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Corruption and Macroeconomic Performance in Nigeria: Evidence from Vector Autoregression Model

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Abstract

This paper attempt to investigate how rent-seeking behaviour that is transmitted through weak institution and monopoly rent is perceived as corruption. The study adapts the rent-seeking theory into aggregate macro model with a Keynesian appeal as a framework. Having satisfied stationarity and the cointegration test, the paper used the Vector Autoregressive technique to decompose the variance in the measuring short and long-run forecast and by extension impulse response function was use to determine the impulse response function. The paper finds that in the short-run corruption is self perpetuating, however in the long-run this self perpetuating tendency spill-over to public capital expenditure. Also long-run public debt tends to contribute more to corruption which signifies that part of public borrowing to finance deficit are likely to be under-utilized or perhaps it is channel into other sub-optimal use which doesn't represents the intended target. Rent seeking behavioural tendency are embedded in economic agents that bid and implement capital government projects. Due to weak institutional framework that might not enforce strict regulation in conducting government business, individuals and firms tends to partake in rent seeking. However the result shows that the economic growth responds to this corrupt tendency gradually. The paper concludes that corruption responds more to both public debt and government capital expenditure than unemployment and growth process. As such weak institutional structures embedded in the public domain incentivize corruption to be persistent.

Keywords: Corruption, Weak Institutions, Rent-seeking & Economic Outcomes

Introduction

Over the years it appears there has been an outcry on the ills and economic set back brought about by corruption in Nigeria. Across different eras (both military and civilian) the issues of institutional failure, lack of governance, lack of transparency and accountability including information asymmetries were probably link as causative factors of corruption. From the liberal market perspective, corruption is considered as an economic sabotage that is likely to affect economic performance. This means the the market efficiency[1] that the neo-liberal and neoclassical rely on could be grossly derail

[1] The market efficiency refers to allocation, distribution and combination of product.

whenever corruption prevail. Thus this could hamper both private and public efficiency in investment, expenditure and to a large extend economic growth and unemployment might be affected.

Believing that economic performance in terms of growth, level of employment, public expenditure and debt ratio could be affected by the prevalence of corruption. This more or less relates to the fact that corruption may have the tendency to truncate economic progress by either miss-allocating scarce productive resources or distorting the production as well as consumption pattern in an economy. For instance investors (domestic or foreign) may tend to be averse to countries that are perceived[2] to be corrupt. The intuition that could follow is that corruption may add to transaction cost due to the risk and uncertainties. As such this averseness towards corruption may impede investment in the domestic economy and this could affect opportunity in the labor market and the overall growth of the economy.

In the Nigerian economic space, the behavioural tendency of economic agent within the public domain appears to impede the rules of the game when market participants and government agents interact. This posture could be a reflection of the strength/weakness of regulatory framework or institutions in the country. This perception also juxtapose the Transparency International (TI) report which ranked Nigeria's average corruption as 94%, 81.1% and 98.4% in 1995, 2005 and 2012 with a Corruption Perception Index (CPI) of 0.63, 1.90 and 1.76 respectively. More recently Nigeria is ranked 136 out of 168 countries in Transparency International's Corruption Perception Index for 2015.
To achieve the broad objective of this paper; investigating the influence of corruption on economic outcomes in Nigeria. This paper was divided into five (5) sections as follows: section one focused on the introduction, section two reviews the relevant literature and theoretical framework for the study. Section three presents the method of analysis, while the results of the study are presented and discussed in section four. Section five concludes the study and relevant recommendation provided.

Empirical Review

Economic literature is replete with studies on corruption and economic growth in Nigeria.
Bakare (2011) conducted a study on the crowding-out effects and its destabilizing implications on the economic growth of Nigeria, using parsimonious error correction mechanism. The results showed a negative relationship between corruption and output growth in Nigeria. In a similar line, Ajie and Wokekoro (2012) examined the impact of corruption on the economic growth and development of the Nigerian economy using secondary data obtained from the CBN publications for the period of 1980 - 2011. The findings attested that there were positive impacts of growth (GDP) and Unemployment on corruption. These studies reveal that corruption affect macroeconomic performance just as macroeconomic performance affects economic growth.

Kyarem (2007) investigated *Determinants and effects of corruption on investment, general price level and sustainable economic growth in Nigeria*, using the Ordinary Least Square (OLS) technique. The findings revealed that corruption has insignificant positive impact on the general price level while it had significant negative impact on economic growth. Also his findings leaves much room for further investigation since price level and inflation are integral variables of economic growth and are seen in the study as infinitesimally affected by

[2] Evidence is available from the transparency internation.

corruption and yet corruption is growth inhibiting.

Hafeez, and Naveed (2000), regressed a panel data to identify the determinants of corruption and its relation to GDP from 1995 to 2005 in Nigeria. There first objective, the study was based on determinants of corruption. The empirical results indicated that real GDP per capita, secondary school enrolment, public spending on education, FDI, and unemployment rate are important determinants of corruption. Similarly the second objective probes the relationship between corruption, level of GDP per capital and growth of GDP. The results indicated that corruption is the most relevant variable in the determination of the level of GDP per capita in Nigeria.

Nageri, Kamaldeen, Umar and Ajoke, (2013) investigated the impact of corruption on economic development in Nigeria. Secondary data sourced from the World Bank and Transparency International was used. The data were analyzed using the Ordinary Least Square (OLS) regression technique. The first hypothesis tested with respect to Corruption Perception Index (CPI) was not accepted implying that the tests were statistically significant, meaning that Corruption Perception Index (CPI), a proxy for corruption in this research negatively affects economic development. The second hypothesis tested on the Corruption Rank (CR) of Nigeria and Relative Corruption Ranking (RCR) of Nigeria among countries under review was not accepted meaning that the relative position of Nigeria among countries under review and Nigeria's rank on corruption cadre was also statistically significant. The findings revealed that corruption had a significant negative effect on economic growth and development. It recommended that the Nigerian government should employ the strict application of anti-corruption codes as stipulated in the legislations that created the anticorruption agencies without prejudice irrespective of the culprit's stature or position in the society. Their final advice was that transparency, accountability and the application of the rule of law in dealing with corrupt government officials can lead to improved CPI ranking, induce investment, and foster economic growth and development.

