

## **Foreign Aid and Fiscal Behaviour in Nigeria: An Impact Assessment of Deregulations**

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**Abstract:** *The study examined the influence of deregulation on the relationship between foreign aid and fiscal behaviour in Nigeria. The equation which described foreign aid as function of important fiscal variables and other macroeconomic variables is derived from the famous two-gap model. Chow test is used to examine if there is any structural changes since the adoption of deregulation that has significantly affected the relationship between foreign aid and fiscal behaviour. The result shows that deregulation has positively and significantly affected the impact of fiscal behaviour in Nigeria on foreign aid accessibility. But the effect has been short-lived recently owing to the recent drastic fall in foreign aid available to Nigeria despite the sustained increase in both government revenue and expenditure. It is recommended that assessment of other shocks that can affect the fiscal behaviour in Nigeria should be conducted with a view to getting the reason why deregulation fails to maintain positive relationship that exists between fiscal behaviour and foreign aid in Nigeria.*

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### **I. Background of the Study**

Foreign Aid from whatever source is aimed at enhancing economic progress in the recipient country. It is the belief of many economists that there is a positive relationship between aid and growth. This is the main reason why most aids are tied to specific projects or targets. The United States currently provides \$0.15 in foreign assistance for every \$100 in gross national income, as against an average of more than \$0.80 in the Scandinavian countries. About 20 percent of U.S. foreign aid goes to about four countries: Egypt, Pakistan, Jordan, and Colombia. American assistance to Africa in 2003 exclusive of that related to emergencies, military assistance, debt service, and research amounted to about \$1 billion (Werlin, 2005).

However, According to recent statistics, Nigeria as one of the beneficiaries of foreign aid in Africa has endured a lot of economic ups and downs in recent times. For instance, Nigerian economy slowed down in 2012. Despite the robust economic growth, unemployment rate in the country yet increased from 21 per cent in 2010 to 24 per cent in 2011. Also, poverty remains widespread, with a headcount that declined marginally from 48 per cent in 2004 to 46 per cent in 2010. In addition, during the first, second and third quarters of 2012, Nigeria's exports increased while its imports decreased, resulting in a 59 per cent improvement in its trade balance and foreign direct investment (FDI) of 24 per cent relative to 2011. Official Development Assistance (ODA) decreased from USD 2.0 billion in 2010 to USD 1.8 billion in 2011. Total FDI in 2011 was USD 8.9 billion, representing 20 per cent of the total FDI to Africa in 2011 ( World Bank, 2013).

However, these investments are mostly in the oil and gas sector. Essentially, Nigeria's problem of underdevelopment has, for a long time, been connected to the lack of infrastructural facilities, wrong policy frameworks, hostile environment, backwardness in technology, problem of unemployment and over-dependence on imported products amongst other constraints. If the economic postulation of direct or positive relationship between foreign aid and economic growth is to be considered, then, the dwindling foreign assistance to the country recently might have contributed to the economic problem confronting Nigerian economy. According to Bashir (2013) the benefits and access to foreign aid by most developing countries is largely affected by fiscal behaviours of government institutions in these countries.

Over the years fiscal policy has been a major policy used side by side monetary policy to maintain economic stability, increase output and promote overall economic development of a country. However, attention of researchers in recent times have been more driven towards fiscal policy and one of the reasons for this is the general consensus that monetary policy only have transitory effect on output (see Tobins 1965, Sidrauski 2003, Papademos 2008) In other words, Fiscal policy has been identified has a policy that tends to have long run relationship with growth. Consequently, it is a general believe that such policy will be highly susceptible to external influences which might have serious implications on its behaviours during a particular period and this can mitigate its having sustainable effect on output over the long run period horizon it is designed for (see Olasunkanmi, 2013) ). Two major variables of fiscal policy that is the government revenue and expenditure have been identified as major factors that indicate the fiscal behaviour especially in a country that is naturally endowed and heavily dependent on imported goods (see World Bank, 2013).

The nature of budget in a beneficiary country as significant factor the affects assess to official development assistance (ODA). According to him policies governing ODA disbursement appears to favour developing countries with savings gap to make up for the balance of payment (deficit balance). The nature of the budget which is strongly linked with fiscal behaviours is affected by deregulation policy ( see Christopher 2004). In recent decades, one of the central objectives of international aid agencies has been to encourage developing countries to re-orient their economies from highly regulated and centrally controlled to deregulated and market-based. However, poor economic performance on its own might necessitate such shift (svensson 2000).

