

## Microeconomic Modeling of Public Sector Corruption: a Case for Inclusion of the Public Officer as Central Variable

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### Abstract

The main objective of this paper is to identify the centrality of the public sector officer as the major determinant of public sector corruption. In reality, the public officer is the principal agent in most analysis of public sector corruption, yet economic models often ignores his inclusion in models that attempt to explain the cause or impact of public sector corruption. The study advocates a new perspective on the examination of the corruption in countries afflicted by public sector corruption like Nigeria; arguing that macroeconomic approaches that capture aggregate variables like GDP appears insufficient, as it often does not represent the principal agent as a determining variable. The inefficacies of public sector corruption models to aid policies alleviate the persistent corruption may, to a degree be traceable to the improper macroeconomic models used. This study is a deviation from the past studies as it advocated for a microeconomic modeling approach that hallmarked on the corrupt public officer, with regards to intrinsic instigators of the corrupt tendencies like regionalism and nepotism. Based on the rent-seeking theoretical framework, the study apply the utility maximization principle and discover that the marginal utility of the corrupt public officer is positive and hence the propensity for marginal corruption. This analysis demonstrates the analytical dimension that necessitates the use of microeconomic models as the basis for future examination of continuum official corruption in Nigeria. The study invites future researches for metrics that could proxy psychic income.

### Keywords:

Corrupt public officer, Psychic income, Corruption.

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### **Background to the Study**

Corruption unarguably incapacitates economic growth and development. All over the world, especially among developing countries, this negative impact is associated directly or indirectly with many anti-developmental consequences like socio-political unrest and low standards of living. Among African countries, it is an open secret that public officers entrusted with policy formulation and executions have been afflicted by this scourge. The magnitude of such corruption in countries like Nigeria has become so frightening especially in the past 30 years. Nlerum (2007) asserts that corruption in official circles is tacitly accepted as an official activity in Nigeria. This is an affirmation of the predominance of corruption in Nigeria's public sector.

According to Osoba (2007), one of the main factors responsible for the endemic spread and sustenance of official corruption in Nigeria has been the long history of direct government intervention in economic activities. Though this intervention is often carried out in the proclaimed attempt to direct and control economic activities, the regulatory efforts so adapted often results to bureaucratic corruption and the multiplicity of corrupt public officers.

Efforts to stifle public sector corruption in Nigeria have been varied and many. However, the dominance of the public sector corruption attests that the efforts have essentially failed. Among other variables, this failure may be attributed to wrong identification of the technicality of the corruption as captured by models whose dynamics often does not reflect the true nature of corruption in Nigeria. It is obvious that if a model that built for investigation is defective, the result will be spurious and the social problem persistent. This may be part of the explanation for the persistence of official corruption or officers' corruption in Nigeria.

Broadly, the two modeling approaches aimed at capturing all the relevant variables on corruption in most empirical works are the political economy and the econometric methodology. The political economy approach offers explanations, facts and evidences which are mostly non-empirical, hence not very central in goal setting and targeting. On the other hand, the researches that are patterned on econometric methodology could be classified into those that adopt macroeconomic models or microeconomic models. Largely, macroeconomic modeling is preferred and of course, they produced good numeric values, but unfortunately, their application yields little positive results, hence the persistency of the corruption menace.

The failure of the macro-metric method to drastically reduce official corruption as most of the time expected may be attributed to two factors. First, is the failure to identify the corrupt officer as the centre of official corruption. This leads to overemphasis on macroeconomic variables like recurrent expenditure, and less attention to very important micro variables like the corrupt officer and other actors in the saga and the tribe from where the actors in the corruption saga comes from. Secondly, the failure of the macro-models to incorporate the psychic component of even the corrupt officer who is the principal actor in any corruption episode is a major drawback; and of course, it is this factor that heavily influences the demand or supply of corruption in any country.

In reality, for an impactful investigation into official corruption in Nigeria, these salient variables like psychic component of the corrupt officer must be made central component of the microeconomic model employed. The emphasis should be the key players in the act of corruption, more than variables like gross domestic product or capital expenditure which are most often results or consequences of corruption. A microeconomic model that seeks to unravel the motivational and causative variables of officer- corruption has become inevitable in the quest for a model that would significantly impact on corruption, hence this study.

