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**FOREIGN AID, FOOD SUPPLY AND POVERTY REDUCTION IN
NIGERIA - EXAMINATION OF POSSIBLE NEXUS.**

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Abstract

This study examines the relationship among foreign aid, food supply and poverty reduction in Nigeria. It uses secondary data for the period 1975-2005. With the use of econometric analysis we specify a structural model that examines the determinants of poverty-reduction. We test our model specification, using Statistical Analysis of Time Series (STATA 10) software. We find that multilateral aid, food supply, public sector spending on health care and education are the major determinants of poverty reduction in Nigeria. We conclude that given the ongoing food supply crises, the gradual withdrawal of government from provision of health care and education as well as the unreliability of aid, there is the need for some policy re-think if poverty is to be reduced in the country.

1.0 Introduction

One of the development challenges facing Nigeria today is how to reduce the high poverty level prevailing among her population. At the centre of the challenge is how the country will sustainably feed her over 140million people. However, observers' opinions differ about the efficacy of foreign aid in fast tracking the process. It is noted that a prominent argument for foreign aid is that it tends to promote reduction of poverty. The importance of the development challenge of poverty reduction and hunger is aptly demonstrated as the number one goal of the eight Millennium Development Goals (MDGs).

In examining the issues of poverty reduction and inequality, some studies focus on either income or non-income determinants (see Olowomomi, 1997; UNDP, 1999; Akinbobola and Saibu, 2004). There is no doubt that a combination of both determinants may produce better results. Also, in examining foreign aid in relation to poverty level, most studies regress poverty on total aid. We like to argue that different types of foreign aid will likely produce different results. In this study we use both the income and non-income determinants of poverty and account for the effects of different types of aid on poverty indicators.

Furthermore, studies have examined the importance of foreign aid in food supply especially in countries where food crisis is prevalent notably the low income countries in the Sub Saharan Africa. However, not much has been done in the areas of investigating the relationships among the three concepts: foreign aid, food supply and poverty reduction in Nigeria. In this regard, some questions have been probing the intellectual curiosity of some observers. Does availability of foreign aid discourages or encourages domestic production

of food? Does increase in food production reduces or increases poverty level? Does foreign aid leads to decrease or increase in poverty level? This study attempts to provide answers to the above questions using data from Nigeria.

The broad objective of this study is to determine the relationship among foreign aid, food supply and poverty reduction in Nigeria. Apart from the above introductory section, the rest of this study is sub-divided into four sections. In section 2 that follows we review the state of knowledge on the three concepts. Section 3 presents conceptual framework for the study. Model specification and estimation, as well as analysis of data are presented in section 4. Policy implication and conclusion are presented in sections 5.

2.0 Theoretical and Empirical review

Economic growth refers to sustained increase in gross domestic product of a country with a view to reducing poverty, inequality and unemployment (Todaro, 1982). The challenges of economic growth in a country are better appreciated if we ask the question about what has been happening to poverty, inequality and unemployment? In Seers' view (see Seers, 1969) if all the three have been reducing, some real development has taken place. If otherwise, no development has taken place even if per capita income doubles.

According to Oneworld a United Kingdom based agency ([http//. Uk.oneworld.net](http://Uk.oneworld.net), accessed on 10th June 2008) saddled with the responsibilities of monitoring sustainable development and human rights issues, as at June 2008 about 10million hunger related deaths were recorded every year, with half of them being children. The implication from this is that the world has might be failing to achieve food security. Also about 850million

people remain entrapped in the spiral of hardship that hunger imposes. The level of worry about the above figures is better appreciated if considered against the backdrop that they are recorded amidst the riches of the 21st century. In fact, the recent doubling of world food prices has transformed food insecurity from a difficult developmental challenge into an emergency.

Heller and Gupta (2002) express worry about the call by international community that to enable developing countries to achieve the MDGs by 2015, there should be increase in foreign aid to 0.7 percent of industrialized countries' GNP from 0.24 percent of GNP at present. Nevertheless, they argue that a large increase in aid flows could pose a number of challenges for the poorest countries. For example, if the industrial world is to be successful in meeting its ODA targets, financial aid will increase to about \$175 billion, slightly more than three times current levels. To ensure that enhanced ODA is used efficiently in the fight against global poverty, they argue that donors need to examine closely the different possible approaches it could take in deciding how to allocate aid, both among countries and among complementary global poverty reduction programmes.

