Foreign Aid and Poverty Reduction in West African Nations: Insights and the Need for Policy Re-Orientation

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Abstract
Poverty, a deteriorating healthcare system and insufficient educational standards are among the major macroeconomic problems facing African countries. Foreign aid from Western countries to African countries has been hailed as one of the solutions to these problems. Thus, this study investigated the impact of foreign aid on poverty using a panel data set of 14 West African nations. Foreign aid was disaggregated according to the reason for which it was given while poverty was measured with three variables namely; poverty headcount, infant mortality, and literacy rate. Annual data was sourced from the WDI (2022), WGI (2022) and OECD (2022), scoped 2008-2020. Using a two-step system GMM, the study found that total aid insignificantly reduces poverty headcount in the presence of reduced corrupt practices. Furthermore, foreign aid allocated to health and education was found to lower infant mortality and improve literacy rates, respectively; however, these effects were only significant in the condition of reduced corrupt practices. The study thus concludes that foreign aid works better when corrupt practices are reduced, and it recommends that policymakers in west-African countries should consider corruption control policies so that aid allocation is properly managed to improve its impact on poverty headcount, infant mortality, and literacy rate.

Keywords: Foreign Aid, Poverty Reduction and Two-Step System GMM

JEL Classification: F35, I32

1. Introduction
Well-off nations began giving aid to less-developed nations around the world in the nineteenth century, and by the 1930s, nations such as Germany, France, the United Kingdom, and American industrialists (via the Ford and Rockefeller Foundations) were already committed to providing regular aid to less-developed nations, usually their colonies in Africa, Latin America, and Asia. At the time, most of the aid given was project aid, such as the construction of roads, schools, seaports, and railways (Keeley, 2012). However, aid policies and systems in developed countries have evolved, with the primary focus now directed to the humanitarian and emergency needs of developing countries via multilateral aid agencies; an idea conceived by the belief that these agencies provide a more equitable distribution of aid, in terms of transparent criteria.
that are free of national political preferences (Atwood, Bachelet, Clark, Kaberuka, Manning, Ogata & Wolfensohn, 2016).

In West Africa, the volume and value of aid inflow in the form of net Official Development Assistance (ODA) are official aid received from advanced nations which has continued to increase since the 1990s, reaching a total of US$15.6 billion in 2019; an increase of 208% from US$5.1 billion received in the year 2000. The major beneficiaries of these aids were Nigeria, Niger and Mali whose total amount of aid received rose by 1365%, 386% and 326% respectively between the two periods. As presented in Figure 1 below all other countries in West Africa sub-region also witnessed an increase in the amount of aid received between these periods except Guinea-Bissau which had a marginal decrease of 6% aid inflow between the period, Cabo Verde had a marginal increase of 4%. These aids were given to promote poverty reduction and support health and education systems in recipient countries (Steven, 2006; Riddell, 2008).

Figure 1: Total (ODA) & Official aid received (2000 and 2019)

Despite this increasing aid inflows to reduce poverty and support health and education systems, the West African recipient nations are still in poverty, deprived health system and inadequate educational standard remains the major problems facing the nations in the sub-region. The most dominant feature of income poverty across West Africa submits that the proportion of the total population living beneath the international poverty line of US$1.90 a day remains high. As of 2019 (i.e., before the covid 19 outbreak), about 34.8% of the total population of the sub-region still lives beneath the international poverty line of $1.90 per day (ECOWAS Bank for Investment and
In Guinea-Bissau, the proportion was estimated to be high at about 60% while that of Togo was about 45%. Benin, Mali, Liberia and Sierra Leone were estimated to be about 40%, whereas the estimated poverty rates for Nigeria and Niger are 38% and the remaining countries in the sub-region fall below 38%, Cape Verde is estimated to have the lowest poverty rates at 5%.