This paper argues for indigenization of microeconomic models of corruption with variables peculiar to Nigeria, which are often ignored – the corrupt public officer. The model so envisaged shall illuminate the key socio-economic and psychosomatic variables associated with the officer's corrupt behavior (such as psychic income) that enables the analyst to easily and realistically identify the true variables that determine the corrupt officer's behaviour. This paper is divided into 5 parts. After this introduction, section 2 explains the concepts of corruption/ public officer corruption and psychic income. The section also reviewed relevant literature; Section 3 presents a theoretical framework that situates the subject matter of corruption in microeconomics. Section 4 attempts a justification of microeconomic modeling emphasizing the centrality of the public officer and some intrinsic variables like psychic income/utility, while Section 5 concludes.

### **Literature Review**

The concepts corruption, corrupt public officer and psychic income is treated systematically in this work.

### **Concepts of Corruption and Corrupt Public Officer**

Regarding the concept of corruption, Jain (2001) observed that there is no universally accepted definition of corruption because of differences in political, social and cultural perceptions across peoples and nations. Barro (1991) attempted a definition of corruption as bureaucratic inefficiency. This definition is insufficient because beside the public sector bureaucratic, corruption thrives in the society in the other areas like the judiciary. North (1990) perceives corruption as a systemic episode of general malfunctioning of institutions in the society; this, of course is too mirageous for easy identification of corrupt events.

The World Bank (2000) encapsulates corruption as “the abuse of public power for private benefit”. In a similar vein, the Transparency International (1996) defines corruption as “the abuse of entrusted power for private gain”. Both organizations are specific pivoting on corruption as coming from the activities of those in public offices and other positions held in trust for the people that deviate from expectations. The problem here is that expectations are dynamic across nations and also depends on the depth of corruption itself. There is also the private sector corruption that is not related to 'public power' which these definitions ignore.

To avoid definitional controversies, institutions like the United Nations (2002) and Nigeria's Vision 20: 2020 Committee (2010) defines corruption descriptively to include bribery, embezzlement, illicit enrichment, abuse of office, laundering of proceeds of corruption and obstruction of justice among others as corrupt acts. Though the approach is specific, the acts

in reality cannot be exhausted and the danger of erroneous limitation of obviously corrupt acts is plausible. In this work, we agree with Kyarem (2007) that in Nigeria, corruption can best be defined as the use of the Nigerian Federal, State or Local Government position, or any other position for personal or private gain at the expense of the society. The act may be a legal condemnation or an abhorrent general perception.

Following the definition of corruption, a corrupt public officer is a person elected, nominated or appointed into a Federal, State or Local Government position that engages in acts of legal condemnation or abhorred generally; that attracts personal or private gain at the expense of the society. In this light, the corruption perpetuated by the public officer is referred to in this paper as officer corruption, while the corruption that is powerlessly and permissively exists in the country is called official corruption.

### **Concept of Psychic Income**

Generally, Economics perceives income as monetary or material rewards that accompany an occupation or economic activity. Zafirovsk (2003) further elaborated that there is a strong correlation between income and utility or satisfaction derived by a person from the consumption of a good or service, or executing a job. All economic actions are supposedly motivated by a desire for maximization of utility or income. While many actions and decisions of a public officer may be traceable to a maximization of income or utility that may be quantified in measureable units in monetary terms, many others do not fit in numeric classification of income. In practical life, many actions of public officers are not motivated by monetary income. The personal or subjective benefits, rewards, or satisfactions derived from a job or undertaking as separate from its objective or financial rewards is called psychic income ([www.dictionary.com/browse/psychic-income](http://www.dictionary.com/browse/psychic-income)).

Mansfield (2008:2) posits that psychic income is that subjective value of non-monetary satisfaction gained from an activity, the giver receives value from bestowing a gift on an acquaintance, friend, or loved one. The quantification of psychic income is all the more complicated when we discover that the psychic income of the giver may be different from the perceived psychic income of the receiver in the same transaction. Terborgh (1928) proxy psychic income to (government) transfer earnings and emphasised that it must not be ignored in economic analysis since it is capable of creating wealth (or alternatively misdirecting resources, and by that stifle wealth creation).

