Corruption and macroeconomic variables in Nigeria: an empirical analysis

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ARTICLE INFO	ABSTRACT
	The objectives of this paper were to show the impact of corruption on some macroeconomic variables as well as simulate a shock to corruption and view its impact on those variables for the period 1980 to 2010. To achieve these objectives, a VAR model was used, along with its uses namely the impulse response functions and the variance decomposition. Variables used include the GDP, life expectancy, investment, government expenditure, inflation rate, oil revenue, government revenue and corruption. Findings from the simulations using both the impulse response functions and variance decomposition show that corruption explains a considerable portion of economic development. It also shows the negative effects of corruption on economic growth and the indirect effects as well, through other variables of interest especially investment, life expectancy and oil revenue. Conclusions reached show that the effects of corruption on macroeconomic variables are long term in nature and it tends to increase over time. The implication is that if corruption is not tackled aggressively, low economic growth will continue unabated in the country.

Introduction

A development in the global economy posing a great challenge to policy makers across countries is the increasing spate of corruption in the economy. In Nigeria for example economic growth has been generally poor in recent time. In the past, growth was explained in terms of factor endowments, investment in both health and education sectors and subsequently by policy alignment. However, in the 1990s, institutions and governance came into the limelight, as policy would not work except there was good governance. Corruption was then picked as the culprit inhibiting economic growth in the economy (Dearden, 2000 cited in Oresajo 2007).

Emphasis on corruption is not new, both in the developed and less developed countries. In Nigeria for example, past administrations have long had legislation to prevent corrupt practices, and stringent penalties for those found engaging in them, including black listing, seizing of assets, mandatory dismissal from public offices and legal action. However, in most regimes, these provisions have been ineffectual because they have not been invoked or because important figures have been exempted. This has served, not only to undermine anti-corruption efforts, but also to erode pubic support for them (Umaru 2001, Okonjo 2005).

In Nigeria today, the level of corruption has reached a terrifying level in which almost every citizen is involved in one corrupt practice or the other; whether petty or grand. Those involved include; the leaders as well as the followers, the elites and the illiterates; the military and the democrats, the rich and the poor, the security and those to be secured. Obayelu (2007) for instance, opined that people engage in corrupt practices in Nigeria as a result of high level of poverty, high unemployment rate, under – remuneration of workers, financial hardship, persuasion by friend and colleagues in public offices, desire to please kinsmen, late payment of contractors by government, over – concentration of powers and resources at the centre,

unregulated informal economy, nepotism, tribalism in the administration of justice and lack of honest leaders.

According to the recent NEEDS document in 2004, it recognizes corruption and the abuse of privileges as being a feature of Nigeria's economic and political landscape. It itemized some acts of corruption as being inflation of government contracts, low level of transparency and accountability, money laundering, misappropriation of funds, kick backs, under and over invoicing, bribery, false declarations, abuse of office and collection of illegal tolls. As a result of the manifestation of these acts of corruption, Nigeria was rated by various corruption indices as one of the most corrupt countries in the World (NPC, 2004; Ribadu, 2005).

Today as a result of this high rate of corruption practice in the economy, 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. Hence, the question that one may ask is what impact has this canker worm on the macroeconomic variables in the economy in the recent time? Thus the specific objectives of the study are to analyze the effect that corruption portends on the level of some macroeconomic variables in the Nigerian context. Data from 1980 to 2006 are used for the study.

Therefore, for this paper a vector autoregressive (VAR) model of the Nigerian economy is constructed to test whether corruption affect economic activities on the one hand, and to examine whether shock in corruption accounts for the fluctuations in aggregate economic activity.

The remaining parts of this study proceed as follows. The next section discusses in detail the measurement issues and other problems pertaining to the study corruption and outlines development of an alternative causes and extent of corruption. Section III presents the study's working methodology and

estimation methods used in the empirical analysis. Section V presents the empirical results of the tests based on data. Section VI concludes and recommends.

Concept of Corruption

It is very easy to talk about corruption, but like many other complex phenomena, it is difficult to define corruption in concise and concrete terms, it involves the abuse of public roles and resources for private benefit. But in rapidly changing societies the term is often applied to quite disparate actions and circumstances (Hao and Johnston, 1995). Distinctions between "public" and "private" can be difficult to draw. Benefits may be intangible, long-term, widely dispersed, or difficult to distinguish from legitimate constituent services (Thompson, 1993, 1995). The demands and expectations driving corrupt dealings can become so ingrained into a system that they go unspoken. How can we reliably distinguish corrupt activities from acceptable ones?

Corruption is efforts to secure wealth or power through illegal means for private gain at public expense; or a misuse of public power for private benefit. Corruption like cockroaches has co-existed 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 as a phenomenon, is a global problem, and exists in varying degrees in different countries (Agbu, 2003). 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 bedeviled by corruption (Dike, 2005).

According to Ayobolu, (2006) it is one of the many unresolved problems that have critically hobbled and skewed development. 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 fabric of the nation. It ranges from petty corruption to political / bureaucratic corruption or Systemic corruption (International Center for Economic Growth, 1999).

Osoba (1996) also sees corruption as an anti-social behaviour conferring improper benefits, contrary to legal and moral norms, which undermine the authorities to improve the living conditions of the people. Other forms of corruption according to Bayart, *et al.* (1997) include embezzlement of public funds; frauds such as trickery, smuggling and forgery; extortions and favouritism and the diversion of scarce public resources into private pockets. All these types of act are the order of the day in the present day Nigeria.

Theoretical Framework

The debate on the effects of corruption on macroeconomic variables has led to two opposing schools of thought in the literature. One views corruption as enhancing growth (Leff, 1964; Huntington, 1968). It proponents argue that corruption raises economic growth through two types of mechanism. The first is 'speed money' which enables firms and individuals avoid bureaucratic delay and burdensome legal systems. Secondly, government officials who are allowed to levy bribes work harder. Lien (1986) developed models that indicated that bribes promote efficiency by assigning projects to the most efficient firm. Tullock (1996) show that bribes supplement low wages and allow government to maintain a low tax burden. Tanzi (1998) stated that corruption is a fee for under priced services and it improves the allocation of resources in a regulated market.