Figure 2: Poverty headcount ratio at $1.90 income a day

Source: ECOWAS Bank for Investment and Development (EBID), (2021)

In addition to the high level of income poverty, high child mortality rates persist in most countries of the West-African Sub-region despite increased aid inflow. According to World Development Indicator (2022), the average infant mortality rate per 1000 live births in West Africa as of 2019 was approximately 51.2 with Sierra Leone having the highest rate of 82.4. Nigeria, Guinea and Mali also have high rates of 74, 63 and 60 respectively, while a rate less than 60 were recorded in the rest of the countries with Cape Verde having the least rate of 12.4. Similarly, in 2019 average under-five mortality rate per 1000 live births in the sub-region remain high at 75.6 and the rate in most nations exceeds 70.

Even though school enrollment rates have increased over the years, low quality of education and low completion rates remain a great challenge in the West African Sub-region. According to the African Statistical Yearbook, (2018), the proportion of children and young people at the end of primary school achieving at least a minimum proficiency level in reading and mathematics were all below 60% except Côte d'Ivoire and Togo who has 89% and 67% proficiency level in math’s, while Nigeria has a 61% proficiency level in reading. Also, the World Development Indicator (2022) shows that as of 2019, the lower secondary school completion rates in most countries were below 60% while primary school completion rates were mostly below 70%. The adult literacy
rates in virtually all the nations in West Africa were below 50%. Only countries such as Cote d'Ivoire (89.9%), Ghana (79.0%), Togo (66.5%), and Nigeria (62.0%) had literacy rates, which are higher than 60%.

The leading aid advocates such as Sachs (2005, 2009, 2014), and Collier (2001, 2007) among others posited that aid to less developed nations often acts as a big push to help them take off in the development process, without which their economic performance would be more terrible. To them, aids have the potential to reduce poverty and improve well-being in recipient countries. On the contrary aid sceptics such as Boone (1994 1996), Easterly (2003, 2007, 2014), and Moyo (2009a, 2009b) often argue against donor assistance on the basis that it deteriorates governments’ determinations in collecting revenue and broadens unnecessary government expenditure, to them aid perpetuates dependence and corruption and thus facilitating poverty and human suffering. According to Bauer (1971) and Easterly (2014), aid is a process through which poor people (taxpayers) in rich countries assist rich people (elites) in poor countries.

It is against these contradicting statistics and differing scholarly opinions that this empirical study is carried out, to explore a simple question of what is the impact of foreign aid on poverty reduction in West-African Countries, as foreign aid flowing from developed nations which have been hailed as the solution to the problems facing the African nations demand further inspection due to the fact that effective domestic and international policy measures should be employed to tackle poverty problems which are crucial importance to the policymakers in African nations. In this vein, the broad objective of this study is to estimate the impact of foreign aid on poverty in West African countries and to see if control of corruption can serve as a channel through which aid effectiveness can be improved in West-African nations.

2. Literature Review

Among other early theories of foreign aid is the modernization theory which was propounded by Walt Rostow in 1960. The basic doctrine of this theory is that if the problem facing third-world nations resides in their lack of productive investments, then the solution lies in the provision of aid to these nations in the form of capital, technology, and expertise (McClelland, 1964). To modernization theorists, the developed nations are more educated, productive and technically advanced and as such have unmatched economic prosperity and democratic stability compared to less developed economies around the world as such substantial economic progress can be attained in the less developed nations through a transformative process through which change from traditionalism to modernity is required (Tipps, 1976; Reyes, 2001).

Currently, there is no universal harmonious definition of foreign aid given the fact that there are differing descriptions of foreign aid across countries and organizations providing it in various parts of the world. However, the most widely accepted definition is the one given by the Development Assistance Committee (DAC) of the
Organization for Economic Cooperation and Development (OECD), which defined foreign aid otherwise known as ODA as the flow of official financing from developed nations to the underdeveloped nations with concession of grants and loans which are at least a 25% grant component. This definition as given by the DAC has three important components: firstly, the aid must come from governments, either at the national or state level or from their official agencies. Secondly, the donor objective must be non-commercial and its target should be to improve the economy and welfare of developing countries. And lastly, it’s either a grant of numerous kinds or a loan. However, for a loan to be considered as aid, it must be at a rate less than market interest rates.