While *Kairos Documents* accept psychic income as the subjective value of non-monetary satisfaction gained from an activity. He further termed it as "implicit revenue" - income in a non-monetary form, gratifying psychological and emotional needs. In the business world, power, prestige, recognition, and fame are all considered to be forms of psychic income. From a marketing perspective, it relates to the intangible benefits above and beyond the utilitarian value derived from a conventional purchase -- including the improvement in a consumer's self image as a result of purchasing certain highly desirable products.

In practical life, psychic income may be equivalent to variables like respect and recognition, challenge and love of the work itself, location in a particular community or name of a prestigious family, tribe or institution. Obviously, the full income of a public officer under

these scenarios would be the combination of wages and psychic income. In this paper therefore, we see psychic income as non-monetary or non-material satisfactions that accompany an occupation or public service. It is what motivates a public officer other than money, such as the utility obtained from identification with a person or granting a job opportunity or a favour to an undeserved applicant on the basis of tribe, region or religion. It is true that the fluidity of the concept of psychic income exist, nonetheless, its reality is undeniable. This research therefore postulates the acceptance of this reality and demand an inquest into its numeric proxy subsequently.

### **Review of Empirical Literature**

Generally, the literature that treats the issues of corruption in Nigeria adopts either macroeconomic or microeconomic modelling. Of the macroeconomic modelling school, Bamidele, Joseph and Oresajo (2013) investigated the channels through which corruption impacts and frustrated the achievement of the Millennium Development Goals (MDGs) in Nigeria for the period 1970 to 2010. The technique used was the Structural Vector Auto Regression (SVAR). The variables used were Corruption Perception Index, Gross Domestic Product (GDP) growth rate, Secondary School Enrollment rate, life expectancy, government expenditure and investment, and oil exports. It can be noted that all the variables used were macroeconomic aggregates. They recommended that the government in Nigeria should withdraw from the objectives of providing services to being a regulatory body. We can however note that even in its role as a regulatory agent, corruption has continued, blossomed and become all encompassing.

Ajie and Wokekoro (2012) examined the impact of corruption on the economic growth and development of the Nigerian economy for the period 1980 – 2011 using Cochrane-Orcutt method. The macroeconomic variables employed were Corruption Perception Index, Gross Domestic Product (GDP), unemployment rate, debt stock, government expenditure and political stability. One of the recommendations was that the government should develop the political will to prosecute anyone found guilty of corruption to serve as deterrent to others. It is indeed strange that with the aid of macroeconomic models that provided no room for examination of the corrupt individual would recommend individual punishment as solution to corruption in Nigeria. This of course is the shortcoming inherent in studies that adopts macroeconomic models.

Akinpelu et al. (2013) investigated the socio - economic determinants of corruption in Nigeria. Variables employed were Corruption Perception Index, Gross Domestic Product per capita, population growth rate, trade openness, literacy rate and value of fuel export over total exports. They recommended that Federal, State and Local Governments in Nigeria should focus attention on planning and implementing socio economic development policies and programs. This type of recommendation from macroeconomic model-based researches has little direct relevance to corruption. They are also based on the premise that development cures corruption, which has been empirically proved wrong as corruption is still rampant in all developed nations.

Many other studies that adopt macroeconomic modelling approach like Hearther (2013), Bakare (2011), Fabayo *et al* (2011) and Akindele (2005) undertook an empirical investigations via various methodologies like regressions, VAR and simulation. Generally the results indicate lineality and causality or a mixed up between variables hence recommendations often fail to address issues directly connected to the principal actors in any corruption saga like the public officer that practices nepotism or the region or religion of the corrupt officer as relevant factors in the corruption saga.

On the other hand, empirical studies that employed microeconomic models to examine corruption appeared to be the only substantive alternative available. Richmanova (2006) after a treatise of different models and how these theoretical models can be extended to study the impact of anti-corruption measures, noted that microeconomic models are limited in existence and hence a research agenda. This study is an answer to this outcry.

