

## **Does Developmental Aid Impact or Impede on Growth: Evidence from Nigeria**

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**ABSTRACT:** This paper examines the effect of four different types of developmental aid on economic growth in Nigeria utilizing the Two-Stage Least Square (2SLS) estimation technique between 1970 and 2012. The empirical estimates show that multilateral aid had more impact on growth compared to bilateral aid from Nigerian's trading partners, top-five CDI ranked countries, and Nordic countries. Our findings support the need for stringent conditionalities and standard monitoring and evaluation framework by donors in order to promote meaningful impact of developmental aid on economic growth.

**Keywords:** Developmental aid; Economic Growth; Nigeria

**JEL Classifications:** O1; O2; O4

### **1. Introduction**

Developmental aid has been the highest source of external funding in Less Developed countries including Nigeria. One major characteristic of these economies is the issue of budget constraint which has slow down growth and development overtime. The availability of development aids is belief to either relax budget constraint of a country or influence its expenditure. It can also work in stimulating economic growth thereby supplementing available sources of finance such as revenue, capital investment and capital stock of a country.

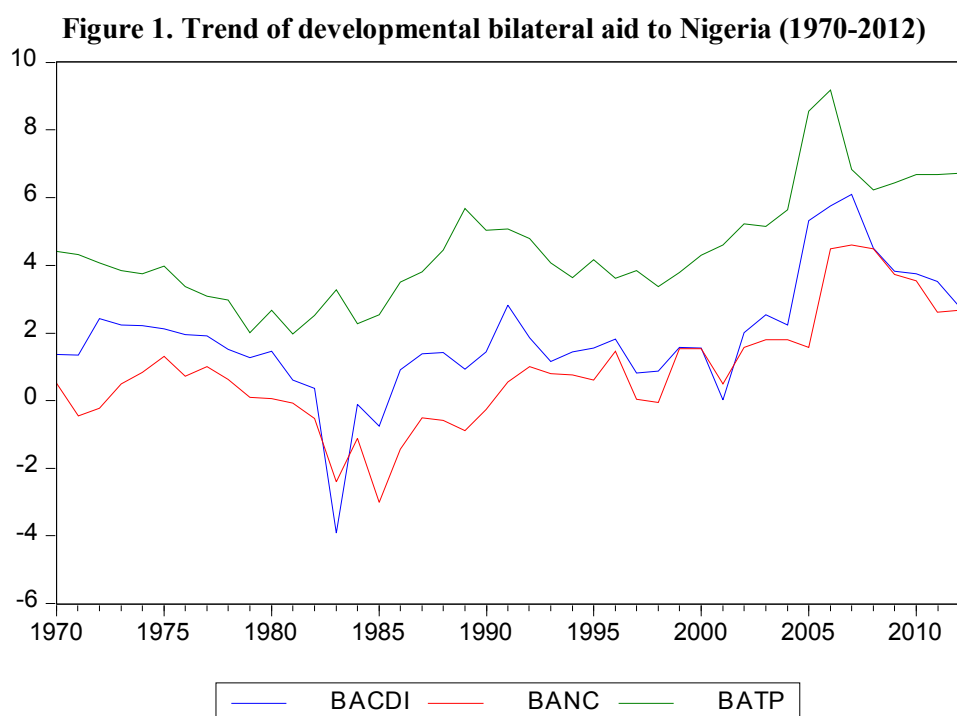
The net average volume of Official Development Aid (ODA) to Nigeria between 1970 and 1979, 2000 and 2009 ranges from US\$317million and US\$2620 million. Average capital growth rate for these periods stood at N2, 427.5million and N601, 878.85million respectively. In 2005, the country was the second largest recipients of ODA, and ranked among the tenth highest recipients in Africa, between the periods of 2009 to 2011. Total net bilateral development aid in these same periods stood at US\$1657 million, US\$2062 million, and US\$1813 million respectively. However, this influx of ODA has not been used for the appropriate purposes. For instance, much of aids received were simply looted, while recovered funds were simply re-looted. According to the economic and financial crime commission in 2005, the total numbers of looted ODA fund was about \$5006 billion, which is equivalent to total aid to other countries in Africa over the past decades.