Tchané, (2005) argue that making significant progress toward achieving the MDGs remains a major focus of the international community, and larger and more effective aid flows will be a critical component in reaching the MDGs. This suggests that controversy exists on the objectives of aid, most notably the urgency of reducing poverty. However, for both donors and macroeconomic policymakers in the aid-receiving countries these objectives raise a number of critical questions on the macroeconomic management of aid.

Masud and Yontcheva (2005) assess the effectiveness of foreign aid in reducing poverty through its impact on human development indicators and whether foreign aid

reduces government efforts in achieving developmental goals. They use a dataset of both bilateral aid and NGO aid flows. Their results show that NGO aid reduces infant mortality and does so more effectively than official bilateral aid. They also find that impact on illiteracy is less significant while mixed evidence of a substitution effect exists for whether foreign aid reduces government efforts in achieving developmental goals.

Salop et al (2007) evaluates in the context of continuing debate about the role of the IMF in aid to low-income countries, what, and how well, the IMF has done on aid to Sub-Saharan Africa. The study focuses on IMF policy and practice in operations supported by the Poverty Reduction and Growth Facility (PRGF), being the IMF's main instrument for operational work in low-income countries during the 1999–2005 review periods. The study find that PRGF-supported macroeconomic policies generally accommodate the use of incremental aid in countries whose recent policies have led to high stocks of reserves and low inflation; in other countries additional aids are programmed to be saved to increase reserves or to retire domestic debt. It also finds that IMF communications on aid and poverty reduction have contributed to the external impression that the IMF committed to do more on aid mobilization and poverty-reduction analysis.

Diouf (2007) investigates the determinants of inflation in Mali between 1979 and 2006, and argues that variations in Mali's consumer price index (CPI) are driven by changes in food prices, with food items accounting for 50 percent of the CPI. It also finds that where households at the bottom quintile of the income distribution spend more than 80 percent of their income on food, controlling food price inflation may greatly reduce poverty. When food price inflation is high, the cost of food leaves few resources for expenditures like health and education. In the extreme case, high food price inflation leads

to hunger. Similarly, high non-food price inflation reduces real money balances and the income that can be spent on food, again leading to food insecurity. The study concludes that understanding the determinants of inflation is important in designing policies that can improve food security in Mali.

Usman and Lemo (2007) examines the Seven-Point Policy Agenda of the incumbent civilian administration in Nigeria, designed to address the fundamental issues of development with a view to ensuring that ongoing reforms are accelerated. The agenda includes: Power and Energy, Food Security and Agriculture, Wealth Creation and Employment, Mass Transportation, Land Reforms, Security and Qualitative and Functional Education. On food security and agriculture, it is argued that the Food Security and Agriculture Policy are linked with the need to address the MDG One –eradication of extreme poverty and hunger. The emphasis is on the development of modern technology and a financial framework for research, production and development of agricultural inputs, which will deliver a 5-10 fold increase in yield and production.

Finally, the debate on the definition and measurement of poverty remains inconclusive (see Ravallion, 1996 and Laderchi et al, 2003). Most studies on poverty rely on monetary poverty measures such as the head count index. However, it has been argued that possessing an increased income does not necessarily mean an improvement in the well-being of people especially if this increased income does not translate to access to basic necessities of life.

Also, despite the fact that monetary measure is simple, studies have shown that it is deficient (see Ravallion, 1996). Ravallion argues that since poverty is multi-faceted, multiple indicators are necessary including measures of distribution of real expenditure per

adult, access to non-market goods like health and education, distribution within households and the personal characteristics of the poor. Thus, to measure poverty effectively there is the need to go beyond money metric measures. It is necessary to employ multi dimensional approach in which expenditure on market goods is placed side-by-side with “non-income” goods and indicators of intra-household distribution, understand its causes more so that better policies that can fight it can be formulated.