The opposing school of thought views corruption as having a damaging impact on economic growth (Myrdal, 1971). This however is supported by a broad consensus of scholars and country experience in recent years. Tanzi (1998) for example opposed the growth – enhancing proposition on the following grounds. Firstly, he argued that public officials could intentionally create rigidities. Secondly, those who pay the highest bribes might not be the most efficient but the most successful at rent seeking. Thirdly, the payment of speed money (bribes) may reduce the speed of which activities are been carried out. On the other hand, Shleify and Vishny (1993) advanced the argument that the division of individuals from productive activities to rent seeking activities imposes a great cost for growth and development. The major proposition of the growth retarding school is that corruption takes the form of rent seeking activities that consequently retards economic growth, impedes investment and interferes with other economic decisions favourable to growth.

Empirical framework

Empirical literature on corruption indicates that its effects on macroeconomic indicators are myriad. For instance, Mauro (1995 and 1997b), Ades and DiTella (1996) and Gupta *et al* (1998) are of the view that corruption has serious negative effect on the economy in terms of slowing growth and increasing inequality. Also, Morris (1991), Mauro (1997a), La Porta *et al* (1998), Rose-Ackerman (1999), Della-Porta (2000), Seligson (2002), and Adsera *et al* (2003) observe that corruption portends a negative effect on democracy in terms of decreasing government effectiveness and political legitimacy and increase instability. In addition, Mauro (1997a) in his study confirms that corruption causes a reduction in quality of goods and services available to the public. He also observes that corruption affects investment, economic growth, and government expenditure choices by reducing private investment.

Mauro (1997b) and Johnston (1997) observe that high rate of corruption creates a situation where investment returns are difficult to predict. They conclude that the effect of corruption is to limit investment, which is critical to the long-run sustainable economic growth. They argue further that corrupt behaviors have the tendency to scare away foreign and local investors with significant adverse effect on the economy. Svensson (2003) also opines that less corrupt activities make more resources available for private investment and that high rate of corruption at the political level reduces public revenues, which may translate into less public services. Dike (2005) argues that corruption undermines effective governance, endangers democratic rule and erodes social and moral fabric of a country.

The level of corruption in Nigeria has reached a terrifying level in which almost every citizen is involved in one corrupt practice or the other; whether petty or grand. Those involved include; the leaders as well as the followers, the elites and the illiterates; the military and the democrats, the rich and the poor, the security and those to be secured. Evidence abounds that the just concluded 2006 National Population Census (NPC) exercise was marred with frauds. Many NPC officials were arrested for selling census material as high as x1.0m. Peoples were selected (not elected) into political post based on personal gains and interests. For instance, it has been reported that one Northern state governor is about marrying one of his lady commissioners as his third wife. Also, former inspector general of police was detained for corrupt practices while in office. Many state governors in Nigeria were also involved in the misappropriation

of public funds and some had been impeached based on election frauds while many are still being investigated. No sector of the economy is free from the menace of corruption (Benjamin, 2007).

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.

Wraith and Simpkins (1963) and World Bank (1994 and 1996) observe that widespread corruption remains a symptom of a poorly functioning state as witnessed in most developing countries such as Nigeria while Bowman (1991) and Broadman and Recanatini (2002) find lack of value system and ethical standard throughout the various institutions of government and business organizations as a major cause of corruption in most less developed countries including Nigeria. Corruption has also been seen by Lipset and Lenz (2000) as an outcome of social pressures to violate norms so as to meet the set goals of a social system. The social and political systems in Nigeria are at present faulty and it is observed that as war against corruption is going on in the country presently, corrupt activities are still being reported in Nigeria on daily basis. Corruption may be attributed to indiscipline among Nigerians; there is complete absence of value system.

The cost of corruption is very high, as it is a vicious circle that tends to perpetuate the development problems faced by Nigeria. Nigeria cannot be said to be a poor country but resources available for development have created room for rent seeking. This has kept Nigeria in the bracket of the weakest growing economies of the world on a per capital basis, according to the NEEDS (2004) document. The oil boom of the early 70s provided huge amounts for investment and the expansion of government activities but the incidence of rent seeking distorted the outcome of most of the projects, as productivity was low or non-existence (Nwaobi, 2004).

Causes of corruption in Nigeria

In Nigeria, as well as other developing countries a number of factors have been identified as instrumental to enthroning corrupt practices. The Literature shows that there are several causes of corruption which are sub-divided into political, economic and socio-cultural factors. Some authors have found the level corruption to depend strongly on the type of government existing in an economy. For instance, Girling (1997) and Lipset and Lenz (2000) and some other authors opine that corruption is widespread in most non-democratic countries while corruption level is low in many democratic societies. Similarly, Treisman (2000) finds significant evidence that federal states are more corrupt than centralized ones. This implies that the nature of the political system and culture of a country may expose people to corrupt practices. In addition, there is tendency for high level of corruption in a society where leaders have absolute power given the fact that "power corrupts and absolute power corrupts absolutely". All political appointees are always informed at swearing ceremonies that they should not use their offices to amass wealth. This is a clear indication that most Nigerians see political appointments as means of making quick wealth thus reduce the quality of governance. Since 1993, Nigeria has been "electing" their leaders through elections (democratic means), it is thus expected that democracy must have reduced the level of corruption in the country.

Economic situation being experienced in a country is also responsible for the level of corruption in the developing countries. For instance, studies by Shleifer and Vishny (1993) and Ali and Isse (2003) advocated that in a country where economic condition is poor there is tendency for such country to experience high level of corrupt practices which further worsens the rate of development. They also observe that a country with good macroeconomic performance stands to experience low (if any) level of corruption and develops rapidly. Hindrance to economic opportunity is, therefore, seen as the source of corrupt practices. Lipset and Lenz (2000) argue that such hindrance could be as a result of their race, ethnicity and lack of physical and other human resources. They argue further that cultures that stress economic success as an important goal but which strongly restricts access to opportunities will have higher levels of corruption. This view probably explains the high incidence of corrupt practices among Nigerians as many are highly success-oriented, but possess relatively low access to economic opportunities.