Akindele (2005) undertook an empirical investigation of the relationship between corruption (proxy by CPI) and employment of labour and capital, and political instability in Nigeria. With the use of a modified Cobb-Douglass production function, Corruption index was found to be inversely related to all the developmental indicators implying a strong significant negative relationship between corruption and development and concluded that, corruption in whatever form is inimical to efficient macroeconomic performance and development of Nigeria. Along this reasoning, Fabayo*et al* (2011) analyzed the consequences of corruption on investment in Nigeria using the Ordinary Least Square technique. Corruption proxy by annual Corruption Perception Index between the period 1996 and 2010 was regressed over investment. The study revealed that low Corruption Perception Index ranking on Nigeria, which implies high level of corruption, leads to low investment and thus low economic growth in Nigeria.

From the various researches and findings, it is clear that corruption is economic growth inhibiting. However, the more damaging finding is that of Jie and Wokekoro (2012), that corruption had negative impact on institutions. When institutions are corrupted, urgent actions are required, otherwise corruption and anti-economic growth traits will become institutionalized. It is also not very clear from the series of studies the strength of the impact of corruption on

economic growth. It is simply verified as negative (but not strongly negative or weakly negative). Such verification will dictate the nature of policy biasness in the face of competing economic demands.

Furthermore, Bamidele, Joseph and Oresajo (2013) presumed opinion that corruption impacts the socio-economic indices of Nigeria negatively. By extension their study attempts to examine the impact of corruption on the achievement of the Millennium Development Goals (MDGs) in the country. The scope covered the period 1970 to 2010, using to test the relationship was the Structural Vector Auto Regression (SVAR). The variables used include Corruption Perception Index, Gross Domestic Product (GDP) growth rate, Secondary School Enrollment rate, life expectancy, government expenditure and oil exports. The study discovered that corruption has negative impact on the objectives of MDGs in Nigeria. The impulse response results indicate that corruption accounts for negative shocks in the variables, while the forecast variance decomposition showed that corruption accounts for a substantial portion of the variance decomposition of the variables under study. They concluded that the government as an institution is weak in enforcing rules against corruption as such corruption prevalent. They recommended that the government in Nigeria should withdraw from the objectives of providing services and concentrate as regulatory body.

Urien (2012) assessed the impact of corruption on the socio-economic development of Nigeria. Adopting the system theory as a theoretical framework and demonstrating with secondary sources of data, the study exposed the country's deplorable socio-economic indicators that promote vices like kidnapping, public immorality, lawlessness, and ghost - worker syndrome, which translate to general unemployment in Nigeria. The study recommended strengthening of the existing anti-corruption agencies to punish corrupt convicts. He also advocated for exemplary leadership in the anti-corruption agencies, to avoid leadership compromise with corrupt persons. This study seems to rely so much on the existing ant-corruption and law enforcement agencies as instruments of eradicating corruption. The reality however, is that, many of the law enforcement agencies are themselves corrupt, and except they are purged, they can only sustain corruption.

In a similar study, Akinlabi, Hamed and Awoniyi(2011),investigated the causality and effect of corruption on (un)employment in a stunted economy that would not create jobs for the citizenry. Using the foreign direct investment inflow to Nigeria as one of the dependent variables and as a major source of employment creation and economic growth, the paper employs Granger causality test and Ordinary Least Square method on time series (secondary) data, covering 1990 and 2009. Using Augmented Dickey Fuller (ADF) and Johansen and Juselius co-integration tests, the OLS result showed among others that, there is an inverse relationship between FDI inflow and corruption. In other words, a large volume of FDI inflow is associated with a low level of corruption in Nigeria, implying that employment creation would be very minimal in the light of the high corruption level in Nigeria.

Considering public procurement as indispensable to economic growth, Ekwo (2013) investigated into *corruption risk factors: an analysis of public procurement in Nigeria.* Primary data used was secured via 20 semi-structured interviews conducted across four organizations in Lagos, Nigeria. The major finding was that wide discretionary powers of procurement officers under the direction of management are the risk factor

that motivates corruption in the public procurement process in Nigeria. A corruption risk factor vulnerability check-list was proposed for the management of public procurement to achieve transparency and accountability and hence a robust economic growth. The problem with corruption associated with procurement is that there are already corruption cartels from importers to distributors, with associates within and without the country. The problem therefore is far beyond procurement to inspection and market surveys. The corruption risk factor vulnerability check-list must go hand in hand with other agencies like NAFDAC to crosscheck that quality is not compromised.

Investigating into the effect of corruption on major economic growth variables like capital expenditure, total government expenditure and foreign debt, Ogboru and Abimiku (2010) used an OLS and regress CPI of Nigeria on these indicators. They discovered a positive relationship between corruption and employment, capital expenditure and general government expenditure. With the evidence, he concluded that when corruption exist in a country, efforts to increase welfare through increased general expenditure by the government results to minimum positive results and a disproportionally higher increase in the level of corruption.

From these findings, we can deduce the possible reasons why Nigeria posits impressive growth rates and yet the poverty rates remain high. This perhaps, explains the growth with corruption, and without poverty reduction witnessed in Nigeria over the past decade. The trend of corruption must be checked; otherwise the huge gap between expenditure and benefits will enshrine exclusive economic growth. It is indeed unarguable that corruption is economic growth inhibiting.

Theoretical Framework

The Rent-seeking theory as first brought forward by Tullock (1967, 1993) and later Krueger (1974) has long created a niche in the understanding of how institutions and market co-inhabit in an economic space. Therefore this paper draws from the strengths of the Rent-Seeking theory as a theoretical footing. The central tenet of the theory provides that incentives[3]are embedded in the market when government institutions interact with private market participant in an economic space. These incentives exist as unique market privileges as such both market participants which includes private individuals and government agents seek this incentives in order to benefit from the potential economic rent.

Therefore this paper begins with a baseline model where private market participants and government agent partake in the economy.

$$y = c + i + g \qquad (1)$$

The model in eq. (1) is a macro model where c is aggregate household consumption, $i$aggregate private investment, g is government investment and y is the aggregate output in the economy. The justification for adopting baselinemodel is because of two distinct reasons. First the model allows for the participation of both private and government agent participation in the economy which is consistent with the underlining thesis of the rent-seeking theory. Secondly corruption is not directly transmitted into the economy.

[3] The incentives connotes unique market privileges such as information which market participants take advantage in order to seek economic rent during transaction.

