THE ECONOMIC IMPACT OF FOREIGN AID ON POVERTY: A CASE OF SUBSAHARAN AFRICA

By

MATETE, Tinaye Rudolph

THESIS

Submitted to

KDI School of Public Policy and Management

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TABLE OF CONTENTS

LIST OF TABLES

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The economic impact of foreign aid on poverty alleviation: A case of Sub-Saharan Africa.

Abstract

This research paper examines the economic impact of foreign aid on poverty for Sub-Saharan African countries. In this empirical analysis I have ascertained that foreign aid has an impact in reducing poverty in 42 Sub-Saharan African countries from 1980-2013. Panel estimation techniques and instrumental variables are used in order to control for country specific time varying effects and endogeneity. Based on the empirical analysis, I concluded that aid is effective in reducing poverty after controlling for macroeconomic variables. The findings are consistent on all poverty measures, the poverty gap, poverty depth, and poverty severity. Thus, sound macroeconomic policies and good institutional quality are also necessary factors in achieving sustainable poverty reduction strategies in recipient countries.

1.0 Introduction

Persistent travesty of poverty vicious circle in developing world has led to many questions being raised to the efficacy of foreign aid as a means of reducing poverty in recipient countries. Correlation between foreign aid and poverty is certainly suggestive, but the causation has been widely debated. Rising poverty levels and how they can be ameliorated remains a dilemma in the international development debate. More specifically, the two questions at the center of academic research are why some countries remain poor and other countries richer? Why is aid not eradicating poverty in Sub-Saharan African countries? Further, researchers are interested in assessing why Sub-Saharan African countries remained poor despite receiving a substantial amount of foreign aid from donor countries.

On one hand, proponents of foreign aid postulate that though foreign aid has failed in some countries, it has fostered economic growth and poverty reduction in countries like South Korea and Indonesia. Bauer asserts that foreign aid is a necessary instrument for economic development, a powerful tool for income redistribution and serves the interests of the developed countries (Bauer 1981: 97). (Burnside & Dollar (2001), Masud & Yontcheva (2005), Alvi & Sanbeta (2012) assert that multilateral aid has seen to reduce poverty, while bilateral aid has no negative impact on poverty reduction, thus foreign aid is useful in reducing poverty if the intended objective is specifically tailored towards poverty reduction. On the other hand, opponents of foreign aid argue that foreign aid has been wasted on frivolous expenses and has perpetuated bad governments to stay in power, and instead it has enriched the elites in poor countries and harmed the private sector (Easterly 2003). Other critiques of foreign aid posit that aid has not been effective because of donor countries that tend to give conditional and tied aid.

Since 1970, Sub-Saharan Africa has received a substantial amount of foreign aid from donor countries. Yet, Sub-Saharan Africa remains one of the poorest regions in the world, with real income per capita lower today than in the 1970s. While the number of the world's population living in poverty fell in 1980, between 1985 and 2005, the number of people in Sub-Saharan Africa living in poverty nearly doubled, leaving the average African person today poor than two decades ago (World Bank Development Indicators, 2018). Poverty is on the rise in most SSA countries and it has become a major task for United Nations (UN) and the World Bank to eradicate poverty and hunger by 2030. As a policy measure to eradicate poverty, the Heads

of state in the UN declaration accord of 2000 resolved to embark on debt cancellation, improving market access, increasing Foreign Direct Investment and enhancing the Official Development Assistance in Sub-Saharan African Countries (UN Sustainable Developmental Goals). Donor countries in the Organization for Economic Development have agreed on channeling 0.7 percent of their Gross National Income (GNI) as foreign aid (OECD Statistics, 2018).

This paper seeks to assess whether foreign aid can be a necessary tool that can be used to achieve poverty reduction in Sub-Saharan African countries. The research question that this paper seeks to answer is whether foreign aid can cause a reduction in poverty? Therefore in this paper I will argue that foreign aid reduces poverty in SSA countries after controlling for macroeconomic variables and the quality of institutions.

2.0 LITERATURE ON AID EFFECTIVENESS

2.1 Aid and Growth Relationship

Ideally, it is perceived that an increase in foreign aid raises average income per capita in the recipient country which in turn lessens poverty. This scholarly view infers an increase in aid ultimately cause a rise in income levels and ultimately reducing poverty. Concerns can be raised with such a hypothesis. It remains imperative in assessing if aid fosters an increase in income growth or whether aid raises the income threshold of the poor. These questions are separate and they should be addressed differently. This is only attainable if aid tailored for poverty reduction is allocated specifically to bolster countries with extreme poverty levels. In other situations overall growth may be nonexistent or take considerable time to be realized but poverty may still be reduced. Senbeta (2009) argues that growth can reduce poverty in three ways. Firstly, by implicitly assuming that foreign aid only reduces poverty by increasing economic growth. Secondly, that aid is more effective in increasing growth and ultimately reducing poverty. Finally, that poverty efficient allocation of aid assumes diminishing returns to aid. What remains clear is that poverty reduction can be tackled from two fronts: via the growth led effect or by improving credit service extension and increasing the asset allocation to those living below a poverty datum threshold (Lensink & White 2000:5). In this paper I argue that foreign aid does reduce poverty in SSA countries. Further it

can also be noted that an increase in credit provision to the poor helps to reduce poverty. Domestic credit reduces poverty at better levels compared to foreign aid and therefore SSA governments should ensure there is provision for access to finance. Empirical studies have ascertained that a sustained and inclusive economic growth is *sine qua non* in poverty mitigation (Dollar & Kray, 2004; Chambers, Wu, & Yao 2008). Literature on foreign aid effectiveness show that aid seem to work in countries with economic growth led policies such as development of a sound financial system, macroeconomic stability policies, quality of institutions, openness to trade, and remittances and thus systematically reduce the poverty levels (Alvi & Senbetta 2012).

The objectives of the research will be firstly, to assess whether foreign aid helps reducing poverty in Sub Saharan African countries after controlling for macroeconomic variables and other independent variables relevant in determining poverty levels. Secondly, to assess whether domestic credit can be a sustainable solution in reducing poverty in SSA countries. In assessing the aid and poverty relationship, my specification builds on the findings of Radelet & Clemens (2005), Alvi & Senbetta (2012) Burnside and Dollar (2000) of analyzing the effectiveness of foreign aid and checking for systematic difference in relationship to poverty reduction. Not all aid is alike, and the purpose for which it is channeled plays a role. Further, the development of the financial sector in channeling domestic credit to the poor can be a sustainable mechanism to eradicate poverty. Empirical research has been conducted on the impact of foreign aid and poverty. However, different measures of poverty have been used. Other research has focused on headcount index, and Masud and Yoncheva (2005) has used human development indicators to assess the relationship between foreign aid. In their paper they found that aid had a reduce poverty in relationship with human development indicators. Alvi and Senbeta (2012) also analyzed the impact of foreign aid and poverty and they used poverty gap, poverty depth and severity poverty index on 81 countries. In their research findings they controlled for the covariates of aid and concluded that aid reduces poverty after taking into consideration effects of average income. My paper uses a dataset from povcalnet with three different measures of poverty proposed by Foster *et al* (1984). Emphasis has been placed on the 42 Sub-Saharan African countries from the period of 1980-2013 where over 40 percent of the population lives in dire circumstances of extreme poverty (UNDP Statistics, 2018).