Corruption is also caused by high level of poverty and macroeconomic instability in the country. Apart from these quantifiable factors, other less quantifiable factors have also been identified. Notable among them is that the average Nigerians prefers pleasure to work. Absence of clear rules and codes of ethics leads to abuse of discretionary power make most Nigerian vulnerable to corrupt practices. The country also has a culture of affluent and ostentatious living that expects much from "big men," extended family pressures (Maduagwe, 1996), village/ethnic loyalties, and competitive ethnicity. The country is also one of the very few countries in the world where a man's source of wealth is of no concern to his neighbour, the public or the government. Once a man is able to dole out money, the churches, the Mosques pray for him, he collects chieftaincy titles and hobnobs with those who govern. The message to those who have not made it is clear: just be rich, the ways and means are irrelevant (Ubeku, 1991).

Low civil service salaries and poor working conditions, with few incentives and rewards for efficient and effective performance, are strong incentives for corruption in Nigeria. Other factors are: less effective government works with slow budget procedures, lack of transparency, inadequate strategic vision and weak monitoring mechanisms make Nigeria a fertile the environment for corrupt practice.

The Extent of corruption in Nigeria

The extent of corruption in Nigeria today has become so alarming and skyrocketing. Corruption has not only permeated the government and oil fields of Nigeria, it has attacked the entire nation (Hadi, 1999). Corruption and inefficiency are characteristics of service delivery in Nigeria, although the private sectors seem to perform more efficiently and less corruptly than public sectors (Amadi, 2004).

Corruption has become so blatant and widespread that it appears as if it has been legalized in Nigeria (Gire 1999). As Goodling (2003) notes, "since 1996, Nigeria was labeled the most corrupt nation three times: 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".The 1996 Study of Corruption by Transparency International and Goettingen University ranked Nigeria as the most corrupt nation, among 54 nations listed in the study, with Pakistan as the second highest (Moore 1997). As this was not too bad enough, the 1998 Transparency International corruption perception index (CPI) of

85 countries, Nigeria was 81 out of the 85 countries pooled (Lipset and Lenz, 2000; Folorunsho, 2007). In 1999 Transparency International (TI) released its annual Corruption Perceptions Index (CPI) ranking 99 countries in order of their perceived levels of corruption with number one being the least corrupt, Nigeria at number 98, was only one rank above its neighbour Cameroon. In the 2001 corruption perception index (CPI), the position of 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 at number 132 was still only one rank above Bangladesh – even though the number of countries in the latter poll had increased to 133 countries.

The 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. On sectorial distribution, the nationwide corruption survey in the Nigeria Corruption Index (NCI) 2007 identified the Nigerian Police as the most corrupt organization in the country, closely followed by the Power Holding Company of Nigeria (PHCN). Corruption in the Education Ministry was found to have increased from 63 per cent in 2005 to 74 per cent in 2007, as against 96 per cent to 99 per cent for the Police in the corresponding period. The Independent National Electoral Commission (INEC), was the only new organization identified as corrupt among the 16 organization on a list which included Joint Admission Matriculation Board, the Presidency, and the Nigerian National Petroleum Commission (NNPC).While the Federal Road Safety Commission (FRSC) and the Nigerian Railway Corporation (NRC) have been identified as the least corrupt organizations with respect to bribe taking from the populace as at June 2007 (Abimbola, 2007).

Methodology

For this paper, we consider the following vector autoregressive model of order of (or simply, VAR (P) a representation of Sims (1980) which specifies a dynamic model given by an unconstrained such as

$$y_t = \alpha + \sum_{k=1}^{n} A_i\, y_{t-1} + \sum t \qquad \text{.........(1)}$$

Where y_t is (n x 1) vector of endogenous variables $\alpha = (\alpha_1, \text{------} \alpha_2)$ is the (n x 1) intercept vector of the VAR, Ai is the (n x n) matrix of autoregressive coefficients for c = 1, 2 ------ p and $\sum_t = (\sum c_t \text{------------} \sum 8t)$ is the (n x 1) generalization of a white noise.

In this paper, we use an annual eight variable VAR for the study of the y_t vector which include; economic growth (GDP), life expectancy (LE), investment (INV), government expenditure (GE), government revenue (GR) inflation rate (INFR), oil revenue (OIR) and corruption (COR). It is however expected that corruption.

For the purpose of dynamic simulation of the impact of corruption on macroeconomic variables, the VAR system was transformed into its moving average in order to analyze the system's response to exogenous shock in corruption. The model takes the form

$$y_t = \mu + \sum_{k=1} \phi \sum e_{t-1} \qquad \text{....................(2)}$$

Where μ is the mean of the process (μ (In - $\sum \phi$) and ϕ_1 is the identity matrix of the IRFs since they represent the behaviour of

the modeled series in response to shocks over time. $Vector_{et-1}$ is called the vector of innovation. The Moving Average representation is used to obtain the forecast error variance decomposition and the impulse – response function. The variance decomposition shows the proportion of the unanticipated change of a variable that is attributable to its own innovations and shocks to other variables in the system.

Empirical Results

It is a known fact that time series data are prone to spurious regression and a way out of this is to carry out a unit root test to test for their stationarirty properties of all the variables. In order to be free from having a spurious regression, the Augmented Dickey Fuller unit root test was carried out for all the variables and the result obtained is presented below

Table 1 Unit Root Tests

Variables	ADF at level	ADF at 1st Difference	ADF at 2nd Difference	Order of integration
Cor	-1.580374	-4.648688		I(1)
Ge	0.617583	-3.181779		I(1)
Oilr	-2.166269	-3.572335		I(1)
Gr	-2.071532	-3.328105		I(1)
Infr	-3.014425			I(0)
Inv	0.582973	-3.841206		I(1)
Le	0.859699	-2.864829		I(1)
Gdp	2.518647	-2.815783		I(1)

Critical values : 1% = -3.7497   5% = -2.9969   10% = -2.6381

The Augmented Dickey Fuller unit root test indicates that all the variables are integrated at their first differencing except the value of inflation rate which was integrated at levels.