Again, the nature of fiscal policy practiced in Nigeria for the past three decades has been in form of deficit. That is, a major feature that characterized fiscal behaviour in Nigeria over the years has been fiscal deficits. According to Obinyeluaku (2009), since the adoption of Structural Adjustment Programme SAP in 1985 which marks the beginning of deregulation policy, Nigeria has witnessed a considerable increase in government indebtedness. Beyond the issue of poor quality of public expenditure, the ability to save windfalls from excess crude oil proceeds by the government remains critical in ensuring that government expenditure is maintained at a sustainable level and consistent with the absorptive capacity of the economy. According to him there has been a substantial increase in government spending, primary deficit and debt in Nigeria especially between 1988 and 2009.

Christopher (2004) argued that it remains to be seen if deregulation policy has significantly affected fiscal system and its role in increasing more accessibility to foreign development assistance. He argued that surveys of countries and empirical works have been showing ambiguous results in this regard. He therefore suggested a thorough assessment of the fiscal system and foreign aid relationship in the light of deregulation policy.

Consequently, the question here is that has the adoption of deregulation policy in Nigeria significantly affects the relationship between the country's fiscal behaviour and her assess to official development assistance ODA?

This paper intends to contribute to knowledge by answering this question. This appears to be germane to improving and repositioning of the fiscal policy framework in Nigeria in other to enhance gains and increase the volume of foreign aid available to the country. The rest of this paper is structure as follows; the next section discusses both the conceptual and empirical literatures on the subject matter. The third section appraises the theoretical framework and provides a link between it and the model specification for the study. The last section, centers on the result and discussion as well as make inferences and draw conclusions leading to policy recommendation to improve fiscal behaviour and foreign aid relationship in Nigeria.

### **Objectives of the study**

- (i) To examine factors that determine fiscal behaviours in Nigeria
- (ii) To assess whether deregulation significantly affect fiscal behaviours and foreign aid relationship

### **Hypothesis**

H<sub>0</sub>: Deregulation does not significantly affect foreign aid and fiscal behaviours relationship.

H<sub>1</sub>: Deregulation has significantly affected foreign aid and fiscal behaviours relationship.

### **Significance study**

Over forty year since Nigeria got independence there has been influx of official friend assistance into the country but the myriads of socio economic problem even in the strategic areas that these ODA's are directed to, it appears the effect are far from being felt. Again, fiscal system in existence in a country has also been shown to have germane implications on foreign aids accessibility (Christopher, 2004; World Bank, 2013).

Deregulation policy, marked an important shift in fiscal system in Nigeria and there has been debate whether a regulated (centrally planned economy) benefits more form foreign aids than a market determined economy (deregulated economy). The importance of this study is to at this time is to assess the situation in Nigeria since the economy has been deregulated since 1985. This will go a long way to reposition the country's fiscal system if the need be in other to improve the country's accessibility to Official Development Assistance (ODA) and the subsequent benefit from foreign aids.

Various organizations and government agencies that are directly or indirectly in charge of securing foreign assistance for the country will find the results and findings from this study very useful for their operations. In addition, the revelations from the study will open further avenue for further studies on foreign aid and fiscal policy relationship in the country.

### **Scope of the study**

Since deregulation is the benchmark in terms of periods for the study, therefore the scope of the study covers years before deregulation and after deregulation. Consequently, the periods cover 1970 to 2013. That is

1970 to 1984 is the period before deregulation while from 1985 to 2013 are the periods after deregulation. This will pave way for thorough assessment of the impact of deregulation on foreign aids and fiscal behaviours relations in Nigeria.

## **II. Literature Review**

This section of the study discusses the conceptual literature, theoretical literature as well as empirical literature for the study.

### **Conceptual literature**

#### **Foreign Aid**

Foreign aid is used to cover all financial transactions made or guaranteed by one government to another. Indeed, foreign aid has become a focus and locus in the Third World. It has assumed the status of foreign policy instrument by developed democracies to strengthen their relationship with, and consequently spread their influence on, the Third World. Aid according to Ajayi (2000:117) is “a form of assistance by a government or financial institutions to other needy countries, which could be in cash or kind.

The establishment of an aid system was one of the principles of the Breton Woods system in 1944. The system believes that there should be a free capital market, which allows an unrestricted inflow of foreign aid. Based on this principle, a Marshall Aid Assistance of about \$17.5 billion was granted to Western Europe to resuscitate her ruined economy due to the World War II. Since then, the aid system has remained a durable phenomenon of the international economic system (Todaro, 1977:328-335).