In this paper I will proceed as follows: chapter 2 will focus on the literature of foreign aid effectiveness and poverty reduction. In chapter 3, I will describe the data and the research methodology, and chapter 4, I will analyze the data. I will then discuss the results, policy implications and conclusion.

2.2 Foreign Aid and Poverty Reduction

Foreign Aid as defined by OECD refers to the "voluntary transfer of public resources, from one government to another independent government, to an NGO, or to an international organization (such as World Bank or the UN Development program) with at least a 25 percent grant element" Lancaster (2007). Lancaster identified four purposes of extending foreign aid which are for development, humanitarian relief, diplomatic and commercial purposes (ibid). Literature on aid has concluded that aid is issued by donor countries for strategic interests (Burnside and Dollar, 2000). Literature on aid effectiveness ascertain that aid for development purposes in the 1970s mainly focused on the transfer of wealth from donor countries to meet the basic needs of those impoverished in the recipient countries, and in 1980s it was meant for stimulating economic growth and economic policy reform in recipient countries. In 1990s aid for development focused on good governance of institutions that supported economic progress and poverty reduction. Thus, aid for development, according to Radelet (2006), is tailor made towards boosting productive sectors of the recipient countries e.g. agriculture, or to bring about new technological advancements and improving education and health services delivery in recipient countries. Aid channeled for humanitarian relief was mainly through the spirit of altruism that rich countries are compelled helping poor countries as they are endowed with resources. Therefore it became a moral obligation of rich countries to help poor countries. In so doing donor countries agreed upon a contribution of 0.7 percent of Gross National Income to be allocated to poor countries (OECD Statistics 2018). Aid for diplomatic purposes focused on political and strategic reasons. The motive of issuing bilateral aid is strengthening bilateral relations between governments and fostering international security reasons Lancaster (2007). Aid allocated for commercial purposes was meant to open up trade relations between donor country and recipient countries and strengthening bilateral agreements between countries (ibid).

The effectiveness of foreign aid has been looked at different aspects, depending with the type of foreign aid and its desired objectives in recipient countries. Recent literature has assessed the effectiveness of foreign aid as benchmarked to economic growth. (Radelet, 2006), argues that though some countries have received substantial amounts of foreign aid they have managed to achieve rapid growth, while the notion was different for other recipient countries that received similar or larger amounts and have achieved slow or negative growth rates. Therefore the relationship can be interpreted differently. Other countries e.g. Ethiopia, Democratic Republic of Congo and Nigeria that received substantial amounts of foreign aid might have been suffering from serious civil conflict or poor geographical location that aid has a positive impact on growth but the overall growth effect might be weak. Radelet suggests three views of foreign aid namely; "aid has a positive relationship with growth, under certain circumstances, and has diminishing returns; as the volume of aid increases", aid has no effect on growth and it may be undermined under certain circumstances; and, aid has a provisional relationship with growth and can hasten growth under certain circumstances (ibid). Radelet *et al* (2005), firstly, concluded that the type of aid matters: humanitarian aid reduces growth as disasters reduce growth and increases the aid received in the recipient country and this humanitarian aid is not tailored for poverty reduction purpose only to help in emergence relief. Secondly, "Aid can affect growth, but indirectly and over a long period of time" (ibid). With this late impact aid they found weak positive results on growth. Thirdly, for aid meant to improve growth immediately -- for example aid for infrastructure -- they found a positive relationship with growth (ibid). Collier & Dollar (1999) used the same approach of assessing foreign aid effectiveness by looking at growth. They suggested that donors should reallocate foreign aid to poor countries with good, sound policies and good institutions. Based on their findings it can be inferred that aid is effective in increasing growth and reducing poverty in countries with good policies and good institutions, mainly formal institutions which are rule of law, property rights and enforcement of contract laws. Their findings had been crucial for policy makers in allocating aid to countries with good policies, institutions and those with extreme poverty levels. Boone argues that they are three political or economic regimes which are egalitarian, elitist and laissez faire would use foreign aid (Boone, 1996). In his findings, an elitist regime has the motive to maximize the welfare of the elite; the motive of egalitarian regimes is to maximize the welfare of its poor citizens; and the laissez faire regime seeks to reduce taxes and distortions in the economy. In his findings, Boone concluded that aid neither increase investment nor growth nor benefit the

poor in recipient countries as measured by improvements in human development indicators (ibid). Further he posits that the impact of aid does not vary according to whether the recipient government political regime is liberal, democratic or highly repressive. Liberal regimes had 30 percent reduced infant mortality rates than other political regimes (ibid). Boone also implied that short term aid is targeted towards supporting liberal regimes, which might be a successful means of reducing poverty. Democracy has been seen as a necessary factor in building viable institutions and alleviating poverty in developing countries. However, Boone's notion was criticized by Burnside & Dollar (2000); they came up with a policy index in which they incorporated budget surplus, openness of the economy, and inflation rate. Their findings were that aid had a positive impact on growth after controlling for macroeconomic policies and the quality of policies and institutions (ibid). Their policy recommendations have been widely accepted: foreign aid should be increased to countries with good policies and higher poverty levels. The findings of Burnside and Dollar have been criticized by William Easterly (2003) who finds contrary results to what Burnside and Dollar found in 2000 when he enlarged the dataset. Other scholars (Dalgaard & Hansen 2001, Lu & Ram 2001) also replicated the study, used different datasets and different regression methodologies and estimates, and could not find similar results obtained by Burnside & Dollar.

Aid has fosters economic growth in other countries, but diminishes as the volume of aid increases. The idea of good institutions was supported by Acemoglu *et al*. (2001), they emphasized that countries with good institutions benefit from the following attributes that are brought about by good institutions: good institutions enforce property rights, and prevent the actions of the elites, politicians and bad governments from abusing their power that tends to distort the outcome of the economy. However, the notion of good governance has been criticized by John Weiss (2008). He eluded that not all good governance reform is a panacea for development problems.

2.3 Fungibility of Foreign Aid

"Fungibility" of foreign aid means the money intended for specific aid projects is misused. Thus foreign aid extended to recipient countries is expended on other unintended projects which might not be the objective of the donors. The notion that foreign aid is fungible has been raised by World Bank Economist, Paul Rosenstein-Rodin in 1947. Devarajan et al (1999) concluded that aid is fungible in Africa. They found out that a dollar increase in foreign aid results in a 90 cent increase in government spending. Chattarjee et al (2007), found similar results to Devarajan et al, thus in their model specification they incorporated total government expenditure in recipient economies and analyzed the changes in aggregate foreign aid. Their results indicated strong evidence of "*fungibility*" of about 70 cents of every foreign aid dollar received with investment aid being the most fungible, with almost 90 cents of every dollar received being fungible. Therefore, based on their foreign aid effectiveness test, they found that in the presence of "*fungibility*" aid has no positive effect in fostering economic growth.

2.4 Financial Development and Poverty Alleviation

Development of the financial sector can enable poverty reduction indirectly either by stimulating growth and eventually allowing the poor to benefit by undertaking profitable investments (Jeanneney & Kpodar, 2008). Conversely, the development of finance as evidenced by access to credit in some instances undermine the effort of poverty reduction as it widens the income inequality gap between the rich and poor in malfunctioning financial institutions and indirectly through adverse macroeconomic conditions (ibid). Kuznets' (1963) inverted U hypothesis argues that if a country develops, its income per capita rises, the degree of income inequality rises, and after reaching a certain maximum level it drops as the Gross Domestic Product per capita continues to rise.

