국제학석사학위논문

# Foreign Aid and Income Inequality

## 대외원조가 소득불평등에 미치는 영향

2021년 2월

서울대학교 국제대학원

국제학과 국제협력전공

김 세 원

**Master's Thesis of International Studies**

# Foreign Aid and Income Inequality

**Submitted in Fulfillment of the Requirements**
**For the Degree of Master of International Studies**

**February 2021**

**Graduate School of International Studies**
**Seoul National University**
**International Cooperation Major**

**Sewon Kim**

# 대외원조가 소득 불평등에 미치는 영향

지도교수 김 종 섭

이 논문을 국제학 석사학위 논문으로 제출함

2021년 2월

서울대학교 국제대학원
국제학과 국제협력전공
김 세 원

김세원의 석사학위 논문을 인준함

2021년 2월

위 원 장 김 태 균 (인)

부 위 원 장 안 재 빈 (인)

위 원 김 종 섭 (인)

# Abstract

This study contributes to the empirical understanding of aid effectiveness by examining the effect of foreign aid on income inequality in recipient countries. Impact of aid on income inequality has been little studied despite the importance of the topic in terms of aid effectiveness. This study utilizes both Pooled OLS estimation and the Generalized Method of Moments (GMM) method for a panel of 156 countries covering the period 1997-2018. Data on inequality is extracted from the United Nation's World Income Inequality Database (WIID). The results indicate that foreign aid itself, controlling for other variables, has negative effect on income inequality at a statistically significant level, and the results are robust. Institutional variables, the level of democracy and control of corruption are also incorporated to discern the mechanism between foreign aid and institutions. The results show that institutional variables have positive correlation with income inequality. This implies that foreign aid may offset the equalizing effect of good institutions, although overall, the negative (equalizing) effect of foreign aid on income inequality remains.

**Keywords:** Foreign aid, Inequality, Aid effectiveness, Panel data, International Development, GMM, WIID

**Student Number:** 2019-22247

# Table of Contents

# List of Tables

# I. Introduction

Foreign aid already has a long history but whether it has left positive impacts, especially in terms of improving inequality, remains unanswered. The main supposed goal of foreign aid is to promote the economic growth and development of recipient countries, although there are many other reasons as to why donors give aid to certain countries (Alesina and Dollar, 2000). Whether foreign aid helps economic growth of the developing countries has been the main focus of literature on its effectiveness (Boone, 1997; Burnside and Dollar, 2000; Banerjee and Rondinelli, 2003; Easterly, 2003; Rajan and Subramanian, 2008). Even for this question, however, papers have not reached agreement, as there are various views that oppose each other. On the issue of foreign aid and its impact on income inequality, there have not been much literature regarding this question (Bourguignon et al., 2008; Calderon, Gradstein and Chong, 2009; Bjornskov, 2010;). Inequality, not only poverty, is an important issue to be tackled since inequality itself can hinder economic growth, which would interrupt sustainable development. Even if developing countries receive aid and poverty is alleviated to a certain extent, without sustainable development, aid effectiveness is limited, which is why inequality is as important as poverty to tackle. Therefore, the aim of this paper is to contribute to the empirical study of whether foreign aid helps reduce income inequality in the recipient countries.

Ideally, aid should have a positive impact on both alleviating poverty and reducing inequality. However, there are empirical and theoretical reasons to believe that

this is not the actual case in many developing countries. There have been reported cases of the elites using the money received from foreign aid for their own benefits instead of using it for public interests. Studies have given examples of political elites and leaders "stealing" the aid resources, such as Mobutu Sese Seko, the former president of Zaire, Indonesian political elite under Suharto, Philippine elite under Marcos, Zimbabwean dictator Robert Mugabe and another list of ten African dictators (Klitgaard, 1991; Bayart, 1993; Svensson, 2005). Accordingly, foreign aid itself is not the problem but rather how it is used by whom seems to be the key in determining its effectiveness. Democracy is said to provide checks and balances which also allows better redistribution towards the poor, as every vote counts in democracy and therefore leaders have to be accountable to their own citizens, including the poor. Yet, empirical relation between democracy and inequality is also not clear. Hence, this study will also see whether what role institutional variables play in aid receiving countries, as to its mechanism with foreign aid.

This paper is organized as follows. Section 2 clarifies the definition and scope of foreign aid. The literature review in Section 3 builds the theoretical background for foreign aid, growth and inequality and summarizes the findings in recent and past studies. Section 4 outlines the research methodology and the data used in this paper. Section 5 shows the findings of the empirical analysis and a discussion of the findings. Section 6 includes implications of foreign aid and its impact on income inequality. The Appendices contain a list of the countries included in the research and sources of the employed data as well as simple correlations.

# II. Background

Before moving on to the research, it is necessary to define the keyword in order to clarify the analysis and its implications. Also, empirical results tend to differ according to which definition of foreign aid is adopted in the study as William Easterly (2003) points out that the results from Burnside and Dollar (2000) do not appear to be statistically significant as claimed to be when using a different measure of foreign aid. Therefore, most widely used definitions of foreign aid will be visited here in Section 2.

## 2.1. Definition of ODA

Foreign aid started as one of the tools to help developing countries escape poverty and achieve growth after World War II. Thus, foreign aid has been increasing since the 1950s and 60s. The Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD) has been measuring resource flows to developing countries since 1961. At first, “resource flows” had a wide coverage including grants, loans, export credits, mixed credits, associated finance, private investment, etc. Over time, however, calls for a more specific measure of concessional flows came from the DAC members, especially those who provided a large share of grants in their overall flows (Hynes and Scott, 2013).

As a result, the DAC first defined Official Development Assistance (ODA) in 1969, which became the most common type of foreign aid. After much debate, a

consensus was reached to clearly separate total official and private flows into the categories of ODA, Other Official Flows (OOF) and Private Flows. Separating ODA from OOF allowed identification of official transactions designed to promote the economic and social development of developing countries (Hynes and Scott 2013). The initial definition of ODA according to OECD was defined as those flows to countries and territories on the DAC List of ODA Recipients and to multilateral development institutions which are:

i. Provided by official agencies, including the state and local governments, or by their executive agencies;

ii. and each transaction of which:

   a) is administered with the promotion of the economic development and welfare of developing countries as its main objective; and

   b) is concessional in character and conveys a grant element of at least 25% (calculated at a rate of discount of 10%).

Originally, the DAC List of ODA Recipients was divided into two parts, “Part I” and “Part II” where only aid flowing to “Part I” listed countries was counted as ODA while those flowing to “Part II” was counted as Official Aid (OA). Part II recipients were more advanced countries of Central and Eastern Europe, the countries of former Soviet Union, and certain developing countries and territories. Official Aid was provided under similar terms and conditions to those for ODA until Part II of the DAC List was abolished in 2005. Nowadays, any aid that meets the above criteria falls under ODA.

## 2.2. Modernization of ODA

Reaching agreement on the ODA definition of the minimum grant element of 25% was a major achievement and took years to negotiate. However, “the discussion on the appropriateness of this measure has never ended” (Hynes and Scott, 2013). There were still opinions that the DAC definition of ODA is somewhat arbitrary and that a concept of ‘sliding concessionality’ should be proposed instead (Hynes and Scott, 2013).

Accordingly, at their High Level Meeting in December 2014, DAC members agreed to make important improvements in the framework. In the past, the face value of both grants and loans was counted as ODA, but they agreed that only grants and the “grant portion” of concessional loans would be considered. This provides a more realistic comparison of loans and grants, and encourages the use of grants and highly concessional loans. Moreover, they made a change to the discount rate used in the calculation so that it is now differentiated by developing country groups. Therefore, a loan to a least developed country (LDC) or other low-income country (LIC) will score more ODA than a loan provided under the same conditions extended to a middle-income country (MIC). This would incentivize the donors to lend to poorer countries based on the consideration that it involves greater effort by providers (in terms of both the funding cost of the loan and the risk associated with it) (OECD, 2015).

