Effects of Public Expenditure on Industrial Sector Productivity in Nigeria

EFFETS DES DÉPENSES PUBLIQUES SUR LA PRODUCTIVITÉ DU SECTEUR INDUSTRIEL AU NIGERIA

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Abstract

It is obvious from literature that for any business entity to experience significant changes in its status, there is need for a well designed and holistic execution of both fiscal and monetary policy in that country. Public expenditure as one of the significant fiscal policy has its own multiplier effect on the organizations within the economic environment. Fiscal policy has both direct and indirect effect on industries. The policy primarily create enabling environment for the industries to perform. Government expenditure has capacity to influence the dynamics of industrial growth through its consequences for the effectiveness of resources allocation and accumulation of productive resources. The rate at which corruption, misallocation of resources and mismanagement of funds are increasing in government circle caused a great concern on whether the public expenditure actually impact positively on industrial sector. It is the concern that necessitated this research to find out the effect of public expenditure on industrial sector productivity in Nigeria.

Ordinary least square multiple regression was adopted to carry out analysis on the relationship that exist between public expenditure and industrial sector productivity. In the model adopted, Index of industrial Production (IIP) serves as proxy for industrial productivity, while Total Government Expenditure (GEXP), Government Expenditure on Administration (GADM), Government Expenditure on Economic Services (GESC), and Government Expenditure on Social and Community Services (GSCS) and Government Expenditure on Transfer (GTRS) were proxies for government expenditure.

The regression results showed that both government expenditure on administration and government expenditure on economic services have negative relationships with industrial productivity. This implies that when GADM and GECS are increasing, the IIP falls. Also when GSCS and GTRS are increasing, IIP also increases. The impact of each independent variable either negative or positive on industrial productivity is insignificant. This findings revealed the fundamental reasons why Nigerian economy remain underdeveloped, despite the huge amount spend every year for the past 52 years since her political independence. It was found out that all the explanatory variables in the model collectively explained about 86% changes in the behavior of industrial productivity in Nigeria.

Generally, the research discovered that the public expenditure process in Nigeria as a whole is marred with mismanagement, misallocation allocation of resources and lack of leadership focus.. In recognizing the present ugly situation of public expenditure process that lack transparency and accountability, it therefore became imperative that only a well-designed public sector accountability reform package targeted at improving the industrial sector performance indicators positively can reverse the relationship between public expenditure and industrial productivity. Despite the fact that the presence of funds is a good instrument to attain industrial productivity, there is need for open and competitive tender arrangements for government contracts; the establishment of a "Due Process" mechanism that vets and eliminates excess "fat" from government contracts; massive anti-corruption campaigns involving all public officials and the political appointees; and public sector reforms to reduce, if not completely eliminate, the opportunity for corruption.

Key words: Public Expenditure; Industrial Sector; Productivity

Résumé

Il est évident d'à partir de la littérature que pour toute

entreprise de connaître d'importants changements dans son état, il ya nécessité d'une exécution bien conçus et holistique de la politique à la fois budgétaire et monétaire dans ce pays. Les dépenses publiques comme l'un de la politique budgétaire important a son propre effet multiplicateur sur les organisations au sein de l'environnement économique. La politique budgétaire est à la fois un effet direct et indirect sur les industries. La politique d'abord créer un environnement favorable pour les industries à effectuer. Les dépenses publiques a une capacité d'influencer la dynamique de la croissance industrielle par le biais de ses conséquences pour l'efficacité de l'allocation des ressources et l'accumulation de ressources productives. La vitesse à laquelle la corruption, la mauvaise affectation des ressources et la mauvaise gestion des fonds sont en augmentation dans le cercle du gouvernement causé ag rande préoccupation de savoir si la dépense publique fait un impact positif sur le secteur industriel. Il est la préoccupation qui a nécessité cette recherche pour savoir l'effet des dépenses publiques sur la productivité du secteur industriel au Nigeria.

Au moins ordinaire de régression multiple a été adoptée carré d'effectuer une analyse sur la relation qui existe entre les dépenses publiques et de la productivité du secteur industriel. Dans le modèle adopté, indice de la production industrielle (IPI) sert de proxy pour la productivité industrielle, tandis que les dépenses totales du gouvernement (Gexp), de dépenses du gouvernement sur l'administration (GADM), de dépenses du gouvernement sur les services économiques (CNGI), et de dépenses du gouvernement des questions sociales et Services communautaires (CSS) et des dépenses du gouvernement sur le transfert (RTM) ont été les procurations pour les dépenses du gouvernement.

Les résultats de la régression a montré que tant les dépenses du gouvernement sur l'administration et des dépenses du gouvernement sur les services économiques des relations négatives avec la productivité industrielle. Cela signifie que lorsque GADM et GECS sont en augmentation, l'IIP tombe. Aussi, quand AFEDC et RTM sont en augmentation, l'IIP augmente également. L'impact de chaque variable indépendante soit positif ou négatif sur la productivité industrielle est insignifiante. Cette étude a révélé les raisons fondamentales pour lesquelles l'économie nigériane demeurent sous-développés, en dépit de l'énorme quantité dépensent chaque année pour les 52 dernières années, depuis son indépendance politique. Il a été constaté que toutes les variables explicatives dans le modèle collectivement expliqué environ 86% des changements dans le comportement de la productivité industrielle au Nigeria.