2.5 Conclusion

Given the ideas articulated above, there is clear certainty that researchers agree to the notion that aid can be effective in reducing poverty under certain macroeconomic conditions, and that donor and recipient countries are working tenaciously to make aid more effective in reducing poverty and fostering economic growth. This has been evidenced in the Paris Declaration of 2005, in which donor and recipient countries have adopted the five principles namely; ownership, alignment, harmonization, mutual accountability of foreign aid between donor and recipient countries and managing for results in a bid to improve the effectiveness of aid. However, the new found literacy in aid effectiveness has seen donor countries increasing selectivity by extending foreign aid to poor countries with 'good' macroeconomic policies, and 'good' institutions in order to ameliorate poverty. What then remains unclear is what exactly qualifies as 'good' institutions? Is it only formal or informal institutions that matter in aid allocation? Slow-moving institutions proposed by Gerard Roland (2004) such as norms, culture, societal values seem to be playing a pivotal role in fostering economic sustainable development and ultimately poverty reduction.

Though it is interesting to assess the importance of slow moving institutions in their relationship to effectiveness of foreign aid but this is not the main focus of this research. As I analyzed various papers on this topic what remains unclear is the impact of foreign aid and poverty in Sub-Saharan Africa region. Therefore the question remains whether recipient countries should depend on foreign aid to reduce poverty or develop its financial sector as a necessary tool in alleviating poverty. This paper contributes to the assessment of foreign aid effectiveness as an economic tool to eradicate poverty in SSA countries. Given that foreign aid allocation is not consistent in its allocation and in some instances aid is received in nominal amounts in recipient countries, greater focus should be concentrated on better and sustainable measures of alleviating poverty in recipient countries. SSA countries should rather focus on building a resilient domestic credit to people living under extreme poverty as a more sustainable approach in alleviating poverty. Thus recipient countries should move away from aid dependency and hence cultivate extending domestic credit as an effective tool in eradicating poverty.

3.0 DATA DESCRIPTION AND STATISTICS

Table 1. Summary Statistics

Panel A:Summary Statistics

Variables	Obs	Mean	Std. Dev	Min	Max
Log Poverty Gap	608	3.56	0.997	-1.05	4.569
Log Poverty Depth	608	2.569	1.263	-2.996	4.169
Log Poverty Severity	608	1.862	1.466	-4.605	3.921
Log Population	1496	6.314	0.989	0	7.311
Private Credit (% of GDP)	1373	2.474	0.924	-1.856	5.076
Aid (% of GNI)	1477	3.746	0.982	-4.683	6.539
Log Finance	608	4.559	0.64	3.08	6.55
Log GDP	1037	7.49	0.922	5.489	10.153
Log Trade openness	856	5.631	0.573	4.152	7.235
Log Inflation	1193	2.223	1.473	-4.074	10.103
Landlocked Dummy	1496	0.364	0.481	0	1
English Colony	1496	0.419	0.494	0	1
Common Law	1496	0.477	0.5	0	1
Freedom of Speech	924	3.496	0.648	0	4.317
Economic Freedom Index	555	1.722	0.181	0.997	2.008
Legal Origin	1496	0.419	0.5	0	1
Gini coefficient	615	82.924	47.46	1	163

The dataset used in analyzing the poverty and aid relationship is obtained from the World Bank household survey on poverty and inequality; PovcalNet. Absolute poverty measures are obtained from over 500 household incomes covering over 100 developing countries (Chen & Ravallion, 2007). The period covered in this research is from 1980-2013. In this paper, I restricted the analysis to 42 out of 54 in SSA countries for which high quality information and the distribution of income data was available. Average income per capita for each household survey is converted to 2011 Purchasing Power Parity (PPP). The international poverty line of $1.90 per day is converted to 2011 rate of $1.08 per day. Aid effectiveness data is obtained from OECD and is measured relative to Gross National Income. The panel dataset is fairly balanced with years ranging from 1980 to 2013. Due to availability of data there are gaps in between the years as the poverty levels are measured as averages over a period of 3 years. The Pearson Correlation matrix for this dataset is shown in the appendix section.

3.1 Measurement of Absolute Poverty

Absolute poverty is measured using the Foster–Greer–Thorbecke Index (1984). The FGT index has been well-recognized by policy makers as a good measure of poverty and inequality (Foster *et al* 2010:3). Absolute poverty is a better indicator of extreme poverty in a country as the measure indicates how one barely meets the basic essential needs (Todaro and Smith, 2015:226). Its axiomatic practices are sound and it has helpful properties of additive decomposability and subgroup consistency. The Index is calculated as follows:

$$P_\alpha = \frac{1}{N}\sum_{i=N}^{H}\left(\frac{Y_P - Y_i}{Y_p}\right)^\alpha \quad (1.0)$$

N is the population size, and H is the number of deprived people, and Y_p is the poverty line, and poverty gap is (Y_p-Y_i) where Y_i is the per capita income.

$\alpha \geq 0$ is a parameter, when

$\alpha = 0$ is the Poverty gap measure (P_0)

$\alpha = 1$ is the normalized Poverty Depth index (P_1)

$\alpha = 2$ is the severity poverty index(P_2)

The *headcount count index (poverty gap*) is a measure of the proportion of the deprived population living in a household of income per person below the poverty datum line. The pitfall of absolute poverty measurement is that it does not take into consideration the distribution of the people as no weight is given to the relative distance of the poor to the poverty line (Alvi and Senbetta 2012). Everyone living below the poverty line is counted as poor without any peculiarity how any individual is far from the poverty line. *Poverty gap index* (*poverty depth)* measures the income shortfall as a proportion of the poverty line. This measurement of absolute poverty expresses income needed to take the poor out of the poverty datum line expressed as a ratio of the poverty line. *Squared poverty gap index (poverty severity index)* squaring the shortfall in the poverty severity index allocates more weight to those living below the poverty line (ibid).

3.2 Endogeneity and foreign aid

Endogeneity of foreign aid and poverty is a serious issue as non-robust results can result due to endogenous aid. Recent empirics on aid effectiveness studies test for the endogeneity biases in the estimated parameters resulting from endogenous aid. Endogeneity in foreign aid could arise from 1) the reverse causality between foreign aid and poverty, 2) it could be a result of measurement error, absolute poverty is measured with household surveys and collection of data is not consistent over a period of time which results in measurement error problems especially with African countries, 3) endogeneity could be a result of omitted variables in the econometric model. In most circumstances results will be produced disfavoring the effect of aid if the issue of endogeneity is not correctly addressed. However; accounting for country time invariant specific effects and incorporating instrumental variables is necessary to capture the true impact of foreign aid. In so doing, literature on aid effectiveness suggest lagging the aid variable. The reason for lagging the aid variable is that previous aid extended by donors could have the effects on poverty in the following year or over a period of time.

