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Foreign Aid Growth and Determinants in Nigeria: An Autoregressive Framework

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Abstract: This study examines the growth and determinants of foreign aid allocation to Nigeria. This study is necessitated by the fact that most studies examines this issue with either panel data analysis or cross country analysis framework, which do not really show specific country characteristics and moreover, there is no time series analysis on the determinants of foreign aid allocation in Nigeria. The study employed Ordinary Least Square method of estimation with an autoregressive model to examine the short run and long run coefficients of the determinants. Data for the study were mainly secondary source extracted from the World Development Indicator, 2007. The study revealed that both at the short run and steady state, national income per capita, total debt service, population and domestic saving all have positive impacts in the determination of foreign aid allocation to Nigeria. However, net barter term of trade has negative impact on it. The study then recommends that policies aim at reducing the dependency and proper use of foreign aid be implemented.

Key words: Per capita income, foreign aid, domestic savings, total debt service, short run coefficient, long run coefficient

INTRODUCTION

The benefits of foreign aid have recently been under severe scrutiny. Several observers argued that a very large portion of foreign aid flowing from developed to developing countries is wasted and only increases unproductive public spending. Poor institutional development, corruption, inefficiencies and bureaucratic failures in the developing countries are often cited as reasons for the result (Alesina and Dollar, 1998; Furuoka, 2008). While there are many reasons for giving foreign aid, a major argument for such aid is that this assistance will increase the rate of economic growth in countries, which are recipient of aid. These expectations of aid induced growth however have often been unrealistic. The explanation is that aid largely goes to consumption rather than productive activities which crowd-out domestic savings and investment. Nigeria is among the African countries ranks low on international comparisons. The country occupies most of the bottom places in income per capita, percentage of population living in poverty, life expectancy, AIDS prevalence, literacy, infant mortality and human development index among others. Nigeria is also a huge growth disappointment in the last four decades having the worst growth rates in the world. The west has responded to Nigeria tragedy by intensive involvement of foreign aid agencies and international organization. On the average, African countries which Nigeria is not an exception receives much more aid as percentage of its income than other developing countries and has spent more time on International Monetary Fund (IMF) programmes (Easterly, 2005).

Recent years have seen a surge in calls for more foreign aid to Africa in order to eliminate the continent's poverty. Developed countries, international organizations and other Philanthropists have all made renewed pleas for a massive infusion of development aid to Africa. Experts who argued in favour of more aid to Africa are of the view that injecting more foreign aid would materially benefit its people. The role of western assistance in alleviating Africa extreme poverty depends on various theories on why Africa is poor. Economists overtime have insinuated different models of poverty that have different implications for foreign aid. These include the big push models and foreign aid, project intervention (education, health and infrastructure), models of policies and growth as well as aid, institutions and development. Based on these theories and others, several researchers have examined empirically the determinants of aid allocation and its impact on recipient countries.

A recent research by Furuoka (2008) studied the determinants of aid allocation, which he adopted Arellano and Bond Generalized Method of Moment (GMM) type of estimator for 152 developing countries for the period 2000-2005. The empirical findings revealed a complex nature of foreign aid allocation with a dynamic panel model but the static panel model indicated that aid donors tended to provide larger amounts of foreign to poorer countries. The study specifically examined four determinants vis-à-vis: gross national product per capita, total debt services, net barter terms of trade and total population of recipient countries.

Akonor (2008) examined foreign aid impact to Africa using theoretical and descriptive quantitative analyses

revealed that aid is not a panacea for Africa's development woes. The study revealed further that foreign aid has so far created a welfare continent mentality and has become the hub around which the spokes of most African economies turn. The study also stated that dependency on foreign aid has compromised the sovereignty of African countries and that it is very unfortunate that aid has taken >50% of Sub-Saharan African countries budgets and seventy percent of their public investment.

Alesina and Weder (2002) studied the effect of corrupt governments on aid allocation for 20 developing counties. The study adopted a panel analysis and as well Tobit model for 5 year. The study revealed that there is no evidence of less corrupt countries receiving more foreign aid and the study never uncovered any weak evidence of a negative effect of corruption on received foreign aid.