En règle générale, la recherche a découvert que le processus des dépenses publiques au Nigeria dans son ensemble est gâché avec une allocation mauvaise répartition de mauvaise gestion, des ressources et le manque de mise au point de leadership. En reconnaissant la situation actuelle du processus de laide dépenses publiques qui manquent de transparence et de reddition de comptes, il est donc devenu impératif que seul un système bien conçu paquet réforme du secteur public qui vise à améliorer la reddition de comptes des indicateurs de performance du secteur industriel de façon positive peut inverser la relation entre les dépenses publiques et de la productivité industrielle. Malgré le fait que la présence de fonds est un bon instrument pour atteindre la productivité industrielle, il ya nécessité d'arrangements d'appels d'offres ouverts et compétitifs pour les marchés publics, la création d'un «Due Process» mécanisme que les vétérinaires et élimine l'excès «gras» de contrats gouvernementaux; massives campagnes anti-corruption impliquant tous les fonctionnaires et les élus politiques et les réformes du secteur public afin de réduire, sinon éliminer complètement, la possibilité de corruption.

Mots-clés: Dépenses publiques; Du secteur industriel ; La productivité

INTRODUCTION

Background of the Study

Nigeria is a developing country that has experienced dynamic changes in the trend of public expenditure policy over years. These periodic changes in the administration of fiscal policy are largely reflected from the way governance has been changing hands between civilian and the military. Also trend of expenditure has been changing as the fiscal unit kept changing in the economic system. Nigeria's economy is characterized by a market economy with government assuming the role of creating enabling environment within which business can flourish and contribute to the development of the country's economy. Therefore, the primary role of government is to provide extension services and infrastructural facilities, which stimulates investment and augment the productive capacity of the economy.

The Nigeria economy has a large non-tradable sector (government services) and export of agricultural and mining products that are primary in nature. Income distribution in the country is also highly skewed such that probably less than 15% of the population actually benefited from the GDP growth. The country has an estimated population growth rate of 2.8% and a GDP growth rate of about 2.5% (Akpobash, 2004)

According to National Population Commission (2006),

Nigeria population is about 150 million people (NPC, 2006) and it is the most populous Black Country in Africa with a Gross Domestic Product (GDP) second only to South Africa (Okonjo-Iweala and Osafo-Kwaako, 2007). Nigeria's economy depends heavily on oil and gas sector, which contributes more than 80% of government revenue. Nigeria had earned #31trillion from oil sector and N3trillion from non-oil sector between 1999 and 2009. (The Punch Newspaper, 2010)

Statement of the Problem

Some theories believed that increasing government expenditure promotes industrial growth, while some other theories asserted that increasing government expenditure leads to dwindling economy. It is observed that the prevailing factors are the problems of externalities and market failure, lack of well developed factors and products markets, worsening terms of trade and domination by the multinationals producing at a decreasing cost which has a compounding negative impact on domestic industrial performance. With all these problems besetting the economies of the third world countries (Nigeria inclusive), it therefore became topical issue whether market mechanism alone can perform all the adjustment functions needed in the economy. Also, it was discovered from literature that most government administrations in Nigeria embarked on unproductive expenditures which are did not aid industrial growth and economic development. It is on this basis that the paper identified the following research questions: what has been the resources allocation pattern in Nigerian economy? Has the resource allocation pattern (public expenditure) in Nigeria led to the improvement of industrial sector productivity in particular and economic growth at large? What are the likely economic implications of the public expenditure?

Objectives of the Study

The main objective of the study is to empirically investigate the relationship between public expenditure and industrial sector performance in Nigeria between 2000 and 2009, while the specific objectives of the study are to: analyze the trends in Nigeria's government expenditure during the period of study; examine the various industrialization strategies of the public sector in Nigeria; identify various bottlenecks that affect industrial productivity and economic development in Nigeria.

The research hypothesis is therefore established on the main objective that public expenditure has no significant effect on industrial productivity in Nigeria.

Scope and Limitation of the Study

The scope of the study is limited to the period between 2000 and 2009. This enables the study looked at different aspects of the fiscal operations of the government in the democratic setting, succeeding the long reign of the military administration. In this paper work, the federal government expenditure pattern is given much emphasis, because of the nature of fiscal federalism in Nigeria.

Significance of the Study

Unfortunately, rising government expenditure has not translated to meaningful growth and development in Nigeria, as Nigeria is still ranked among the poorest countries in the world. In addition, many Nigerians still wallow in abject poverty, while more than 50% live on less than $1US (US dollar) per day. (Business and Economic Journal (2010). This paper will identify the basic relationship hindrances between Industrial sector productivity and public expenditure, which will serve as a good information for fiscal policy managers in Nigeria.