Foreign aid can also be in form of economic assistance such as; Investment in the economy of the needy country, loan, infrastructural development, etc. Aid can also come in form of military assistance such as, Supply of military hardware at subsidized rates, Military agreements, bilateral or multilateral, loose or solid or in a defense pact, Supply of military technical assistance such as military presence to a country in crisis or conflict with another country, Supply of military technical assistance and advice, direct participation as in the case of military allies to other countries, military subversions, coups, assassinations, etc.

#### **Fiscal behaviour and deregulation**

Fiscal policy has been seen as that aspect of government policy that deals with manipulations of both government expenditure and government revenue to achieve macroeconomic objectives. Output growth being a major macroeconomic objective has formed a major focus of many researchers in past and fiscal policy administration has been identified as an important policy that can help to achieve this growth objective and some other macroeconomic objective (Angelopoulos, Malley and Philippopoulos, 2007).

According to Dixit and Lambertini (2003), the behaviour of fiscal policy depends largely on the use of government spending and taxation to influence the economy. Governments typically use fiscal policy to promote strong and sustainable growth and reduce poverty. The role and objectives of fiscal policy have gained prominence in the current economic crisis as governments have stepped in to support financial systems, jump-start growth, and mitigate the impact of the crisis on vulnerable groups. In the communiqué following their London summit in April, 2013 leaders of the Group of Twenty industrial and emerging market countries stated that they are undertaking “unprecedented and concerted fiscal expansion.” That will map out a new horizon for fiscal behaviour in the world. What do they mean by fiscal expansion? And, more generally, how can fiscal tools provide a boost to the world economy?

Deregulation, has continued to have its own fair share in determining fiscal behaviours over the years. Historically, the prominence of fiscal policy as a policy tool has waxed and waned. Before 1930, an approach of limited government, or *laissez-faire*, prevailed. In other words fiscal policy has been an important tool for controlling economic activities before deregulation. The global shift to deregulation policy has posed serious implications on fiscal behaviours (see Obinyeluaku and Viegli 2011). With the stock market crash and the Great Depression, policymakers pushed for governments to play a more proactive role. More recently, countries scaled back the size and function of government, with markets taking on an enhanced role in the allocation of goods and services. Now, with the financial crisis shadows still haunting many economies, a more active fiscal policy is back in favor.

Like most other oil dependent emerging markets, much of the responsibility for managing the risks from oil price fluctuations inevitably falls on fiscal policy. Many oil-dependent countries, including Nigeria, have fallen victim to boom bust cycles magnified by pro-cyclical fiscal spending. Conversely, countries that have transformed the oil curse into an advantage for economic development have managed to implement countercyclical policies that build fiscal buffers during times of high oil prices that can finance stimulus spending in the aftermath of a negative oil shock (Obinyeluaku and Viegli, 2009).

However, Macroeconomic dynamic in Nigeria has been dominated in the past by fiscal behaviours which is characterized by so much instability. There have been a strong deficit and debt bias stemming from

government revenue volatility. As a result, monetary authority has been forced to implement neutralizing monetary policies leading to macroeconomic instability. Fiscal policy has been often relied upon to ameliorate instability resulting from the implementation of monetary policy.

### **Theoretical and Empirical Literature**

A plethora of approaches and theories has been developed within the disciplinary parameters of International Relations to explain the granting of foreign aid to economically weak countries by advanced economies. This is to arrive at scientifically valid explanations of, and factors responsible for, granting of foreign aid to Third World countries. This study, however, adopts dependency theory to explain the nature of the relationship between the countries of the world and the factors that have facilitated dependency of one group of countries on the other. Countries of the world have been sharply divided along economic prosperity. Countries that are economically buoyant and politically stable are termed Developed Countries and, on the other hand, countries that are economically backward are tagged Developing Countries or commonly referred to as 'Third World Countries'.

The dependency theory seeks to establish the factors that have propelled or contributed to the development of the underdeveloped countries. This theory is predicated on the assumption that resources flow from a "periphery" of poor and underdeveloped states to a "core" of wealthy states, enriching the latter at the expense of the former. It is a central contention and standpoint of dependency theory that poor states are impoverished and rich ones enriched by the way poor states are integrated into the "world system" (Todaro, 2003: 123; Amin, 1976).

The theoretical premises of dependency theory are that:

1. Poor states provide natural resources, cheap labour, a destination for obsolete technology and markets to the wealthy nations, without which the latter could not have the standard of living they enjoy.
2. Wealthy nations actively perpetuate a state of dependence by various means. This influence may be multifaceted, involving economics, media control, politics, banking and finance, education, culture, sport and all spheres of human resource development.
3. Wealthy states actively counter the attempts by dependency nations to resist their influences by means of economic sanctions and/or the use of military force (Todaro, 2003).