There is controversy in the literature regarding the meaning of poverty or things that makes one to be classified as poor. Most people have thought of poverty as a situation in which one lacks a given amount of income (usually $1.25 per day). However, DAC Guidelines on Poverty Reduction (2001), defined poverty as a multi-dimensional phenomenon that encompasses not only income level but also the inability of individuals to access other well-being facilities such as education and health.

Over the years, there have been arguments on issues concerning the role of foreign aid in poverty reduction in recipient nations, the reason had been that for several decades, a substantially increased amount of developmental aid has been flowing from developed nations to underdeveloped nations to improve wellbeing and decrease poverty level in the recipient nations, however, despite these efforts, the poverty level remains high and thus makes one wonder if aids are working. In response to these, several empirical studies were carried out and the results appear to be indecisive. Among early studies that supported aid efficiency in poverty reduction in the recipient nations is the study of Boone (1996) who made use of a sample of 96 aid recipient countries over the period of 1971-1990 to examine the impact of non-military aid on poverty (measured with human development index). The study thus employed the OLS, IV and fixed effect model to show that aid does benefit the poor. The study of Masud and Yontcheva (2005), on the other hand, disaggregated aid into bilateral aid and NGO aid with their study sample covering 58 countries over the period of 1990 to 2001. Using the fixed and random effect model the study disclosed that NGO aid had a better poverty reduction impact than bilateral aid.

In the same vein, other studies that contributed to the debate on aid efficacy in poverty reduction include Bahmani-Oskooee and Oyolola (2009), Alvi and Senbeta (2012), Kaya, Kaya and Gunter (2013); and Mahembe and Odhiambo (2019). Specifically, Bahmani-Oskooee and Oyolola (2009). They employed fixed and random effect models in their study and discovered that foreign aid is effective in reducing poverty. This outcome was reached using a data set from 9 developing countries from the year 1981 to 2002. Alvi and Senbeta (2012) employed a dynamic model (i.e., system generalized methods of moments (GMM) estimator) and disaggregated poverty into three categories namely poverty rate, poverty gap index and squared poverty gap index for a sample of
79 countries between 1981–2004 to find that there exist significant poverty reduction impact of aid.

Kaya et al. (2013) concentrated on the effectiveness of aid allocated to the agricultural sector in reducing the poverty level in 46 developing aid-recipient countries from 1980–2003. Their study made use of the fixed effects model to also conclude that aid to the agricultural sector has a significant poverty reduction impact in the recipient countries. The study of Mahembe and Odhiambo (2019) took a different approach by collating and analyzing the existing empirical literature on the effectiveness of foreign aid on poverty reduction. The study thus concludes that foreign aid has a poverty reduction impact, as reported by the majority of the reviewed studies.

On the contrary, quite a number of existing literature opposed the claim that aid reduces the poverty level in recipient countries. Studies in this category include Philip (2013), Azam Haseeb and Samsudin (2016) and Ugwuanyi, Boniface, Ezeaku, Chijindu, & Ibe, (2017). The empirical study of Philip (2013) made use of the cointegration technique and empirical estimators with heterogeneous slopes for 8 west African countries from 1975 to 2010 to conclude that total foreign aid and food aid increases poverty. Azam et al. (2016) examined the impact of foreign aid and other variables on poverty alleviation in 39 countries. The study uses the data covering the period from 1990-2014 and the method of Panel fully modified OLS (FMOLS) to show that aid has a poverty expansion effect. For Ugwuanyi et al. (2017), in the study on Nigeria, discover foreign aid intensifies poverty both in the short-run and long run. This result was obtained using the Autoregressive Distributed Lag (ARDL) Bound Test estimator for over a period of 33 years (1981-2014).

The empirical study of Arvin and Barillas (2002) made use of the Granger causality technique to show that aid impact on poverty levels varies across countries and regions as their study showed no causal relationships in some of the sub-samples while there is an existence of a multitude of relationships across others. Chong, Gradstein and Calderon (2009) could not find any robust statistical relationship between foreign aid and poverty level while studies such as Collier and Dollar (2001), Mosley, Hudson & Verschoor (2004) and Alimi (2018) found that aids work better in the presence of good policies.