1. LITERATURE REVIEW AND THEORETICAL ISSUES

1.1 Literature Review

Public expenditure policy is one of the most important instruments of public sector policy. Traditionally, the normative theory of public finance starting with musgrave, identifies three functions of fiscal policy as: allocation, distribution and stabilization of resources. By means of fiscal policy, any government attempts to ensure effective utilization of limited resources, equitable distribution of income and stability of economic development (Musgrave and Musgrave 1984)

The nature of relationship between public expenditure and economic growth via industrial sector performance has stimulated series of theoretical and empirical studies. Major theoretical work was done by Barro (1988), Barro and Sala i-martin (1995), Devarajan, (1996). In his seminar work, Barro develops a simple endogenous growth model of government spending. In this model, he finds a non-linear relationship between public expenditures which are complementary inputs to private production and a negative relationship between government consumption and growth of the economy.

Dotun (1971) wrote on the "Nigeria public consumption expenditure" he focused on the relationship between government expenditure and per capital income. His study covered the period of 1959 to 1964. He carried out an empirical analysis using a transformed power function in form of Log (E/Y) = Log a + b Log (Y/P)

Where; E/Y = consumption expenditure as a percentage of GDP, Y/P = per capital income.

From this regression result, he concluded that there is a positive relationship between consumption expenditure and per capital income.

Devarajan, (1996) develops the relationship between changes in composition of public expenditure and growth. In this model, the condition for achieving higher steady state of growth depends not only on the productivity of the specific government expenditures, but also on their initial share in total expenditures. Sturn (1998) adopted VAR ap-

proach and submitted that infrastructure investment has positively affected output in Netherlands.

1.1.1 Theoretical Framework

The fundamental causes of growth, disregarding unexpected and non-manageable exogenous shocks, can be classified as follows; efficiency of resource allocation, accumulation of productive resources, technological progress [Tan zi, 1997]. The relationship between public expenditure and industrial sector growth can be analysed both in the shortrun and in the long run. This simply means that time is a significant factor in analyzing the relationship between a policy action and its influence on the industrial productivity (Mankin, 1994). So, the distinction between short-run and long-run impacts of public expenditure is relevant for policy making.

Government expenditures can influence the dynamics of industrial growth through its consequences for the effectiveness of resource allocation and accumulation of productive resources. Both of these conditions assume the influence on the productivity of private sector. For instance, an increase in government expenditures on a public intermediate good (e.g. building road, bridge or financing of education) has significant influence on industrial productivity. Firstly, fiscal policy via taxes or borrowing withdraws financial resources from the private sector and secondly, at the time this public intermediate good becomes freely available and fully effective, it affects the productivity of the industries and labour force which use this goods. The presence of the goods can lead to decreased costs (especially transaction costs) of production, and save more funds for new investments in physical and human capital and could enhance the productivity of existing factors of production. On the contrary, underdeveloped infrastructure may distort the industry structure making it less efficient. Lack of a good road network can cause unproductive, centralization and vertical integration of the production process (Carbajo, 1997).

In most of papers on the issue of public investment, industrial growth is regarded as an integral part of economic growth and it is viewed as a long-run phenomenon, so the analysis is focused on the effects of government expenditures in the long run equilibrium leaving aside the short-run effects. However, investigation of the short-run effects is also an important issue. Firstly, it is important to explain why short-time-horizon public expenditure policy often has an opposite effect from the expected long-run one. Secondly, distinguishing the time lag between short-run and long-run effects allows one to assess the outside lag inherent in public expenditure policy.

Let's consider theories behind the channels through which public investment can affect growth. According to Edward, 2006 the effects of public expenditure is divided into macro-economic effect and microeconomic effect. To analyze the macro-economic effects of public expenditure on industrial growth, we examine five channels through which public investment can affect industrial growth, namely: complementing private capital, crowding-in private investment, increased market integration, increased aggregate demand, and increased national savings.

Most discussions on the effect of public expenditure on industrial growth begin with the assumption that public and private capitals are complements. This is justified on the grounds that public and private capital are made up of quite different things, with public capital consisting mainly public goods (e.g. roads, electricity supply) and private capital consisting of private goods (e.g. buildings, machinery). In this case, the aggregate production function for an economy is stated as.

$$Y = A.f (K, G, N, L) \text{ ----------------------------------- (1)}$$

Where Y is aggregate output, K is private capital (human and/or physical), G is public capital, N is natural resources, L is the labour force, and A is the level of technology, or total-factor productivity. When modeled in this way, an increase in the public capital stock raises aggregate output. It also raises the productivity of all other factors of production, including labour. If labour markets are competitive, and labour supply is inelastic, an increase in the productivity of labour leads to an increase in real wages. When public and private capital are complements in this way, an increase in public investment will raise a country's rate of growth, at least up to a point. To illustrate, assume that Equation (1) can be approximated by a cob-Douglas function of the form.