4.0 Model Specification

$$Log\ Poverty_{it} = \alpha_0 + \beta_1 LogGDP_{it} + \beta_2 Gini_{it} + \vartheta_{it} + \varepsilon_{it} \quad (1.1)$$

The econometric model used is a general specification for growth-poverty relation used by Perry *et al* (2006), Alvi & Senbeta (2011) in testing for growth-income distribution of poverty. Where the dependent variable is a measure of poverty levels and the coefficient of β_1 is the per capita income. β_2 captures the Gini coefficient as it measures the inequality prevalent in African countries at time *t.* ϑ_{it} captures the unobserved country effects and the idiosyncratic error term isε_{it}. Aid is then structured in the second equation and this enables to explain changes in foreign and how it affects poverty levels in recipient countries. Alvi and Senbeta (2012), in their empirical research they aggregated aid into bilateral and multilateral aid and they analyzed 79 countries in different regions. Their panel dataset was fairly balanced and their dependent variable poverty had a 3 year averages)

$$Log\ Poverty_{it} = \alpha_0 + \beta_1 LogGDP_{it} + \beta_2 Gini_{it} + \beta_3 Aid_{it-} + Z_{it}'\theta + \vartheta_{it} + \varepsilon_{it} \quad (1.2)$$

Thus in this model the variable of interest is β_3 as it measures the impact of aid on poverty. In this model I therefore control for other variables that have both direct and indirect effects of aid. Incorporating independent variables in the model is in line with the literature and empirics of foreign aid and poverty. I propose that there are other particular variables that raise aid effectiveness in the sense of reducing poverty and hence the need to incorporate other controlling independent variables in accordance with literature on foreign aid and poverty. *i* and *t* subscripts in the model represents index country and year respectively. The aid effectiveness used in the dataset follows the standard definition of aid which is the ratio of net Official Development Assistance (ODA) relative to GNI.

Independent variables incorporated in the model are growth enhancing policies such as trade openness, quality of institutions, and sound macroeconomic policies. Inflation as one of the independent variables is a macroeconomic indicator of sound economic policies. A higher inflation rate impedes poverty reduction efforts. Trade openness is calculated as total sum of exports and imports relative to the Gross Domestic Product (Frankel & Rommer, 1999). This implies that the more open a country is creates employment for unskilled labour force and can be a source of earnings. Trade openness is expected to reduce poverty levels in recipient countries. Access to domestic credit as a proxy of financial development enables an increase in income share to the poor (Kunt &Levine, 2007). Thus average income of the poor can be improved in relative distribution of income (ibid). A negative effect between poverty and financial development implies that countries with more developed and sound financial sector system, and are open to international trade, and this ultimately reduces poverty (Alvi & Senbeta: 2011). Conversely, landlocked countries face trade competitive disadvantage and more likely to remain poor. Thus lack of access to good infrastructure which is prevalent to most African countries exacerbates poverty levels. Landlocked dummy captures the effects of geography and how it impacts poverty in African countries. The English and French colony dummy captures the long run effects of colonial origin (Lin 2009). 1 implies that a country is an English colony and 0 otherwise. Institutional quality is measured by the International Country Risk Guide Index; it measures governance, focusing on bureaucratic quality, rule of law, and corruption (Brautigam & Knack, 2004). The Index gamut is on an 18 point scale.

Countries with better institutions have a higher index. Most African countries have low institutional quality. The country with a highest institutional quality has 7. Brautigam & Knack, (2004), examined the relationship between ICRG index and tax revenues and observed a stronger relationship between aid and a decline in quality governance. Index of economic freedom is also used as a proxy for government's intervention in property rights institutions. The index is calculated by aggregating four pillars, namely rule of law, government size, regulatory efficiency, and open markets. The index is on a scale of 0 to 100. A higher index implies more economic freedom. The data is obtained from Economic Freedom of the World (Heritage Foundation, 2018).

4.1 Econometric Methodology

Assessing the impact of foreign aid on poverty, I employ the Ordinary Least Squares Method (OLS), Panel Fixed Effects (FE) and Two Stage Least Squares Method (2SLS). The 2SLS with IV model corrects the endogeneity bias in my OLS estimates. This method also improves the efficiency of estimates. In so doing using the GMM estimator enables lagged levels to be used as instruments for level equation. Consistency of SYSTEM GMM estimates largely depends on how valid the instruments are in absence of auto-serial correlation. Literature on institutions posit that they are endogenous in nature and since the motive of this research is to capture the economic impact of aid effectiveness in reducing poverty; hence there is need to ensure that the results are not driven by endogenous differences in institutions. Thus in a bid to remove the effects of endogenous differences in institutions, I use GMM first differencing method.

Assessing the impact of foreign aid and poverty, I first employ the simple OLS method, panel fixed effects and 2SLS method with an instrumental variable. The instrumental variable caters for endogeneity bias between foreign aid and poverty. I begin with the regression in Table (1). In this regression, I only incorporated a few controlling variables to see how they correlate with poverty. In this first OLS regression, the independent variables included are finance and real income per capita. All the variables seem to have an intuitive negative sign, as they show that foreign aid reduce poverty and the coefficients are statistically significant at 1 percent. In these regressions I assume that poverty reduction can be achieved via growth-led policies which in turn reduce poverty. Further, I incorporated other independent variables in relation to aid and poverty literature.

I controlled for institutional quality as measured by ICRG index and it's statistically significant at 1 percent implying that donor countries tend to allocate more aid to countries with good institutions. Collier and Dollar (2002) found similar results in their aid, growth and policies analysis when they analyzed the impact of good institutions in relation to aid allocation. In their findings, they concluded that aid is channeled to countries with good institutions. I further controlled for macroeconomic factor variables such as trade openness, inflation, and private credit. Trade openness is lagged one period. Trade openness enters the model with a negative sign and it is statistically significant at 10 percent for poverty gap implying that countries which embrace the benefits of trade tend to reduce poverty for people living below the poverty datum line threshold. In this case, if countries are open to trade, it creates employment for their low level unskilled workers; hence a consistent of earnings in wages can therefore enable reduction in poverty. Thus trade openness can have different impacts on skilled and unskilled labour both on tradable and non-tradable sectors in both short and long run (Lin 2009; 75). However, it can be inferred that trade openness is only effective in reducing poverty gap and though it has a correct sign, it is no longer statistically significant in other poverty measures. Elvi and Senbeta (2012) found similar results on trade openness when they assessed the impact of foreign aid on poverty reduction using a System GMM method. Based on their results trade openness was only effective in alleviating poverty severity. All other variables are incorporated in the model to control for the possible omitted variable bias that could be correlated with the error term and have a bias on my estimates. The estimates for other control variables show that the quality of institutions, private credit, landlocked dummy and the English colony all have positive effects on poverty levels. The GINI coefficient has a positive impact on poverty; implying that a percentage increase in GINI coefficient result in 0.007 percent increase in poverty depth. I further decided to test for Kuznets' inverted U shape; in so doing I incorporated Gross Domestic Product and a single-lagged Gross Domestic Product. If the Inverted U shape hypothesis holds then the coefficients of these two variables should be significantly negative. Thus based on my estimates, the Kuznets' inverted U shape is rejected.