Theory and practice have shown the usefulness of aid, but with little evidence on the disaggregation of developmental aid and their impact on growth. To account for the true impact of aid, Tarp (2006), adopts the use of Two Stage Least Squares (2SLS), to correct for plausibility of endogeneity encountered in most aid-growth studies. The 2SLS which is an equation by equation technique produces a consistent estimate if the predetermined variables included in the equation to be estimated are in the set of instrumental variables. This implies that the instrumental variables must be uncorrelated with the error disturbance term and correlated with the endogenous variables in the model.

Hence, this study examines aid-growth nexus by disaggregating development aid and accounting for the plausibility of endogeneity through the use of 2SLS estimation technique. Section 2 shows the profile of aid, and growth since 1970 to 2012. Literature review is provided in section 3. Section 4 explains the methodology and data used. Section 5 is the empirical results while the last section concludes the paper.

## 2. Stylized Fact

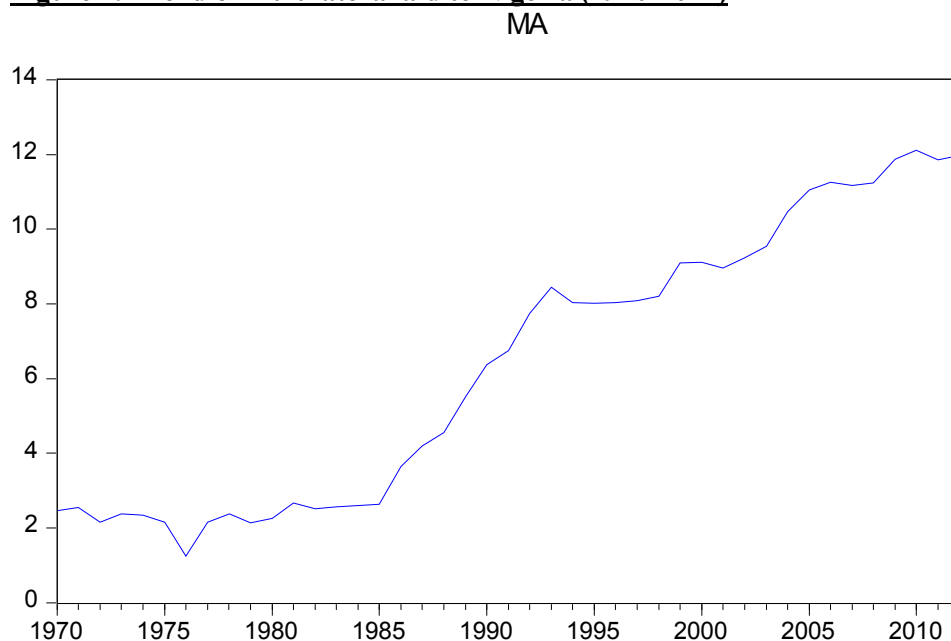
The inflow of ODA to Nigeria from 1970 to 2010 are shown in the figures below, all trends are plotted in logarithm forms of the data. Bilateral aids flows are of three categories - bilateral aid from top-five CDI Ranked countries (BACDI), bilateral aid from Nordic countries (BANC), and bilateral aid from Nigerian's trading partners (BATP) (figure 1). The influx of BATP supersedes any other category of bilateral aids. As at 1970, BATP stood at 81.68 compared to BACDI and BANC which were 1.68 and 3.99 respectively. However, BANC dropped sharply between the first half 1980s, but gradually increases over time. Other categories show a significant increase over the mid-periods of 2000s.



**Note:** BACDI = bilateral aid from top-five CDI Ranked countries; BANC = bilateral aid from Nordic countries; and BATP = bilateral aid from Nigerian's trading partners. The flow of BATP supersedes any other category of bilateral aids. As at 1970, BATP stood at 81.68 compared to BACDI and BANC which are 1.68 and 3.99 respectively. However, BANC dropped sharply between the first half 1980s, but gradually increases over time. Other categories show a significant increase over the mid-periods of 2000s.