$$y = A. K^{\alpha} g^{\beta} \text{ -- (2)}$$

Where $y = {}^Y/_L$ is output per worker, $K = {}^K/_L$ is private capital per worker, and $g = {}^G/_L$ is public capital per worker, and the parameter ${}^{\alpha}$ and ${}^{\beta}$ represent the elasticity of aggregate output with respect to private and public capital respectively. Assuming that the rate of private saving is unaffected by the return to private investment, the long-run or 'steady-state' level of output per worker (y*) is then given as:

$$y* = 1/r \left[\frac{S_p}{\delta_p} \right]^{a/r} \left[\frac{S_p}{\delta_g} \right]^{\beta/r} \text{ ----------------------------(3)}$$

where S_p is the share of private investment in national income, S_g is the share of public investment in national income, δ_p and δ_g are the rates of depreciation of private and public capital respectively, and $\gamma = 1 - \alpha - \beta$. Equation (3) is derived by solving the conditions for the steady-state level of output per worker to obtain expressions for the steady-state levels of private and public capital per worker, and then inserting these formulae into equation (2). The prediction is that, in the long-run, countries with higher rates of public investment will have higher levels of output per worker (ceteris paribus). As the short to medium run approach their long-run steady-state level of output per worker, countries with higher rates of(public

investment will have higher rates of economic growth (centers paribus).

Equations (1) to (3) could be extended to include several different types of public capital and investment, each with a potentially different effect on long-run output per worker and economic growth. Equation (2) could also be extended to a more general functional form. In this case, the impact of public investment on economic growth will be more varied, and will depend on at least four things, namely: the kind of public investment; the amount of investment; the initial stock of public capital and the economic context in which investment occurs. For instant, public investment on roads could have either a marginal or a dramatic impact of productivity and growth. The impact depends on whether the initial road network was substantial or otherwise.

Crowding-in Private Investment theory assumes that when the rate of private saving is flexible, it adjusts in response to changes in the returns to private investment. When public and private capitals are complements, public expenditure raises the marginal productivity of private capital.

Although, public expenditure is almost certain to crowd in private investment when starting from a low level, it is unlikely to do so at all level. This is because increases in public expenditure have a successively smaller positive impact on the returns to private investment, while the taxes required to finance them have a constant negative impact. At some stage therefore, it is inevitable that increased public expenditure will 'crowd-out' private investment. Nevertheless, many developing countries are in all likelihood a long way from this point, given their low levels of tax revenues relative to GDP.

In Keynesian model of the economy, public expenditure affects the level of national income through its effect on aggregate demand. Such models assume that, because of inflexible wages and/or prices, economies sometimes operate at less than full employment level. In such cases, an increase in public expenditure would have an immediate positive impact on the level of national income, followed by a successively smaller positive impact in a limited number of subsequent years. Alternatively, for economies with some positive underlying rate of growth, a rise in public expenditure would initially cause growth to accelerate, followed by a gradual deceleration back to the underlying rate. There are in fact, many examples of such growth accelerations in developing countries in recent decades, as shown by Hausmann (2004), although it is not known what proportion can be attributed to increase in public expenditure.

It is also possible that public investment will raise industrial growth simply by raising the rate of national savings. A government can in some circumstances increase the share of national income that is saved by taxing consumption and investing the revenues generated. For this particular effect to occur, the rate of private savings must not fall significantly as a result of such tax. However, whether a government can raise national savings in this way is another issue of discussion. Most relevant arguments on this issue is referred to as Ricardian equivalence and associated with barro (1974) which submits that the current generation will response to a tax rise (fall), adjust their own savings downwards (upwards) by an amount that leaves the national savings rate unchanged.

One of the main effects of public expenditure is to increase the quantity and/or quality of public goods and services. The private sector will typically not supply public goods and services because they cannot charge a price for their uses. Therefore such goods are provided by the government, through its ability to raise revenues from domestic taxation or foreign aid. In this case, the amount of the good or service which is provided, and which any one firm or household can use is in effect rationed. Nevertheless, additional investment can increase the quantity and/or quality of this rationed amount, benefiting households and firms in the process.

To analyze the 'quantity' effects of public expenditure on firms, we will again assume that public and private capital are complements. However, we now assume that from the point of view of any one individual firm, the supply of public capital is effectively fixed, whereas the amount of labour, capital and other inputs used is under the firm's control. We can then express the profit function of any one individual firm as

$$\pi_i = f(p_i, \breve{G}_k, x_j) \text{---(4)}$$

Where π_i is the profits of firm, P_i are the prices of the various goods and services produced or used as inputs by the firm, G_k is the fixed amount of the various types of public capital to which the firm has access, and x_j is a set of other characteristics which affects the firm's profit. The impact of public expenditure (i.e. and addition to the stock of public capital of a given type) on the firm's profits is given by $d\pi_i / d\breve{G}_k$.

Much public expenditure also provides direct welfare benefits to households, in the form of increased quantity and / or quality of final goods and services. To analyze these effects, we will assume a household utility function as follow. $V_h = f(m_h, P_j, Z_k)$

Where V_h is the utility of household h, m_h, is the disposable income of household h, P_j are the price of the various market goods and services consumed by the household, and Z_k are the fixed quantities of the various goods and services consumed by the household that are publicly provided. The direct impact of public investment on household welfare is given by dV_h/dZ_k. This again will tend to be smaller, the higher the initial amount of the public goods and services been provided, reflecting in this case, diminishing marginal utility. It will also vary

according to household preferences.