The OLS estimates can be biased due to the issue of omitted variables, reverse causality in foreign aid and poverty and measurement error. Though I have lagged some of the independent variables but there is still a possibility of endogeneity bias arising from the reverse causality in foreign aid and endogenous institutions. I ran a panel fixed effects and panel random effects, and after conducting a Hausmann's test, I rely on the Panel Fixed Effects estimates. Conducting panel fixed effects enables to control the impact of omitted variables. In this case panel data contain information on intertemporal dynamics and individuality of the entities may allow one to control the effects of unobserved country effects (Wooldridge, Chapter 14: 2013). Panel fixed estimates results are reported in Table 2. It can be inferred that some variables are dropped due to collinearity problems. However, the variable of interest foreign aid still remains statistically significant in all poverty levels and with a correct negative sign. I further controlled for country fixed effects and time dummy and the results are reported with robust standard errors.

I have also conducted a 2SLS with freedom of speech as an instrumental variable for aid. Instrumental variables are used to help capture the effects of endogeneity bias. If not carefully dealt with a further challenge of endogeneity can cause an attenuation bias. Foreign aid may either influence freedom of press both positively and negatively. Positively when aid is channeled in supporting media infrastructure and when it's providing policy advice by transferring knowledge to journalists. Conversely, aid can influence freedom of press by minimizing the existence of democratic checks. Hence this enables bad governments to stay in power and conceal the misappropriation of funds. Aid can also negatively impact the freedom of press in autocratic countries due to corruption and lack of transparency and accountability (Dutta and Williamson, 2016). Due to the endogenous nature of institutions, I have used legal origin as an instrumental variable, legal origin is a dummy on whether a country has common law or otherwise.

The two stages for structural equation can be identified by the following equations:

$$Y_i = \alpha_{10} + \beta_1 P_2 + Z_1\beta_1 + u_1 \qquad (1.3)$$

and

$$Y_2 = \alpha_{20} + \beta_2 P_1 + Z_2\beta_2 + u_2 \qquad (1.4)$$

Thus in these structural equations, Y1 and Y2 are endogenous variables and u_1 u_2 are structural error terms. Aid is assumed as endogenous in relation to the aid effectiveness literature. Variable Z_1 represent a set of k*1 exogenous variables. Z1and Z2 contains exogenous variables and this implies that I have imposed exclusion restrictions on the model. Thus since I am assuming that foreign aid and poverty are endogenous by using this structural equation I am trying to eliminate the potential bias. Further, I assume exclusion restrictions by assuming that the cov (ε_i, p) = 0. Where ε represents the error for equation 1 and 2 (Woodridge 2013, Chapter 16:538). In running the two stages least square estimation method, I controlled for the endogenous aid with freedom of press as the instrumental variable. I further controlled for the endogenous institutions by incorporation of legal of origin dummy as an instrumental variable for institutions. In doing this, I followed the literature on endogenous institutions by Acemoglu *et al* (2005) procedure. All countries have distinct and peculiar legal origins which matter in maintaining the rule of law and financial development. The use of the dummy variable as an instrument is in accordance with the literature on institutions. Countries which the British settled they influenced setting of common law and those in which the French countries settled influenced the setting of civil laws.

4.2 Discussion of Empirical Results

Referring to the findings of the 2SLS estimation method in Table 3, results show that 1 percentage point increase in aid results in a reduction in poverty gap by 0.02 percent, and the result is statistically significant at 1 percent. Aid is effective in reducing poverty in all poverty level measures. Finance to the households enters the model with a negative sign and has also been statistically significant across all poverty levels, implying that a percent change in access to finance result in 1.91 percent reduction in poverty gap. This further implies that

in a well developed financial sector it can therefore enhance households receiving substantial income that can subsequently reduce poverty. However, the growth led policies as posited by the GDP enter the model on a negative sign but are not statistically significant for poverty gap and poverty depth. Further it can be ascertained that controlling for other macroeconomic factors and institutions quality, private credit, landlocked, English colony dummy, and GINI coefficient they remain with the same sign as in the OLS results and statistically significant.

Private credit shows that a percentage change in private credit results in an increase in poverty by 0.7 percent for both poverty gap and depth. The English dummy is a variable between 0 and 1 -- 1 if the country is a British colony and 0 otherwise.

Further, as a robustness check, I decided to employ the System GMM Method to find out if I can receive similar results by employing lagged dependent variables as instruments. This enables me to capture the possible endogeneity of incorporating GDP and aid in the same regression, because once we employ time averages, GDP and aid will be jointly endogenous (Daalgard *et al*, 2004:F202). Consistency of the GMM estimation method largely depends on the validity of instruments (Elvi & Senbeta, 2012). Validity of the instruments used and method of moments conditions are tested using the Sargan test of overidentifying restrictions and further serial autocorrelation is tested using an Arellano-Bond first and second order autocorrelation test. In these regressions I fail to reject the null hypothesis suggesting that the lagged instruments are valid and that there is no serial autocorrelation. System equations are calculated as follows:

$$Poverty_{it} = \propto Poverty_{it-1} + x'_{it}\beta + v_i + \varepsilon_{it} \qquad (1.5)$$

First differencing in equations results in $\Delta Poverty_{it} = \alpha \Delta Poverty_{it-1} + \Delta x'_{it}\beta + \Delta\varepsilon_{it}$ (1.6)

Moments of this equation are that $E(Poverty_{t-s}\,\Delta\varepsilon_{it}) = 0$ for lagged poverty and for independent variables covariates the equation is as follows:

$E(x_{it-s}\Delta\varepsilon_{it}) = 0 \;\; \forall$ t$\gg$ *3*, …. T and S$\gg$ *2* for the covariates. If I then condition for auto serial correlation then $E(\Delta\varepsilon_{it}\Delta\varepsilon_{it-1} = 0)$ for t=2. The moment conditions in level equations are

$E(\Delta Poverty_{it-1}\varphi_{it}) = 0$ for the lagged poverty variable and $E\left(\Delta X_{i,t-1}\varphi_{it}\right) = 0 \; \forall \; t \gg 3, \ldots\ldots, T$ for covariates. The condition for no second-order serial autocorrelation is

$E(\Delta\varepsilon_{it}\Delta\varepsilon_{i,t-1}) = 0$ for t=2

I however find similar results in comparison to the 2SLS results after controlling for other macroeconomic variables suggesting that the foreign aid can have a negative reducing effect on poverty even after applying different econometric methods.