Vector Auto regression Results

Although, vector auto regression results are hardly interpreted in empirical studies, this paper interprets it so that comparison can be made with previous empirical studies on corruption. The results from the vector auto regression in appendix 1indicates that GDP is positively related to economic growth and is significant. On the other hand, investment, government expenditure, oil revenue, inflation and corruption are positively related to economic growth but are not significant. This indicates that although they are necessary for growth they are not sufficient to jump start economic growth. However, life expectancy and government revenue shows a negative impact on GDP as it reduces economic growth.

The positive impact of inflation on economic growth confirms Dreher and Herzfeld (2005) and Al-Marhurb's (2000) results. The relationship between life expectancy and economic growth contradict Dreher and Herzfeld's results, which found a positive but insignificant relationship. The positive and marginally significant relationship between GDP and corruption contradict Mauro's (1995) results.

The corruption model indicates that corruption, oil revenue, government expenditure, life expectances and investment have a positive impact on corruption. The result on oil revenue confirm Leite and Weidman's (1995) positive results that show that natural resources generate rents whose effects are felt through increased corruption. Economic growth (GDP) causing corruption contradict Mauro (1995) and Islam's (2004) results. Government expenditure conform to Abdiwelli et al's (2003) results, as it have a positive and significant relationship with corruption. The indirect effects of corruption are viewed through those variables upon which corruption has an impact and which contribute to economic growth. They include economic growth, life expectancy, investment, government expenditure, inflation, oil revenue, and corruption. The positive and significant

relationship between lagged corruption and corruption show that corruption 'begets' corruption. The positive contribution of corruption to government expenditure confirms Mauro's (1995) results. The negative and significant relationship between corruption and life expectancy indicate that an increase in life expectancy will reduce corruption by about 3%. This is in line with Mo's (2001) results. Investment has a significant negative relationship with life expectancy. An increase in investment reduces the life expectancy by about 4%. This gives an indication that investments undertaken in Nigeria do not contribute to improving people's lives. This contrasts with Mauro's (1995) results that found that a better quality of human capital implied more investment and less corruption. Corruption contributes negatively and significantly to investment, inflation and oil revenue but they are not significant determinants of growth except for inflation. The entire equations exhibit a high R-squared and adjusted R-squared. It is observed that the indirect effects of corruption on growth make a variable that are supposed to contribute to growth become insignificant determinants of growth.

Impulse Response Functions (IRFs)

The Impulse Response Functions (IRFs) show the response of each variable in the model to an unanticipated shock in corruption over a ten-year period **(see appendix)**

The response of government revenue, oil revenue and government expenditure to a shock in corruption indicates no reaction in the first year (See table). Howbeit, it contracts between the second and the third year, expands in the fifth and seventh year and thereafter contracts till the tenth year. The greatest negative effect is felt in the tenth year. This gives an indication of the time frame of the reaction of economic growth to a shock in corruption. The overall result supports Mauro's (1995) findings that a significant negative relationship exists between GDP and corruption.

The response of corruption to a shock in itself indicates a decline till its sixth year before expanding once more. Nevertheless, if the idea behind the interpretation of the corruption perception index were to be used the interpretation would be that corruption increases until its decline from the seventh year.

The responses of the other variables of interest to a shock in corruption are observed. Life expectancy responds to a shock in corruption by contracting from the first to the fourth year thereafter it increases in the fifth year till the tenth year. This confirms Mo's (2001) findings and shows the negative impact of corruption on life expectancy. The expenditure of the government increases in the second year and declines till the tenth year. This short-term increases and decreases in the response of government to a shock in corruption gives indication of the haphazard nature of government expenditure in Nigeria. Oil exports representing natural resources react to a shock in corruption by responding negatively in the second year and starts expanding from the seventh year till the tenth year. The response of initial GDP to a shock in corruption indicates an expansion in the first five years before contracting till the tenth year. Investment indicates a contractionary response to a shock in corruption for the first three years. This confirms that corruption is a tax on investment. It then increases gradually till the eighth year before contracting once more. Inflation responds to an innovation in corruption by declining till the seventh year before expanding once again. This contradicts A-Marhurbi's (2000) findings of a positive relationship. All the variables

show no response to corruption in the first year. On the overall, all the variables react negatively to a shock in corruption except the initial GDP. The IRFs further explains the effects of corruption on the variables, which were supposed to contribute to economic growth.

Variance Decomposition

The variance decomposition provides information on the relative importance of each random innovation to each variable in the model. Appendix 3 displays the fraction of forecast error variance of each variable attributed to a shock at time horizons that are up to ten years.

GDP growth is the major contributor to the variability in GDP growth both in the short run and medium run **(see appendix)**. By the long run, corruption explains about 6% of the variability in economic growth. The variability in GDP falls from 100% in the first year to 31% in the tenth year while corruption increases. This confirms the negative relationship between economic growth and corruption. As corruption increases and economic growth falls, government expenditure and inflation increases to about 21% and 32% in the tenth year. All the other variables account for about 10% of the forecast error variance in economic growth by the tenth year.

In accounting for the determinants of corruption, the variance decomposition of corruption attributable to the other variables are explained **(see appendix)**. For the first year, GDP growth accounts for about 19% of the variability in corruption and increase to 22% in the long run. Investment is the most significant variable accounting for the variance decomposition of corruption, apart from corruption, which accounts for about 40% in the long run. The negative relationship between corruption and economic growth is observed as economic growth rises as corruption falls. This shows that apart from corruption the incidence of corruption is income based. Government expenditure, investment, inflation and oil exports account for about 8%, 4% 21% and 2% of the variability in corruption in the long run. The other variables explain less than 5% of the variance decomposition of corruption.