**Table 1.** Changes in the statistical framework of measuring ODA

| | BEFORE: | AFTER: |
|---|---|---|
| | CASH FLOW | GRANT EQUIVALENT |
| Grant element threshold | · 25% | · 45% for LDCs and other LICs<br>· 15% for LMICs<br>· 10% for UMICs |
| Discount rate | · 10%<br>· Used for assessing the concessionality of a loan | · 5% base (current IMF discount rate) + adjustment factors of:<br>➢ 4% for LDCs and other LICs<br>➢ 2% for LMICs<br>➢ 1% for UMICs<br>· Used for both assessing the concessionality of a loan (threshold) and for calculating its ODA grant element |
| Measurement of flows | · Counted as ODA when disbursed<br>· Subtracted from ODA when repaid | · Grant equivalent of loan disbursements (grant element multiplied by amount disbursed) counted<br>· Repayment of past loans not subtracted from ODA but data continues to be collected and published<br>· More ODA credit for softer terms and conditions loan<br>· Grants score more ODA than loans |
| Debt sustainability safeguard | · no explicit measure | · linked to IMF Debt Limits Policy and Non-Concessional Borrowing Policy |

Source: OECD

The initial definition of ODA was used for data collected up to 2017. The new system became the standard for reporting from 2018 on (for which ODA reporting takes place in early 2019). Data on actual flows (i.e. disbursements and loan repayments) continue to be collected and published to ensure transparency.

Another modification was made for the clarification of eligibility rules. In 2016, the DAC agreed on updated rules for the eligibility of peace and security-related expenditures to better recognize the marginal, but actual developmental role that military actors sometimes play, notably in conflict situations, while clearly delineating it from their main peace and security function. In 2017, the DAC agreed to clarify the reporting directives for assessing what may be included or not in ODA – and provide its members with a blueprint to use when accounting for the costs of assisting refugees in donor countries.

Discussion on the method for calculating ODA is still ongoing. Members have yet to agree on the method for calculating the grant equivalent of private sector instruments and debt relief (OECD, 2020c). Also, the methodology for updating the DAC List of ODA Recipients and the methods for measuring the Sustainable Development Goals (SDGs) of development cooperation are being worked upon. Further changes to the definition and the way of calculation are expected, with new opinions and suggestions to keep the DAC statistical system fit-for-purpose. Timely changes to the definition will provide more guidelines to donor countries on how to best give aid.

## 2.3. Definition of Foreign Aid

Foreign aid encompasses a larger scope than just the ODA. Foreign aid, or development resource flows, also includes Other Official Flows (OOF), which would be summed up as “Total official flow” along with the ODA. Total official flow is defined by OECD as the sum of Official Development Assistance (ODA) and Other Official Flows (OOF) which represents the total (gross or net) disbursements by the official sector at large to the recipient country. Other official flows are official sector transactions which do not meet the ODA criteria, e.g.:

i. Grants to developing countries for representational or essentially commercial purposes;
ii. Official bilateral transactions intended to promote development but having a grant element of less than the percentage specified in the ODA criteria;
iii. Official bilateral transactions, whatever their grant element, that are primarily export-facilitating in purpose. This category includes by definition export credits extended directly to an aid recipient by an official agency or institution (“official direct export credits”);
iv. The net acquisition by governments and central monetary institutions of securities issued by multilateral development banks at market terms;
v. Subsidies (grants) to the private sector to soften its credits to developing countries;
vi. Funds in support of private investment.

Private flows refer to monetary flows between nations which are mostly not counted as foreign aid. According to the OECD, private flows are defined as financial flows at market terms financed out of private sector resources (changes in holding of private, long-term assets held by residents of the reporting country) and private grants (grants by non-government organizations, net of subsidies received from the official sector). Private capital flows can be divided into several categories such as foreign direct investment, portfolio equity (the buying and selling of stocks and shares), remittances sent home by migrants, and private sector borrowing. Military aid may also be included as private flows, as most military aid does not count as official flows, unless military forces are utilized to deliver humanitarian aid to recipient countries.

The sum of total official flows and private flows represents the total (gross or net) disbursements by the official and private sector of the creditor country to the recipient country. For this paper, private flows and OOF will not be considered, as it is usually not regarded as foreign aid per se, although it is certainly a very important element for growth of the developing countries. Moreover, since the fundamental purpose of private flows and OOF is somewhat commercial, assessing its impact on income inequality does not seem fair. Hence, in this study, foreign aid would refer to only ODA and Official Aid, which is counted as ODA since 2005. Nonetheless, studies on how private flows may affect inequality may also be interesting to research upon, as most of the studies that try to discern its impact is also mainly focused on economic growth.

# III. Literature Review

This section outlines previous studies on foreign aid and its impacts, largely in three categories: economic growth, governance/institutions, and inequality. This paper contributes to the third section, impact of foreign aid on income inequality, by carrying out an empirical study using panel data. This will contribute to the existing literature in two ways. First, there has not been much empirical studies regarding aid's impact on income inequality and among the ones that exist, results are divided, which motivated this study. Therefore, this paper will add to the unfinished debate to determine the impact. Second, this paper tries to provide robust results to supplement the weaknesses of the existing literature which do not seem to find strong evidence.

## 3.1. Foreign Aid and Growth

Foreign aid has been one of the main vehicles for the rich countries to help promote better living conditions in developing countries, by alleviating poverty and instigating growth and development. The effectiveness of foreign aid has been frequently questioned but each with distinct findings and conclusions. First, on the most studied question of whether aid helps economic growth, Burnside and Dollar (2000), one of the most widely cited and noted papers in the field, examine the relationship among foreign aid, economic policies and growth. They find that aid only has positive impact on growth in countries with good fiscal, monetary, and trade policies, while in the absence of such policies, there

is little effect.

However, this conclusion was questioned by more recent literature. Easterly (2003), Easterly et al. (2004) and Rajan and Subramanian (2008) claim that there is no evidence of any effect of aid on growth, even when institutional quality is high. Burnside and Dollar (2004) replied to Easterly et al.'s comment by revisiting the econometric model and data, in which they again concluded that aid to countries with less corrupt governments and good policies will be more likely to produce good results. Dalgaard et al. (2004) also shares this positive view of aid on spurring growth, but they find that the magnitude of the effect depends on climate-related circumstances.

## 3.2. Foreign Aid and Governance

The dominant opinion on the relationship between aid and governance or institutions is that foreign aid harms the institutions of recipient governments, which hinders good governance. It is known that many developing countries have weak institutions and high levels of corruption, such as countries in Sub-Saharan Africa who have received most of the foreign aid over the past decades. Looking from a historical perspective, this may be stemming from the colonialist past where there was no room for strong institutions to be developed that could tackle the development demands of modern states. Moreover, these states have experienced economic crises, unsustainable debt, civil wars and political instability (Bräutigam and Knack, 2004).

Theoretically, there are opposing views on the impact of foreign aid on

institutions. On the positive side, aid can release governments from binding revenue constraints, enabling them to strengthen domestic institutions. On the other hand, aid can create dependency and liberate corrupt governments from being accountable to their citizens, therefore making it more difficult for good governance to develop. More literatures seem to be supporting the latter view (Bräutigam and Knack, 2004; Moss et al., 2006). Dambisa Moyo (2009), acclaimed economist and author, also argues in her book "Dead Aid" that aid has been a disaster for Africa as aid encourages dependency and facilitates corruption. This only exacerbates the situation since most of the reasons underlying the slow development of Africa is attributed to bad governance and mismanagement of resources (Hansen and Tarp, 2000).

However, there are also previous studies that find no empirical evidence of aid having a systematically negative effect on political institutions. Proponents of foreign aid argue that aid can promote democracy and solidify institutions of the recipient countries. Research on the impact of foreign aid on democracy in a panel of 93 developing economies during years 1971-2000 found that a percentage increase in foreign aid leads to an increase in the Polity Democratic Development Index (Altunbas and Thornton, 2014). More recent study also shows from data analysis that due to more stable inflows of "governance aid", dynamic panel estimators show a small positive net effect of total aid on political institutions (Jones and Tarp, 2016).

Institutional quality and good governance seem important for sustainable growth and development. Nevertheless, corrupt governments still receive as much aid as less

corrupt ones since corruption is not considered as a criteria in the application of debt relief (Alesina and Weder, 2002). Except for a few Scandinavian countries and Australia, who give more aid to less corrupt governments, most of aid, including ones coming from multilateral organizations does not discriminate against corruption of the receiving country (Alesina and Dollar, 2000).

As to whether aid conditionality should be put to practice invites another debate. A study on governance, economy and foreign aid concludes that donors can best assist good governance to develop by helping to foster conditions for better accountability (Brautigam, 1992). On the other hand, a research paper for the World Bank argues that aid conditionality is not the most appropriate method to strengthen good governance in developing countries. Instead, the paper argues for a more radical approach in which donors cede control to the recipient country, within the framework of agreed-upon objectives (Santiso, 2001).