1.2 Budgetary Allocation and Sector's Contribution to Economic Development in Nigeria

The trend of government budgetary allocations to the agriculture, education, health and transport sectors is examined. According to Nigeria budget over the years, the total percentage of total expenditure allocated to the Agricultural sector from 2000 to 2006 ranges from 3 percent to 17.41 percent. Within this period, the years that witnessed allocation above 10 percent coincided with various Government agriculture programmes like mass investment on Dams and irrigation facilities to boost food production between 2001 and 2005 (Ekpo 2008, World Bank 2004).

The percentage allocation to the education sector for the period ranges from 2.20 percent to 8.94 percent of the total government expenditure. During this period, none of the allocation meets the 25 percent budgetary allocation recommended by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Government budgetary allocation to the Health sector for the period under review also ranges from 2 percent to 6.91 percent. The sector allocations that were above 4 percent were between 1999 and 2004. This is the period when government place emphasis on primary health care delivery and the development of the tertiary health care institutions (like the teaching Hospitals and Federal Medical Centres). The allocation to the transport sector between 1999 and 2003 are 4.29 percent and 10.10 percent respectively. These sectors have suffered seriously from poor budgetary allocations and this is largely due to the economic conditions, debts service burden and competing claims from recent emerging social sectors as well as poor monitoring and evaluation of capital budgets. (Adenuga, 2002; World Bank, 2004, CBN, 2008)

1.3 Budget Implementation in Nigeria

In line with the declaration of the 2010 appropriation bill as a 'fiscal stimulus budget' while presenting the 2010 appropriation bill to the national Assembly members in Abuja, late president Umar Yar'Adua gave credence to this when he said "The purpose of the 2010 budget is to accelerate economic recovery through targeted fiscal interventions intended to further stimulate the economy and support the private sector growth".

Accordingly, the 2010 budget provide about 90 percent of Ministries, Departments and Agencies capital expenditure to five key priority sectors as follow: critical infrastructure; human capital development; land reform and food security; physical security, law and order; and the Niger Delta.

However, given the importance of the federal budget, it is not surprising that budget implementation, monitoring and evaluation have attracted much interest in recent years. For instance, during the review of 2009 budget

in November 2010, the Senate through the Chairman, Information and Media Committee, Senator Ayogu Eze described the performance of the budget thus; "The Senate is not satisfied with the budget performances and neither is the Minister of Finance himself satisfied with the budget performance, because the performances are as low as 15 percent, 27 percent, and 30 percent in some cases. This is to show that the problems facing industrial growth in Nigeria are multi-dimensional". Some of the problems identified are: weakness in budget implementation; corruption in the part of politicians and civil servants, thereby diverting the funds meant for development to service their personal needs; low budgetary allocation to those sectors that can triger industrial growth like; Agriculture, Health, Education, Transportation and other socio-economic activities; and changes in the leadership.

2. METHODOLOGY

2.1 Model Specification

Annual data on industrial growth (as proxied by Index of Industrial Productivity (IIP), Total Government Expenditure on Administration (GADM), Total Government Expenditure on Economic Services (GECS), Total Government Expenditure on Social and Community Services (GSCS), and Total Government Expenditure on Transfer (GTRS).

The model for the study is specified as:

$$IIP = \alpha_0 + \alpha_1\, GEXP + \mu_1 \quad (1)$$

$$IIP = \beta_0 + \beta_1 TGADM + \beta_2 GECS + \beta_3 GSCS + \beta_4 GTRS + \mu_2 \quad (2)$$

Where:

IIP = Index of industrial Production

TGEXP = Total government expenditure

GADM = Total government expenditure on administration

GESC = Total government expenditure on economic services

GSCS = Total government expenditure on social and community services.

GTRS = Total government expenditure on Transfer

α_s and β_s = parameters to estimate, μ_1 and μ_2 are white noise.

2.2 Estimate Technique

The modern econometric approach for analyzing the time series relationship is employed. We adopted both Ordinary Least Square (OLS) multiple regression and causality techniques were adopted.

2.3 A Priori Expectation

$$\frac{IIP}{GADM} = \beta_1 > 0$$

$$IIP = \beta_1 GADM$$

If government expenditure on administration on

administration increases by one unit, then IIP (Index of Industrial productivity) will be increased by the value of β_1

$$\frac{IIP}{GECB} = \beta_2 > 0$$

IIP = β_2GECS

If government expenditure on economic services increase by one unit, the IIP will be increase by one unit, the IIP will be increased by the value of β_2

$$\frac{IIP}{GSCS} = \beta_3 > 0$$

IIP = β_3GSCS

If government expenditure on social and community services by one unit, the IIP will be increased by the value of β_3

$$\frac{IIP}{GTRS} = \beta_4 > 0$$

IIP = β_4GTRS

If government expenditure on transfer increased by one unit, the IIP will be increased by the value of β_4

2.4 Sources of Data

Major data and necessary information were obtained from Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, Journals and Text Books.