McGillivray (2002) examines the interactions between foreign development aid, economic reform and public sector fiscal behaviour. He proposed a model of the public sector fiscal response to aid inflows, which allows for changes in structural relationships due to an exogenously imposed program of economic reform. The model was applied to 1960-97 time series data for the Philippines, which embarked on an IMF- and World Bank-funded liberalization program in 1980. Estimates of structural and reduced-form equations painted a very dismal picture of the effectiveness of foreign aid in general and liberalisation in particular in the Philippines. Both bilateral and multilateral aid inflows, and the presence of an economic reform program, were associated with decreases in public fixed capital expenditure, decreases in taxation and other recurrent revenue and decreases in public sector saving. Multilateral aid also appeared to be highly fungible.

M'Amanja Lloyd and Morrissey (2005), examined the effect of fiscal variables (government expenditure and revenue) and aid on growth using annual time series data for Kenya over the period 1964–2002. Multivariate cointegration (VAR) and vector error correction models (VECM) are estimated to establish both the short- and long-run relationships between foreign aid, fiscal variables and growth of per capita income. Two measures of aid were used; external grants and loans, and both yielded different results. Aid loans were found to have a negative impact on long run growth whilst grants have a positive one. Government spending was found to have a positive long-run influence on growth, and there was no evidence that taxes retard growth. The implication for policy was that aid to Kenya could be more effective if given in form of grants, and associated with fiscal discipline.

Sugema and Chowdhury (2005) assessed the effects of aid on fiscal behavior in Indonesia. There were four main findings. First, aid inflow was primarily driven by the need to fill the fiscal gap. That is, aid is demand driven. Second, although project aid is by definition intended for development expenditures, it resulted in an increase in routine expenditure as well. This suggested that project aid was fungible: it creates extra resources available to increase nondiscretionary spending. Third, program aid tended to increase routine expenditure but not development expenditure; thus it mainly served as budget support. Fourth, aid flows make the government fiscally lazy. The availability of aid is a disincentive to mobilize domestic revenue through a more efficient and effective taxation system.

Zafar Iqbal (1997) demonstrated the impact of foreign capital inflows on government's fiscal behaviour in Pakistan. Government's fiscal response is measured in terms of social, non-development, and development

expenditures as well as revenues. The study specified and estimated a fiscal behaviour model for the period 1976–95. The three stage least squares results suggest that foreign capital flows into the public sector have strong positive impact on social and non-development expenditures and, in contrast to what the government and donor agencies believe, have little effect on development spending. In other words, proceeds from foreign loans and aid are largely consumed rather than invested productively. The results also revealed the strong substitutable interdependence between social and non-development expenditures. Furthermore, the finding clearly demonstrated that foreign assistance causes a strong shift of public domestic resources from development projects to non-development activities. In addition to the above, the results showed that a large fraction of government revenues is used to finance social and non-development expenditures. The results also demonstrated that foreign assistance enhanced taxation efforts of the Government of Pakistan.

Kolawole (2013) examined the impact exacted by foreign assistance in the form of official development assistance (ODA) and foreign direct investment (FDI) on real growth in Nigeria over the period 1980 to 2011. Using the Two-Gap model and various econometric techniques which include Augmented Dickey Fuller (ADF) test, Granger causality test, Johansen co-integration test and Error Correction Method (ECM), empirical results revealed that there is Granger no-causality between any pair of the variables. Findings of the study also established a negative relationship between FDI and real growth as ODA exacts no impact on real growth in the country.

Okon (2012) provided a long-term perspective on development aid and human development in Nigeria. This study employed two-stage least squares estimation to analyzing data from 1960 to 2010, the result showed that there was a negative relationship between development aid and human development, implying that aid tends to worsen human development in Nigeria. As such Nigerian government should put in place an appropriate policy measures that would monitor the maximum and effective utilization of foreign aid. According to him, Government should sustain the current reforms in the various sectors of the economy to encourage the inflow of foreign aid. Donors should provide information on future aid disbursements in order to reduce the uncertainty associated with aid flows and improve fiscal planning.

## **Theoretical Framework and Methodology**

### **Two gap model**

The theoretical relationship between foreign aid and economic growth can be described by the prominent two gap model. The idea behind the two-gap approach to economic development is that savings-gap and foreign exchange-gap are two separate and independent constraints to the attainment of a target rate of growth in less developed countries (LDCs). The identity between the two gaps, the investment-savings ( $I - S$ ) gap and the import-export ( $M - X$ ) gap, follows from the nature of the accounting procedures. It is a common knowledge that if a country invests more than it saves, a balance-of-payments deficit will result. Or an excess of imports over exports implies an excess of resources used by an economy over resources supplied by it. Such that, Chenery & Strout (1956) assert that foreign aid is a way to filling these two gaps in order to achieve the target growth rate of the economy.