Rather corruption is indirectly transmitted through private investment and government spending. As a caveat this an important justification that warrants the introduction of corruption as variable into the macro model in equation (1) which extends to equation (2). Note that because corruption cannot be explicitly stated, we therefore indicate the channel(s) through which it is transmitted into macro model (i.e. corruption may be transmitted through transactions between the government and private agents as presented below:

$$y = c + (i + mr) + (g + wi) \qquad)$$

Where $\boldsymbol{mr}$ and $\boldsymbol{wi}$ represents *monopoly rent* and *weak institution* respectively. This means private investors may partake in corruption by accruing monopoly rent when government contracts are awarded. Similarly corruption may strive in the economy space when government institutions are weak in the enforcement of rules (to ensure the procedure in the awards of government contracts are followed) and regulation in the conduct and execution of contract. Thus this implies that corruption could be entrenched in private or public investment[4] or perhaps as a result weak enforcement capacity of regulatory institutions.

Therefore both monopoly rent seeking peculiar in the private domain and weak institutions that could not over-see to the proper conduct of government business are perceived to be corruption. This intuition is consistent with Ajie and Wokekoro (2012) and also Bamidele et al (2013). This means that:

$$mr + wi = percieved\ corruption\ (pc) \qquad (3)$$

Removing the bracket from eq. (2) we have:

$$y = c + i + g + (wi + mr) \qquad (4)$$

Substituting eq. (3) in (4) we have:

$$y = c + i + g + pc \qquad (5)$$

Now it can be infer that $\boldsymbol{pc}$ is the rent-seeking variable in the model. Similarly$g$ is a notation for government institutions while$y$ is the economic growth and c & i are component of private consumption and investment.

Methodology

Data

Data of the variables were drawn from secondary sources which include Central Bank Statistical Bulletin and transparency international indicator. The study will make use of annual data from 1981 to 2014. From the variables that enter into the model, g represents government institutions. Conventionally government contributes to aggregate output or economic growth through aggregate government expenditure which is proxy by capital expenditure. In addition exogenously government participates in the debt market to raise funds in order to finance this capital expenditure. Therefore government debt is factored as a component of government institution. Lastly the aggregate consumption and investment are variables that influence unemployment. This means the transmission of aggregate private investment and consumption passes though the labor market. As aggregate consumption changes, such changes are reflected in the money market as adjustment in savings which further affect private investment. It should be born in mind thatthis transmission precludes asymmetries and therefore the neoclassical assumption that market response instantaneously is presumed. Hence it assumed that consumption and investment are transmitted into the labor market which invariably affects unemployment. This implies that the two variables (c & i) of interest in the

[4] Transactions within either private and public domain or between private and public agent tends to emobody corruption largely when institutions are weak.

model are proxied by unemployment. The justification for taking unemployment as proxy for labor market adjustment to investment and consumption is predicated on the encompassing attribute it embodies as a measure of social benefit/cost in the economy. The variable of perceived corruption is proxied by the corruption perception index.

Where RGDP = Real Gross Domestic Product per capita, CPI = Corruption Perception Index, UNEMP= Unemployment Rate, DEBT= Foreign Debt Outstanding and CAPEX= Capital Expenditure and μ_t= random error term.

Model Specification

The logarithmic econometric form of the empirical model specifying the relationship between corruption and macroeconomic performance is:

$$logRGDP_t = \beta_0 + \beta_1 logCPI_t + \beta_2 logUNEMP_t + \beta_3 logDEBT_t + \beta_4 logCAPEX_t + \mu_t \quad (6)$$

A VAR model is developed to capture the relative interaction of the identified transmission determinants on macroeconomic performance in Nigeria. These are represented in a system of equations 7 through 11:

$$CPI_t = \alpha_0 + \sum \alpha_{1i} CPI_{t-i} + \sum \alpha_{2i} UNEMP_{t-i} + \sum \alpha_{3i} RGDP_{t-i} + \sum \alpha_{4i} DEBT_{t-i} + \sum \alpha_{5i} CAPEX_{t-i} + u_{1t} \quad (7)$$

$$UNEMP_t = \theta_0 + \sum \theta_{1i} CPI_{t-i} + \sum \theta_{2i} UNEMP_{t-i} + \sum \theta_{3i} RGDP_{t-i} + \sum \theta_{4i} DEBT_{t-i} + \sum \theta_{5i} CAPEX_{t-i} + u_{2t} \quad (8)$$

$$RGDP_t = \in_0 + \sum \in_{1i} CPI_{t-i} + \sum \in_{2i} UNEMP_{t-i} + \sum \in_{3i} RGDP_{t-i} + \sum \in_{4i} DEBT_{t-i} + \sum \in_{5i} CAPEX_{t-i} + u_{3t} \quad (9)$$

$$DEBT_t = \beta_0 + \sum \beta_{1i} CPI_{t-i} + \sum \beta_{2i} UNEMP_{t-i} + \sum \beta_{3i} RGDP_{t-i} + \sum \beta_{4i} DEBT_{t-i} + \sum \beta_{5i} CAPEX_{t-i} + u_{4t} \quad (10)$$

$$CAPEX_t = \Psi_0 + \sum \Psi_{1i} CPI_{t-i} + \sum \Psi_{2i} UNEMP_{t-i} + \sum \Psi_{3i} RGDP_{t-i} + \sum \Psi_{4i} DEBT_{t-i} + \sum \Psi_{5i} CAPEX_{t-i} + u_{5t} \quad (11)$$

Where α_0, θ_0, $\in_0$, β_0 and Ψ_0 are the intercept terms and $\mu_{1t}, ... \mu_{5t}$ are white noise error terms.

Result and Discussion

Optimal-Lag Length test

The result of the lag length selection criteria using sequential modified Likelihood Ratio (LR), Final Prediction Error (FPE) and the Akaike Information Criterion (AIC) test statistic criteria are consistent in the choice of 1 lag which was consequently employed.

Unit root Test

Table 4.1 show results of the unit root test with intercept on one hand and with intercept and linear trend on the other hand using both Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP). For ADF, all the variables are stationary at first difference in both intercept and intercept and a linear trend.

Table 1: Unit Root Test Results

Variable	ADF	PP	ADF	PP
	With intercept		*With intercept and a linear trend*	
RGDP	0.925362	1.948201	-1.837636	-1.858831
CPI	-1.436911	-1.305873	-3.290438	-3.127171
UNEMP	-0.436152	-3.056093	0.094739	-2.886817
DEBT	-1.970742	-2.993183**	-1.137036	-1.494492
CAPEX	-0.185408	-0.168089	-2.526448	-2.236603
REEX	-0.806129	-0.804388	-2.583947	-2.582258
ΔRGDP	-3.288995**	-3.152406**	-3.671100**	-3.507902**
ΔCPI	-7.302103*	-8.529052*	-7.154834*	-7.779953*
ΔUNEMP	-6.732746*	-6.884238*	-7.092513*	-7.572705*
ΔDEBT	-2.955509***	-4.112140	-3.674670**	-4.395882*
ΔCAPEX	-4.732638*	-5.507517*	-4.620273*	-5.424564*
ΔREEX	-7.680084*	-7.829702*	-7.618088*	-8.220014*

Source: Researchers' compilations (2014).
Note: * and ** denote rejection of the null hypothesis at 1% and 5% level of significance respectively. The null hypothesis is that the variable (in series) is non-stationary.