3. DATA PRESENTATION AND INTERPRETATION OF EMPIRICAL RESULTS

Table 1
Descriptive Analysis of Data

Variable	IIP	GADM	GECS	GSCS	GTRS
MEAN	153.8200	876189.9	408035.1	255055.0	584272.5
MAXIMUM	165.3000	3040087.	1009876.	522765.0	1243066.
MINIMUM	139.9000	197809.6	140100.5	112750.2	225153.4
STD.DEVIATION	9.655027	843731.0	283574.8	144853.8	301376.2

Table 1 presents the descriptive statistics of the data used in the empirical analysis. The index of the industrial productivity (IIP) averaged 153.8200 between 2000 and 2009 and varied from a minimum of 139.9000 in 2000 to a maximum of 165.3000 in 2009. Total government expenditure on Administration (GADM) also averaged 876189.9 and varied from a minimum of 197809.6 in 2000 to a maximum of 3040087.in 2009. Government expenditure on economic services (GECS) averaged 408035.1 and varied from a minimum of 140100.5 in 2000 to a maximum of 1009876. in 2009. Total government expenditure on Social and Community Services (GSCS) also averaged 255055.0 and varied from a minimum of 112750.2 in 2000 to a maximum of 522765.0 in 2009. Government expenditure on transfer (GTRS) averaged 584272.5 and varied from a minimum of 225153.4 in 2000 to a maximum of 1243066.0 in 2009.

3.1 Interpretation of Ordinary Least Square Results

Table 2
Regression Analysis Table

Independent/Explanatory variable	Coefficient	Standard Error	T-Cal	Probability
Constant (C)	134.3708	4.277729	31.41171	0.0000
GADM	-3.78E-07	2.20E-06	-0.171595	0.8705
GECS	-4.08E-05	2.33E-05	-1.750071	0.1405
GSCS	0.000104	5.05E-05	2.058060	0.0947
GTRS	1.70E-05	1.26E-05	1.351890	0.2343

Source: Author's computation

$R^2 = 0.868735$,
S.E of Regression = 4.693144;
F-Statistics = 8.272738;
Durbin Watson Stat = 1.650640

Adjusted $R^2 = 0.763723$
Sum of squared Residual= 4.693
Prob(F-Statistic) = 0.019801

IIP = $134.3708 - 0.000000378GADM - 0.0000408GECS + 0.000104GSCS + 0.0000170GTRS$

3.2 Analysis of the Estimated Coefficient

A look at the regression result in the table 2 shows that the regression coefficient of GADM and GECS are negative, while that of GSCS and GTRS are positive.

A unit increase in Government expenditure on Administration leads to 0.000000378 decreases in the index of Industrial productivity. This is to show that in Nigeria, federal government expenditure on administration which includes expenses on the National Assembly, Defense, Internal Security and General Administration has no meaningful impact on the industrial productivity. This is expected because bulk of the money is spent on political office holders.

A unit increase in the Government Expenses on Community Services (GECS) led to 0.0000408 decreases in the Industrial Productivity. The government expenses on economic and community service which includes: expenses on Agriculture, transportation and communication. Ordinarily, it is expected that government expenditure on economic and community service should have a positive relationship with index of industrial productivity but as the case is in Nigeria now, agriculture has been neglected,

and most of our roads are bad due to non-charlatan attitude of the government. Therefore, the negative relationship does not come to us as a surprise.

According to the result, a unit change in government expenditure on social and community service (GSCS) led to 0.000104 increases in industrial productivity. Government expenditure on social and community service include; education, health and other social services. There is a positive relationship between GSCS and IIP but insignificant. This shows the average level of commitment on the part of the government to these sectors.

From the result, a minimal positive relationship also exists between GTRS and IIP. The positive effect is low and insignificant. Transfer which include scholarship, aids, pension etc are expected to have positive effects on industrial productivity, but because scholarship policy is politicized, pensions of the death are still paid to invisible people, while grant and aids were influenced by ethnicity and politics. This is also expected, but low because government expenditure on transfers which includes expenses on scholarship, aids, pensions etc should affect the industrial productivity positively.

Table 3
FOR β_1 (T-Test Result)

Variable	Computed T-Value	Tabulated at 5%	Decision
GADM	-0.171595	2.571	Accept H0
GECS	-1.750071	2.571	Accept H0
GSCS	2.058060	2.571	Accept H0
GTRS	1.351890	2.571	Accept H0

Source; Author's computation

From the table above, since the t-cal is lesser than the t-tab, we accept H0 and conclude that the parameter is statistically insignificant. This can be further enumerated by the probability value which is 0.8705. In case of GECS, the T-cal -1.750071 is lesser than T-tab 2.571, we accept Ho and conclude that the parameter is statistically insignificant.

GSCS T-cal 2.058060 is lesser than T-tab 2.571; we accept Ho and conclude that the parameter is statistically insignificant. The T-cal 1.351890 is lesser than T-tab 2.571 in case of GTRS, we therefore accept Ho and conclude that the parameter is statistically insignificant.