## 3.4 Foreign Aid and Inequality

The effects of foreign aid on inequality, which is less studied, have not reached consensus but several papers conclude that aid has an inequality increasing effect, which should be noted by the international aid society. Inequality is not only undesirable by itself, but even more so when it comes to its negative impact on growth as it is argued that high income inequality may hinder economic growth (Barro, 2000; Mo, 2000). Empirical analyses conclude that the impact of inequality on growth is negative

(Deininger and Squire, 1998; Banerjee and Duflo, 2003).

Inequality, therefore, is associated with undesirable effects. Then, how can foreign aid affect inequality theoretically? Aid increases the amount of resources the recipient government has in their pockets instead of benefitting the poor (Boone, 1997; Collier and Dollar, 2004). This deteriorates governance since a government that is less constrained of resources has reduced interest in being accountable to the local population (Rajan and Subramanian, 2008). This would help governments stay in power for a longer period, regardless of whether the government's performance is good or bad, increasing the risks of an oppressive regime. Thus, aid funds can, not only deteriorate democracy, but also exacerbate inequality, thereby failing to meet the intended purpose of helping the poor and improving inequality.

In fact, these aid funds are sometimes embezzled by the local elite, together with the officials in government (Drazen, 2000). There are several real examples of the case such as Indonesia under Suharto, the Philippines under Marcos, Zimbabwe under Robert Mugabe, etc. (Bjørnskov, 2010). Political systems, especially in developing countries, are believed to favor the political elites (Boone, 1997), meaning that foreign aid would be directed to the rich instead of the poor. Therefore, aid can be used by the local elites and the government to maintain power and further exacerbate income inequality in the recipient countries.

Regarding foreign aid's impact on inequality, only a few empirical studies have been performed. Foreign aid is found to be conducive to the improvement of the

distribution of income when the quality of institutions is taken into account, but the result is not robust (Calderon, Chong and Gradstein, 2009). Also, although there are many theoretical perspectives that foreign aid aggravates income inequality, empirical evidence was found to be contrary, with aid causing small reductions in inequality (Shafiullah, 2011). In Latin America, only in the lower-middle income countries, it is found that aid had a negative effect on Gini coefficient, meaning that aid helped reduce income inequality (Gonzalez and Larru, 2012).

However, there are also empirical evidence shown by other studies that claim opposing results. Herzer and Nunnenkamp (2012) show from panel co-integration that aid exerts an inequality increasing effect on income distribution. In Sub-Saharan Africa, evidence shows that foreign aid has an inequality increasing effect, although the effect can reverse when corruption is controlled for (Pham, 2015). Therefore, views are quite divided on the impact of foreign aid on recipients' income inequality. In light of this unfinished debate and ongoing claims, this paper would empirically test the question with panel data and contribute to the field of international development by suggesting implications of foreign aid on income inequality in the recipient countries.

# IV. Empirical Framework

## 4.1. The Model

The dependent variable in the model is inequality, proxied by the Gini coefficient, which measures the level of income inequality in the country. The independent variable of interest is foreign aid, which is represented by net official development assistance and official aid received. The independent control variables are GDP per capita, trade openness, government expenditure, private sector credit, agriculture and industry value-added and an institutional variable. For the institutional variable, democracy and control of corruption are used. The democracy variable is provided by Polity V which shows the level between democracy and autocracy in the country. Control of corruption captures perceptions of the extent to which public power is exercised for private gain. The basic model is shown as below:

$$GINI_{it} = \beta_0 + \beta_1 AID_{it} + \beta_2 GDPPC_{it} + \beta_3 TRADE_{it} + \beta_4 GOV\_EXP_{it} + \beta_5 PRIV\_SECT_{it} + \beta_6 AGRI + \beta_7 INDU_{it} + \beta_8 INSTITUTIONAL_{it} + \varepsilon_{it}$$

$t$ = 1997, ... , 2018

$i$ = Afghanistan, ... , Zimbabwe

On the right hand side, foreign aid and GDP per capita are calculated in natural logarithm for better comparability against the Gini coefficient, while trade openness, government expenditure, private sector credit, agriculture and industry sector value-

added are all considered in ratio relative to GDP in order to see each of the variable's share in the national economy. This is to ensure better comparison between countries as the absolute amount of GDP and population vary vastly across countries.

## 4.2. The Data

Income inequality is measured by the Gini coefficient since there is no better proxy available than the Gini coefficient to make broad cross-country comparisons of inequality. The Gini coefficient is computed based on the Lorenz curve, where the y axis shows the cumulative percentage of income held by shares of society while the x axis shows the percentage of the population holding the particular income share. The 45-degree line from the graph denotes perfect income inequality. The Lorenz curve is below this line because perfect income equality is never observed empirically. The Gini coefficient measures the area between the 45-degree line and the Lorenz curve, expressed as the percentage of the area between the x axis and the line. Therefore, a Gini coefficient of 100 means perfect income inequality, while a Gini of 0 means perfect equality (Reuveny and Li, 2003). A higher level of Gini thus represents a higher level of inequality in the distribution of income.

There are several sources for the Gini coefficient data, such as the dataset provided by Deininger and Squire (1996), the Luxembourg Income Study (LIS), World Income Inequality Database (WIID) and the Standardized World Income Inequality Database (SWIID). For this paper, WIID, released by the United Nations University and

updated in May 2020, was used due to its comprehensiveness and reliability. SWIID data (Solt 2019) has a wider coverage than WIID, but the imputation method of filling in the values contain econometric problems (Wittenberg, 2015). A comparison between the two world income inequality databases, the WIID and SWIID, was assessed and concluded that WIID is recommended over SWIID for academic researches (Jenkins, 2015). WIID combines information coming from many sources, including historical compilations with updated information from the most salient data repositories (including LIS, ECLAC, SEDLAC, Eurostat, World Bank, and OECD), as well as from national statistical offices, and independent research papers. Different criteria from various sources are homogenized in the WIID dataset in order to avoid problems of definition. To examine the robustness of my Gini-based results, I also employ the share of income held by the top 20% of the national population as an alternative measure of income inequality.

The main independent variable of interest is foreign aid. With respect to the foreign aid data used in this paper, “official development assistance and official aid received” was extracted from World Development Indicators. Official aid refers to aid that was given to the countries in DAC List Part II, which was abolished in 2005 as mentioned above. It is now counted as ordinary ODA. The standard definition of ODA is provided by the Development Assistance Committee of OECD. It includes grants and concessional loans, provided by public donor countries and organizations, and received by developing countries. ODA data from the World Development Indicators which uses the OECD data as their base but it offers a wider coverage. To avoid the potentially

disproportionate influence of countries receiving large amounts of foreign aid, I use the natural logarithm value of aid. By doing so, all negative values of aid received was eliminated which better suits the analysis and interpretation as the question is aid's impact on income inequality.

Note that China, who started to give out huge amounts of loans to developing countries in Africa, may not be covered in this paper. In case of China, the Ministry of Commerce's Department of Foreign Assistance is at the center of the Chinese system and manages over 90% of its bilateral funding. It is responsible for most of affairs related to foreign aid, including coordinating concessional loans with the China Exim Bank. Concessional loans given by the China Exim Bank is not included in the OECD estimates because little information is available on their objectives or financial terms which makes it difficult to ascertain whether they fit into the official aid definition set by OECD. Therefore, this study may not discern the impact of China's concessional loans to Africa.

Democracy variable is included which is the measurement of level between democracy and autocracy from the Polity5 Project developed by Ted Gurr and last updated in 2018. This widely-used dataset provides two indices of political regime characteristics. Democracy index is an additive eleven-point scale (0-10) which measures the democratic characteristics of the regime. Autocracy index is also constructed additively, ranging from 0 to 10. Some scholars have observed that many governments may have both democratic and autocratic characteristics (Mansfield and Snyder, 1995; Londregan and Poole, 1996). Hence, they measure the level of democracy as the

difference between the democracy index and the autocracy index, whose practice I adopted in this paper as well. This measure is already provided in the Polity5 dataset as "polity2" variable which ranges between -10 (the most autocratic regime) and 10 (the most democratic regime).

The other institutional variable used in this study is control of corruption indicator from the Worldwide Governance Indicators (WGI) provided by the World Bank. The World Bank uses 30 existing data sources to develop the WGI. The sources are selected to include the views of citizens, business owners, academics and experts drawn from the public, private, and NGO sectors from across the globe, and the standard methodology is used (World Bank, 2011). The control of corruption indicator is developed using an 'Unobserved Components Model (UCM)' which enables the development of the control of corruption indicator that ranges from -2.5 (most corrupt / least effective) to 2.5 (least corrupt / most effective).