Similarly the unit root test result for PP showed that all the variables are non-stationary at levels except for debt. Therefore the null hypothesis; that the variables have a unit root is not rejected at levels. However all the variables were found to be stationary after first difference which means integrated of order one I(0). Hence we proceed with estimation using the Vector Auto Regression (VAR) framework as an appropriate econometric technique in the analysis of non-stationary data.

Co integration Test Results

The result of the test of cointegration among the variables used in the VAR technique is presented in Table 2.

Table 2: Johansen Co-integration Test Results

Hypothesis Null	Alternative	λ_{max}	5% critical value	λ_{trace}	5% critical value
r = 0	r ≥ 1	27.57675	33.87687	69.81889*	70.33603
r ≤ 1	r ≥ 2	19.37470	27.58434	42.75928	47.85613
r ≤ 2	r ≥ 3	14.32363	21.13162	23.38458	29.79707
r ≤ 3	r ≥ 4	6.678517	14.26460	9.060945	15.49471
r ≤ 4	r ≥ 5	2.382428	3.841466	2.382428	3.841466
r ≤ 5	r ≥ 6	5.576415	3.841466	5.576415	3.841466

Source: Researchers' computations (2014).
Note: r denotes the number of co-integrating vectors. * indicates rejection of the null hypothesis at 5% level of significance.

The result of the test of cointegration suggests there is no co-integrating vector among the variables and therefore the absence of long run relationship between corruption and macro-economic performance in Nigeria. In view of this, a restricted VAR has been adopted for estimation.

The variance decomposition and the impulse response function of the estimated VAR model is presented in the next section.

Forecasting Externality of Corruption

The result shows a forecast of ten (10) periods. In the first panel the result reveals that in the short run unemployment accounts for about 25.7% of the variation in economic growth while government debt, corruption and capital expenditure have only a negligible influence on economic growth. Economic growth also appears to have more influence on itself, as it accounts for over 70% of the variation. However over the long-run the influence of growth on itself diminishes to about 53.5%. Similarly in the long-run, unemployment also showed a declining influence on growth as it accounts for only about 7% of the variation on economic growth. Conversely debt appears to have an increasing influence on economic growth in the long-run as it accounts for more than 35% of the variation on economic growth. While corruption and government capital expenditure both account for just 2.1% of the variation in economic growth in the long-run.

The result in panel II indicates that rent seeking behaviour is inherent in economic agents. In order words corruption is self perpetuating in the short-run. This is evident from the result that shows that 100% of the variation corruption is not influenced by any macroeconomic variable but rather it is accounted by the rent seeking tendency embedded in the economic agent. More so, short-run corrupt practices could be attributed to weak institutions that could not enforce punishment and reward for partaking in corrupt practices. It is critical to bear in mind that even when institutions are strong it is expected that economic rational economic agents are attracted to corruption because of the insatiable nature of the *homoeconomicus*[5] which is fuel by greed. The long-run effect of this self perpetuating corrupt tendency in the economic agent tends to be reflected in both public and private domain as a spill-over. The most influencing variable on corruption is evidently public capital expenditure which account for more than 13.5% of the variation in corruption in long-run. This means while in the short-run corruption is self perpetuating, however in the long-run this self perpetuating tendency spill-over to public capital expenditure. Such that public capital expenditure like contract on infrastructure: roads, bridges, schools, hospitals and the procurement components that accompanies these contracts embodies corruption which could be in the form of inflated contracts figures, incomplete supplies or abandon projects, kick-backs or non-transparent bidding of contracts.

Other influencing variables on corruption are public debt and economic growth. The result shows that in the short run both variables have relatively no influence on corruption. However in the long-run public debt contribute about 9.4% of the variation in corruption in Nigeria. Similarly economic growth is found to account for about 6.9% of the variations in corruption in the long-run. These outcomes bear some interesting implication on the economy. Firstly in the long-run public debt tends to contribute more to corruption which signifies that part of public borrowing to finance deficit are likely to be under-utilized or perhaps it is channel into other sub-optimal use which doesn't represents the intended target. It could also

[5] A homoeconomicus is an economic being that is selfish and hedonistic in nature.

mean that part of public debts are use to finance private consumption. This finding also supports the believe that government finances are mismanaged over the years.

Table 3: Result of Variance Decomposition

Panel 1: Variance Decomposition of Macroeconomic Performance (RGDP)

Horizon	S.E.R	GDPC	P	IUNEM	PD	EB	TCAPEX
1	0.047656	70.51330	0.647630	25.71503	1.970570	1.153468	
2	0.065292	73.79648	0.384025	21.11555	3.972133	0.731818	
3	0.078281	74.80602	0.269599	17.12045	7.279606	0.524332	
4	0.089219	74.09453	0.236535	13.95628	11.30199	0.410665	
5	0.099071	72.13153	0.316522	11.47667	15.66814	0.407142	
6	0.108331	69.25024	0.513048	9.598890	20.10797	0.529855	
7	0.117286	65.72399	0.813463	8.271305	24.41114	0.780108	
8	0.126108	61.79230	1.197380	7.441612	28.42200	1.146708	
9	0.134889	57.66156	1.641641	7.048294	32.03816	1.610341	
10	0.143676	**53.50069**	2.123635	7.022855	35.20498	2.147840	
Panel 2: Variance Decomposition of Corruption Perception Index (CPI)							
1	0.204263	0.000000	100.0000	0.000000	0.000000	0.000000	
2	0.222295	0.512541	88.55592	1.117133	3.212228	6.602180	
3	0.228931	1.357097	83.95640	1.053606	3.847423	9.785470	
4	0.232921	2.369988	81.33120	1.140548	3.747664	11.41060	
5	0.236392	3.429645	79.17261	1.298218	3.751577	12.34795	
6	0.240041	4.436488	77.01460	1.497784	4.142283	12.90884	
7	0.244117	5.318407	74.72057	1.747662	4.977632	13.23573	
8	0.248689	6.033408	72.28506	2.060630	6.209133	13.41177	
9	0.253739	6.566250	69.75414	2.445628	7.741688	13.49230	
10	0.259211	6.921839	**67.18767**	2.906015	9.468482	13.51599	