3.0 Conceptual Framework

It is noted that all the three levels of government are allowed to receive foreign aid in Nigeria. One characteristic of foreign aid in Nigeria is that it is not paid into the Federation Account. This is unlike other countries notably Ghana, where all foreign aid is paid into a consolidated fund and disbursed centrally. This makes aid to be part of government revenue with direct impact on government expenditure. One merit of the Ghanaian approach is that the issue of national need is addressed. In the Nigerian case donors determine the areas where they like to intervene without recognition of the national need. In the process maximisation of benefits from foreign aid suffers.

Three approaches to foreign aid have been identified. They include conditional or unconditional, matching or non-matching and open or closed ended (Tresch, 1981). Conditional aids list specific services on which the receiving government can spend the aid funds. Other conditions could be included as well. An unconditional aid on the other hand places no restrictions on the disbursement of the aid. In fact, a fully unconditional aid could even permit recipients to reduce taxes, especially if there was no plan to increase spending by the total amount of the aid. It should be noted that tax is a function of income, assuming

progressive system of taxation, the higher the level of income the higher the tax yields. Thus, anything that affect tax might ultimately affect income and consequently welfare of the citizenry.

As the name suggests a matching aid is an ad valorem subsidy in which the grantor agrees to reimburse the receiving government for spending undertaken at some predetermined rate. However, the spending initiative remains with the recipient. A non-matching aid refers to transfer of lump sum of money to the recipient. This could be thought of as a two-tiered matching aid, with matching rate equal to hundred percent up to the limit of the funds transferred, and zero percent for any other spending the recipient might choose to undertake.

In the case of a closed-ended aid there is limit to the total funds that the donor would transfer. On the other hand, open-ended aid places no limit whatsoever on the size of the transfer. It is noted that significant proportion of the foreign aid in Nigeria are conditional and closed-ended, with either matching or non-matching.

Gross Domestic product (GDP) in Nigeria is sub-divided into two: oil GDP and non-oil GDP. The mono-cultural nature of the Nigerian economy makes this distinction relevant. Food supply is under the non-oil GDP and refers to food and beverages for human consumption. It therefore includes output from agricultural food crops, manufactured food, livestock, fishing, among others. The implication from the above is that increase in GDP could come from either oil GDP or non-oil GDP or both. However, in Nigeria the driver of the economy has been the oil sector.

Matching aids are esteemed to be more effective than non-matching aids given the behavior of the recipient. Thus, it is possible that aid may impair the domestic production,

especially when recipients consider the aid as increase in their income, stimulating them to go for more leisure instead of increasing labour supply. If the domestic production weakens, non-oil GDP will fall and consequently the food supply component of the GDP will fall. However, matching aid by its nature may increase non-oil GDP and consequently the food supply component. Nevertheless, total aid may produce bias results necessitating consideration for some decomposing. In this regards we adopt food aid and bilateral aid.

Foreign aids are usually sourced from some quasi-government agencies, multilateral and bi-lateral organizations, private consultants and academic institutions in specific areas. The nature and extent of assistance obtainable from these institutions vary depending on their professional competence (Edward, 1988). The aid could be financial or technical or both. The former as the name suggests refers to whole funding or counterpart funding. The latter refers to formulation of appropriate development policies, establishment of development institutions, necessary macro and sector studies, and preparation of investment programmes.

4. 0 Model specification

We adopt an aggregate production function in the endogenous growth model form for a representative economy (see Romer, 1994; and Abiola 2003).

$$Y = (R, K, L, F) \dots\dots\dots 1$$

Where Y is total output and it is proxied by GDP. R is research and development carried out by economic agents that may have positive though indirect effects on capital stock and productivity of the labour force. K is the accumulated capital stock which refers to the services provided by machinery, buildings, tools and other productive instrument that are goods made to produce other goods with a view to enhancing the productivity of other

factors such as land and labour. L is the accumulated stock of human capital which is the labour force and is determined relative to total population (see Odedokun, 1996 and Sogotemi, 2000). F is other factor inputs notably level of technology, efficiency profile, etc. Y is sub-divided into two: food (f) and non-food (nf) components. The former is the total food supply in the economy represented by the food production index and will have direct influence on poverty reduction. The latter as the name suggests is the aspect of total output that is not for food. It is noted that the non-food aspect could also influence poverty reduction but not directly.