In looking at the indirect effects of corruption, the variance decomposition of life expectancy, government expenditure, oil revenue, investment and inflation due to corruption are examined (See appendix). For the first year, corruption does not account for the variability in any of the variables. It increases steadily to about 14%, 10%, 11%, 17%, 11% and 13% in the long run (tenth year). The effects of corruption on these variables tend to increase over time and this points to the fact that corruption has long-term effects, which are greater than the initial costs of corruption to the economy.

For policy analysis, it can be seen that the effects of corruption on government revenue, oil revenue and government expenditure are both direct and indirect and not only direct as concluded by previous studies. Corruption feeds indirectly to economic growth through those factors that are meant to boost economic growth in Nigeria.

Recommendations And Conclusion

This study on the economic effects of corruption on macroeconomic variables was carried out using a VAR model with the impulse response functions and the variance decomposition. Findings show that corruption reduces life expectancy and economic growth while investment has a positive relationship with corruption. Corruption explains low growth more than growth explains corruption.

The paper recommends that efforts be made at increasing the rate of economic growth. Investing in human capital especially those that improve the well being of the people can achieve this, when they are done on the basis of need and not for greasing the pockets of a few select people. The government should provide safety nets for the vulnerable persons in the society especially when inflation rises so as to reduce the temptation to engage in corrupt acts. Conditions of service especially in the public service and living and economic conditions should be improved also.

There should be less reliance on oil resources, as they have not contributed significantly to growth but have created room for rent seeking.

The big government has provided opportunities for corruption and so they should divest from providing services to being a regulatory body. Howbeit, this can only be achieved when there is increased accountability, transparency in government dealings and more powers granted to the bodies concerned with curbing corruption.

Our paper concludes that corruption is the major culprit inhibiting macroeconomic growth in Nigeria and it does so through low income, low living standards evidenced by the low life expectancy as well as investment. There is need to tackle corruption aggressively or else low economic growth will continue unabated in the country.