Also, following Chenery & Bruno (1962) and Chenery & Adelman (1966), a savings gap arises when the domestic savings rate is less than the investment required to achieve the growth target. The economy can achieve the target growth rate by filling this savings gap with foreign aid. Similarly, a fixed relationship is postulated between targeted foreign exchange requirements and net export earnings. If net export earnings fall short of foreign exchange requirements, a foreign exchange gap appears which can be filled by foreign aid.

Structurally, the two gaps are represented in terms of the national income accounting identities as follow using the aggregate expenditure equals aggregate output approach

$$E - Y \equiv M - X \equiv I - S \equiv F \dots\dots\dots(1)$$

Where, E is national expenditure, Y is national output and income, I is investment, S is saving, M represents imports, X is exports and F represents net capital inflow.

Such that, when aggregate expenditure, E is more than the aggregate output, Y then the economy requires foreign capital inflow or aid, F in order to meet the short fall in income. The short fall, however, would be from domestic savings being less than the required investment, that is, a savings gap ( $I - S$ ) and from foreign exchange required for import being more than net earnings from export, that is, a foreign exchange gap ( $M - X$ ). Yet the foreign aid required to fill the gap (short fall) is determined by the dominant gap at a given point in time. If the savings gap is larger than the foreign exchange gap, the economy is said to be in a savings constraint.

On the other hand, if the foreign exchange gap is larger than the savings gap, the economy is in a foreign exchange constraint. Since these gaps are different and independent then the foreign aid required in each gap would be necessarily different. Essentially, if domestic investors (via domestic commercial banks) gain access to world financial markets, the savings gap and foreign exchange gap could be overcome by the

financing domestic (excess) investment out of the savings from high income countries (HICs) that is, by the inflow of capital.

### III. Model Specification

The above brings the relationship between foreign aid and the economic development of developing economies. By mathematical implication from the two gap model it shows that economic growth can be expressed as a function of foreign aids. That is;

$$g_t = f(F_t, E_t, \mu_t) \dots \dots \dots (2)$$

Where  $g_t$  is the growth of the developing economy,  $F_t$ , is the foreign aid volume the developing economy is able to access,  $E_t$  represents other endogenous variables of factors that determines growth and  $\mu_t$  is the stochastic variable.

$E_t$  Which is other factors that determine growth can be defined within the national income equation. Through this equation, governments directly and indirectly influence the way resources are used in the economy. The basic equation of national income accounting helps show how this happens:

$$GDP = C + I + G + NX \dots \dots \dots (3)$$

Therefore  $E_t$  comprises of C, I, G, and NX.

On the left side is gross domestic product (GDP)—the value of all final goods and services produced in the economy (see “Back to Basics,” F&D, December 2008). On the right side are the sources of aggregate spending or demand—private consumption (C), private investment (I), purchases of goods and services by the government (G), and exports minus imports (net exports, NX). This equation makes it evident that governments affect economic activity (GDP), controlling G directly and influencing C, I, and NX indirectly, through changes in taxes, transfers, and spending. Fiscal policy that increases aggregate demand directly through an increase in government spending is typically called expansionary or “loose.” By contrast, fiscal policy is often considered contractionary or “tight” if it reduces demand via lower spending. Besides providing goods and services, fiscal policy objectives vary.

The functional implication of the relationship in equation 3 is that the growth of an economy can be expressed as:

$$g_t = f(C_t, I_t, G_t, NX_t) \dots \dots \dots (4)$$

This indicates that the growth of an economy proxy be GDP can be a function of consumption expenditure, gross investment (which can be proxy be gross capital formation), government expenditure (which can represent fiscal policy) and net export ( income from abroad).

Merging equations 2 and 4 to arrive at a broader definition of factors that determine growth then, we have:

$$g_t = f(F_t, C_t, I_t, G_t, NX_t, \mu_t) \dots \dots \dots (5)$$

Since  $E_t$  comprises of C, I, G, and NX

Equation 5 can be presented in linear form thus;

$$g_t = \emptyset + \partial F_t + \beta E_t + \mu_t \dots \dots \dots (6)$$

This study is aimed at accessing how fiscal policy behaviours ( G ) has affected foreign aid consequently, we make  $F_t$  the subject of the formula and leads us to equation 7:

$$F_t = (-\theta)(g_t + E_t) + \mu_t \dots \dots \dots (7)$$

Where,  $-\theta$  represents the combined intercepts of the explanatory variables. The model expressing the relationship between foreign aid and fiscal behaviour in Nigeria follows equation 7 thus;

$$F_t = \alpha_0 + \alpha_1 TGR + \alpha_2 TGE + \alpha_3 GDP + \alpha_4 CAP + \alpha_5 EXR + \mu_t \dots \dots \dots (8)$$