Thus:

$$Y = (f + nf) \dots \dots \dots 2$$

Efforts directed at poverty reduction (Pr) directly and indirectly through production of food and non-food components, may be financed with both public (pf) and private (PV) funds. The private fund comes from domestic (dpv) and foreign (fpv) sources. Thus,

$$Pr = (pf, dpv, fpv) \dots \dots \dots 3$$

Three foreign sources of finance are identified notably: aid, loans and foreign direct investment. Aid as earlier clarified is financial assistance given to a recipient and not repayable. Total aid comprises of both bilateral and multilateral. We note that it is not total aid that is directed at food supply to reduce poverty, we therefore attempt to examine the effects of food aid. Loans could come from Paris or London Clubs of creditors and attract different interest rates. The London Club of creditors being commercial borrowers charge higher interest rates. Foreign direct investments (FDI) in Nigeria are foreign capital by foreign entrepreneurs for the purposes of profit making.

Realising that it is not the total public spending that influences welfare directly, we like to argue that public expenditures on some public goods notably capital expenditure on education, health care and basic infrastructure may provide direct welfare benefits to people in terms of increased quantity and price reduction which in turn improves income as well as non-income determinants of poverty. Incidentally the three public goods are under the social and community services classification of government expenditure in Nigeria.

Poverty is measured with human development indicators such as per capita index of agricultural output, representing rural development, life expectancy rate representing the capability of leading a long and healthy life, and consumption per capita representing access to resources needed for a decent standard of living.

Therefore our poverty reduction equation is specified as follows

$$Pr = f(fs, A, pscs, dpv, V) \dots \dots \dots 4$$

Where Pr is poverty reduction; fs is food production index; A is food aid, multilateral aid and total aid; pscs is public sector capital spending on education, health and infrastructure; dpv is domestic private sector fund represented by as financial deepening; V represents other variables such rural population growth rate and foreign direct foreign investment, that can influence poverty reduction.

Thus, re-writing equation 4 in a structural form gives equation 5, which is our estimation equation.

$$Pr = a_1 + a_2fs + a_3fA + a_4mA + a_5TA + a_6pscscdu + a_7pscsha + a_8pscscinfra + a_9dpv + a_{10}rurpop + a_{11}fdi + e \dots \dots \dots 5$$

The equation is estimated using the STRATA estimation package. Summary of results are as specified in the appendix.

5.0 Estimation and Analysis of data

Table 1, shows that only growth rate of rural population and food supply are significant in explaining rural development and they contributed positively, although this is not much. Total grant aid, education expenditure and foreign direct investment show negative relation with rural development, while multilateral aid responds positively to rural development. The negative relationship between total grant aid and rural development follows the result of some of the earlier studies that find foreign aid retarding development and thereby increasing poverty. This study, also finds that if all aid is not lumped together like most other studies, some types of aid such as multilateral aid impacts positively on rural development, although with non significant t-statistics.

The above results show the importance of food supply to rural development, while negative relationship between spending on education can be justified in the sense that whenever youths are able to receive some basic education they hurry to move away in search of employment opportunities in urban centers. If they are unable to get gainful employment they constitute majority of the urban poor. Aside from this, expenditures on education in Nigeria are not likely to impact positively on poverty, at least in the short run, largely due to high level unemployment prevalent among the young school leavers.

Furthermore, the study finds negative relationship between rural development and foreign direct investment. This is justified in the sense that most foreign direct investment are made in urban centers, this has necessitated the movement of youths to urban centers in search of white collar jobs. Moreover, the foreign direct investors are more concerned about how to maximize profit, and this prospect is brighter in urban areas with better

markets. At present, the rate of urbanization in Nigeria is about 5.3%, which is one of the highest in developing countries.