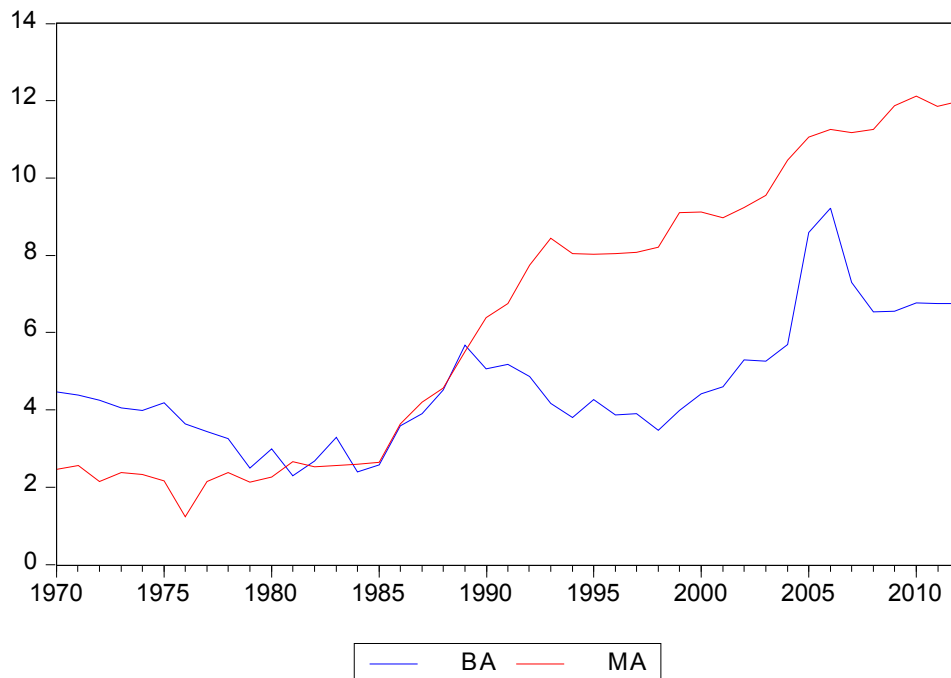
Figure 2, depicts the trend of multilateral aids as increasing over the period of time. Precisely, early periods of 1990s show a sharp increase of multilateral aids flow, while the period after witnessed a gradual increase of this category of aid. Total bilateral and multilateral aids are tracked in figure 3. During the earlier periods of 1970s, total bilateral aids exceed multilateral aids (figure 3). This disparity cannot be far-fetched, bilateral aids which comes through the Development Donor Countries (DAC) are seen as free monies with less stringent conditions as against multilateral aid which are mostly tied to agencies conditionality. However, the periods of 1990s and 2000s witnessed an increase in the influx of multilateral, thus making it exceed the bilateral aids.