The model includes control variables frequently used in previous studies. GDP per capita is expressed in constant 2010 U.S. dollars as dollar figures for GDP are converted from domestic currencies using 2010 official exchange rates. Trade openness is also included in the model as a control variable to see whether economic openness of a country affects income inequality. It is the sum of total import and export values as a share of a country's GDP which shows the magnitude of trade relative to the size of the domestic economy. Government expenditure, private sector credit, and the agriculture and industry value-added, which can also affect income inequality, are included as

control variables in the model. These variables are highly correlated with GDP, and thus are all expressed in percentages, to show each of the variable's share in the country's GDP. These variables are extracted from the World Development Indicators, last updated in 2020.

Data on the variables mentioned above are taken from 156 developing countries in Africa, Latin America, the Caribbean, Eastern-Europe, and Asia over a period of twenty two years that spans from 1997 to 2018. The list of countries included in this study is provided in Appendix 1. Definitions and sources of all the variables employed are shown in Appendix 2. Pairwise simple correlations at the panel level among variables included in the regressions will be included in Appendix 3. Table 2 shows descriptive summary statistics of the variables.

**Table 2**. Summary statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Gini coefficient | 1,685 | 37.70 | 9.62 | 20.00 | 73.40 |
| Foreign aid (log) | 3,261 | 19.11 | 1.66 | 9.90 | 23.94 |
| GDP per capita (log) | 4,676 | 8.57 | 1.52 | 5.23 | 12.19 |
| Trade openness (%) | 4,261 | 89.59 | 56.43 | 0.03 | 860.80 |
| Government expenditure (%) | 3,912 | 16.71 | 9.02 | 0.91 | 147.73 |
| Private sector credit (%) | 4,004 | 45.08 | 39.49 | 0.19 | 308.98 |
| Agriculture, value added (%) | 4,301 | 12.34 | 11.97 | 0.03 | 79.04 |
| Industry, value added (%) | 4,291 | 26.56 | 12.50 | 3.15 | 87.80 |
| Democracy (polity2) | 3,202 | 4.23 | 6.13 | -10.00 | 10.00 |
| Control of corruption | 3,814 | -0.00 | 0.98 | -1.83 | 2.47 |
| Income shares by top 20 (%) | 1,395 | 45.32 | 7.41 | 34.00 | 71.00 |

## 4.3. Empirical Methodology

First, a simple cross-section regression approach is taken by using Pooled OLS estimator. Interaction term between foreign aid and the institutional variable is introduced in the Pooled OLS model.

Cross-section findings may have limitations due to common problems of simultaneity and reverse causation that may arise because while income inequality may be affected by foreign aid, so may aid allocation be affected by the level of inequality of the recipient countries. Econometrically, a panel data approach can help to resolve the causal aid effect on inequality. Another problem is of endogeneity, which may occur since past levels of inequality may be important predictors of current levels of inequality, which is likely to make the cross-section findings biased.

Hence, following practice from previous literature that takes into account the particular characteristics of the series under examination, *Generalized Method of Moments* (GMM) (Arellano and Bond, 1995; Blundell and Bond, 1997) is considered to be the most suitable estimator. This estimation model takes into account both fixed effects and endogenous independent variables. The lagged term of foreign aid, the main independent variable of interest, is employed as the instrumental variable for additional control in the GMM-IV estimator. Further fixed effects or random effects are not needed by applying this method. The model is similar to the one presented in the cross-section, along with the interaction term between aid and the institutional variable.

# V. Empirical Results

## 5.1. Pooled OLS Estimations

First, I estimate the effect of foreign aid on Gini coefficient in column (1) in Table 3. The negative coefficient on foreign aid suggests that developing countries that receive more foreign aid are more likely to have lower levels of inequality. The coefficients on control variables have expected signs; natural logarithm of GDP per capita, trade openness and government expenditure are all negatively related to Gini coefficient at a statistically significant level, while private sector credit is positively related with the dependent variable. Agriculture value added in the domestic economy is also negatively correlated with Gini while industry value added is found to have no statistical significance.

In column (2), I introduce democracy as the independent institutional variable to see how it affects the relation between foreign aid and income inequality. The coefficient on foreign aid changes from -1.326 to -1.098, implying that higher level of democracy in the aid receiving country may reduce the extent to which foreign aid helps to lessen income inequality. The democracy variable is positively related to the Gini coefficient at a statistically significant level. This can be interpreted that democracy can exert a negative influence when the amount of foreign aid in natural logarithm flowing in is around its average at 19. The estimates support the notion that aid may be detrimental to income inequality in democratic developing countries, which is in line with some of the literature (Brautigam and Knack, 2004; Djankov et al. 2008; Bjørnskov, 2010).

**Table 3**. Pooled OLS estimations

| Dependent variable: | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Gini coefficient | OLS | OLS | OLS | OLS | OLS |
| Aid (log) | -1.326*** | -1.098*** | -0.864* | -0.922** | -0.810* |
| | (-4.27) | (-3.41) | (-2.21) | (-2.83) | (-2.37) |
| GDP per capita (log) | -2.685*** | -3.363*** | -3.293*** | -3.328*** | -3.364*** |
| | (-3.59) | (-4.43) | (-4.38) | (-3.90) | (-3.97) |
| Trade openness (%) | -0.076*** | -0.070*** | -0.068*** | -0.077*** | -0.076*** |
| | (-6.08) | (-5.27) | (-5.14) | (-5.65) | (-5.47) |
| Government expenditure (%) | -0.266*** | -0.286** | -0.276** | -0.263*** | -0.274*** |
| | (-3.93) | (-3.02) | (-2.82) | (-3.67) | (-3.69) |
| Private sector credit (%) | 0.075*** | 0.081*** | 0.076*** | 0.0597*** | 0.597*** |
| | (5.61) | (6.08) | (5.08) | (4.01) | (4.03) |
| Agriculture, value added (%) | -0.257** | -0.227** | -0.227** | -0.271** | -0.264** |
| | (-3.25) | (-2.85) | (-2.87) | (-3.05) | (-2.99) |
| Industry, value added (%) | -0.044 | 0.071 | 0.076 | -0.001 | -0.001 |
| | (-1.06) | (1.47) | (1.53) | (-0.02) | (-0.01) |
| Democracy | | 0.464*** | 1.321 | | |
| | | (6.46) | (1.33) | | |
| Aid (log) * Democracy | | | -0.044 | | |
| | | | (-0.87) | | |
| Corruption | | | | 2.281*** | -6.766 |
| | | | | (3.33) | (-0.89) |
| Aid (log) * Corruption | | | | | 0.485 |
| | | | | | (1.19) |
| Observations | 856 | 796 | 796 | 745 | 745 |
| R-squared | 0.128 | 0.173 | 0.174 | 0.134 | 0.136 |

*Note*: Robust t-statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

In column (3), the interaction term between foreign aid and democracy is introduced. Although both the democracy variable and the interaction terms are not statistically significant, it can be calculated that given the same amount of foreign aid received, one level increase in the democracy index amplifies the negative impact of foreign aid on income inequality, thereby reducing inequality further. The coefficient on foreign aid, however, is reduced from -1.098 to -0.864.

Control of corruption is employed as the institutional variable in columns (4) and (5), which ranges from -2.5 (most corrupt) to 2.5 (least corrupt). In column (4), the coefficient on foreign aid is -0.922, which signifies that, when controlling for corruption on top of the other control variables in column (1), the extent to which foreign aid helps to reduce inequality in the recipient country diminishes. 1% increase in foreign aid would lead to -1.326 points decrease in Gini in column (1) while in column (4), it would lead to -0.922 points decrease in Gini. Although control of corruption variable itself is negatively associated with Gini coefficient, it can be seen from the coefficient on corruption that in the context of foreign aid, control of corruption is positively associated with income inequality at a significant level, hinting at the possible harmful effect of foreign aid on corruption.

In column (5), I added the interaction term between foreign aid and the corruption variable, but the coefficient turned out to be statistically insignificant. The coefficient on foreign aid was reduced further from -0.922 in column (4) to -0.810 in column (5), but still negatively associated with income inequality and significant.