The result in panel III represents the variance decomposition and forecast for unemployment. The result shows that unemployment is persistence in the short-run with about 100% of the variation in unemployment accounted by unemployment. However over the years other macroeconomic factors tend to exert increasing influence on prevailing unemployment. Notably corruption, public debt and public capital expenditure account for increasing variation in unemployment. This means that, before the long-run, corruption exerts increasing influence on unemployment, so also public debt and expenditure. In the long-run the result indicates that unemployment accounts for only about 67.8% of the variation in unemployment while corruption accounts for more 4% of the variation in unemployment. This means that rent seeking behavior which is carried out by economic agent in the form of monopoly rent in the private domain and weak institutions inherent in the public domain contribute to labor market inefficiency. Therefore it can be inferred that in the long-run, 4% of the dynamics in the unemployed labor force is attributed to corruption related activities. The social implication of this is that labor supply function which is a composite of households labor supply cannot equilibrate with the labor demand and therefore wage rate will be at sub-optimal level. This also explains why

Nigeria offers one of the unattractive wage rates.

The long-run influence of public debt and capital expenditure highlights the crowding-out effect government borrowing could have on borrowing which could be reflected in the labor market. This result is consistent with Bakare (2011). Also the result it appears government borrowing influences about 8% of the unemployment in the long-run while the on the other hand the multiplier effect of any capital expenditure by government accounts for about 16% of the unemployment. This result of the long-run influence of public debt and expenditure spells an appealing outcome in the labor market. That is, the positive externality from capital expenditure which is assumed to be financed through government borrowing outweighs the negative externality that could be cause by crowding-out.

The result in panel IV is the forecast of the public debt. The result indicates that in the short-run only unemployment contributes to variation in public debt which means about 5.1% of the fluctuation in public debt is accounted by the level of unemployment while about 94% of the short-run changes in government debt are attributed to debt itself. The implication of this finding is that government borrowing tends to be motivated by either the desire to borrow and then spend in sectors that will generate more employment via multiplier effect within the economy or perhaps government borrowing in the form issuance of commercial papers like Treasury bills and Bonds driven to by the need to exercise some form of discretionary fiscal policy.

Similarly the long-run result supports the short-run posture taking by the fiscal authority. Over the period of ten years into the future the result indicates that about 24.4% of the variation in public debt is accounted by the unemployment level in the economy. This suggests that government borrowing over the long-run is motivated by the employment opportunity the spending of the borrowed funds will exert in the labor market. Believing that the multiplier effect of government spending which are finance through borrowing outwits the crowding-out effect of private investment in the long-run, is a conundrum that is incumbent on the fiscal authority to fashion out. The result further highlights the influence economic growth and corruption both have on long-run public debt. The result indicates that about 8% and 5.6% of the changes in long-run public accounted by economic growth and corrupt practices respectively.

The result in panel V represents the forecast for capital expenditure. In short-run the result bears some interesting outcome. One of the suggestions is that out of the 100% public expenditure made in the economy, about 14.4% is influenced by corruption in the short-run. This means that the government contracts awarded and executed in the form of roads, hospitals, housing or procurement could be made against the tenet of competitive market environment which is at odds with efficiency. It also means that contracts are awarded at sub-optimal rate and by extension inflated above competitive market rates. However in the long-run, many years after these inflated contracts have been executed the influence of corruption tends to reduce slightly by about 2%. This is so; because the social benefits derive from the consumption of the public good (use of roads, hospitals, dams, security airports etc) reduces the overall cost incurred during the execution of government contract.

Also in the long-run unemployment and public debt tends to influence government expenditure on capital project. The result shows that about 26% and 21% of the variation in capital expenditure is accounted by changes in the level of unemployment and

level of public debt. This means that when government desires to reduce the level of unemployment in the economy, it tends to make large expenditure in infrastructure and the capital outlay or budget to finance such project are influence by the availability of credit though the debt market.

Panel 3: Variance Decomposition of Unemployment (UNEMP)

Horizon	S.E.	GDPC	P	IUNEMPD	EBTCAPEX
1	0.180890	0.000000	0.073294	99.92671	0.000000	0.000000
2	0.194856	0.136028	1.070394	92.17289	1.201114	5.419571
3	0.202829	0.459411	1.695234	86.60027	1.443694	9.801396
4	0.208428	0.907817	2.157996	83.02090	1.367955	12.54533
5	0.213206	1.405332	2.558243	80.22946	1.563002	14.24397
6	0.217904	1.885070	2.925555	77.66509	2.229479	15.29480
7	0.222824	2.299620	3.270301	75.14423	3.356206	15.92965
8	0.228052	2.623286	3.597375	72.64585	4.840750	16.29274
9	0.233575	2.848809	3.909504	70.20676	6.555389	16.47954
10	0.239339	2.981862	4.208137	**67.87438**	8.380557	16.55506

Panel 4: Variance Decomposition of DEBT

Horizon	S.E.	GDPC	P	IUNEMPD	EBTCAPEX
1	0.499930	0.000000	0.001413	5.184374	94.81421	0.000000
2	0.706083	0.370788	1.528500	10.71368	87.37913	0.007907
3	0.835907	1.014485	2.716882	13.85469	82.26122	0.152726
4	0.929517	1.844292	3.579994	16.32860	77.69322	0.553900
5	1.002503	2.793735	4.221406	18.41136	73.47188	1.101627
6	1.061788	3.812139	4.703216	20.15823	69.62917	1.697240
7	1.110946	4.863571	5.063202	21.60118	66.19576	2.276281
8	1.152089	5.923554	5.327364	22.77385	63.17344	2.801791
9	1.186627	6.975553	5.515224	23.71039	60.54309	3.255740
10	1.215606	8.008095	5.642107	24.44280	**58.27479**	3.632208

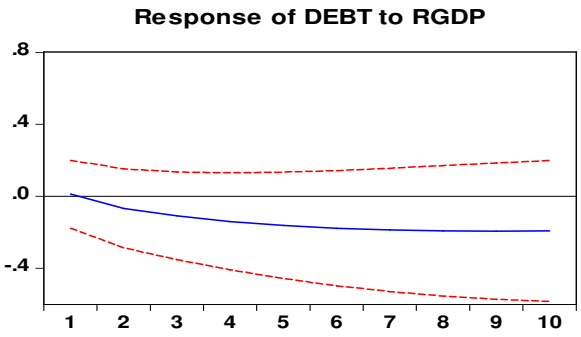
Panel 5: Variance Decomposition of Capital Expenditure (CAPEX)