Table 2: Ordinary Least Square Estimation

Estimation Method	(OLS1)	(OLS 2)	(OLS 3)	(OLS 4)	(OLS 5)	(OLS 6)
	LogP0	LogP0	LogP1	LogP1	LogP2	LogP2
Log AID	-0.0800***	-0.0668***	-0.0716**	-0.0611***	-0.0611*	-0.0568**
	(0.0288)	(0.0223)	(0.0353)	(0.0225)	(0.0419)	(0.0264)
Log Finance	-1.256***	-1.053***	-1.712***	-1.685***	-2.049***	-2.088***
	(0.0683)	(0.0594)	(0.0836)	(0.0608)	(0.0993)	(0.0712)
Log GDP	-0.101**	-0.100**	-0.0294	0.00207	0.0432	0.0843*
	(0.0444)	(0.0398)	(0.0544)	(0.0403)	(0.0646)	(0.0473)
Institutional Quality		0.0689***		0.0651***		0.0709***
		(0.0125)		(0.0128)		(0.0150)
Trade Openness		-0.112*		-0.0364		-0.0312
		(0.0614)		(0.0630)		(0.0738)
Private Credit		0.876***		0.433**		0.322
		(0.192)		(0.200)		(0.234)
Landlocked		0.130***		0.0536		0.0350
		(0.0379)		(0.0396)		(0.0465)
English Colony		0.170***		0.0798**		0.0772*
		(0.0370)		(0.0397)		(0.0466)
GINI				0.00722***		0.01000***
				(0.000475)		(0.000557)
Constant	10.37***	9.404***	10.87***	9.719***	11.11***	9.974***
	(0.212)	(0.593)	(0.260)	(0.601)	(0.308)	(0.705)
Observations	470	258	470	258	470	258
R-squared	0.738	0.834	0.747	0.905	0.731	0.906

Note: Dependent variables are Log Poverty gap (P0), Poverty Depth (P1) and Poverty Severity (P2). Robust standard errors are in parenthesis.
*** Significant at 1 percent
** Significant at 5 percent
* Significant at 10 percent

Table 3: Panel Fixed Effects Estimation

Estimation Method	(FE 1) Log P0	(FE 2) Log P1	(FE 3) Log P2
Log Aid	-0.01858**	-0.0128**	-0.0201***
	(0.0201)	(0.0245)	(0.0308)
Log Finance	-0.907***	-1.386***	-1.716***
	(0.0653)	(0.0796)	(0.0999)
Log GDP	-0.284***	-0.222***	-0.151*
	(0.0555)	(0.0677)	(0.0850)
Log Trade openness	0.249*	0.257	0.284
	(0.139)	(0.169)	(0.213)
Log Private Credit	-0.0292	-0.252	-0.383
	(0.204)	(0.249)	(0.313)
Log Inflation	-0.0134	-0.00828	-0.00715
	(0.0118)	(0.0144)	(0.0181)
Log Population	-0.0410**	-0.0442**	-0.0494*
	(0.0179)	(0.0218)	(0.0274)
GINI Coefficient	0.00232***	0.00633***	0.00961***
	(0.000481)	(0.000586)	(0.000736)
Constant	8.583***	8.978***	8.882***
	(1.020)	(1.244)	(1.562)
Observations	347	347	347
R-squared	0.738	0.787	0.773
Number of countries	42	42	42

Note: The dependent variable is poverty gap (P0), poverty depth (P1), and poverty Severity (P2). Robust standard errors appear in parentheses.
*** Significant at 1 percent,
**Significant at 5 percent,
* Significant at 10 percent

Table 4: Two Stage Least Squares Estimation Method

Estimation Method	(2SLS) LogP0	(2SLS) LogP1	(2SLS) LogP2
Log Aid	-0.241***	-0.217***	-0.175**
	(0.0477)	(0.0577)	(0.0771)
Log Finance	-1.096***	-1.628***	-2.030***
	(0.103)	(0.102)	(0.131)
Log GDP per capita	-0.106*	-0.00442	0.104
	(0.0626)	(0.0700)	(0.0961)
Institutional Quality	0.0522***	0.0632***	0.0751***
	(0.0127)	(0.0150)	(0.0202)
Trade Openness	-0.172***	-0.0694	0.0254
	(0.0525)	(0.0559)	(0.0780)
Private Credit	0.681***	0.686***	0.622**
	(0.243)	(0.248)	(0.286)
Landlocked	0.163***	0.172***	0.157***
	(0.0360)	(0.0370)	(0.0445)
English Colony	0.00673	-0.00670	-0.0445
	(0.0563)	(0.0528)	(0.0570)
GINI Coeffiecient	0.00230***	0.00663***	0.0103***
	(0.000646)	(0.000630)	(0.000696)
Constant	10.73***	10.29***	9.576***
	(0.663)	(0.763)	(1.072)
Observations	154	154	154
R-squared	0.950	0.967	0.967

Note: The dependent variable is poverty gap (P0), poverty depth (P1), and poverty Severity (P2). White heteroskedasticity consistent standard errors appear in parentheses. P values for test of exogeneity are in brackets.

*** Significant at 1 percent,

**Significant at 5 percent,

* Significant at 10 percent.

Table 5: GMM Estimation Method

Estimation Method	(GMM 1) Log P0	(GMM 2) Log P0	(GMM 3) LogP1	(GMM 4) Log P1	(GMM 5) Log P2	(GMM 6) Log P2
Log Aid	-1.581***	-0.229***	-1.965***	-0.216***	-2.187***	-0.164**
	(0.430)	(0.0416)	(0.538)	(0.0572)	(0.610)	(0.0770)
Log Finance		-1.199***		-1.658***		-2.055***
		(0.110)		(0.102)		(0.127)
Log GDP		-0.0429		0.0175		0.126
		(0.0603)		(0.0703)		(0.0955)
Trade Openness		-0.133***		-0.0551		0.0282
		(0.0456)		(0.0569)		(0.0747)
Private Credit		0.587**		0.599**		0.604**
		(0.231)		(0.237)		(0.284)
Inflation		-0.0380*		-0.0306		-0.0168
		(0.0196)		(0.0247)		(0.0314)
Landlocked		0.124***		0.170***		0.165***
		(0.0347)		(0.0390)		(0.0446)
English Colony		0.0435		-0.00251		-0.0601
		(0.0583)		(0.0585)		(0.0609)
Institutional Quality		0.0576***		0.0647***		0.0746***
		(0.0121)		(0.0146)		(0.0201)
GINI Coefficient		0.00255***		0.00686***		0.0106***
		(0.000591)		(0.000640)		(0.000684)
Constant	10.04***	10.50***	10.56***	10.24***	10.72***	9.488***
	(1.718)	(0.555)	(2.162)	(0.764)	(2.458)	(1.047)
Observations	119	89	119	89	119	89
R-squared		0.951		0.968		0.967

Notes: The dependent variable is Poverty gap (P0), Poverty Depth (P1) and Poverty Severity (P2). Robust t-statistics are reported in parentheses. The t-statistics in regression (2), (4) and (6) are based on a small sample with a corrected covariance estimates. Instruments used freedom of speech, and lagged poverty levels. They are all lagged one period. The two step Sargan test statistics which are consistent in case of heteroskedasticity are reported. *** Significant at 1% , ** significant at 5 %, * significant at 10%.

Incorporating the instrumental variables freedom of press and economic freedom in a 2SLS regression in Table 3, it can be inferred that a percentage change increase in foreign aid results in a 2 percent reduction in poverty. The result is statistically significant in all three measures of poverty. The findings are consistent with the findings of Elvi & Senbeta (2012); after controlling for average income effects, they found that a percentage increase in aid reduced poverty by 3 percent. After aggregating aid, they also found that an increase in multilateral aid reduced poverty by 2 percent. The negative impact of finance can be attributed to the prominent role of financial sector development as a necessary tool in eradicating poverty. Easing credit and borrowing constraints to the poor can bring about

improvements in productivity which can ultimately reduce poverty (Beck *et al*, 2007). Income per capita enters the model with a negative sign and is only statistically significant at 10 percent in poverty gap. Mosley *et al,* (2004) found similar results when they assessed the relationship between foreign aid and poverty. Alvi and Senbeta, (2012) found that income per capita reduced poverty in all poverty levels and it was statistically significant at 1 percent after they aggregated aid in bilateral and multilateral aid and controlled for trade openness, GINI, age dependency ratio and democracy score. The GINI coefficient estimates are consistent with literature on aid effectiveness. A 1 percent increase in inequality as measured by the Gini coefficient results in a 0.01 percent increase in poverty severity. I tested for regressor endogeneity between OLS and IV estimators using Hausmann test principle that provided a test of whether the regressor was endogenous and based on the results there was need to instrument for foreign aid. In so doing after incorporating the IV of freedom of speech as an instrument for foreign aid I had to test for overidentifying restrictions using the Hansen's J test and Sargan's test under the hypothesis that all instruments are valid. Chi Squared distribution with degrees of freedom equal to the number of overidentifying restriction. I failed to reject the null hypothesis. Further the Cragg Donald Wald F-Statistic was 16.22 with a benchmark of 10 implying that the instruments used are not weak.