The foregoing review of the existing literature indicates that there is no straightforward consensus on the nature of the aid-poverty nexus. Literature is divided between aid optimists and aid sceptics with each side supporting their ideas empirically. Part of their limitations is that the studies failed to disaggregate foreign aid according to the reasons for which it is given (i.e., aid to the health sector and aid to the education sector). In addition, none of these studies concerted on West-African countries except a study carried out by Philip (2013), which only covers 8 out of 16 West African countries from 1975 to 2010.
In light of the above limitations, this study seeks to add to the existing literature by looking at the impact of foreign aid on poverty using data from 14 West African nations for the period 2008 to 2020. Aid is thus disaggregated into three categories namely; total aid, aid to the health sector and aid to the education sector. Poverty, on the other hand, was measured in terms of income and non-income facets. Thus, our analysis departed from the previous literature in at least three important ways; first, the study made use of a more comprehensive (14) West African sample and up-to-date data set. Second, aid was disaggregated based on the reason for which they are given. Lastly, the study made use of three poverty indicators namely; poverty headcount ratio at $2.15 a day, infant mortality rate and literacy rate.

3. Methodology

The forgoing review presented that poverty is multidimensional and can be measured in terms of income and non-income facets. This study chose poverty headcount ratio of $2.15 income per day to represent the income facet of poverty while infant mortality rate and the literacy rate were chosen to represent the non-income facet, this is as a result of data availability and the fact that it was empirically proven by Robert (1993) and Reidpath (2003) that infant mortality rate and literacy rate are better measures for the non-income facet of poverty. As stated earlier, poverty is measured by three different indicators, implying the estimation of three different models which are presented in equations 3.2 – 3.4. Our model specification is guided by theoretical literature and empirical works of Masud & Yontcheva (2005), Kouassi (2012), and Alimi (2018). The basic model can be presented below

\[ Pov_{it} = \alpha + \delta Faid_{it} + \beta Z_{it} + \lambda_i + \epsilon_{it} \] ................................. 1

Where \( i = i^{th} \) country, \( t = \) time, \( \alpha = \) country-specific intercept, \( \delta \) and \( \beta = \) parameter estimates. \( \lambda_i = \) individual country fixed effect, \( \epsilon_{it} = \) error term. \( Pov \) stands for poverty and \( Faid \) stands for foreign aid (foreign aid is disaggregated in the later equations). \( Z \) encompasses other determinants of poverty.

The regression model as stated in equation 3.1 pose one important challenge for estimation, which is the possibility of endogeneity resulting from simultaneity. That is, it is possible that poverty measures and aid tend to be determined simultaneously in our models. In other words, donors may be motivated by poverty level, health and educational condition in the recipient nations. For example, it is possible that the higher the levels of poverty the greater the desire to give aid to reduce it, the poorer the health condition the greater the desire to give aid to improve it and so on.

In a bid to find a potential technique that will be sufficient to overcome these potential challenges, the review of literature indicated great support for the use of Generalized Method of Moments (GMM) techniques in estimating panel models suspected with endogeneity problem, specifically the Differenced GMM estimator developed by Arellano and Bond (1991) and System GMM developed by Arellano and Bover (1995) and Blundel and Bond (1998) were mostly supported. However, the Differenced GMM
is suitable when \( T \) (time) is large and \( N \) (number of observations) is small and is also not suitable for an unbalanced panel and as well does not accommodate time-invariant regressors. The system GMM, on the other hand, is suitable when \( T \) is small and \( N \) is large and its an improvement over the Difference GMM as such it is used to overcome many of the disappointing features of the Difference GMM estimator (Blundell & Bond, 2000). In this vein, the study, therefore, considered the approach suggested by Bond, Hoeffler and Temple (2001). Such that inefficient models i.e., pooled OLS and the fixed effect models were estimated as the upper and lower bound respectively. Hence, the estimate of difference in GMM was compared and found to be close to the fixed effect estimate, implying that the difference in GMM estimate is downward biased. Given these scenarios, it becomes appropriate for this study to employ the two-step system GMM.

Note that the problem of missing data was handled using linear interpolation and extrapolation.