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Appendix
Variance decomposition combined table graph
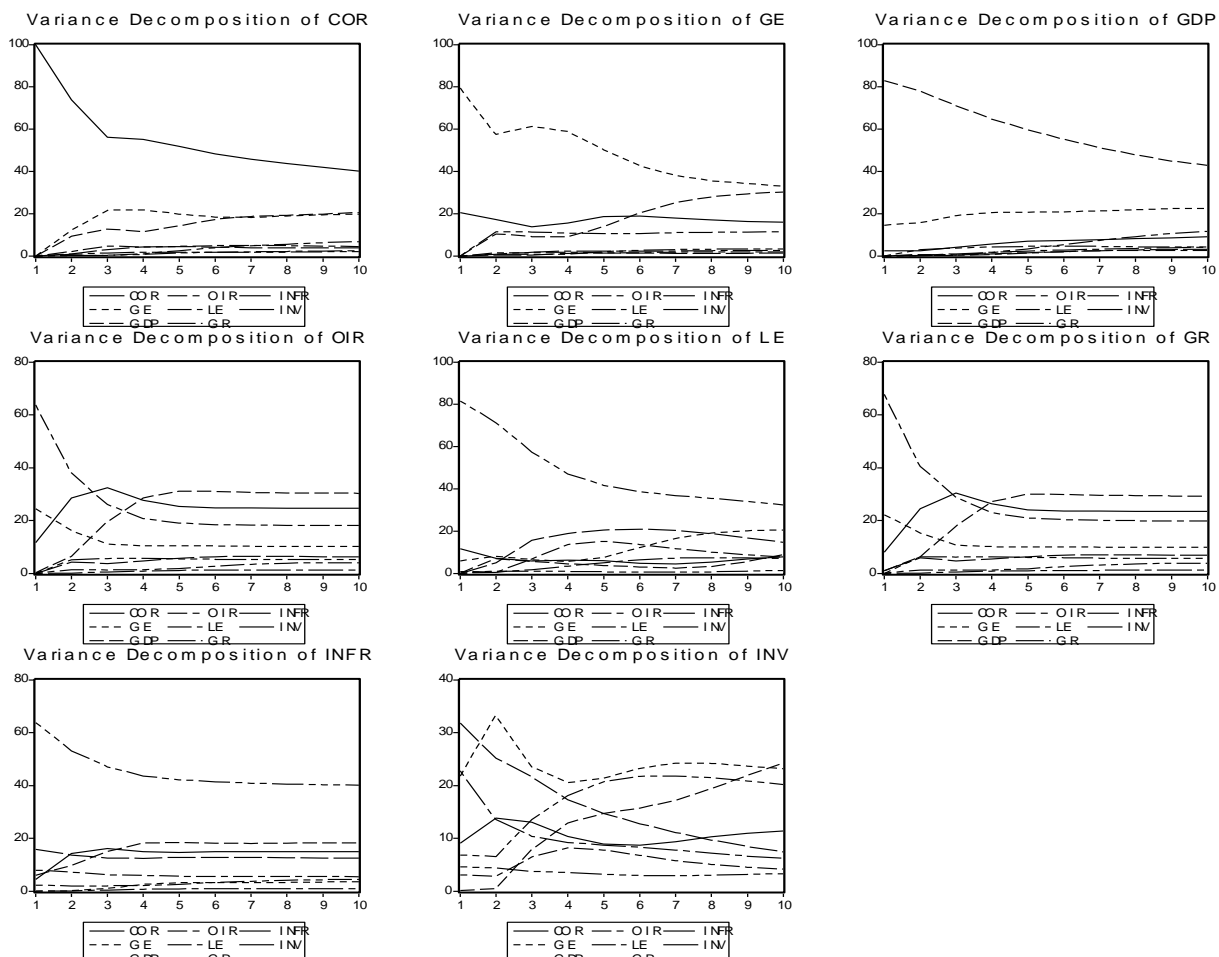
Impulse Response Combined Table Graph
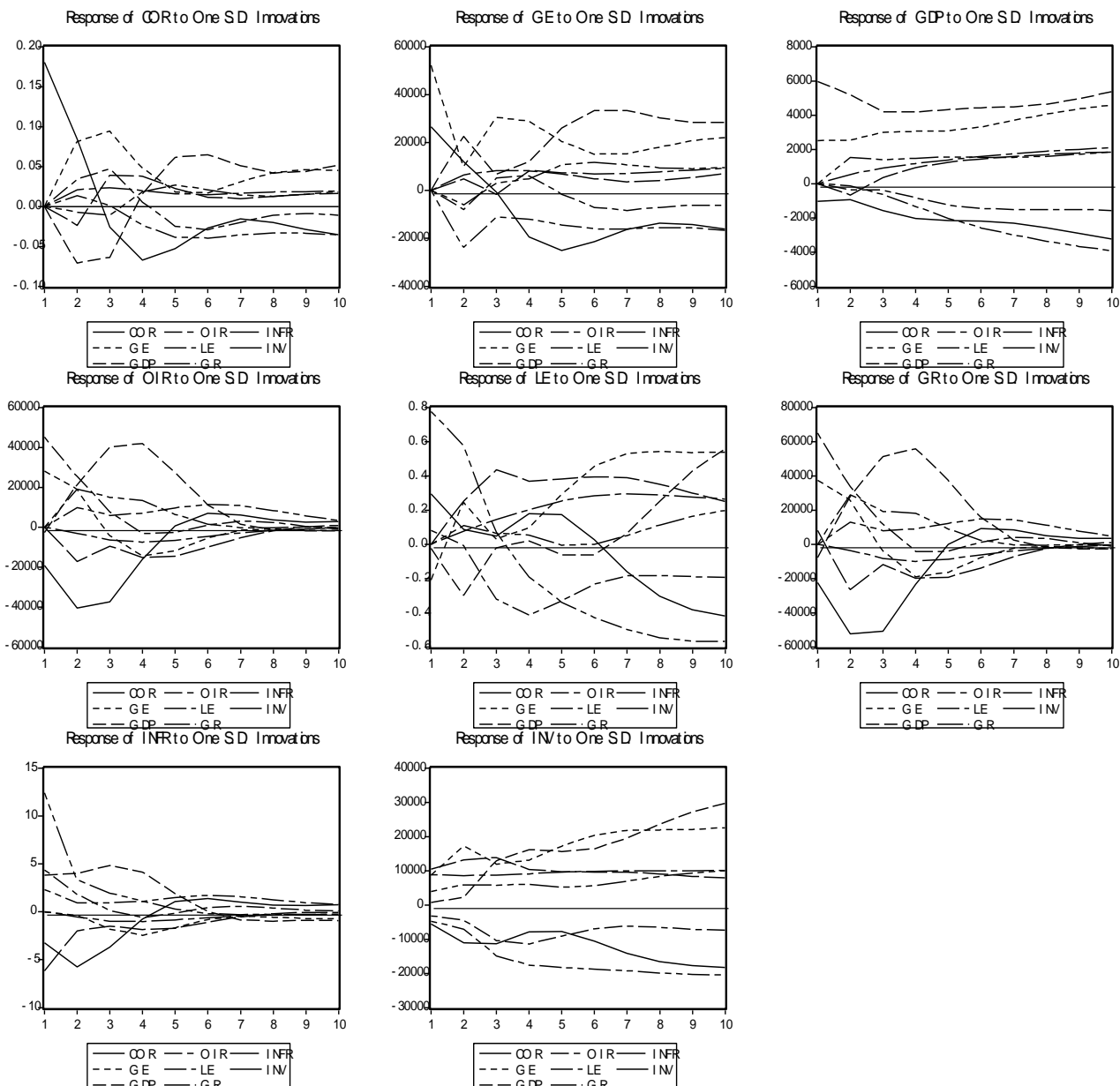
Vector Autoregressive Result
t values in parenthesis

VARIABLE	COR	GE	GDP	OIR	LE	GR	INFR	INV
COR(-1)	0.531293	195995.4	3211.984	-164750.8	-3.085591	-199296.2	-22.51133	-67385.39
	(2.38825)	(2.71780)	(0.39774)	(-2.35901)	(-2.91541)	(-2.04446)	(-1.17548)	(-2.96062)
GE(-1)	1.07E-06	-0.243607	0.005062	0.104894	1.05E-05	0.144574	-2.47E-05	0.187162
	(1.21810)	(-0.85842)	(0.15930)	(0.38167)	(2.52542)	(0.37688)	(-0.32723)	(2.08964)
GDP(-1)	-1.55E-05	3.433770	0.731870	2.435825	-3.57E-05	2.788391	0.000530	0.453761
	(-2.36717)	(1.61814)	(3.07991)	(1.18528)	(-1.14551)	(0.97209)	(0.93980)	(0.67751)
OIR(-1)	1.13E-05	1.306654	0.106548	0.959938	-3.78E-05	1.738378	-5.83E-05	-0.760615
	(1.76770)	(0.63269)	(0.46072)	(0.47996)	(-1.24683)	(0.62271)	(-0.10628)	(-1.16693)
(-1)	0.031555	-24502.91	-164.6589	5124.331	0.788914	6392.469	-0.010221	-3239.943