Alesina and Dollar (1998) studied the pattern of foreign aid allocation from various donors to receiving countries. The study revealed that the direction of foreign aid is dictated by political and strategic considerations of the recipients and that colonial past and political alliances are the major determinants of foreign aid. The study used probit model to estimate the likelihood that a developing country receives aid and also adopted Tobit model to estimate the response of the aid flow to the variables.

Burnside and Dollar (2000) studied the interactions among choice of macroeconomic policies and growth and revealed that aid is beneficial to countries that adopt appropriate and stable policies. However, the study revealed no evidence that foreign aid encourages the adoption of good macroeconomic policies. The study then showed that foreign aid is a waste to countries without appropriate and stable domestic policies.

This study intends to contribute to this discussion by analyzing the determinants of foreign aid allocation to Nigeria. The studies that examined the determinants of foreign aid especially in Africa excludes savings rate as one of the determinants.

The main thrust of this study is to include savings as a determinant of foreign aid and examine their relationship empirically since in the big push model, low saving on the part of most developing countries is the brain behind the need for foreign aid.

MATERIALS AND METHODS

Data definition and source: With the aim of examining the determinants of foreign aid allocation, this study shall employ Nigeria annual series data from 1980-2007. These series include overseas development assistance as a proportion of GNP (ODA), National Income per capita (GNI), Total Debt Service payment (TDS), net Barter Term of Trade (BTT), Population (POP), gross domestic saving as a proportion of GNP (ASY). The variables under consideration are mainly sourced from the World Development Indicator (WDI), 2007.

Model specification: Contrary to many of the earlier studies which simply concentrated on a long run specification or panel analysis in determination of foreign aid allocation, this study extends its tentacle by examining the short run and long run relationship between foreign aid growth and its determinants. Therefore, following Furuoka (2008), it is hypothesized that Official Development Assistance (ODA) depends on National Income per capita (GNI), Total Debt Service payment (TDS), net Barter Term of Trade (BTT) and Population (POP). However, to argument the Furuoka specification based on the big push hypothesis, we include gross domestic saving as a proportion of GNP (ASY) in the model which previous studies ignored. Thus, the subsequent equation to be estimated is outlined thus:

$$oda = f(gni, tds, btt, pop, asy) \quad (1)$$

However, to determine the short run relationship, we include the lagged value of ODA adopted from Iyoha (2004) and Edo (2001) to transform the functional form to be an autoregressive model. Thus, the equation in a log-linear form is given as:

$$oda_t = \alpha_0 + \alpha_1 oda_{t-1} + \alpha_2 gni_t + \alpha_3 tds_t + \alpha_4 btt_t + \alpha_5 pop_t + \alpha_6 asy_t + £_t \quad (2)$$

where, α_2, α_3, α_4, α_5 and α_6 are the short run coefficients. For the purpose of examining the long run coefficients:

$$oda_t = oda_{t-1} = oda_t^* \quad (3)$$

Hence, solving Eq. 2:

$$oda_t - \alpha_1 oda_{t-1} = \alpha_0 + \alpha_2 gni_t + \alpha_3 tds_t + \alpha_4 btt_t + \alpha_5 pop_t + \alpha_6 asy_t + £_t \quad (4)$$

$$(1-\alpha_1) oda_t^* = \alpha_0 + \alpha_2 gnit + \alpha_3 tds_t + \alpha_4 btt_t + \alpha_5 pop_t + \alpha_6 asy_t + £_t \quad (5)$$

$$oda_t^* = \alpha_0/1-\alpha_1 + \alpha_2/1-\alpha_1 gni_t + \alpha_3/1-\alpha_1 tds_t + \alpha_4/1-\alpha_1 btt_t + \alpha_5/1-\alpha_1 pop_t + \alpha_6/1-\alpha_1 asy_t + £_t/1-\alpha_1 \quad (6)$$

where, $\alpha_2/1-\alpha_1$, $\alpha_3/1-\alpha_1$, $\alpha_4/1-\alpha_1$, $\alpha_5/1-\alpha_1$, $\alpha_6/1-\alpha_1$ are the long run coefficients.