The first model is used to estimate the impact of foreign aid on income facet of poverty as measured with poverty headcount ratio at $2.15 a day (2017 PPP) (% of population) in West African nations. The model is given in GMM form as follows:

\[
Pov_{it} = \beta_1 Pov_{i,t-1} + \beta_2 \ln Faid_{it} + \beta_3 \ln Faid_{it} \cdot \text{Cop}_{it} + \beta_4 Z_{it} + \lambda_i + \varepsilon_{it} \quad \cdots \quad 2
\]

Where \( i = 1,2,\ldots,N; t = 1,2,\ldots,T \). \( \beta_1 - \beta_4 \) are the parameters. \( Pov \) stands for poverty and was measured with poverty headcount ratio at $2.15 a day (2017 PPP) while \( Pov_{i,t-1} \) is the first lag of poverty. \( \ln Faid \) stands for log of foreign aid and was measured with net Official Development Assistance (ODA) and official aid received. \( \ln Faid \cdot \text{Cop} \) is the interactive term of log foreign aid and control of corruption (Cop), the aim is to see how corruption mediates the impact of aid on poverty. \( Z \) consists of other regressors that are determinants of poverty, it includes; inflation, unemployment and government expenditure. \( \lambda \) is country-specific fixed effects while \( \varepsilon \) represents the error term.

The second model is used to estimate the impact of foreign aid on non-income (Infant mortality rate) facet of poverty in West African nations. The model is given in GMM form as follows:

\[
imr_{it} = \beta_1 imr_{i,t-1} + \beta_2 FaidH_{it} + \beta_3 \ln FaidH_{it} \cdot \text{Cop}_{it} + \beta_4 Z_{it} + \lambda_i + \varepsilon_{it} \quad \cdots \quad 3
\]

\( \text{imr} \) stands for infant mortality rate, \( \text{FaidH} \) is foreign aid allocated to the health sector while \( \text{FaidH} \cdot \text{Cop} \) is the interactive term of foreign aid allocated to health sector and control of corruption (Cop). \( Z \) encompasses government expenditure on health, physicians (per 1,000 people) and poverty rates. All other variables (i.e., \( i, t, \beta_1 - \beta_4, \lambda \& \varepsilon \)) are defined as earlier.

Model three is used to estimate the impact of foreign aid on non-income (literacy rate) facet of poverty in West African nations. The model is given in GMM form as follows:

\[
lt_{it} = \beta_1 \text{lt}_{i,t-1} + \beta_2 \ln FaidE_{it} + \beta_3 \ln FaidE_{it} \cdot \text{Cop}_{it} + \beta_4 Z_{it} + \lambda_i + \varepsilon_{it} \quad \cdots \quad 4
\]
\( ltr \) stands for literacy rate, \( FaidE \) is foreign aid allocated to the education sector while \( FaidE \times Cop \) is the interactive term of foreign aid allocated to education sector and control of corruption (\( Cop \)). \( Z \) encompasses pupil-teacher ratio and school enrolment. All other variables (\( i.e., i,t, \beta_1 - \beta_4, \lambda \& \varepsilon \)) are defined as earlier.

4. Result
Table 1 below presented the result of our two-step system GMM which shows the variable of interest and other regressors used in this study were found to be significant in our respective models. The robustness check results (i.e., AR(1), AR(2) & Hansen test, as well as the number of instruments and groups) as contained in the lower part of the table indicate that the results obtained are reliable. In order words, the first-order serial correlation is present while the second-order serial correlation is not. The Hansen test result indicated the non-rejection of the null hypothesis implying that the full instrument set is jointly valid. As required, the number of instruments were found to be less than the number of groups.