## 5.2. Dynamic Panel Data Approach

OLS may lead to biased results due to problems of endogeneity, reverse causation and omitted variables bias. Fixed effects model cannot solve all of these problems. Therefore, following previous literatures and taking into consideration the particular characteristics of the series under examination, dynamic panel data approach is adopted in this study. The *Generalized Method of Moments* (GMM) technique (Arellano and Bover, 1995; Blundell and Bond, 1997) controls for endogeneity of the lagged independent variable in a dynamic panel data model. GMM also controls for omitted variables bias, unobserved panel heterogeneity and measurement errors. By using this method, the regression equation is estimated in differences and in levels simultaneously. Also, note that there is no need for further fixed effects as the estimation is already testing for differences.

Table 4 shows the results of the estimations using GMM-IV estimator. Independent variable of interest, foreign aid, still show the expected negative signs and remain statistically significant in all 5 estimations. Column (1) reports the basic model with Gini as the dependent variable, foreign aid as the independent variable of interest with control variables in place. The coefficient on foreign aid is still negative, with a value of -1.738 and statistically significant at 1%, which implies the equalizing effect of foreign aid on income in the recipient countries. 1% increase in foreign aid would lead to -1.738 points decrease in the Gini. The coefficients on the control variables are also as expected, same as the OLS estimations, except for industry value added.

**Table 4**. Dynamic panel data approach

| Dependent variable: | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Gini coefficient | GMM | GMM | GMM | GMM | GMM |
| Aid (log) | -1.738*** | -1.493*** | -1.376** | -1.240*** | -1.109** |
| | (-5.41) | (-4.45) | (-2.92) | (-3.58) | (-3.05) |
| GDP per capita (log) | -3.254*** | -3.922*** | -3.889*** | -3.839*** | -3.883*** |
| | (-4.09) | (-4.91) | (-4.84) | (-4.17) | (-4.26) |
| Trade openness (%) | -0.087*** | -0.082*** | -0.080*** | -0.089*** | -0.088*** |
| | (-6.49) | (-5.84) | (-5.70) | (-5.87) | (-5.73) |
| Government expenditure (%) | -0.251*** | -0.268** | -0.263** | -0.247*** | -0.258*** |
| | (-3.74) | (-2.76) | (-2.60) | (-3.48) | (-3.50) |
| Private sector credit (%) | 0.085*** | 0.095*** | 0.092*** | 0.069*** | 0.070*** |
| | (5.98) | (6.79) | (5.62) | (4.32) | (4.35) |
| Agriculture, value added (%) | -0.275** | -0.228** | -0.228** | -0.288** | -0.279** |
| | (-3.24) | (-2.68) | (-2.69) | (-2.97) | (-2.90) |
| Industry, value added (%) | -0.0213 | 0.109* | 0.112* | 0.0212 | 0.0226 |
| | (-0.50) | (2.21) | (2.22) | (0.48) | (0.50) |
| Democracy | | 0.512*** | 0.954 | | |
| | | (7.19) | (0.79) | | |
| Aid (log) * Democracy | | | -0.023 | | |
| | | | (-0.37) | | |
| Corruption | | | | 2.246** | -8.305 |
| | | | | (3.24) | (-1.03) |
| Aid (log) * Corruption | | | | | 0.566 |
| | | | | | (1.31) |
| Observations | 809 | 751 | 751 | 699 | 699 |
| Adj. R-squared | 0.129 | 0.183 | 0.183 | 0.137 | 0.139 |

*Note*: Robust t-statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Column (2) reports the estimation with democracy institutional variable included. Coefficient on foreign aid changes from -1.738 to -1.493, meaning that with democracy controlled for, the equalizing effect of foreign aid on income is slightly reduced. This can be interpreted that democracy can exert a negative influence when foreign aid is being given to that country, in line with literature that foreign aid may be detrimental to the development of democracy. The coefficient on democracy is positive at the value of 0.512 and statistically significant at 1% level. This means that in a country where foreign aid is given, 1 level increase in the level of democracy will lead to 0.512 points higher in the Gini, thus exacerbating income inequality.

Column (3) includes the interaction term between foreign aid and democracy. Although not statistically significant, the coefficient is negative. When calculated, the coefficient on foreign aid is -1.468, indicating that for the average developing country in the sample, whose democracy level is around 4, 1% increase in the inflow of foreign aid would lead to 1.468 points decrease in the Gini.

Column (4) and (5) reports the estimations with the other institutional variable, control of corruption. Foreign aid, controlling for corruption, is still negatively associated with income inequality at a statistically significant level. The coefficient on control of corruption is positive at the value of 2.246, implying that in a developing country where foreign aid is given, control of corruption may not function to enhance inequality as it should. The interaction term between foreign aid and control of corruption is reported as not statistically significant.

## 5.3. Robustness Checks

Concerning the reliability of data for measuring income inequality, robustness of the results shown above is tested here with a different measure of income inequality. The measure used above is from the World Income Inequality Database (WIID). Although WIID is argued to be a better measure than the Standardized World Income Inequality Database (SWIID) developed by Solt (Jenkins, 2015; Wittenberg, 2015; UN DESA, 2018), it is not the absolute measure. Therefore, income share by top 20% from World Development Indicators (WDI) is adopted as a different measure of income inequality for robustness checks.

Table 5 reports the results from the dynamic panel data approach using income share by top 20% as the dependent variable instead of the Gini coefficient from WIID. First of all, it should be noted that in all 5 estimations, the coefficient on foreign aid remains negative and statistically significant, which proves the robustness of the main results. The more foreign aid a developing country receives, the less income share by the top 20%. The coefficients on control variables also remain mostly similar, although the statistical significance disappears in a few cases. Also, the coefficients for the institutional independent variables are similar to the main results, with democracy and control of corruption statistically significant at 1% level. Last but not least, note that in column (5), the interaction term between foreign aid and corruption turns significant.

**Table 5**. Robustness to different measure of inequality

| Dependent variable: | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Income share by top 20% | GMM | GMM | GMM | GMM | GMM |
| Aid (log) | -1.806*** | -1.424*** | -1.243** | -1.400*** | -0.964** |
| | (-6.90) | (-5.18) | (-2.87) | (-5.02) | (-3.16) |
| GDP per capita (log) | -2.324*** | -3.225*** | -3.227*** | -2.441*** | -2.729*** |
| | (-3.34) | (-4.71) | (-4.73) | (-3.56) | (-4.01) |
| Trade openness (%) | -0.077*** | -0.074 | -0.073*** | -0.070*** | -0.071*** |
| | (-6.34) | (-5.92) | (-5.81) | (-5.70) | (-5.83) |
| Government expenditure (%) | -0.111*** | -0.021 | -0.007 | -0.125** | -0.148** |
| | (-2.72) | (-0.26) | (-0.08) | (-2.89) | (-3.12) |
| Private sector credit (%) | 0.054*** | 0.062*** | 0.059*** | 0.040** | 0.038** |
| | (4.42) | (5.05) | (4.15) | (2.95) | (2.92) |
| Agriculture, value added (%) | -0.250*** | -0.225** | -0.227** | -0.227*** | -0.223*** |
| | (-3.59) | (-3.11) | (-3.14) | (-3.35) | (-3.31) |
| Industry, value added (%) | -0.055 | 0.032 | 0.037 | -0.007 | 0.002 |
| | (-1.75) | (0.85) | (0.95) | (-0.20) | (0.05) |
| Democracy | | 0.448*** | 1.090 | | |
| | | (8.63) | (0.96) | | |
| Aid (log) * Democracy | | | -0.033 | | |
| | | | (-0.57) | | |
| Corruption | | | | 1.904*** | -26.35*** |
| | | | | (3.52) | (-4.37) |
| Aid (log) * Corruption | | | | | 1.513*** |
| | | | | | (4.63) |
| Observations | 754 | 660 | 660 | 684 | 684 |
| Adj. R-squared | 0.151 | 0.222 | 0.224 | 0.153 | 0.181 |

*Note*: Robust t-statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

In column (5), the coefficient on foreign aid is -0.964, statistically significant at 5% level, while the coefficient for control of corruption and the interaction term is -26.35 and 1.513 respectively, both significant at 1% level. Foreign aid and control of corruption themselves are both negatively correlated with income inequality, which is logical. The more foreign aid, the less income inequality and the higher the control of corruption, the less the income inequality. Given the interaction term being significant, it can be inferred that in an average developing country where the control of corruption is around 0, 1% increase in foreign aid leads to -0.964 share decrease of income by top 20%. Given the same amount of foreign aid, when the control of corruption rises to the highest, around 2.5, 1% increase in foreign aid leads to 2.819 share increase of income by top 20%. This means that for a developing country where foreign aid is given, control of corruption does not function to reduce inequality, but instead exacerbates income distribution.