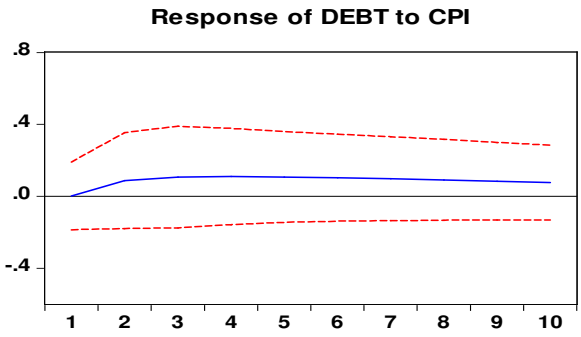
Horizon	S.E.	GDPC	P	IUNEMPD	EBTCAPEX
1	0.330224	0.000000	14.47261	0.111415	2.164147	83.25183
2	0.422888	0.041316	13.84126	9.517150	2.203932	74.39635
3	0.492889	0.097452	13.56080	15.52283	4.344526	66.47440
4	0.551853	0.141138	13.38878	19.01409	7.198035	60.25796
5	0.604347	0.162409	13.22918	21.20426	10.19091	55.21324
6	0.652448	0.163134	13.06975	22.69531	13.03708	51.03473
7	0.697118	0.150937	12.91652	23.78698	15.59667	47.54890
8	0.738825	0.134927	12.77559	24.63950	17.81626	44.63373
9	0.777810	0.123435	12.65007	25.34298	19.69166	42.19186
10	0.814219	0.123109	12.54056	25.94948	21.24422	40.14263

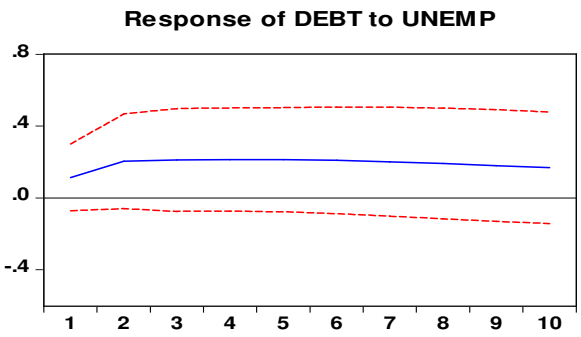
S.E. = Standard Error
Source: Researcher's computations (2014)

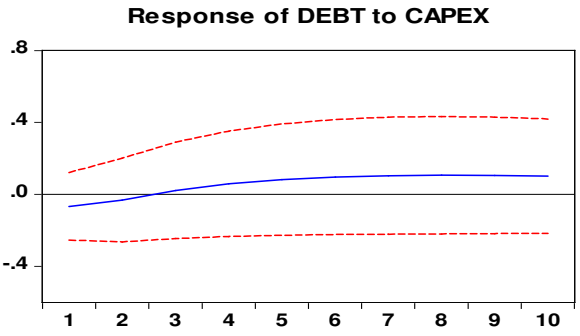
Economic Outcomes and Response to Corruption Externality

The result of the responses of the variables to one unit shock standard deviation on the variables is presented in figure I-V.The result in figure I show the responses of public debt to one unit shock from each variable in the model. Public debt appears to respond instantaneously to a unit shock from economic growth. Also the direction of the response is negative and persistent up to eight (8) periods. However after eight periods the effect of the shock dies-off but remains negative. On the contrast the responses of public debt to unit shock from corruption, unemployment and capital expenditure are all positive and instantaneously. However there are divergences on the duration of the effect of each shock on public debt. The effect of the shock from corruption and unemployment decapitate and die-off after two periods while the effect of the shock from capital expenditure persists into six (6) quarters.