Table 1: Impact of foreign aid on poverty (Two-Step System GMM)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Pov</th>
<th>Imr</th>
<th>Ltr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pov Lag1</td>
<td>1.810*** (0.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imr Lag1</td>
<td></td>
<td>0.5476*** (0.11)</td>
<td></td>
</tr>
<tr>
<td>Ltr Lag1</td>
<td></td>
<td></td>
<td>1.7563*** (0.07)</td>
</tr>
<tr>
<td>Faid</td>
<td>0.1356 (0.17)</td>
<td>-0.0013 (0.001)</td>
<td>0.0047 (0.00)</td>
</tr>
<tr>
<td>Faid*Cop</td>
<td>-0.0025 (0.013)</td>
<td>-0.0067*** (0.002)</td>
<td>0.3784* (0.21)</td>
</tr>
<tr>
<td>Inf</td>
<td>0.0550** (0.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ump</td>
<td>0.1874* (0.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lngeh</td>
<td></td>
<td>-1.9341* (1.00)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>127</td>
<td>127</td>
<td>139</td>
</tr>
<tr>
<td>AR(1)</td>
<td>-2.29**</td>
<td>-2.04**</td>
<td>-1.68*</td>
</tr>
<tr>
<td>AR(2)</td>
<td>-0.64</td>
<td>-0.98</td>
<td>-1.36</td>
</tr>
<tr>
<td>Hansen test</td>
<td>6.11</td>
<td>6.09</td>
<td>1.76</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Number of groups</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Note: Windmeijer finite-sample correction was used to correct the standard errors; Standard errors in parentheses; *** \( p < 0.01 \), ** \( p < 0.05 \), * \( p < 0.10 \); Year dummies are included
Source: Authors’ Computation

The result presented in Table 1 indicates that the first Lag of dependents variables has positive significant impacts on the dependent variables, implying that the past levels of
poverty, infant mortality and literacy contribute to an increase in each of the dependent variables respectively. Furthermore, Table 1 indicates that foreign aid has a positive (increases) insignificant impact on poverty headcount and literacy rates in West African nations, whereas its impact was found to be negative though also insignificant on infant mortality rates. The interactive effect of aid and control of corruption shows a negative insignificant impact on poverty headcount (implying poverty reduction) while a significant negative impact was found for infant mortality rate (also implying a reduction in infant mortality). Thus, all things being equal, a unit increase in aid allocated to the health sector coupled with an increase in control of corruption decreases the infant mortality rate by about 0.006 per cent. Also, the interactive impact on literacy rates was found to be positive and also significant (implying improvement in literacy rate). Hence all things being equal, a unit increase in foreign aid to the education sector coupled with an increase in control of corruption decreases the literacy rate by about 0.3 per cent.

Additionally, the findings above indicate that total aid increases poverty headcount in West African nations, however in the presence of better controlled corrupt practices reverse is the case as it reduces poverty though, this impact was not significant. Also, aid allocated to health and education was found to have a desirable impact (i.e., decrease infant mortality rates and increase literacy rate) however, its impacts only become significant if the corruption level is better controlled in the west African nations. Other regressors such as inflation and unemployment were also found to have a positive significant impact on poverty headcount while government expenditure on health was found to have a significant negative impact on infant mortality rates.

5. Conclusion and Recommendation
Using a sample from 14 west African nations over the period of 2008-2020 to examine the impact of foreign aid on poverty in West African countries considering the role of corruption, the study concludes that aid allocated to health and education sectors improves infant mortality and literacy rate respectively, however, its works better if the corruption level is reduced. Also, the study concludes that aid is harmful to poverty headcount (income poverty) however, its impact can also be made better if the corruption level can be controlled. The study thus recommends that policymakers in the West African nations should consider corruption control policies such that aid allocation will be properly managed to improve its impact on poverty headcount, infant mortality and literacy rate. Regardless, African nations must strive to take control of their economic fortunes and gradually wean themselves off of reliance on foreign aid. A step in this direction is desirable, as the IMF recently stated that some economies in the eurozone are already indebted due to aid and lack the necessary funds to bail out. This is, in fact, a bell ringer. African policymakers must develop a well-articulated self-reliant economic policy to achieve economic prosperity without relying on Western aid.

This study, however, has some limitations. The first of which is the relatively high number of missing data which may alter the significance of the regressors’ coefficients.
The second limitation is that the study fails to disaggregate aid into other forms such as project aid, program aid, financial aid, non-financial aid, etc. Lastly, the study fails to provide a country-specific explanation. An analysis of each country’s economy would be needed for further analysis.

**References**


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