**Figure 2. Trend of multilateral aid to Nigeria (1970-2012)**



Note: MA = multilateral aid

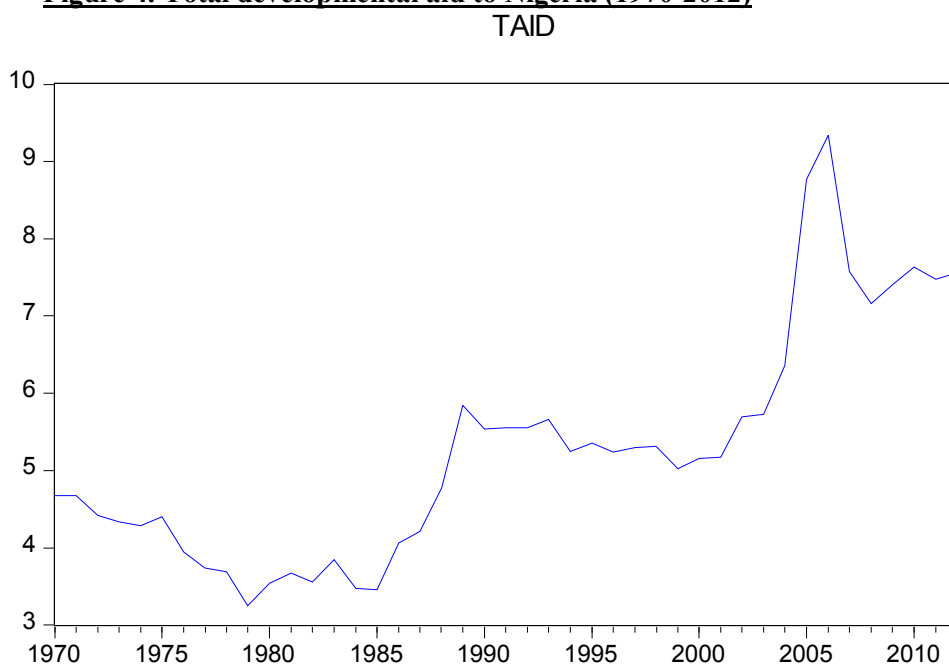
**Figure 3. Trend of total bilateral and multilateral aid in Nigeria (1970-2012)**



Note: BA = bilateral aid; and MA = multilateral aid

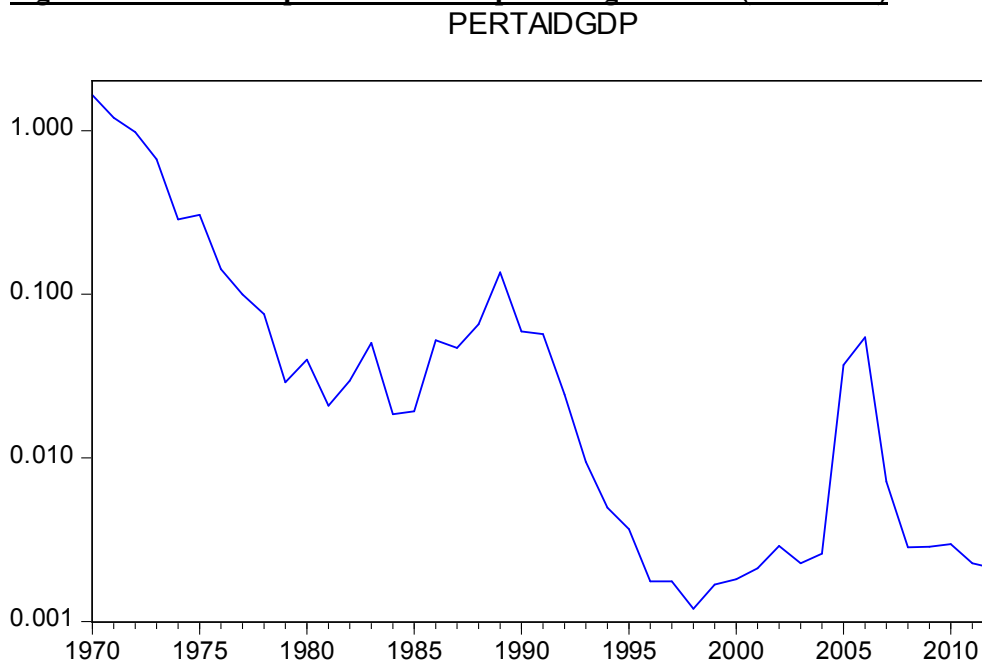
In figure 4, total aid between the periods of 1970 to 2010 depicts a kind of oscillatory movement. It peaked in the 1990s and mid 2000s but the growth became unsustainable the periods thereafter.

**Figure 4. Total developmental aid to Nigeria (1970-2012)**



**Note:** TAID = Total developmental aid

**Figure 5. Total developmental aid as a percentage of GDP (1970-2012)**



In 1970 and 1971, the share of total aid in GDP was as high as 165 per cent and 119 per cent respectively, but fell to 2 per cent in 1981 and 1982. In 1989, it remarkably increases to about 14 per cent, and continue to reduce thereafter. It peaked again to 4 per cent and 5 per cent in 2005 and 2006.