Turning the estimates the other way, the results can also be interpreted that in an average developing country where the amount of foreign aid received in logarithm is around 19, one level increase in the control of corruption would lead to 2.397 share increase of income by top 20%. This means that if this country receives more foreign aid, the extent to which the control of corruption exacerbates income inequality becomes even greater. This is notable for aid effectiveness and something that needs to be considered in terms of international development. All in all, by employing a different measure of income inequality, the robustness of the results using the Gini data from WIID is proven.

# VI. Conclusion

This paper contributes to the literature on aid effectiveness by examining foreign aid's impact on income inequality. Although reducing inequality constitutes one of the primary objectives of foreign aid and international development in general, as also stated in Sustainable Development Goals (SDGs) Goal 10, empirical research on the effect of foreign aid on income inequality is scarce. I focus on both the direct effect of aid and how this effect is possibly mediated by recipient countries' institutions, the democracy level and control of corruption. In line with some previous research that claims aid's positive impact to reduce inequality (Shafiullah, 2011; Gonzalez and Larru, 2012) and against ones that identify aid's failure to do so (Bjornskov, 2010; Herzer and Nunnenkamp, 2012), I find that aid by itself appears to have a statistically significant effect on reducing inequality. Both cross-section approach and dynamic panel approach report robust impact of foreign aid in this regard. Institutional variables, democracy and corruption, report to have robust impact on income inequality in a positive relation, in aid receiving developing countries.

The findings from this research contribute to the existing literature by adding on to the unfinished debate, and by discerning a robust impact of foreign aid on income inequality, whereas the previous literature have diverging conclusions, or find weak evidence where the result is not robust (Chong, Gradstein and Calderon, 2009). Most other studies used the aid variable as a percentage of the GDP, which I also tried but did

not yield as clear results as the amount of aid in natural logarithm which is used in this study. Other previous literature either did not utilize the GMM-IV estimator (Bjornskov, 2010) or were specific region-based (Gonzalez and Larru, 2012; Pham, 2015). This study incorporates 156 developing countries that have received aid between 1997 and 2018, uses the GMM-IV estimator that is popularly thought to be adequate for this particular dataset, and discerns robust impact of foreign aid on income inequality, and also in presence of institutional variables.

The results suggest that foreign aid itself has a positive impact for the recipient countries in terms of reducing income inequality, thereby providing some background as to why foreign aid may be necessary and should be continued in the future. However, the mechanism between foreign aid and the institutional variables implies that foreign aid may deter democracy and control of corruption, or offset the positive effects of good institutions. Foreign aid could have unforeseen detrimental impacts in recipient countries in terms of creating dependency, fostering corruption and deterring the development of democracy. Therefore, the international aid community should pay more attention to how foreign aid could affect other aspects unrelated to the supported area, and how such backfires could be prevented. Also, the international aid community needs to provide better measures to ensure that foreign aid does not harm good governance. If foreign aid continues to exert negative influence on the development of democracy and control of corruption, or offset the positive power of these good governance factors, sustainable development may be hindered in these developing countries.

Nonetheless, this study finds that foreign aid itself has an income equalizing effect, contrary to what many people argue, which provides at least one more reason to continue to give aid. Solving inequality in developing countries will allow them more opportunities and possibilities for sustainable growth. Moreover, with the recent global pandemic situation, many developing countries would be requiring more help than any other time. Despite its possible detrimental effects, foreign aid is still awaited and needed in many parts of the world, and if measures are provided to prevent the side effects, it could contribute to making a more egalitarian world.

## References


Acemoglu, Daron, Simon Johnson, James Robinson and Yunyong Thaicharoen. 2003. "Institutional causes, macroeconomic symptoms: volatility, crises and growth." *Journal of monetary economics*, 50(1): 49-123.

Alesina, Alberto and Roberto Perotti. 1996. "Income distribution, political instability, and investment." *European Economic Review*, 40(6): 1203-1228.

Alesina, Alberto and David Dollar. 2000. "Who Gives Foreign Aid to Whom and Why?" *Journal of Economic Growth*, 5(1): 33–63.

Alesina, Alberto, and Beatrice Weder. 2002. "Do corrupt governments receive less foreign aid?" *American Economic Review*, 92(4): 1126-1137.

Altunbaş, Yener, and John Thornton. 2014. "The (small) blessing of foreign aid: further evidence on aid's impact on democracy." *Applied Economics*, 46(32): 3922-3930.

Arellano, Manuel, and Stephen Bond. 1991. "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations." *The review of economic studies*, 58(2): 277-297.

Arellano, Manuel, and Olympia Bover. 1995. "Another look at the instrumental variable estimation of error-components models." *Journal of econometrics*, 68(1): 29-51.

Asongu, Simplice, Joseph I. Uduji, and Elda N. Okolo-Obasi. 2020. "Foreign aid volatility and lifelong learning." *International Journal of Education Economics and Development*, 11(4): 370-406.

Arvin, B. Mak, and Francisco Barillas. 2002. "Foreign aid, poverty reduction, and democracy." *Applied Economics* 34(17): 2151-2156.

Arvin, B. Mak, Francisco Barillas, and Byron Lew. 2002. “Is Democracy a Component of Donors’ Foreign Aid Policies?” *New Perspectives on Foreign Aid and Economic Development*, 171-198.

Atkinson, Tony, Andrea Brandolini, and Timothy Smeeding. 2001. *Producing time series data for income distribution: sources, methods and techniques*. No. 295. LIS Working Paper Series.

Barro, Robert J. 1991. “Economic growth in a cross section of countries.” *The quarterly journal of economics*, 106(2): 407–443.

Barro, Robert J. 2000. “Inequality and Growth in a Panel of Countries.” *Journal of economic growth* 5(1): 5-32.

Banerjee, Abhijit V., and Esther Duflo. 2003. “Inequality and growth: What can the data say?” *Journal of economic growth* 8(3): 267-299.

Banerjee, Sudeshna G., and Dennis A. Rondinelli. 2003. “Does foreign aid promote privatization? Empirical evidence from developing countries.” *World Development* 31(9): 1527-1548.

Bayart, Jean-François. 1993. "Religion et modernité politique en Afrique noire: Dieu pour tous et chacun pour soi."

Beck, Thorsten, Ross Levine, and Norman Loayza. 2000. “Finance and the Sources of Growth.” *Journal of financial economics* 58(1-2): 261-300.

Berg, Andrew, Jonathan D. Ostry, Charalambos G. Tsangarides, and Yorbol Yakhshilikov. 2018. “Redistribution, Inequality, and Growth: New Evidence.” *Journal of Economic Growth* 23(3): 259–305.

Bjørnskov, Christian. 2010. “Do elites benefit from democracy and foreign aid in developing countries?” *Journal of Development Economics* 92(2): 115-124.

Blundell, Richard, and Stephen Bond. 1998. "Initial conditions and moment restrictions in dynamic panel data models." *Journal of econometrics* 87(1): 115-143.

Blundell, Richard, and Stephen Bond. 2000. “GMM estimation with persistent panel data: an application to production functions”. *Econometric reviews* 19(3): 321-340.

Blundell, Richard, Stephen Bond, and Frank Windmeijer. 2001. *Estimation in dynamic panel data models: improving on the performance of the standard GMM estimator.* Emerald Group Publishing Limited.

Boone, Peter. 1996. “Politics and the effectiveness of foreign aid”. *European economic review*, 40(2): 289-329.

Boone, Peter. 2005. *Effective intervention: making aid work.* No. 187. Centre for Economic Performance, LSE.

Booth, David. 2011. “Aid, institutions and governance: What have we learned?”. *Development Policy Review* 29: s5-s26.

Boschini, Anne D., Jan Pettersson, and Jesper Roine. 2007. "Resource curse or not: A question of appropriability." *Scandinavian Journal of Economics* 109.3: 593-617.

Bourguignon, F., Levin, V., & Rosenblatt, D. 2006. Global redistribution of income. The World Bank.

Bourguignon, François, et al. 2008. *Millennium Development Goals at Midpoint: Where do we stand and where do we need to go?* EC.

Bourguignon, F., Levin, V., & Rosenblatt, D. 2009. International redistribution of income. *World Development*, 37(1), 1-10.

Bräutigam, Deborah. 1992. "Governance, economy, and foreign aid." *Studies in comparative international development* 27.3 (1992): 3-25.