Note that the use of lower case letters indicates that the variables are in their log forms. The use of natural log transformation model allows the determination of the responsiveness of foreign aid allocation to changes in the predictors used in this study.

RESULTS AND DISCUSSION

This study presents the empirical results of the systematic econometric process in this study. For easy of appreciation and following the methodological procedures earlier stated, the results are outlined in the following order.

In Table 1 the R^{-2} value indicates that per capita income, total debt service, barter term of trade, population and domestic saving account for 86% of the total variation in official development assistance for the sample period. The f-statistics value of 28.39, which is significant at both 1 and 5% indicates that there is a considerable harmony between Official Development Assistance (ODA) and all the explanatory variables put together. The table also shows that the coefficients of the explanatory variables pass the significant test at 5% level. Moreover, a desirable property of the econometric result is the value of the Durbin-h statistics, which indicates the absence of autocorrelation in the error term.

The result shows that the past value of official development assistance has positive influence in the determination of foreign aid allocation. Though, this is just a fraction which is less that one. The per capita income, total debt service, population and domestic saving have short run elasticity coefficients of 1.77, 0.73, 2.95 and 0.90 respective. This implies that they are all positively related to the determination of foreign aid allocation for the sample period. A 1% increase in any of them will positively influence foreign aid allocation by the percentage of the value of their coefficient presented above in the short run. But this result is counter intuitive specifically with regards to positive coefficients of per capita income and total debt service. It was shown in the result that term of trade has negative impact in the determination of foreign allocation and it has a short run elasticity coefficient of -1.07.

Presented below is the equation for the long run elasticity coefficients:

$$oda_t^* = -109.40 + 3.52gni_t + 1.45tds_t - 2.13btt_t + 5.86pop_t + 1.79asy_t \quad (7)$$

In Eq. 7, it is shown that per capita income has a long run coefficient of 3.52 on aid allocation and total debt service has a long run coefficient of 1.42 but the barter term of trade has a long run coefficient of -2.13 while that of population and domestic saving are 5.86 and 1.79 respectively. Therefore, at the steady state, the above coefficients are the long run effects of the explanatory variables on foreign aid allocation in Nigeria.

Table 1: The result of the short run model

Variables	Coefficients	SE	t-statistics	Prob.
C	-55.02910	19.32360	-2.847766	0.0103
LOG (ODA(-1))	0.496631	0.146027	3.400947	0.0030
LOG (GNI)	1.767547	0.564751	3.129781	0.0055
LOG (TDS)	0.732726	0.236653	3.096202	0.0059
LOG (BTT)	-1.068211	0.505084	-2.114919	0.0479
LOG (POP)	2.953465	1.083888	2.724881	0.0134
LOG (ASY)	0.901768	0.418540	2.154557	0.0442
R^2	0.899681	Mean dep. var	19.033720	
AdjR^2	0.868002	SD dep. var	1.261577	
S.E. of reg.	0.458350	Akaike info criteria	1.502438	
Sum squ resid	3.991615	Schwarz criteria	1.841156	
Log likelihood	-12.53170	F-stat	28.399430	
Durbin-h	2.311018	Prob (F-stat)	0.000000	

Dependent variable: LOG (ODA); Sample: 1980-2007

CONCLUSION

This study estimated the short run and long run relationship of the determinants of foreign aid allocation to Nigeria for the period 1980-2007. Five explanatory variables were taken into consideration: national income per capita (GNI), Total Debt Service payment (TDS), net Barter Term of Trade (BTT), Population (POP), gross domestic savings as a proportion of GNP (ASY). The study employed the Ordinary Least Square method of estimation contained in the E-Views 4.1 package. The study revealed that per capita income, total debt service, population and domestic saving all have positive influence on foreign allocation to Nigeria at both the short run and long run. However, net barter term of term of trade had negative impact on foreign inflow determination. The main issue of concern is that foreign aid flow might encourage wasteful and unproductive public spending and as well permit a relaxation in savings effort. There is therefore the need for Nigeria government to implement policies that will reduce dependency on foreign and as well ensure proper use of aid to productive public spending.

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