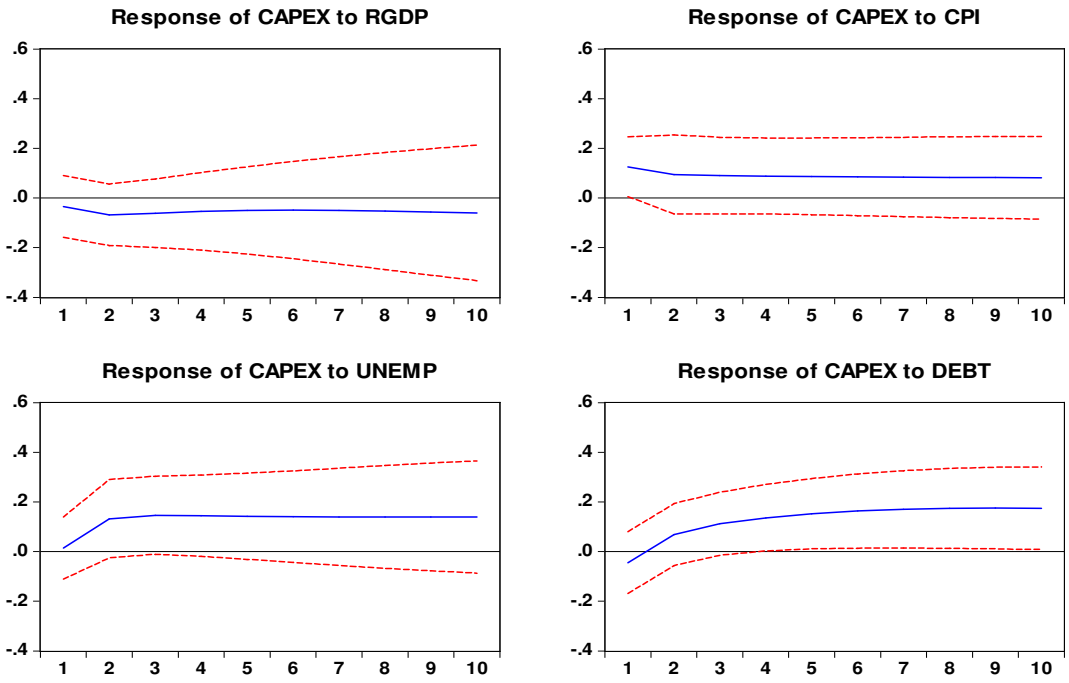






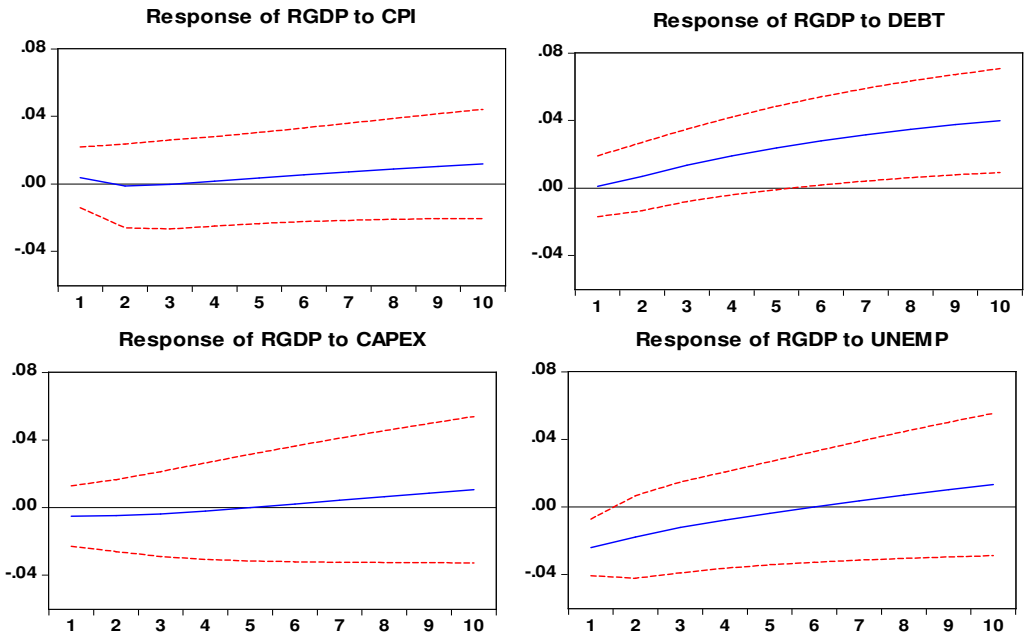
The implication of this finding is that government tends to borrow increasingly when it desires to reduce some level of unemployment or to finance some capital projects. Also such borrowing is susceptible to inefficient utilization which by extension reduces the required effect it ought to have on the economy in general.

The result in figure II represents the responses of capital expenditure to shocks from economic growth, corruption, unemployment and public debt. The result indicates that government capital expenditure responds slowly and less significant to both economic growth and corruption. Thus it responds instantaneously to both unemployment and public debt positively.



It is worthy to note that the effect of a shock on capital expenditure from public debt persistent to six (6) periods as it decapitates gradually. However the effect of the shock coming from unemployment dies out after a single period. This means that public debt has a longer term effect on capital expenditure and most certainly the result points out to the burden in financing public project such as schools, hospitals, roads and so on with debt. The interest accrued from the borrowed accumulates over time which adds to the cost of initial borrowing.

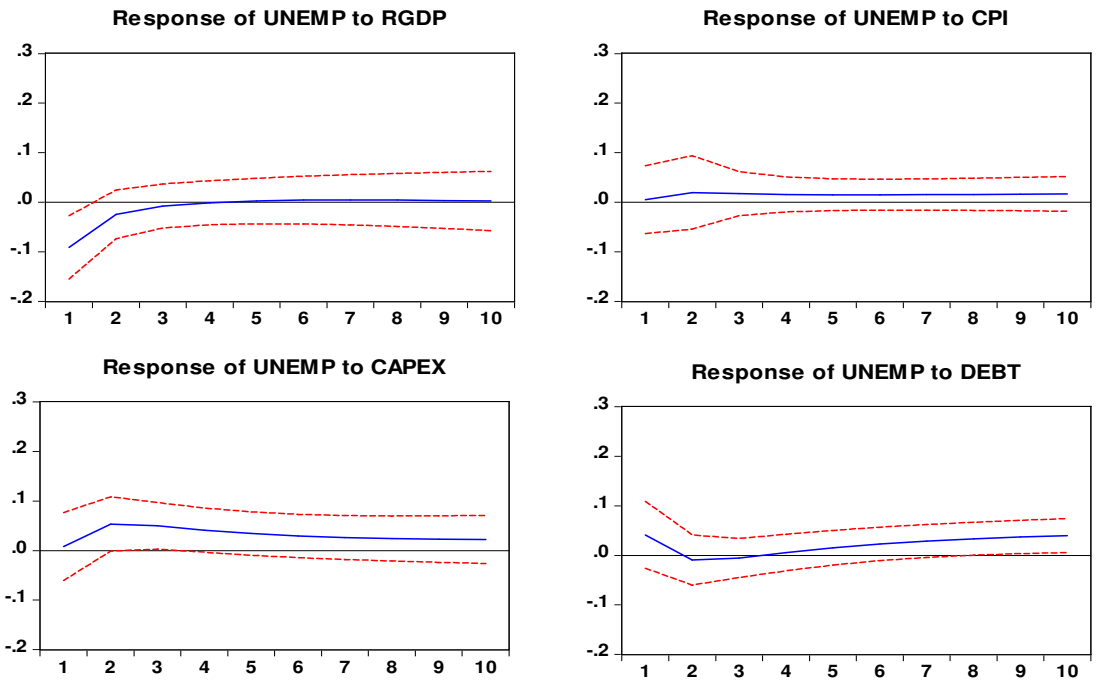
The result in figure III represents the response of economic growth to a unit shock from corruption. The result shows that economic growth responds positively to shocks from corruption, public debt capital expenditure and unemployment. Furthermore the result reveals that response to shock from public debt affects economic growth more because the response in rapid and instantaneously. This means that when government borrows credit, businesses tend to perceive that the borrowed funds will be spent in financing short term government expenditure which tends to boost business confidence. This is particularly so, because government expenditure are contracted to the private business to execute. As such effort by government to borrow and spend can trigger positive responses to private business which translate to economic growth.



Similarly due to weak institutional framework that might not enforce strict regulation in conducting government business, individuals and firms tends to partake in rent seeking. However the result shows that the economic growth responds to this corrupt tendency gradually and the response is felt after four (4) periods. This means that there is a weak response from economic growth to corruption. By extension capital expenditure follow the same pattern which also supports the notion that rent seeking behaviour are embedded in economic agents that bid and implement capital government projects. However the response of economic growth to unemployment is substantially negative but this negative response reduces over time from the initial period when the unemployment shock affects economic growth and up to six (6) periods. Afterwards economic growth responds positively to unemployment. This implies that at below potential growth, economic growth responds negatively and as the GDP gap reduces perhaps economic growth response positively to unemployment.