#### Definition and description of variables

$F_t$  is the foreign aid : the is measured by the Net official development assistance and official aid received ODA in USD

TGR is the total government revenue: this is measured by total tax revenue, both oil and non oil revenue and net revenue from abroad. Its measured in naira

TGE is the total government expenditure: this is measured by the gross expenditure of the central government. It comprises of both the capital and recurrent expenditures. It is also measured in naira.

GDP is the gross domestic product: it refers to the sum total of monetary values of goods and services produced within a country in a period of a year.



CAP is the capital formation: it represents the gross investment and it is measured by gross fixed capital formation.

EXR is the official exchange rate: this is measured by the average naira to USD dollars exchange rate annually.

**Sources of data**

Data on ODA are sourced from the database of World Bank while data on total government revenue and expenditure, gross domestic product, gross capital formation and exchange rate are all sourced from the Central Bank statistical bulletin 2013 edition.

**Estimating Techniques**

**Chow Test**

Another alternative estimation technique to be employed in this empirical investigation is chow test. According to Gujarati (2007), Chow test is meant for testing for structural or parameter stability of regression model. That is when we use a regression model involving time series data, it may happen that there is structural change in the relationship between the regressand and the regressors. By structural change, we mean that the values of the parameters of the model do not remain the same throughout the entire time period. However, to show the effect of trade policy reforms on private investment behaviour, this technique will be used to know whether the policy changes have significant influence on investment or not.

How do we find out that a structural change has in fact occurred? We will consider the time series data of equation 8 above and we will obtain an estimated equation for foreign. By doing that, we are maintaining that the relationship between these variables has not changed over the span of 43 years. To effect this, we now divide our samples into two time periods of 1970-1984 and 1985-2012, the PRE-SAP and SAP periods respectively which now give rise to three possible regressions:

$$\text{Time Period 1970-1984: } \text{PI}_t = \lambda_1 + \lambda_2 X_t + \mu_{1t} \quad n_1 = 15 \quad (9)$$

$$\text{Time Period 1985-2012: } \text{PI}_t = Y_1 + Y_2 X_t + \mu_{2t} \quad n_2 = 28 \quad (10)$$

$$\text{Time Period 1970-2012: } \text{PI}_t = \alpha_1 + \alpha_2 X_t + \mu_t \quad n_t = (n_1 + n_2) = 43 \quad (11)$$

Where X represents other explanatory variables in equation 8 and regression 10 assumes that there is no difference between the two time periods and therefore estimates the relationship between foreign aids and other variables for the entire time period consisting of 43 observations.

The  $F_{cal}$  ratio which is known as the Chow test is computed as follows:

$$F^* = \frac{\Sigma e_p^2 - (\Sigma e_1^2 + \Sigma e_2^2) / K}{(\Sigma e_1^2 + \Sigma e_2^2) / (n_1 + n_2 - 2K)} \dots \dots \dots (12)$$

Where:  $e_p^2$  is the pooled unexplained variation

$e_1^2$  is the unexplained variation from sample one

$e_2^2$  is the unexplained variation from sample two

$n_1 + n_2 - 2K$  is the degrees of freedom

$n_1$  and  $n_2$  are sample sizes for one and two respectively

K is the total number of parameter estimates including intercept

The above gives the calculated value of the F-ratio which will be compared with the tabulated value that will be obtained through  $n_1 + n_2 - 2K$ , Chow (1960).

**IV. Data Analysis, Results and Discussions**

This section of the study covers both presentation of the empirical results as well as analysis and findings from the study. Firstly descriptive analysis is used to describe the pattern of both foreign aid to Nigeria and some important fiscal variables within the period under review.