### **3. Literature Review**

A detailed framework of growth aid nexus is premised upon Harrod-Domar (1939) and Chenery and Strout (1966) gap model (Hansen and Tarp, 2000; Alice, 2012). The saving-gap model as explained by Harrod-Domer, opines that every economy saves a certain proportion of its income to replace worn-out capital. In order to grow, new investment representing net additions to capital stock are necessary. This explained the “capital constraint hypothesis”, which justifies the massive transfer of capital as well as technical assistance from developed to Less Developed countries. The foreign exchange-gap hypothesis as propounded by Chenery-Strout emphasis increase in export earnings as prerequisite for importation of capital goods needed for investment (Mercieca, 2010).

Accordingly, the study carried out by Hansen and Tarp (2000) shows a remarkable impact of aid on growth. The study dwells on cross country effectiveness of aid; endogeneity and country specific effects using Ordinary Least Squares (OLS) and Generalized Method of Moment (GMM) estimation techniques. Their analysis reveals a positive relationship between foreign aid and growth in real GDP per capita. The study also shows the importance of capital accumulation in the analysis of growth-aid nexus. Arndt, Jones and Tarp (2009) apply a micro-econometric model over long time period (1970-2000 and 1960-2000) and found that aid has a statistical and positive significant causal effect on growth.

However, several studies have continued to argue the effectiveness of aids. It is been argued that even if aid is useful for economic growth at the initial stages: development comes through indigenous efforts and not through foreign aids. On empirical ground, Burnside and Dollar (2000); Brautigam and Knack (2004) and Salisu and Ogwumike (2010) used panel data and found evidence of negative impact of aid on growth as a result of poor macroeconomic environment. In the same vein, Saif and Omet (2005) used Vector Auto- regression Correction model and impulse response for the period of 1975 to 2004 in Jordan. Their result also shows a negative impact of aid on recurrent and capital expenditure as well as domestic revenue. A study by Easterly (2003) also reveals a negative relationship between aids and growth, but argued that the results are sensitive to change in data set. Williamson (2009) also reveals the negative impact of aids based on the fact that government and aid agencies are not capable of creating either incentive or the information necessary to achieve development.

However, some other studies show empirical evidence of positive impact of aids. A study by Dalgaard et al. (2004) and Shahzad et al. (2011), show the evidence of positive impact of aid on growth. Reddy and Minoiu (2009) using a cross –country analysis for the period of 1960-2000, disentangle the effects of two component of aid to account for aid-financed investment in economic infrastructure and human capabilities in some selected developing countries. Their results reveal that developmental aid had positive and significant impact on growth in the long-run. Adopting Johansen cointegration test and Error Correction Mechanism (ECM), Fasanya and Onakoya (2012) reveals a positive effect of total aid on growth in Nigeria. However, this paper did not account for the possibility of endogeneity and it also an aggregated analysis of the impact of aid on growth.

### **4. Methodology and Data**

In line with Reddy and Minoiu (2009) the aid-growth nexus functional form is expressed as:

$$RGDPL = f(DA, NDA, \varphi) \quad (1)$$

Where RGDPL is define as growth of per capita gross domestic product; DA is developmental aid; NDA is non-developmental aid; and  $\varphi$  represents vector of control variables.