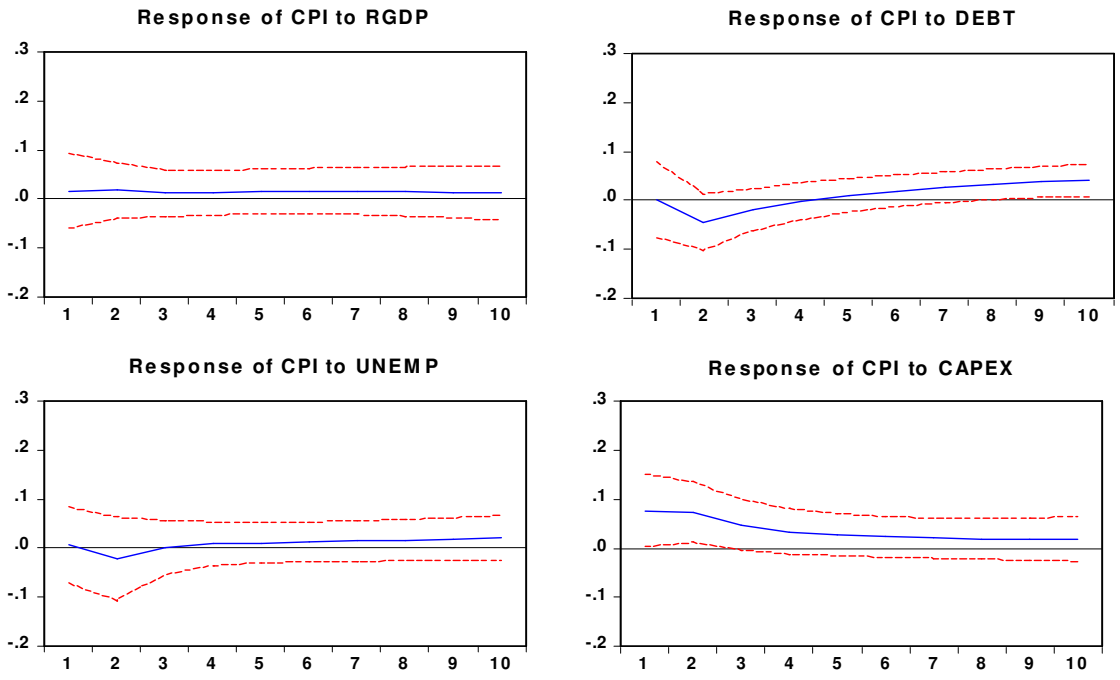
Figure IV represents the responses of unemployment to a unit shock from economic growth, corruption, capital expenditure and public debt. The result indicates that the response of unemployment to economic growth and corruption is almost indistinguishable; however short-run response of unemployment appears to negative and over the long-run unemployment seems not to respond completely to growth process in the economy. This finding doesn't conform with the traditional Okun's law[6]. As such this result is not consistent with Bello and Badiru (2015). Also unemployment respond to corruption is slightly positive in the first three periods however in the long-term this response in non-existent. This suggests that the social cost that could be accentuated from corruption in form of higher unemployment is only tenable in the short-term.

[6] Okun's Law is a theoretical postulate which emphases the positive relationship that exist between economic growth and unemployment.



Furthermore, the response of unemployment to a shock from capital expenditure is in tune with economic fundamentals but only in the immediate short-term. This is evident in the positive response of unemployment to capital expenditure in the first period. However the response of unemployment to capital expenditure fizzles out over time. On other hand the response of public debt to unemployment show a mirror image to that of capital expenditure. Again this supports important market fundamentals, that government borrowing could squeeze the economy in the form of contractionary fiscal policy but as borrowed funds are used in financing public project the multiplier effect becomes expansionary over the long-term.

Figure V represents the responses of corruption to unit shocks from economic growth, public debt, unemployment and capital expenditure. There are apparent distinct responses to these shocks, first is the responses to growth and unemployment. Corruption is almost non responsive to both growth and unemployment. This means that corruption is not responsive but to cyclical fluctuations in the business cycle and structural shocks that could emanate as a result of structural rigidities inherent in the economy. This finding also suggest that perceived corruption that is as a result of monopoly rent which is assumed to be significantly attributable to private domain has less significant on prevailing corruption in Nigeria.



Notwithstanding the second responses are somewhat contrasting, however they both show a significant movement in corruption. The response of corruption to public debt reveals an initial negative response to public debt and subsequently after four (4) periods, corruption responds positively to public debt. This simple but obvious behaviour suggest that public debt could be insulated from corruption in a relatively short-term. However corruption tends to reflect positively in the long-term. This argument that could manifest in the form of substandard public project that are assign huge capital outlay that are finance through government borrowing. Conversely, the response of corruption to capital expenditure remains positive hover over long term the response trickles down. This means that corruption could be more pervasive at the on-set of capital expenditure than at the later period when such capital has been expended. A significant outcome that has come to light is that corruption responds more to both public debt and government capital expenditure than unemployment and growth process. As such weak institutional structures embedded in the public domain serves as incentive for corruption to be persistent.

Conclusion & Recommendation

This paper provides empirical evidence highlighting how corruption inherent in both public and private domain affect economic fundamentals and by extension economic performance. This paper finds the following:

- That in the short-run corruption is self perpetuating, however in the long-run this self perpetuating tendency spill-over to public capital expenditure. Also long-run public debt tends to contribute more to corruption which signifies that part of public borrowing to finance deficit are likely to be under-utilized or perhaps it is channel

into other sub-optimal use which doesn't represents the intended target.

- The impact of corruption on macroeconomic performance indicators in Nigeria was negative and systematic. Corruption impacted directly on recurrent expenditure with the resultant innovations affecting all other macroeconomic indicators.
- Rent seeking behaviouralaffect the structure of all the macroeconomic variables examined. This may partially be attributed to weak institutional framework that might not enforce strict regulation in conducting government business. However the result shows that the economic growth responded gradually to the high level of prevalent corruption.
- Corruption responded more to both public debt, recurrent expenditure and capital expenditure, than unemployment and growth process. This implies the existence of weak institutionsin the public domain.

By these findings, this paper recommend that the institutional structure and regulatory bodies be strengthen. Also machinery for monitoring and evaluation of capital and recurrent budgets should be institutionalized

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