Burguety, Ganuza and Montalvo (2016) discussed incentives and compensation in bureaucracies, and the interplay of market and bureaucratic structure. They further analyzed competition and contract design in relation to procurement under corruptible agents. The uniqueness of this study is the *unmacroeconomic* but microeconomic approach zeroing on the corruptible agents. The study however did not give place to microeconomic variables like the region of origin of the corrupt officers which is central to corrupt practices especially to a country like Nigeria.

Gander (2013) provided an analysis on Dynamic Managerial Theory of Corruption and Productivity among Firms in Developing Countries. Focusing on Managers and managerial resource, the study found a trade-off between managerial resources used for growth and those used for the shadow price. He opined that soon corruption efforts will become less important as firms and developing countries internalized corruption into the market system and the cost of running the government and the firm. The study seems to be too interested in output and ignored the havoc corruption has caused to production and increased poverty of nations. In fact the most corrupt countries are among the poorest of the world. With this misdirection, the study sidelined the exposition of the technicality and causality of corruption of managers, which would help policy formulation for eradication of corrupt tendencies of managers.

Pedro and Aurora (2006) modeled the behaviour of autocracy versus democracy using a microeconomic framework. The study assumed that autocracy rulers have a monopoly over the bribes market, whereas in a democracy conflicting groups compete in the bribes market. In times of electioneering in democracy, oppositions convince voters of the existence of corruption (bribes and nepotism) in order to gain their votes. The models constructed produced results that agree with well-known stylized facts that; the level of corruption is lower in democracy than in autocracy and that the level of corruption is higher in more regulated economies. The interesting observation here is that the study focused on bribery and nepotism, a common brand of corruption that may not be aligned alongside macroeconomic variables like inflation, GDP or capital expenditure. The findings appeared consistent with the situation in Nigeria. The Nigerian economy is highly regulated and highly corrupted with public authorities susceptible to corruption. The elites, politicians and public

officers appear to be stronger than the existing institutions or regulations. The government officials take and give bribes depending on their regions of origin and the interest they are pursuing; hence, the need for an appropriate model of public officer's corruption tendencies in Nigeria.

Nwaobi (2015), using a simple growth model investigated the interrelationships between natural resources, corruption and economic growth in Nigeria. The interesting salient fact in this approach is the salient deviation from ostensibly macroeconomic approach to microeconomic modelling tendencies identifying natural and human resource as an essential variable that must be treated independently. From the review of empirical studies, it appears efforts by academics to model the scenario of corruption in Nigeria are often framed on macroeconomic perspectives which essentially ignore the principal agents in the corruption saga like the bribe taker and the bribe giver. It is ironic that such macroeconomic-based model researches come up with microeconomic recommendations that anchor on integrity of Nigerians, transparency of government officers and avocations for investigation of wealth of individuals when their models capture none of such variables. Even the microeconomic –based model researches did not give a proper place to the psyche of the bribery agents nor the region of origin. This obvious lapse in gap is what this study seeks to fill by highlighting the technicality of the recommended microeconomic model.

### **Theoretical Framework**

This paper is based on the rent-seeking theory propounded by Tullock (1967) and developed serially by numerous economists. The theory entails efforts to increase one's share of existing wealth without creating new wealth. These non-productive efforts could take the form of money income ( $Y_m$ ) received as bribes and kickbacks, and psychic income ( $Y_s$ ) enjoyed for practicing nepotism. Rent-seeking rips off the consumer surplus, or the producer surplus, or extracts uncompensated value from others by manipulating the social or political environment in which economic activities occur, rather than by adding value or creating new wealth. In a practical context, income obtained through rent-seeking may contribute to accounting profits, but economically add nothing to real production (Conybeare, 1982).

The consequence of rent-seeking activities is generation of incomes entirely unrelated to real production and well-being. This results in a sub-optimal allocation of resources which retards economic growth (Eisenhans, 1996). In this case, rent-seeking grows at the cost of economic growth. Murphy, Kevin, Shleifer and Vishny (1993) assert that public rent-seeking discourages innovation which is the main driver of economic performance and economic growth. The rent-seeking theory seems to explain reasonably the corruption syndrome in Nigeria. This is obvious, especially when we view the huge resources spent on lobbying for the continuation of government subsidies on petroleum products. The central crux for the lobbying is to be given wealth that has already been created without actual productivity.