**Descriptive analysis**

**Table 1: Correlation matrix**

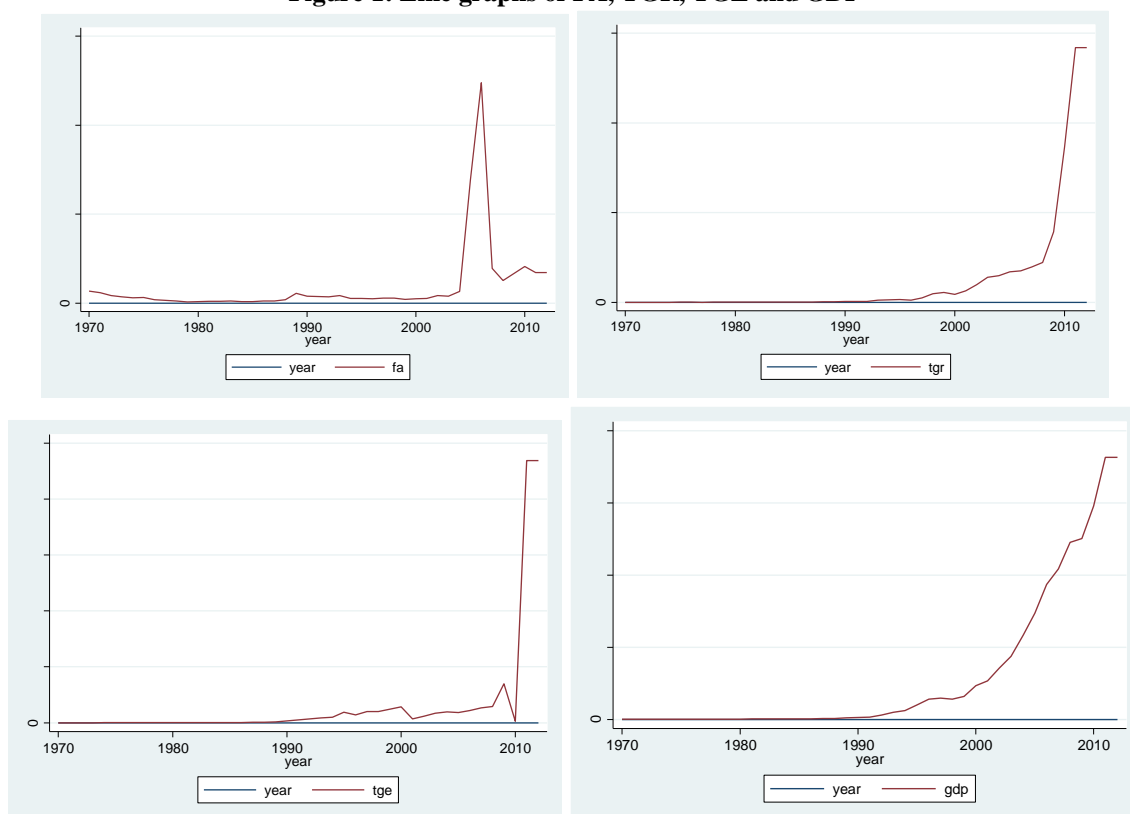
	FA	TGR	TGE	GDP	CAP	EXR
FA	1.00					
TGR	0.2256	1.00				
TGE	0.1219	0.9057	1.00			
GDP	0.4509	0.8828	0.7137	1.00		
CAP	0.5278	0.6821	0.4999	0.9168	1.00	
EXR	0.4717	0.6630	0.4920	0.8675	0.9706	1.00

Source: Authors computation

Table 1 describes the possible relationship between foreign aid and some important fiscal variables as well as other macroeconomic variables used in the study. As shown from the table positive correlation is obtained between foreign aid and other explanatory variables especially the fiscal variables. Germane to our study is the correlation between foreign aid and government revenue which is an important indicator of fiscal behaviour. Though the coefficient is low but it is a direct relationship. Similar relationship is obtained between government expenditure which is an important factor that determine fiscal behaviour and foreign aid. Expectedly positive relationship is obtained between foreign aid and other macroeconomic variables such as GDP, gross capital formation CAP and exchange rate.

These findings suggest a contrary view to the group of authors that believes declining government expenditure should attract more foreign aids (Easterly, Levine, and Roodman, 2004). To show the pattern of core fiscal variables and foreign aid movement during the period under review, the following line graph is plotted. Figure 1 contains line graph of foreign aid, total government revenue (TGR), total government expenditure (TGE) and gross domestic product (GDP) between 1970 and 2012.

**Figure 1: Line graphs of FA, TGR, TGE and GDP**



Source: Authors computation

Figure 1 shows that all the fiscal variables including the GDP show rising trends. But foreign aid after initial unpleasant movement shows a falling trend except in the early 2000s and it shoots up but it nose dives sharply toward 2010. The trend is an indication that there has been decline in the foreign aid available to Nigeria in the recent times. This is part of the reasons why the study needs to assess the role of deregulation on foreign aid accessibility. To determine if the adoption of SAP which marks the beginning of deregulation has changed the relationship between the Nigerian fiscal system and foreign aid accruing to the country, and more precisely, the impact of the behaviour of fiscal policy on foreign aid in the light of economic deregulation.