In Table 5, I ran the GMM model after removing the endogenous institutions by first differencing refer to (Acemoglu *et al*, 2003: 7a). The panel GMM method further controls for unobserved heterogeneity and serial auto correlation between variables. After incorporating the freedom of speech and lagged poverty levels, it can be inferred that aid seems to reduce poverty in all levels and it's highly statistically significant at 1 percent. Controlling for other macroeconomic variables and controlling for the impact of time invariant factors it can be observed that there is a significant change in the levels at which foreign aid reduces poverty. 1 percent increase in aid results in 0.2 percent reduction in poverty gap index. The results are almost similar to the 2SLS estimates.

4.3 Policy Implication

The policy implication on the efficacy of foreign aid effectiveness has been widely contested by policy makers and economists. Some opponents of aid citing that aid in recipient countries have detrimental effects on the private sector; perpetuate bad governments to stay in power or in some instances waste aid on frivolous expenses. The effectiveness of foreign aid is therefore challenged especially in Sub-Saharan African countries where there has been a huge influx of foreign aid. In this empirical research I have shown that foreign aid has poverty reducing effect when we control for other macroeconomic factors and for average income distribution. The results do not specify that giving aid is the only the solution to poverty alleviation. Aid is only one facet to the puzzle that should be treated with caution aid can lead to aid-dependency in recipient countries and Dutch disease. In order for aid to work to achieve convergence between rich and poor countries, donor countries should be consistent in their aid giving with 0.7 percent of their Gross National Income channeled towards effective development in recipient countries. Based on the empirical findings it can be observed that good institutions and sound macroeconomic policies can be quite beneficial for the recipient countries as a means to poverty eradication. Therefore donor countries should also concentrate on channeling aid to countries with good policies and higher poverty levels. So doing enables transparency and allows for accountability for recipient countries to effectively and rightfully allocate aid in the sectors that it is intended for. Making aid effective in recipient countries might call for strong harmonization between donor and recipient countries in understanding critical areas that might call for urgent funding. Many at times have observed donor countries issuing aid in sectors that the recipient countries might not need aid. This enables underutilization of aid in recipient countries and many at times funds being misappropriated or channeled towards budget financing deficits.

5.0 Conclusion

To summarize, this paper analyzed the economic impact of foreign aid on poverty reduction. It can therefore be inferred that an increase in aid reduces poverty in SSA countries as ascertained from the results found in the empirical analysis. This indicates that aid has a direct effect on poverty reduction and the result is robust even after controlling for other variables, excluding outliers and using different estimation techniques. A policy implication that can be drawn from this study is that aid channeling can be improved by exploiting the direct effect of targeting the poor directly and alternatively rather through increased averages incomes following aid lowers poverty indirectly (Senbeta 2009: 37). The finding that aid has a strong impact on reducing poverty to recipient countries has been echoed by a number of researchers, Ravallion & Chen (1997), Besley & Burgess (2003), Kray (2006), Alvi & Senbeta (2012) among others.

However, aid is at work in most African countries and thus donors should channel it towards promoting country owned development strategies. In this way aid can lead to sustained growth and poverty alleviation. Of course, the donors should channel aid to countries with sound economic policies and good institutions, those that promote the rule of law, enforcement of contracts and property rights in order to ensure that aid is not misappropriated. The reason why many countries may still be poor today despite receiving a substantial amount of foreign aid may not be the fact that aid is not working; it might be due to other geopolitical factors, or poor governance structures governing foreign aid, or the conditionality attached to the foreign aid by donors.

In as much as the effectiveness of foreign aid continues to be debated in academic and policy circles, the results presented in this paper signify that aid can be an effective tool in ameliorating poverty in SSA. Thus, increased official development assistance is being proposed as an ambitious plan to cut the proportion number of people living in absolute poverty by 2030. After examining the direct effects of poverty using three poverty measures: poverty gap, poverty depth and poverty severity, it can be ascertained that aid reduces poverty after controlling for average income distribution. Further, the development of the financial markets, ensuring that credit is made accessible to the poor, and sound macroeconomic policies are a necessity as useful strategic tools to reduce poverty in most Sub-Saharan African countries. To answer the question why Sub-Saharan African countries

remains poor even after receiving large amounts of aid can be as a result of other factors such as high levels of corruption, embezzlement of donor funds, violence, conflict among different ethnicities, poor governance, collective action problems, and poor accountability structures in most African countries. If SSA could not have received this aid, perhaps the levels of poverty and inequality could have risen to insurmountable figures to this very day. Therefore aid could be working in reducing poverty and its effects could be observed in the long run. However, this is not to say that SSA countries should heavily rely on aid as the only mechanism to reduce poverty. Aid cannot be the only panacea to solve a myriad of problems facing most African countries. Hence the need to harness other opportunities that can be necessary to alleviate poverty, e.g. embracing trade benefits by not only depending on commodity trading but enhancing value of those primary goods, financial sector reform, creation of employment for majority of youth among other factors.

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Appendix

Table A1: COUNTRY COVERAGE OF SUB-SAHARAN AFRICAN COUNTRIES

Angola	Ghana	Sao Tome and Principe
Benin	Guinea	Senegal
Botswana	Guinea-Bissau	Seychelles
Burkina Faso	Kenya	Sierra Leone
Burundi	Lesotho	South Africa
Cabo Verde	Liberia	Sudan
Cameroon	Madagascar	Swaziland
Central African Republic	Malawi	Tanzania
Chad	Mali	Togo
Comoros	Mauritania	Uganda
Congo, Democratic Republic of	Mauritius	Zambia
Congo, Republic of	Mozambique	Zimbabwe
Cote d'Ivoire	Namibia	
Ethiopia	Niger	
Gabon	Nigeria	
Gambia	Rwanda	