Another common example of rent-seeking is the limiting of access to lucrative occupations via licenses like import licenses and tax moratorium to specific companies. The issuing of import licenses for instance, constrains the overall supply of certain goods and limit competition, rather than ensuring competence or quality, and hence market equilibrium. The *quota system* as applied in Nigeria where each state or region must be 'equitably' represented at the expense of fair competition and competence smacks of national rent-seeking.

Rent-seeking also apply to bureaucratic corruption in Nigeria, where bureaucrats solicits and extracts 'bribe' or 'rent' for applying their legal but discretionary authority for awarding legitimate or illegitimate benefits to clients (Chowdhury, 2006). This is very common in awards of contracts. Obuah (2010) lists rent seeking activities in Nigeria to include bribery for diverse causes like issuance of permits and licenses, and influencing bids for privatization of state owned enterprises or government contracts.

Finally, the principal agent in the theory is the rent-seeker who may be likened to a public officer who is often the central agent in corruption cases in Nigeria. This makes the theory all the more suitable for this investigation. As we identify the centrality of the public officer, we must acknowledge a key motivation variable of the corrupt officer - the Psychic income enjoyed by the rent-seeker whose utility is maximize by rejecting competence and allocating resources on nepotistic yardstick to tribe or region, even in the absence of pecuniary benefits. This Psychic income inherent in the rent-seeking theory and applicable to Nigeria is often ignored in researches and hence in modeling. Here, we include this indispensable variable in our model.

**A Model of Corrupt Behavior by a Public Officer**

The basic assumptions underlining the formation of the model are: First, we assume there are two groups in the society (termed group NR and group SR.) Until *on-the-job* skills and training are acquired, the typical employee from NR and SR possessed unequal capabilities by virtue of their education. This assumption is necessary because it mirrored the social background where corrupt actions thrive where the less qualified is preferred to the more qualified. Secondly, the officers from NR and SR have identical utility functions which they individually maximize by increased money and psychic incomes. Finally, the officer derives more psychic utils by the corrupt acts of regionalism and additional money income through accepting bribes.

Let's assume the official in authority with the powers to employ the unemployed in the public sector is from the NR. The official's utility function is given by

$$U = f(Y_m, Y_s) \dots \dots \dots (1)$$

Where  $Y_m$  is money income and  $Y_s$  is psychic income.

For a corrupt official, his money income is equal to earned income/his salary ( $Y_e$ ) and income received through bribes ( $Y_{rb}$ ), less income lost through paying bribes ( $Y_{pb}$ ) i.e.

$$Y_m = Y_e + Y_{rb} - Y_{pb} \dots \dots \dots (2)$$

The equation 2 is valid because the widespread corruption in Nigeria demands that the public officer maximize utility through not only collecting but giving bribes as well. The money income ( $Y_m$ ) of the public officer is therefore a positive function of earned income/his salary ( $Y_e$ ), income received through bribes ( $Y_{rb}$ ) and a negative function of income lost through paying bribes ( $Y_{pb}$ ).



Because earned income/salary of public officers is relatively fixed over time, we assume  $Y_e$  in equation (2) is constant. On the other hand, income received through bribes ( $Y_{rb}$ ) is dynamic and could be divided into 4 components of (i) illegal price charged to members of SR per unit of employment benefit (IPs), (ii) illegal price charged to members of NR per unit of employment benefit (IPn), (iii) total units of employment benefits granted to members of SR (EBs) and, (iv) total units of employment benefits granted to members of NR (EBn).