Bräutigam, Deborah and Stephen Knack. 2004. "Foreign aid, institutions, and governance in sub-Saharan Africa." *Economic development and cultural change* 52.2 (2004): 255-285.

Bruno, M., Ravallion, M., and L. Squire. 1998. “Equity and growth in developing countries: Old and new perspectives on the policy issues.” In: V. Tanzi and K-Y. Chu, eds., *Income Distribution and High-Quality Growth*. Cambridge, United States: MIT Press.

Burnside, Craig, and David Dollar. 2000. "Aid, Policies, and Growth." *American Economic Review*, 90 (4): 847-868.

Burnside, Craig and David Dollar. 2004. Aid, Policies, and Growth: Reply. *The American Economic Review*, 94 (3): 781-784.

Calderón, César, and Alberto Chong. 2009. "Labor market institutions and income inequality: An empirical exploration." Public Choice 138.1-2 (2009): 65-81.

Calderón, María, Alberto Chong, and Mark Gradstein. 2011. “Foreign Aid, Income Inequality, and Poverty”. No 1939, IDB Publications (Working Papers), Inter-American Development Bank.

Castells-Quintana, David, and José María Larrú. 2015. "Does aid reduce inequality? Evidence for Latin America." *The European Journal of Development Research* 27, no. 5 (2015): 826-849.

Chong, Alberto, and Cesar Calderón. 2000. "Institutional quality and income distribution." Economic Development and Cultural Change 48.4 (2000): 761-786.

Chong, Alberto, and Mark Gradstein. 2007. "Inequality and informality." *Journal of public Economics* 91.1-2 (2007): 159-179.

Chong, Alberto, and Mark Gradstein. 2007. “Inequality and institutions.” *The Review of Economics and Statistics*, vol. 89, no. 3, 2007, pp. 454–465.

Chong, Alberto and Mark Gradstein. 2008. What determines foreign aid? The donors' perspective. *Journal of Development Economics*. Volume 87, Issue 1. Pages 1-13.

Chong, Alberto, Mark Gradstein, and Cecilia Calderon. 2009. "Can foreign aid reduce income inequality and poverty?" Public choice 140.1-2 (2009): 59-84.

Collier, Paul and David Dollar. 2002. “Aid allocation and poverty reduction.” *European Economic Review* 46(8): 1475-1500.

Collier, Paul and David Dollar. 2004. “Development Effectiveness: What have We Learnt?.” *The Economic Journal,* 114(496): F244-F271.

Dalgaard, Carl-Johan, and Henrik Hansen. 2001. "On aid, growth and good policies." *Journal of development Studies* 37(6): 17-41.

Dalgaard, Carl-Johan, Henrik Hansen, and Finn Tarp. 2004. "On the empirics of foreign aid and growth." *The Economic Journal* 114(496): F191-F216.

Dalgaard, Carl-Johan, and Henrik Hansen. 2015. *The return to foreign aid*. No. 2015/053. WIDER Working Paper.

Deininger, Klaus, and Lyn Squire. 1996. "A new data set measuring income inequality." *The World Bank Economic Review* 10(3), 565-591.

Deininger, Klaus, and Lyn Squire. 1998. "New ways of looking at old issues: inequality and growth." *Journal of development economics* 57(2): 259-287.

d'Exelle, Ben and Marrit Van den Berg. 2014. “Aid Distribution and Co-operation in Unequal Communities” *Review of Income and Wealth*, 60(1): 114-132.

Dollar, David. 1992. “Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976-1985.” *Economic Development and Cultural Change*, 40(3): 523-544.

Dollar, David and Aart Kraay. 2003. “Institutions, trade, and growth.” *Journal of Monetary Economics*, 50(1): 133-162.

Drazen, Allan. 1999. "What is gained by selectively withholding foreign aid." *Unpublished manuscript*. (April 1999).

Easterly, William, Ross Levine, and David Roodman. 2000. *New data, new doubts: A comment on Burnside and Dollar's ‘Aid, Policies, and Growth’”* No. w9846. National Bureau of Economic Research.

Easterly, William. 2003. "Can foreign aid buy growth?" *Journal of economic Perspectives* 17(3): 23-48.

Easterly, William, Ross Levine, and David Roodman. 2004. "Aid, policies, and growth: comment." *American economic review* 94(3): 774-780.

Engerman, Stanley L., and Kenneth L. Sokoloff. 2002. *Factor endowments, inequality, and paths of development among new world economics*. No. w9259. National Bureau of Economic Research.

Engerman, Stanley L. and Kenneth L. Sokoloff. 2005. “Colonialism, Inequality, and Long-Run Paths of Development”. No. w11057. The National Bureau of Economic Research.

Farah, Ali Mohamed, Murat ÖNDER, and Emrah AYHAN. 2018. "How foreign aid affect developing countries: The case of Ethiopia." *Avrasya Etüdleri* 53(1): 7-38.

Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer. 2015. "The Next Generation of the Penn World Table." *American Economic Review*, 105(10): 3150-3182.

González, Mariano, and José María Larrú. 2012. "Egalitarian aid. The impact of aid on Latin American inequality."

Gradstein, Mark, Branko Milanovic, and Yvonne Ying. 2001. *Democracy and Income In-Equality: An Empirical Analysis*. No. 411. CESifo Working Paper.

Gradstein, Mark. 2004. "Governance and growth." *Journal of Development Economics* 73(2): 505-518.

Gradstein, Mark. 2007. "Inequality, democracy and the protection of property rights." *The Economic Journal* 117(516), 252-269.

Gupta, Sanjeev, Hamid Davoodi and Rosa Alonso-Terme. 2002. “Does corruption affect income inequality and poverty?” *Economics of Governance*, 3(1), 23–45.

Hansen, Henrik, and Finn Tarp. 2000. "Aid effectiveness disputed." *Journal of International development* 12(3), 375-398.

Hansen, Henrik, Louise Lund Rants, and Julie Buhl-Wiggers. 2009. *Do elites benefit from democracy and foreign aid in developing countries? Comment*. No. 09/06. CREDIT Research Paper.

Herzer, Dierk and Peter Nunnenkamp. 2012. “The effect of foreign aid on income inequality: Evidence from panel cointegration.” *Structural Change and Economic Dynamics*, 23(3), 245-255.

Hynes, William, and Simon Scott. 2013. "The Evolution of Official Development Assistance: achievements, criticisms and a way forward."

Jenkins, Stephen P. 2015. "World income inequality databases: an assessment of WIID and SWIID." *The Journal of Economic Inequality* 13(4), 629-671.

Jones, Sam, and Finn Tarp. 2016. "Does foreign aid harm political institutions?" *Journal of Development Economics* 118, 266-281.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2010. *The Worldwide Governance Indicators: Methodology and Analytical Issues*. The World Bank.

Klitgaard, Robert. 1991. *Controlling corruption*. Univ of California Press.

Knack, Stephen. 2004. "Does foreign aid promote democracy?." *International Studies Quarterly* 48(1), 251-266.

Kraay, Aart, and David Dollar. 2001. *Trade, growth, and poverty*. The World Bank.

Kunčič, Aljaž. 2014. "Institutional quality dataset." *Journal of institutional economics* 10, no. 1 (2014): 135-161.

Kuznets, Simon. 1955. “Economic Growth and Income Inequality.” *American Economic Review*, 45(1), 1-28.

Londregan, John B., and Keith T. Poole. 1996. "Does high income promote democracy?." *World politics* 49, no. 1 (1996): 1-30.

Mo, Pak Hung. 2000. "Income inequality and economic growth." *Kyklos* 53.3: 293-315.

Mohsen Bahmani-Oskooee, Scott W. Hegerty & Harvey Wilmeth. 2008. “Short-run and long-run determinants of income inequality: evidence from 16 countries.” *Journal of Post Keynesian Economics*, 30(3), 463-484.

Moss, Todd J., Gunilla Pettersson Gelander, and Nicolas Van de Walle. 2006. "An aid-institutions paradox? A review essay on aid dependency and state building in sub-Saharan Africa." *Center for Global Development working paper* 74 (2006): 11-05.

Nikoloski, Zlatko. 2009. "Economic and political determinants of income inequality." *London (GB): University College London*.

OECD. 2015. “Why modernize official development assistance?” Paper presented at the Third International Conference on Financing for Development, July 2015.

OECD. 2020a. "Detailed aid statistics: Official and private flows". *OECD International Development Statistics* (database), https://doi.org/10.1787/data-00072-en (Accessed on October 4, 2020).