In table 2, only education expenditure is significant in explaining life expectancy rate, but with negative relationship. The results show that only foreign direct investment has positive relationship with life expectancy rate, while multilateral aid, total grant aid and rural population growth are negatively related to life expectancy rate. We were unable to report the influence of food supply and health expenditure due to multicollinearity. To correct for this, we remove these variables that are collinear from our regression. The report after this is shown in table 2b. In this report, growth in rural population shows the right sign. However, the negative relationships among multilateral aid, total grant aid and education expenditure could be explained via the low productivity of the youth after leaving school. As school leavers they are certificated but not skilled labour. This situation is peculiar in Nigeria due to the nature of academic curriculum.

In table 3, only total grant aid is significant in explaining mortality rate, although with wrong sign; while only multilateral aid show the right sign. We could not report the impact of food supply and growth in rural population. We resulted into removing the variables that are collinear.

In table 4, none of our variables is significant in explaining real per capita income in the Nigerian economy. Our results show that multilateral aid, total grant aid, education expenditure and foreign direct investment show negative relation with per capita income; food supply, health expenditure and rural population growth show positive relation with per capita real income.

In summary, after carrying out the necessary tests and corrections, in this study, we like to argue that multilateral aid, food supply, health expenditure and education expenditure are important factors that determine poverty reduction in the Nigerian economy. Thus, strong relationship exists among some types of foreign aid, food supply and poverty reduction in Nigeria.

5.0 Policy implication and conclusion

The overall goal of Nigeria's Food and Nutrition Policy is to improve the nutritional status of all Nigerians, with particular emphasis on the most vulnerable groups in terms of poverty notably children, women and the elderly. The policy document is intended to serve as framework to guide the identification and development of intervention programmes. Implementation of the policy assigns responsibilities to both local and international agencies. The policy is to remain operational for 15years that is till 2016.

The implication from the above policy is that international agencies through foreign aid have important role to play in food supply and poverty reduction. Also, analysis of our results suggests that food supply can help reverse poverty trend in Nigeria and multilateral aid is one of the factors that can sustainably drive increase in food supply. However, foreign aid by its nature depends on the whims and caprices of the donour, implying it is not a reliable means of financing food supply. The country may have to look inward. The foreign donour usually have its own objective to maximize and which may be directed at poverty reduction but not directly on food supply, after all he who plays the piper dictates the tune.

It is doubtful if the current policy on food supply is succeeding. The ongoing food crisis in which the Federal Government ordered food imports especially rice to the tune of

N800billion is an indicator that the country needs to reform her policy on food supply with a view to reducing poverty. Ideally, sustainable development starts from the rural sector to the urban sector. In Nigeria reverse has been the case. Conceptually, the growth of the industrial sector depends on the growth of the agricultural sector. The agricultural sector needs to generate sufficient surplus to feed the industrial sector with a view to generating sustainable growth. A situation whereby the industrial sector gets its materials from outside the economy may not be appropriate for a consumer oriented economy like Nigeria. In fact, that may impair domestic production including food supply.

The way forward would be to carry out selective support towards production of food items with an effective monitoring and evaluation system. This will entails an intensive process of thorough assessment of existing problems, an analysis of their causes and an assessment of resources to improve the situation. The success story from the cassava initiative needs be replicated for other food items. If as much as N800billion is pumped into rice production the country will in no distant future become an exporter of the commodity.

Furthermore, it should be noted that Nigeria is a transiting from a public sector-led to a private sector-led economy. A major characteristics of the transition is the fast reduction in government involvement in its hitherto activities. For example government is now to provide only primary health and basic education up to junior secondary school. The role of the private sector is fast increasing in respect of healthcare delivery and education. It is doubtful if the private sector spending will be able to perform the observed positive impact at least in the short-run.

Although, it is difficult for government to reverse its privatization policies, but there is the need to exercise some caution in areas of healthcare and education. Privatizing the two may aggravate poverty at least in the short-run thereby conflicting with the primary objective of government: to promote welfare maximisation.

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Table 1.