Hence income received through bribes ( $Y_{rb}$ ) can be model as:

$$Y_{rb} = IP_s(EB_s) + IP_n(EB_n) \dots \dots \dots (3)$$

Finally, we assume income lost through paying bribes ( $Y_{pb}$ ) should be equal to bribery for favours received ( $Y_{rb}$ ) hence

$$Y_{pb} = kY_{rb} \dots \dots \dots (4)$$

Where the metric coefficient is  $0 \leq k \leq 1$

Substituting equations 3 and 4 into equation 2 (i.e.  $Y_m = Y_e + Y_{rb} - Y_{pb}$ ), to obtain the full variables of the money income of the officer we obtain;

$$Y_m = Y_e + IP_s(EB_s) + IP_n(EB_n) - kY_{rb} \dots \dots \dots (5)$$

Since the officer's utility function is given by  $U = f(Y_m, Y_s)$ , we obtain  $Y_s$  (psychic income) by multiplying total units of "favor" done to members of SR (EBs) and total units of employment benefits granted to members of NR (EBn) i.e.

$$Y_s = \phi(EB_s, EB_n) \dots \dots \dots (6)$$

Substituting equation 5 and 6 into equation 1 [i.e.  $U = f(Y_m, Y_s)$ ], the corrupt official's utility function becomes:

$$U = f[(Y_e + IP_s EB_s + IP_n EB_n - kY_{rb}), EB_s, EB_n] \dots \dots \dots (7)$$

This can also be presented as:

$$U = f[Y_e + (1 - k)(IP_s EB_s + IP_n EB_n), EB_s, EB_n] \dots \dots \dots (8)$$

The marginal utility i.e.  $U$  (representing the utility for every additional corrupt behavior) of the officer is obtained by the first partials of the composite utility function in equation 8 as follows:

$$\frac{\delta u}{\delta EB_s} = (1 - k)IP_s + U'EB_s = 0 \dots \dots \dots (9a)$$

and

$$\frac{\delta u}{\delta EB_n} = (1 - k)IP_n + U'EB_n = 0 \dots \dots \dots (9b)$$

The equi-marginal principle of the officer can be stated as:

$$\frac{\delta u}{\delta EB_s} = \frac{\delta u}{\delta EB_n} \dots\dots\dots (10)$$

From the equi-marginal equation, we obtain the marginal utility of the officer for one addition corrupt activity as

$$U'EB_n = (1 - k)IP_s + U'EB_s - IP_n \dots\dots\dots (11)$$

The marginal utility of the officer is a positive function of the bribery obtained from offering employment to members of the other region and negatively related to the bribe collected from his region (since he practices nepotism). The marginal utility therefore is equal to or greater than zero, i.e.

$$U'EB_n \geq 0 \dots\dots\dots (12)$$

On the other hand, the illegal charges to members of the other group (SR) for employment is

$$IP_s = \frac{1}{(1 - k)} (U'EB_n - U'EB_s) + IP_n \dots\dots\dots (13)$$

The price he charges depends on the satisfaction he obtains for employing members of his group (U'EB<sub>n</sub>). The higher the satisfaction, the less the desire to employ members of the other group, and so the higher the illegal charges (IP<sub>s</sub>). Thus:

$$IP_s \geq 0 \dots\dots\dots (14)$$

So the officer is likely to charge a higher price to members SR as compared to group NR i.e. nepotism. The implication of the increasing marginal utility of the corrupt public officer (equation 12) in the light of the officer's positive marginal psychic income (U'EB<sub>n</sub>), and the increasing illegal charges he received show that the public officer practices corruption mainly by bribe taking and nepotism (which yields psychic income), and there is high propensity to maximize his utility by continuing in these corrupt practices. The implication is that the public officer is central to the investigation of corruption in the society and should be the hallmark of the model that seeks to highlight the dependent and independent variables in an investigation of a public sector corruption relationship.

**Conclusion**

This study brings to the forefront salient indispensable variables that had hitherto been absent in models of corruption for countries like Nigeria. It is obvious that macroeconomic models only attempt to address the consequences of corruption and not the cause. A study on the cause must centre around the corrupt officer. This study is a clarion call for researchers to move away from macroeconomic modeling to microeconomic modeling of public sector corruption, focusing on the corrupt officer if this ominous evil must be crushed. Until and unless this change in approach is done, policy formulation would be misleading as key variables in the fight against corruption would not be identified and addressed. Further

studies may well dwell on identification of indices for psychic variables exposed in this study for a more quantitative econometric microeconomic modeling approach to public sector corruption in countries like Nigeria.

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