditure whereby it becomes impossible for people to corruption at all levels.
- Government should equally embark on direct measures capable of eradicating the bureaucratic policy in ensuring that small and medium scale enterprises are encouraged including domestic and foreign investors.
- It is also recommended that programmes of integrating ICT and anti-cyber-crime training into the educational system should be encouraged with a view of remodeling the youth orientation on sharp practices.
- Government policy that awards capital punishment for any corrupt public
- There is need to addressing the Nigeria value system which builds around right information in ensuring that corrupt practices are discouraged in the economy.
- Measures should also be put in place to ensure that serious sanctions are awarded on any corrupt young persons in both public and private offices given the right value system of her citizens.
- Government should build strong institution around the financial institutions to strengthen the Bank Verification Number and maintain single treasury account capable of monitoring the inflow and outflows of currency.
- Government is advised to provide the needed infrastructural facilities including the Central monitoring Camera to improve the effectiveness of the anti-graft agencies and strengthen the whistle blowing policy.
- Policy makers are advised to inculcate corruption prohibition act into the educational curriculum in all institutions of learning.

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