From empirical findings, developmental aids have been found to impact more on growth more than non-developmental aid. Therefore, equation (1) is re-specified to account for only developmental aid. Thus:

$$RGDPL = f(DA, \varphi) \quad (2)$$

Augmenting the definition and categorization of developmental aid by Reddy and Minoiu (2009), this study considers four category of developmental aid namely: multilateral aid; bilateral aid from Nordic countries (Denmark, Finland, Norway, Iceland and Sweden); the top-five growth induced aid donor

countries based on 2013 Commitment to Development Index (CDI) (Denmark, Sweden, Norway, Luxembourg and Netherland); and bilateral aid from main trading partners of Nigeria (France, Germany, Japan, Netherland, Spain, united Kingdom and United State of America)<sup>1</sup>. Based on these definitions, equation (2) is specified in four different ways:

$$RGDPL = f(MA, \varphi) \quad (3)$$

$$RGDPL = f(BANC, \varphi) \quad (4)$$

$$RGDPL = f(BACDI, \varphi) \quad (5)$$

$$RGDPL = f(BATP, \varphi) \quad (6)$$

Where MA is multilateral aid; BANC is bilateral aid from Nordic countries; BACDI is bilateral aid from top-five countries based on CDI; and BATP is bilateral aid from Nigerian's main trade partners.  $\varphi$  is control variables like government size measured as percentage share of total government expenditure/GDP, net export, gross domestic savings, exchange rate, lagged value of aid and dummy for regime shift to capture political stability.

From equation (3) to (6), the Two-Stage Least Square models estimated are expressed as:

$$rgdpl_t = \alpha_0 + \alpha_1 ma_t + \alpha_2 gov_t + \alpha_3 nex_t + \alpha_4 gds_t + \alpha_5 x_t + \alpha_6 ps_t + \eta_t \quad (7)$$

$$rgdpl_t = \beta_0 + \beta_1 banc_t + \beta_2 gov_t + \beta_3 nex_t + \beta_4 gds_t + \beta_5 x_t + \beta_6 ps_t + \mu_t \quad (8)$$

$$rgdpl_t = \phi_0 + \phi_1 bacdi_t + \phi_2 gov_t + \phi_3 nex_t + \phi_4 gds_t + \phi_5 x_t + \phi_6 ps_t + \nu_t \quad (9)$$

$$rgdpl_t = \theta_0 + \theta_1 batp_t + \theta_2 gov_t + \theta_3 nex_t + \theta_4 gds_t + \theta_5 x_t + \theta_6 ps_t + \varepsilon_t \quad (10)$$

Time series secondary data spanning the period 1970 to 2012 were used for analysis. The secondary data were obtained from such publications as Organisation of Economic Co-operation and Development (OECD), Penn table, Central Bank of Nigeria statistical bulletin and International Financial Statistics.

The four specified models are over-identified; therefore the Two-Stage Least Squares (2SLS) systems technique was applied. In addition, all variables are in natural logarithms except for exchange rate and political stability (proxy with a dummy where 1 represent civil rule period and 0 for military rule). To validate the instruments used, the J-statistics (along with p-values) and Cragg-Donald F-statistics were conducted. The J-statistics on one hand was used to validate the instruments. The decision rule is that the larger it is, the more likely the instruments are invalid. While Cragg-Donald F-statistics on the other hand was used to test the weakness of the instruments.

## 5. Empirical Results

The results on the effect of the different types of developmental aid on economic growth are presented in tables 1-4. It is evident from tables 1-4 that the four different types of developmental aid considered in this study had positive impact on growth (measured by real GDP per capita); with multilateral aid having the largest significant coefficient of 0.283, followed by bilateral aid from Nigerian's trading partners (0.177), bilateral aid from the top-five CDI ranked countries (0.166), and bilateral aid from Nordic countries (0.124). The results also show that net export and political stability had significant positive impact on growth. This imply that the kind of regime practice in Nigeria affect growth significantly. The J-statistics and Cragg-Donald F-statistics reveal that the instruments are valid and not weak.