	(0.74917)	(-1.79454)	(-0.10769)	(0.38753)	(3.93690)	(0.34635)	(-0.00282)	(-0.75183)
GR(-1)	-7.13E-06	-0.916239	-0.083505	-0.412465	2.52E-05	-0.881985	4.58E-05	0.500701
	(-1.56278)	(-0.61919)	(-0.50395)	(-0.28783)	(1.15841)	(-0.44095)	(0.11652)	(1.07211)
INFR(-1)	-0.001357	-715.4269	103.9083	1655.762	0.006033	2450.217	0.284361	155.3268
	(-0.40843)	(-0.66429)	(0.86159)	(1.58753)	(0.38169)	(1.68308)	(0.99427)	(0.45697)
INV(-1)	2.34E-06	0.729658	0.059860	-0.361270	8.63E-06	-0.418002	-6.02E-05	0.974184
	(1.56505)	(1.50856)	(1.10519)	(-0.77127)	(1.21625)	(-0.63934)	(-0.46857)	(6.38159)
C	-0.007882	714099.6	23238.39	-261443.2	14.69006	-323528.9	3.286055	182142.5
	(-0.00398)	(1.11182)	(0.32310)	(-0.42032)	(1.55844)	(-0.37265)	(0.01927)	(0.89853)
R-squared	0.820931	0.903551	0.955842	0.794385	0.942297	0.780919	0.468014	0.988754
Adj. R-squared	0.731396	0.855326	0.933763	0.691578	0.913445	0.671378	0.202021	0.983132
Sum sq. resids	0.814375	8.56E+10	1.07E+09	8.03E+10	18.43278	1.56E+11	6035.092	8.52E+09
S.E. equation	0.225607	73135.02	8189.674	70826.20	1.073335	98859.21	19.42146	23082.34
F-statistic	9.168855	18.73629	43.29182	7.726939	32.65999	7.129024	1.759496	175.8470
Log likelihood	7.329170	-309.8964	-255.1606	-309.0945	-31.66415	-317.4312	-104.0543	-281.0655
Akaike AIC	0.133666	25.51172	21.13285	25.44756	3.253132	26.11449	9.044348	23.20524
Schwarz SC	0.572462	25.95051	21.57164	25.88635	3.691927	26.55329	9.483143	23.64403
Mean dependent	1.144400	173925.2	103660.9	77306.54	47.68000	102106.3	25.37200	167364.6
S.D. dependent	0.435307	192278.3	31821.15	127532.7	3.648287	172452.2	21.74133	177722.5
Determinant Residual Covariance	2.94E+42							
Log Likelihood	-1506.106							
Akaike Information Criteria	126.2485							
Schwarz Criteria	129.7589							

Result For Variance Decomposition (Table)

Variance Decomposition of COR:									
riod	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	0.180485	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.231679	73.96191	12.21407	9.380904	2.137945	0.327256	1.081417	0.108186	0.788320
3	0.267844	56.28811	21.57513	12.71638	4.653864	0.245702	2.917750	0.263107	1.339959
4	0.285554	55.08755	21.83362	11.45812	4.130667	0.913623	4.291500	0.647974	1.636944
5	0.303313	51.90187	19.68909	14.25929	4.334124	2.428802	4.339314	1.333985	1.713520
6	0.316946	48.26228	18.31425	17.23662	4.828877	3.822964	4.097734	1.651622	1.785645
7	0.326232	45.78415	18.15178	18.67277	4.932707	4.836055	3.950673	1.743987	1.927879
8	0.334912	43.79154	18.77805	19.26089	4.794271	5.589048	3.887084	1.791576	2.107548
9	0.345015	41.97235	19.44217	19.75224	4.587208	6.235389	3.860549	1.873252	2.276851
10	0.356819	40.21682	19.75277	20.54803	4.391122	6.855506	3.814369	2.009446	2.411941
Variance Decomposition of GE:									
Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	58508.02	20.57294	79.42706	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	69969.77	17.24602	57.51620	10.38824	1.307363	11.50712	0.456731	0.734470	0.843861
3	78070.82	13.85927	61.35568	9.052308	1.490860	11.29009	0.411427	0.740628	1.799745
4	88172.42	15.67957	58.73074	8.944424	1.642180	10.70417	1.143652	0.869933	2.285330
5	99555.38	18.59725	50.20937	13.85393	1.314238	10.49923	1.361140	1.821256	2.343584
6	110593.7	18.84139	42.53875	20.35880	1.479424	10.61417	1.282949	2.603172	2.281354
7	119724.6	17.91156	37.91448	25.09736	1.746656	10.84804	1.179441	3.013576	2.288886
8	127362.4	17.00291	35.50804	27.80467	1.863757	11.08676	1.142457	3.206793	2.384621
9	134619.2	16.35604	34.13474	29.29604	1.881569	11.29562	1.184390	3.323937	2.527667
10	142181.7	15.93278	33.01294	30.27510	1.883160	11.50520	1.284675	3.427473	2.678670
Variance Decomposition of GDP:									
Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	6551.739	2.526424	14.45531	83.01827	0.000000	0.000000	0.000000	0.000000	0.000000
2	8955.118	2.461915	15.63424	77.87190	0.174138	0.024876	0.585320	2.900886	0.346721

Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
3	10615.34	3.973696	19.06132	71.08138	0.270231	0.398192	0.528425	3.722784	0.963977
4	12263.50	5.753203	20.43775	64.75119	0.669400	1.524319	0.978892	4.256169	1.629082
5	13962.90	6.866673	20.61904	59.56951	1.336528	3.323029	1.549036	4.502420	2.233766
6	15682.99	7.398897	20.78428	55.14565	1.953238	5.372832	2.048223	4.527093	2.769791
7	17435.74	7.747506	21.24413	51.18192	2.347018	7.347896	2.464202	4.435326	3.232007
8	19260.61	8.145554	21.80616	47.71639	2.543192	9.082971	2.790443	4.315249	3.600037
9	21182.21	8.636203	22.23070	44.89840	2.624271	10.52093	3.012402	4.214240	3.862860
10	23199.20	9.159747	22.43644	42.78244	2.651145	11.66282	3.130317	4.146359	4.030725

Variance Decomposition of OIR:

Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	56660.96	11.55504	24.49182	0.220476	63.73266	0.000000	0.000000	0.000000	0.000000
2	84091.63	28.53994	16.16289	6.410249	38.01945	1.326846	4.230078	5.167329	0.143223
3	102549.6	32.46609	11.03694	19.37018	26.11730	1.226751	3.733014	5.544853	0.504869
4	115207.9	27.71541	10.36358	28.53906	20.77737	1.325405	4.726927	5.712854	0.839392
5	120613.9	25.28942	10.44373	31.10909	19.01266	1.828275	5.762866	5.486694	1.067261
6	122507.2	24.83466	10.32591	30.96671	18.43732	2.628217	6.291192	5.333186	1.182806
7	123331.4	24.74282	10.20566	30.56884	18.25257	3.350329	6.392017	5.262911	1.224851
8	123725.8	24.67026	10.14750	30.39179	18.16851	3.782617	6.372136	5.230368	1.236818
9	123905.1	24.64073	10.13662	30.32878	18.11680	3.968894	6.353708	5.215465	1.239000
10	124015.2	24.64474	10.14223	30.30431	18.09037	4.027400	6.346272	5.207004	1.237673

Variance Decomposition of LE:

Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	0.858668	11.68060	5.949582	0.074595	0.864781	81.43045	0.000000	0.000000	0.000000
2	1.141501	7.174922	7.966129	6.889943	0.496718	71.21296	4.905179	0.910250	0.443897
3	1.276226	5.881711	6.426088	5.539248	6.724510	57.27778	15.55761	0.967513	1.625533
4	1.435028	6.200727	5.523881	4.401507	13.71414	47.09249	18.89528	0.897005	3.274971
5	1.615867	6.026925	7.575690	3.624961	15.04502	41.55574	20.44674	0.709579	5.015339
6	1.815834	4.793882	12.27394	2.988971	13.56818	38.51811	20.89185	0.561933	6.403136
7	2.032201	4.448992	16.60145	2.481023	11.67372	36.78519	20.31344	0.509024	7.187164
8	2.264478	5.374325	19.07987	3.218423	10.05762	35.45808	18.76104	0.657641	7.392995
9	2.508754	6.699605	20.08732	5.515492	8.779394	34.02951	16.70784	0.957573	7.223265
10	2.757053	7.862018	20.43128	8.673384	7.756161	32.42120	14.66086	1.300872	6.894217

Variance Decomposition of GR:

Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	79087.36	8.072192	22.12548	0.977221	67.80841	0.003155	1.013544	0.000000	0.000000
2	115221.8	24.54531	15.29169	6.270796	40.51251	1.268573	5.784139	6.224854	0.102127
3	138797.4	30.38491	10.61992	17.84654	28.61196	1.188834	4.723960	6.188566	0.435303
4	155624.3	26.41933	9.964124	27.09312	22.82968	1.263600	5.403665	6.262602	0.763883
5	163027.3	24.07453	10.09561	29.92486	20.86823	1.709944	6.333022	6.001885	0.991924
6	165617.3	23.62775	10.00411	29.88847	20.22499	2.459517	6.851939	5.833511	1.109715
7	166727.7	23.55661	9.890515	29.51198	20.01394	3.160298	6.956272	5.756756	1.153632
8	167263.7	23.49281	9.833325	29.33961	19.92030	3.590933	6.935471	5.721020	1.166532
9	167506.7	23.46486	9.821813	29.27922	19.86406	3.780715	6.915396	5.704679	1.169250
10	167652.1	23.46862	9.828252	29.25621	19.83433	3.842192	6.906639	5.695483	1.168278

Variance Decomposition of INFR:

Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV
1	15.53717	4.388725	0.000218	5.965619	7.844015	2.171103	15.87750	63.75282	0.000000
2	17.60737	14.15269	0.057354	9.796214	7.126478	1.959422	13.68265	53.13453	0.090665
3	18.92684	16.06852	0.985186	14.99939	6.169359	1.932519	12.48151	47.00955	0.353962
4	19.73276	14.93082	2.463722	18.15614	5.786165	2.076530	12.40228	43.57161	0.612733
5	20.07569	14.69868	3.091819	18.43115	5.600062	2.554196	12.72665	42.11347	0.783978
6	20.25757	14.90078	3.206063	18.10169	5.539264	3.198802	12.80794	41.37406	0.871407
7	20.39074	14.95611	3.225031	18.04230	5.546100	3.739878	12.71626	40.86183	0.912500
8	20.48283	14.93598	3.276313	18.11283	5.533045	4.078004	12.61484	40.51328	0.935702
9	20.55315	14.92855	3.381282	18.19535	5.500778	4.260334	12.53141	40.25113	0.951165
10	20.61981	14.95358	3.500901	18.29858	5.465558	4.357332	12.45190	40.01092	0.961242

Variance Decomposition of INV:

Period	S.E.	COR	GE	GDP	OIR	LE	GR	INFR	INV

1	18465.87	9.067210	21.79680	0.141630	3.082321	6.818341	31.77149	4.565296	22.75691
2	33446.26	13.86129	33.27901	0.460347	2.780861	6.552528	25.17757	4.368380	13.52002
3	46702.83	12.99838	23.50542	7.847139	6.439207	13.50841	21.58648	3.739132	10.37583
4	57807.84	10.36798	20.44672	12.88170	8.169756	18.12147	17.30674	3.509308	9.196326
5	67596.14	8.899300	21.35082	14.71108	7.792336	20.71096	14.70197	3.136079	8.697456
6	77362.97	8.667110	23.21696	15.70435	6.752825	21.71694	12.76738	2.912590	8.261835
7	87652.36	9.343159	24.20755	17.16943	5.766851	21.78229	11.11897	2.882074	7.729679
8	98378.28	10.25507	24.16210	19.35299	5.028415	21.39211	9.659516	2.992646	7.157152
9	109225.4	10.96029	23.65275	21.84920	4.512057	20.82490	8.416983	3.151948	6.631887
10	119960.7	11.40285	23.13262	24.20947	4.136252	20.21251	7.406760	3.303501	6.196025
Ordering: COR GE GDP OIR LE GR INFR INV									