**Chow Test**

Deregulation has been identified as an important factor that can affect the behaviour of fiscal policy and its impact on foreign aid. It should be noted that Nigeria economy became deregulated in 1985 after the adoption of structural adjustment program (SAP). Therefore periods before 1985 were seen as regulated period while periods after 1985 are the deregulated periods. Chow test is employed for this purpose and the analysis is as follows; Table 2 shows the identities and estimated values of the variables to be used in the chow test.



**Table 2 Identification of chow test variables**

Variables	Meaning	Estimated values
Unexplained variation of pooled model $\Sigma e_p^2$	Sum square of residual of pooled data	25.7988547
Unexplained variation of model one $\Sigma e_1^2$	Sum square of residuals of sample I before deregulation	.567649021
Unexplained variation of model two $\Sigma e_2^2$	Sum square of residuals of sample II after deregulation	15.1828178
Degree of freedom $v_1=K$	Number of parameter estimates	6
Degree of freedom $v_2=n_1 + n_2 - 2K$	$n_1$ is the number of observation in sample I. $n_2$ is the number of observations in sample II	$n_1=15, n_2=28$
$F_{0.05}$	Tabulated value of the F ratio	2.42

The F calculated or the F\* ratio is described by the following equation:

$$F^* = \frac{\Sigma e_p^2 - (\Sigma e_1^2 + \Sigma e_2^2) / K}{(\Sigma e_1^2 + \Sigma e_2^2) / (n_1 + n_2 - 2K)} = 3.93$$

The Null hypothesis  $H_0$ : Deregulation does not have significant effect on the rate at which fiscal behaviour influences foreign aids.

The Alternative hypothesis  $H_1$ : Deregulation has significant effect on the rate at which fiscal behaviour influences foreign aids.

From the chow results, the calculated value of F ratio is greater than the tabulated value F ratio that is  $F^* > F_{0.05}$

Based on the foregoing we reject  $H_0$  that is the null hypothesis and accept the alternative hypothesis thus; indicating that deregulation in Nigeria has significantly affected the impact of fiscal behaviour on foreign aid.

The results from the chow test indicates that, the effect of adoption of SAP in Nigeria which actually brought deregulation has been felt significantly on the contributions of fiscal behaviour to the accessibility of foreign aid in Nigeria. Evidence from the findings is pointers towards the fact that deregulation of Nigerian economy have a pronounced effect on the relationship between fiscal policy practice and foreign aid in Nigeria.

Findings from the study have shown that deregulation changed the impact of fiscal policy on foreign aid during the period under review. It will be noted from the descriptive analysis that a positive relationship was obtained also from table1 and from figure 1 foreign trade started witnessing a rising trend immediately after 1985 and maintained it till around 2010. Though there were some little lows along the line. But all these periods both government revenue and government expenditure were also on the rise. This is contrary to the views Christopher, (2004) and World Bank, (2013) that a reduction in government expenditure could attract more foreign aid.

Since the deregulation of Nigerian economy the upward trend of both government expenditure and government revenue has continued to be accompanied with a rise in foreign aid. However, it appears that deregulation only aided the positive relationship up to 2010. In other words this form of relationship could not be sustained till the recent times. This is evident in the fact that foreign trade nose dives and fall drastically since 2010 and yet government revenue and expenditure are still on the rise.

## V. Conclusion and Recommendation

### Conclusion

It can be concluded from the study that deregulation does not have a sustainable positive impact on the relationship between fiscal behaviour and foreign aid in Nigeria. Deregulation appears to improve the contributions of Nigeria fiscal system to foreign aid accessibility initially but lately that positive effect has died off. Findings from the study tallies with the conclusion of Christopher (2004) that donor agencies might likely favour a deregulated economy more than a regulated or centrally controlled economy. Notwithstanding, there seems to be a problem lately with this trend as foreign aid to Nigeria has continued to fall recently.

### Recommendation and suggested areas for further study

Based on the foregoing, a thorough assessment and review of fiscal behaviour and the deregulation policy should be done with a view to ascertaining why positive contributions of deregulations to fiscal behaviour and foreign aid relationship is not sustained. However, literatures have shown that fiscal behaviour is highly susceptible to some shocks both external and internal that can weaken the impact of deregulation on it, Christopher (2004). Consequently, area for further study in this regard is an assessment of shocks that can perturb fiscal behaviours in Nigeria and the degree of response of fiscal policy to those shocks. This will go a

long way to unravel the cause of unsustainable positive deregulation effect on the relationship between the fiscal system and foreign aid in Nigeria.

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