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<sup>1</sup> Three out of the main trading partners of Nigeria (China, Brazil and India) were not included due to lack of data

**Table 1. The effect of multilateral aid on economic growth**

Variable	Dependent Variable: lnrgdpl	
	Coefficient	t-statistic
Constant	8.186*	11.316
Lnma	0.283*	4.018
Lngov	-0.294	-0.475
Lnnex	0.008	1.285
Lngds	-0.171**	-2.208
X	0.684*	6.937
PS	0.336*	4.100
R <sup>2</sup>	0.794	
Adj R <sup>2</sup>	0.795	
DW	1.842	
J-statistic	18.749	
Prob (J-statistic)	0.0001	
<b>Instruments:</b> lnrgdpl(-1) lnma(-1) lngov(-1) lnnex(-1) X(-1) lngds(-1) PS(-1)		
<b>Cragg-Donald F-statistics:</b> 3.066		

Note: \* and \*\* depict significance at the 1% and 5% levels respectively

Source: Authors' computation

**Table 2. The effect of Nordic countries' bilateral aid on economic growth**

Variable	Dependent Variable: lnrgdpl	
	Coefficient	t-statistic
Constant	7.189*	17.661
Lnbank	0.124*	7.224
Lngov	-0.711	-1.788
Lnnex	0.004	1.008
Lngds	0.023	0.626
X	0.856*	18.044
PS	0.148*	2.694
R <sup>2</sup>	0.832	
Adj R <sup>2</sup>	0.829	
DW	1.778	
J-statistic	13.217	
Prob (J-statistic)	0.0001	
<b>Instruments:</b> lnrgdpl(-1) lnbank(-1) lngov(-1) lnnex(-1) X(-1) lngds(-1) PS(-1)		
<b>Cragg-Donald F-statistics:</b> 2.673		

Note: \* depict significance at the 1% level

Source: Authors' computation

**Table 3. The effect of top five CDI countries bilateral aid on economic growth**

Variable	Dependent Variable: lnrgdpl	
	Coefficient	t-statistic
Constant	7.161*	15.934
Lnbacdi	0.166*	5.416
Lngov	-0.326	-0.569
Lnnex	-0.006	-0.960
Lngds	0.001	0.035
X	0.897*	16.974
PS	0.217*	2.954
R <sup>2</sup>	0.791	
Adj R <sup>2</sup>	0.787	
DW	1.526	
J-statistic	3.113	
Prob (J-statistic)	0.077	
<b>Instruments:</b> lnrgdpl(-1) lnbacdi(-1) lngov(-1) lnnex(-1) X(-1) lngds(-1) PS(-1)		
<b>Cragg-Donald F-statistics:</b> 4.246		

Note: \* depict significance at the 1% level

**Table 4. The effect of Nigerians' trading partners' bilateral aid on economic growth**

Variable	Dependent Variable: lnrgdpl	
	Coefficient	t-statistic
Constant	5.901*	7.119
Lnbatp	0.177*	3.901
Lngov	0.292	0.404
Lnnex	0.002	0.283
Lngds	0.068	0.975
X	0.785*	8.287
PS	0.151***	1.761
R <sup>2</sup>	0.896	
Adj R <sup>2</sup>	0.893	
DW	1.862	
J-statistic	14.635	
Prob (J-statistic)	0.001	
<b>Instruments:</b> lnrgdpl(-1) lnbatp(-1) lngov(-1) lnnex(-1) X(-1) lngds(-1) PS(-1)		
<b>Cragg-Donald F-statistics:</b> 5.609		

Note: \* and \*\*\* depict significance at the 1% and 10% levels respectively

## 6. Concluding Remark

Development aid has been the highest source of external funding in Less Developed countries including Nigeria. This study therefore examined the effect developmental aid on economic growth in Nigeria, utilizing data from 1970-2012. The Two-Stage Least Squares (2SLS) estimation technique was used. Four different types of developmental aid namely; multilateral aid, bilateral aid from Nigerian's trading partners, top-five CDI ranked countries and Nordic countries. The empirical results showed that multilateral aid impacted more on economic growth followed by bilateral trade from Nigerian's trading partners, top-five CDI ranked countries, and Nordic countries respectively. Going by these results, we concluded that multilateral aid and the three types of bilateral trade considered have impacted on growth in Nigeria. Hence, aid donors should put in place stringent conditionalities and good monitoring and evaluation framework to reduce aid uncertainty so that aid would have more meaningful impact on growth.



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