From the regression result, it was found out that coefficient of determination is about 0.868735. This implies that about 86% of the total variation in index of industrial productivity (IIP) is explained by GAD, GECS, GSCS and GTRS. The remaining 14% left unaccounted for by the model is attributed to the error term. This shows a very good fit.

R^2 Adjusted analysis is more reliable than that of the R^2, though similar, it takes into account the degree of

freedom in the model. The adjusted $R^2 = 0.763723$ which implies that about 76% of the total variation in IIP is actually explained by GADM, GECS, GSCS and GTRS.

The F-test is used to test for the overall significant of the model and to test the hypothesis that all the estimated parameters are simultaneously equal to zero.

At 5% level of significance, the F-tabulated (F0.05) is given as 5.19. Since F*cal is greater than the F*tab (0.05), we reject Ho and conclude that the estimated parameters are significantly different from zero. This implies that the model is overall significant. This is further corroborated by the probability value of F-Statistic (0.019801) which is relatively lower than 5% critical level.

One of the major assumptions of Ordinary Least Square (OLS) technique is that there should be no serial autocorrelation among the error terms. The presence or absence of serial autocorrelation can be detected by the use of Durbin Watson (D.W) statistic.

According to Gujarati (2009) given equal numbers of explanatory variable observations, K as the number of explanatory variables, with a given level significance, the

lower limit (dL) and the upper limit (dU) of the Durbin-Watson coefficient are obtained from the statistical table. The decision rule is stated below.

From the OLS result, the value of Durbin Watson d* = 1.650640. at 5% level of significance with N = 10, K = 4, the lower limit and the upper limit (dL) and (du) of the D.W coefficient are given as 0.376 and 2.414 respectively. Since the d* lies between dL and du i.e 0.376 < 1.650640

< 2.141 we do not reject Ho and conclude that there is no evidence as regards the presence of first order serial positive autocorrelation in the model.

3.3 Analysis of the Granger Causality Test Result

The results of the likely feed backs amongst the variables in the model are reported below.

Table 4
Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Probability
GADM does not Granger Cause IPP	8	0.20398	0.82592
IPP does not Granger Cause GADM		0.45402	0.67258
GECS does not Granger Cause IPP	8	0.58528	0.61008
IPP does not Granger Cause GECS		8.13370	0.06144
GSCS does not Granger Cause IPP	8	0.53083	0.63478
IPP does not Granger Cause GSCS		0.84420	0.51185
GTRS does not Granger Cause IPP	8	1.09060	0.44059
IPP does not Granger Cause GTRS		0.59759	0.60472
GECS does not Granger Cause GADM	8	1.36725	0.37839
GADM does not Granger Cause GECS		1.10192	0.43772
GSCS does not Granger Cause GADM	8	0.42177	0.68958
GADM does not Granger Cause GSCS		1.04505	0.45247
GTRS does not Granger Cause GADM	8	0.30493	0.75761
GADM does not Granger Cause GTRS		13.4879	0.03166
GSCS does not Granger Cause GECS	8	3.14843	0.18331
GECS does not Granger Cause GSCS		0.81555	0.52138
GTRS does not Granger Cause GECS	8	3.64440	0.15745
GECS does not Granger Cause GTRS		3.75493	0.15251
GTRS does not Granger Cause GSCS	8	1.77578	0.30986
GSCS does not Granger Cause GTRS		11.6899	0.03835

Source: Author's Computation

Since the probability value is greater than 10% in the first, third, fourth, fifty, sixty, eight and ninth cases, we accept Ho and conclude that the variable does not granger cause each other. In other world, there is no causality between them. In the second case, hypothesis one, the probability value is greater than 10% critical level, we accept Ho and conclude that GECS does not granger cause IIP. In the second case of hypothesis 2, the probability value is less than 10% critical level, we therefore reject Ho and conclude that IIP granger cause GECS. This means that there is a uni-directional causality between IIP and GECS. This implies that the past value of IIP can be

used to estimate or determine the present value of GECS. Also in case seven, hypothesis one, the probability value is higher than 10%, therefore we accept Ho and conclude that GTRS does not granger cause GADM. But in case seven, hypothesis two, the probability value is lesser than 10% therefore we reject Ho and conclude that GADM granger cause GTRS. This shows a uni-directional relationship.

In case ten, hypothesis one, the probability value is higher than 10%, therefore we accept Ho and conclude that GTRS does not granger cause GSCS. But in case ten, hypothesis two, the probability value is lesser than 10%,

therefore we reject H0 and conclude that GSCS granger cause GTRS. This also shows a uni-directional relationship.

4. DISCUSSION OF FINDINGS

Based on economic theory, one might expect positive relationship to exist between public expenditure's functional components and industrial growth. The results have however shown otherwise incase of Nigeria.