TABLE A2: VARIABLE DEFINITIONS AND DATA SOURCES

Variable	Variable definition	Source
LogP0 (Poverty Gap Index)	Log of proportion of people living below the poverty line	PovcalNet, World Bank
LogP1(Poverty Depth Index)	Log of the average income shortfall as a share of poverty line	PovcalNet, World Bank
LogP2 (Severity Poverty Index)	Log of the average income shortfall as share poverty line	PovcalNet, World Bank
Aid	Aid Effectiveness, Aid per cent of Gross National Income	World Bank Indicators, World Bank
Private credit	Private credit by deposit money banks and other financial institutions relative to GDP	World Bank Indicators, World Bank
Population	Log Population	World Bank Indicators, World Bank
Trade Openness	Log of (exports + imports)of goods and services as a share of GDP	World Bank Indicators, World Bank
Finance	Log of the mean annual household income in 2011 PPP	PovcalNet, World Bank
Inflation	Log of the Inflation Rate	World Bank Indicators, World Bank
Gini	Log of the Gini coefficient	PovcalNet, World Bank
Landlocked	Dummy variable, 1 if the country is landlocked and 0 otherwise	UNCTAD Book of Statistics 2005
Economic Freedom Index	Economic Freedom is graded on a scale form of 0 to 100. A country's overall score is derived by averaging these twelve economic freedoms, with equal weight being given to each.	Heritage of Foundation, 2018
Legal Origin	Dummy Variable, 1 if the country has Common law and 0 otherwise	Legal Origin Data is collected from CIA World Fact Book
English Colony	Dummy variable, 1 if the country was colonized by Britain and 0 otherwise	Data is collected from CIA World Fact Book
Real Gross Domestic Per Capita	Log GDP per Capita, PPP(constant 2011 international dollar)	World Bank Indicators, World Bank
Institutional Quality	ICRG Index	Data obtained from Deborah Brautigam and Stephen Knack (2004), Burnside and Dollar (2001)

Negative Correlation Graphs between GDP and Poverty Levels

Figure 1A: Poverty Gap and GDP Negative Relationship

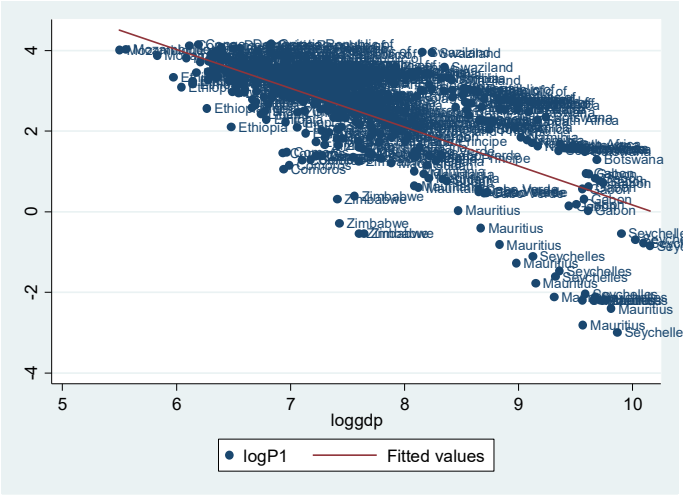

Figure 1B: Poverty Depth and GDP Negative Correlation

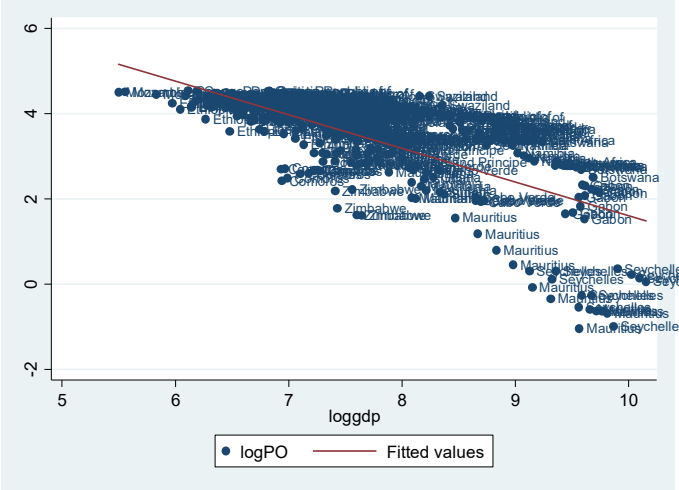

FIGURE 1C: Poverty Severity and GDP Negative Correlation

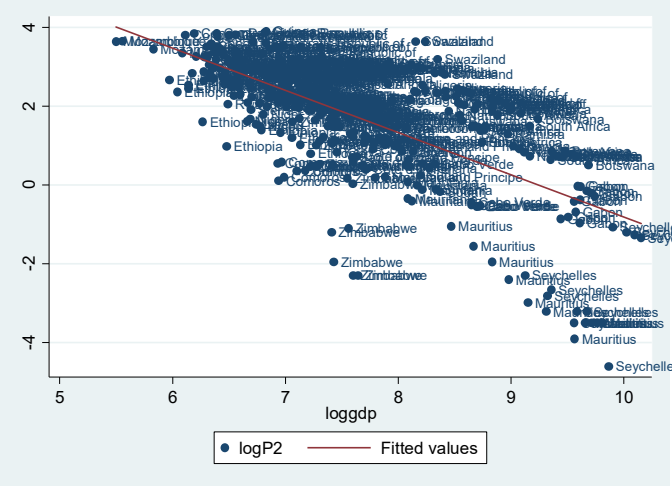

Figure 2A: Poverty Gap and Foreign Aid Negative Relationship

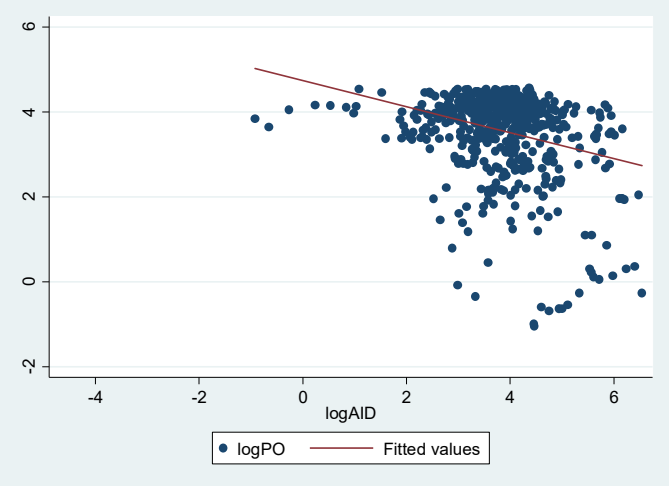

Figure 2B: Poverty Depth and Aid Negative Relationship

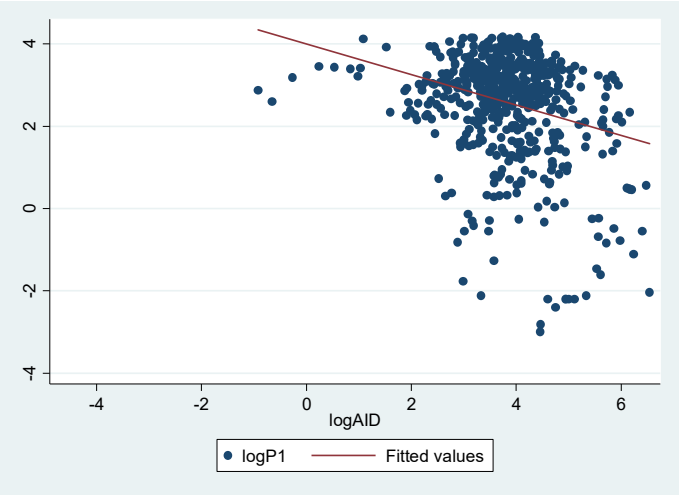

Figure 2C: Poverty Severity and Aid Negative Relationship