Prais-Winsten AR(1) regression -- iterated estimates

Linear regression Number of obs= 26
 F(8, 18) = .
 Prob > F = 0.0000
 R-squared = 0.9925
 Root MSE = .01851

Semi-robust HC3

agrikperk	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
mutaid	.0259265	.0225504	1.15	0.265	-.02145	.0733031
totgran~d	-.0193625	.0105758	- 1.83	0.084	-.0415814	.0028565
foodss	.6777629	.0710137	9.54	0.000	.5285688	.8269571
healtexpend	.0047575	.0176281	0.27	0.790	-.0322777	.0417928
eduxpend	-.0054616	.0137598	-0.40	0.696	-.0343698	.0234466
popgrow	.2699855	.0919651	2.94	0.009	.0767739	.463197
fdi	-.0059928	.0095825	-0.63	0.540	-.0261249	.0141392
_cons	1.194716	.9139091	1.31	0.208	-.7253359	3.114768

rho .1152421

Durbin-Watson statistic (original) 1.498124

Durbin-Watson statistic (transformed) 1.552541

Table 2a

Source	SS	df	MS	Number of obs=	23
				F(5, 17)	= 10.71
Model	11.6898506	5	2.33797012	Prob > F	= 0.0001
Residual	3.70933714	17	.218196302	R-squared	= 0.7591
				Adj R-squared	= 0.6883
Total	15.3991878	22	.69996308	Root MSE	= .46711

lifexpeta~y	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
mutaid	-.0667994	.2835995	-0.24	0.817	-.665142 .5315432
totgran~d	-.3309082	.2325353	-1.42	0.173	-.8215149 .1596984
eduxpend	-.9390095	.3814915	-2.46	0.025	-1.743886 -.1341327
Popgrow	-.0996068	.3883434	-0.26	0.801	-.9189397 .7197261
fdi	.3024088	.179759	1.68	0.111	-.0768496 .6816671
_cons	46.27055	7.242642	6.39	0.000	30.98991 61.55119

Table 2b

Variable	VIF	1/VIF
eduxpend	6.03	0.165936
Mutaid	3.33	0.299946
Fdi	2.91	0.344112
popgrow	2.80	0.357073
totgran~d	1.95	0.512279
Mean VIF	3.40	

Table 3a

Source	SS	df	MS			
				Number of obs	=	18
				F(5, 12)	=	4.29
Model	900	.748923	5 180.149785	Prob > F	=	0.0180
Residual	503	.785861	12 41.9821551	R-squared	=	0.6413
				Adj R-squared	=	0.4919
Total	1404.53478	17 82	.6196932	Root MSE	=	6.4794

motaltyrate	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Mutaid	-3.015162	4.741404	-0.64	0.537	-13.34579	7.315469
totgran~d	11.66758	3.391133	3.44	0.005	4.278937	19.05622
healtexpend	.7465647	1.324896	0.56	0.583	-2.140136	3.633265
eduxpend	10.08716	5.286099	1.91	0.081	-1.430263	21.60458
fdi	2.824631	3.157076	0.89	0.389	-4.054047	9.703309
_cons	454	114.9271	3.95	0.002	203.5953	704.4047

Table 3b

Variable	VIF	1/VIF
Mutaid	2.97	0.336197
Eduxpend	2.89	0.345995
healtexpend	2.66	0.376065
Fdi	1.82	0.548511
Totgran~d	1.26	0.791094
Mean VIF	2.32	

Table 4

Prais-Winsten AR(1) regression -- iterated estimates

Linear regression Number of obs= 27
 F(8, 19) = 46.43
 Prob > F = 0.0000
 R-squared = 0.5144
 Root MSE = .72523

Semi-robust HC3

rpkgdp	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
mutaid	-.7964884	.4916922	-1.62	0.122	-1.825612	.2326352
totgran~d	-.2545794	.5759382	-0.44	0.663	-1.460032	.950873
foodss	.8610754	2.875145	0.30	0.768	-5.156672	6.878823
Healtexpend	.1509398	.5193407	0.29	0.774	-.9360527	1.237932
eduxpend	-.3120764	1.138224	-0.27	0.787	-2.694407	2.070254
Popgrow	.6525396	2.164096	0.30	0.766	-3.876966	5.182045
fdi	-.5810986	.3397602	-1.71	0.103	-1.292225	.1300278
_cons	-36.78812	20.3595	-1.81	0.087	-79.40104	5.824797

rho .1507408

Durbin-Watson statistic (original) 1.750574

Durbin-Watson statistic (transformed) 1.828294