The relationship existing among the variables revealed that government expenditure on Administrative service like payment of salaries and wages, renovations, defense, internal security and general administration has negative impact on industrial productivity in Nigeria. Government expenditure on administration can be termed 'government expenditure on political office holders'. Huge amount of the budgetary allocation for Administration goes to the political office holders (Presidents, Vice-president, State Governors, Senators, Members of House of Representative, etc.). If one would argue from demand side, one might tend to conclude that government expenditure on administration should have a positive impact on industrial growth. This however does not hold sway in Nigeria because majority of these political office holders do not consume locally made products and are widely involved in money laundering and various financial crimes thereby reducing expected aggregate effective demand which could have a negative effect on industrial development.

A surprising result and which signifies a threat for industrial growth in Nigeria is the relationship existing between government expenditure on economic services and industrial growth in Nigeria. One would expect as a matter of economic consideration that there should be a strong positive relationship between IIP and ECS, however, this is not the case in Nigeria considering the way funds are diverted from real sector, and the result was otherwise in Nigeria. But looking at the present economic situation, one would agree with this result.

Government expenditure on economics services includes expenses on agriculture, transportation and construction. The result of expenditure on agriculture which is negative can be linked to the neglect of agricultural sector for crude oil exploration as evidenced in the literature

Also, this may be as a result of much government capital expenditures being allocated to unproductive sectors like general administration and partly on the huge amount used in servicing debt. One may also not lose sight of the level of corruption for which Nigeria has consistently been rated among first three by the Transparency International for the past few years. Corruption in this regard may be seen manifesting inform of fake contracts, inflation of contracts and diversion of funds meant for capital projects into private accounts.

Government expenditure on social and community service exhibit a low or minimal positive relationship with industrial productivity. The expenditure includes expenses on education, health, etc. the low positive relationship may be as a result of the introduction of new policies into the education system which are not well monitored.

Government expenditure on Transfers (pension, scholarship, etc), also exhibit a low positive relationship with industrial productivity in Nigeria. Of course, it is widely known that government expenses on scholarship will increase literacy level and acquisition of skills which in effect boost industrial productivity, but the effect is not significant because of misallocation of resources through transfer payment.

The granger causality test revealed that only IIP and GECS, GADM and GTRS, GSCS and GTRS have a uni-directional causality. All other test shows that there is no causality of any form of existing between these sets of variables. This implies that all the trillions of naira in our various fiscal years have a very minimal or little positive impact on industrial growth in Nigeria. This is however not surprising as the country is still marred by epileptic power supply, poor social amenities, high rate of financial corruption and fiscal indiscipline.

A critical examination of Nigeria's budget (Federal government) from year 2000-2010, reveals that a large percentage of the budget goes to unproductive activities and even the little that is meant to boost industrial productivity are either not implemented or diverted into private accounts.

5. POLICY RECOMMENDATIONS

It has been revealed that the importance of public expenditure pattern on the path of nation building to achieve vision 20-2020 cannot be over emphasized. Government should ensure that there is less wasteful. Money should be spent with more attention to accountability and transparency, capital expenses must be on sectors such as education, agriculture, and general infrastructure that could serve as a solid foundation for industrial take off. Based on the findings of this research work, it can therefore be recommended that policy makers should use public expenditure to stimulate industrial growth in Nigeria.

It is also important that for industrial sector to grow emphasis should be place on appropriate manipulation of the following variables: electricity, interest rate, exchange rate, political stability etc. It is therefore pertinent for policy makers to pay more attention to these factors so as to augment public expenditure on the path of improving industrial growth.

CONCLUSION

From the results analysis it became obvious that Nigeria

public finance system is still operating under unethical and unfriendly environment. There are no complementary efforts from other sectors of the economy to instill discipline in pattern of spending. The lawlessness, absence of corporate governance and uneconomical culture of political class in respect of resources allocation is enormous. The degree of corruption and lack of ideal system created negative impact on the major macroeconomic variables and this reveals the ineffectiveness of public expenditure on industrial growth in Nigeria. The study therefore concludes that the policy makers and the executors in the economic system should see the principle of value money as the major watch word.

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APENDIX

Table 5
The Data for Index of Industrial Productivity (IIP), Government Expenditure on Social and Community Services (GSCS), Government Expenditure on Administration (GADM), Government Expenditure on Economic Services (GECS), and Government Expenditure on Transfer (GTRS) are Hereby Presented

YEAR	IIP	GADM	GECS	GSCS	GTRS
2000	138.9000	174578.6	141324.9	86767.60	298388.3
2001	144.1000	230064.9	312768.9	132970.4	342221.4
2002	145.2000	405313.4	281244.3	221898.9	280252.0
2003	147.0000	395807.4	194013.9	158302.	477833.2
2004	151.2000	444618.6	226503.5	164423.2	548455.9
2005	158.8000	606285.9	329343.2	223007.8	584603.1
2006	160.7000	707422.5	341894.5	272850.4	620420.4
2007	162.3000	920400.0	483100.0	378500.0	566600.0
2008	164.7000	1018100.0	818200.0	485000.0	757000.0
2009	165.3000	1400123.0	1009876.0	522765.0	1243066.0

Source: Central Bank of Nigeria (CBN) Statistical Bulletin, Volume 20, 2009 edition. (Addition of both capital and recurrent expenditure)