OECD. 2020b. "Six decades of ODA: insights and outlook in the COVID-19 crisis", in *Development Co-operation Profiles*, OECD Publishing, Paris, https://doi.org/10.1787/5e331623-en.

OECD. 2020c. “What is ODA?” April 2020. http://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/What-is-ODA.pdf.

Pham, Thi Hong Hanh. 2015. “Income inequality and foreign aid.”

Rajan, Raghuram G., and Arvind Subramanian. 2005. *What undermines aid's impact on growth?*. No. w11657. National Bureau of Economic Research.

Rajan, Raghuram G., and Arvind Subramanian. 2008. "Aid and growth: What does the cross-country evidence really show?." *The Review of economics and Statistics* 90.4 (2008): 643-665.

Reuveny, Rafael, and Quan Li. 2003. “Economic Openness, Democracy, and Income Inequality: An Empirical Analysis.” *Comparative Political Studies* 36(5), 575-601.

Roodman, David. 2009. “How to do xtabond2: An introduction to difference and system GMM in Stata”. *The Stata Journal* 9, no 1, 86–136.

Santiso, Carlos. 2001. "Good governance and aid effectiveness: The World Bank and conditionality." *The Georgetown public policy review* 7, no. 1 (2001): 1-22.

Shafiullah, Muhammad. 2011. “Foreign aid and its impact on income inequality.” *International Review of Business Research Papers*, 7(2), 91-105.

Sharma, Basu and Joe Abekah. 2017. “Foreign direct investment, foreign aid and incomes inequality: Empirical insights from African and South American countries.” *Transnational Corporations Review* 9(1), 1-7.

Skarda, Ieva. 2016. *The Political Economy of Foreign Aid Effectiveness*, Department of Economics and Related Studies, University of York.

Sobhee, Sanjeev K., and Shyam Nath. 2007. "Growth, Income Inequality and Aid Giving: Looking for an Aid-Kuznets Curve." Review of Applied Economics 3, no. 1076-2016-87161 (2007): 157-167.

Svensson, Jakob. 2005. "Eight questions about corruption." Journal of economic perspectives 19.3 (2005): 19-42.

Tanzi, Vito, and Hamid Davoodi. 1998. "Corruption, public investment, and growth." *The welfare state, public investment, and growth*, pp. 41-60. Springer, Tokyo.

Tarp, Finn. 2006. “Aid and Development.” (2006): 9-61.

UN DESA. 2018. Note on Income Inequality Data. Accessed October 3, 2020. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/11/Note-Income-Inequality-Data.pdf

UNU-WIDER, World Income Inequality Database (WIID). Version date 6 May 2020.

UNU-WIDER. 2020. “World Income Inequality Database (WIID). User Guide and Data Sources."

Wittenberg, Martin. 2015. "Problems with SWIID: the case of South Africa." The Journal of Economic Inequality 13, no. 4 (2015): 673-677.

World Bank. World Development Indicators (Online database). Version date 16 September 2020. *Washington, DC: The World Bank.*

# Appendices

**Appendix 1.** List of countries

| **Country** | | | | |
|---|---|---|---|---|
| Afghanistan | Burundi | Eritrea | Jordan | Micronesia, Fed. Sts. |
| Albania | Cabo Verde | Estonia | Kazakhstan | Moldova |
| Algeria | Cambodia | Eswatini | Kenya | Mongolia |
| Angola | Cameroon | Ethiopia | Kiribati | Montenegro |
| Argentina | Central African Republic | Fiji | Kosovo | Morocco |
| Armenia | Chad | Gabon | Kuwait | Mozambique |
| Aruba | Chile | Gambia, The | Kyrgyz Republic | Myanmar |
| Azerbaijan | China | Georgia | Lao PDR | Namibia |
| Bahamas, The | Colombia | Ghana | Latvia | Nepal |
| Bahrain | Comoros | Guatemala | Lebanon | Nicaragua |
| Bangladesh | Congo, Dem. Rep. | Guinea | Lesotho | Niger |
| Barbados | Congo, Rep. | Guinea-Bissau | Liberia | Nigeria |
| Belarus | Costa Rica | Guyana | Libya | North Macedonia |
| Belize | Cote d'Ivoire | Haiti | Lithuania | Oman |
| Benin | Croatia | Honduras | Macao SAR, China | Pakistan |
| Bhutan | Cyprus | Hong Kong SAR, China | Madagascar | Panama |
| Bolivia | Czech Republic | Hungary | Malawi | Papua New Guinea |
| Bosnia and Herzegovina | Dominica | India | Malaysia | Paraguay |
| Botswana | Dominican Republic | Indonesia | Maldives | Peru |
| Brazil | Ecuador | Iran, Islamic Rep. | Mali | Philippines |
| Brunei Darussalam | Egypt, Arab Rep. | Iraq | Mauritania | Poland |
| Bulgaria | El Salvador | Israel | Mauritius | Qatar |
| Burkina Faso | Equatorial Guinea | Jamaica | Mexico | Romania |

| | | | | |
|---|---|---|---|---|
| Russian Federation | Singapore | Sudan | Tunisia | Venezuela, RB |
| Rwanda | Slovak Republic | Suriname | Turkey | Vietnam |
| Samoa | Slovenia | Tajikistan | Turkmenistan | Yemen, Rep. |
| Sao Tome and Principe | Solomon Islands | Tanzania | Uganda | Zambia |
| Saudi Arabia | South Africa | Thailand | Ukraine | Zimbabwe |
| Senegal | South Sudan | Timor-Leste | United Arab Emirates | |
| Serbia | Sri Lanka | Togo | Uruguay | |
| Seychelles | St. Lucia | Tonga | Uzbekistan | |
| Sierra Leone | Vincent and the Grenadines | Trinidad and Tobago | Vanuatu | |

**Appendix 2.** Definitions and sources

| Variable | Definition | Source |
|---|---|---|
| Gini coefficient | The Gini coefficient sometimes called the Gini index or Gini ratio, is a measure of statistical dispersion intended to represent the income inequality or wealth inequality within a nation or any other group of people. | World Income Inequality Database (WIID) |
| Net aid (in log) | Net official development assistance and official aid received (constant 2016 US$). Net official development assistance is disbursement flows (net of repayment of principal) that meet the DAC definition of ODA and are made to countries and territories on the DAC list of aid recipients. Net official aid refers to aid flows (net of repayments) from official donors to countries and territories in part II of the DAC list of recipients. Part II of the DAC List was abolished in 2005. | World Development Indicators (WDI) |
| GDP per capita (in log) | GDP per capita is gross domestic product divided by midyear population. Data are in constant 2010 U.S. dollars. | WDI |
| Trade openness (% of GDP) | Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product. | WDI |
| Government expenditure (% of GDP) | General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). | WDI |
| Private sector credit (% of GDP) | Monetary Sector credit to private sector (% GDP). Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises. | WDI |

| | | |
|---|---|---|
| Industry, value added (% of GDP) | Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15-37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. | WDI |
| Agriculture, value added (% of GDP) | Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. | WDI |
| Democracy (polity2) | Measured by the Democracy index (0-10) minus the Autocracy index (0-10) which shows the level of democracy in a country on a 21 scale, from -10 being the most autocratic, while 10 being the most democratic. Given as “polity2” in the data. | Polity Project V |
| Corruption | Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 (most corrupt) to 2.5 (least corrupt). | Worldwide Governance Indicators (WGI) |
| Income share by top 20% | Percentage share of income or consumption is the share that accrues to subgroups of population indicated by deciles or quintiles. Percentage shares by quintile may not sum to 100 because of rounding. | WDI |

**Appendix 3.** Simple correlations

| | Democracy | Trade Openness | Gov expenditure | Private sector credit | Industry val added | Agri, val added | Gini | Income share by top 20% | Control of corruption | GDPPC (log) | Aid (log) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Democracy | 1.0000 | | | | | | | | | | |
| Trade Openness | 0.0246 | 1.0000 | | | | | | | | | |
| Government expenditure | 0.0961 | 0.1231 | 1.0000 | | | | | | | | |
| Private sector credit | 0.3230 | 0.3220 | 0.1377 | 1.0000 | | | | | | | |
| Industry, val added | -0.3528 | -0.0036 | -0.1341 | -0.1146 | 1.0000 | | | | | | |
| Agriculture, val added | -0.2777 | -0.2802 | -0.1760 | -0.5220 | -0.3043 | 1.0000 | | | | | |
| Gini coefficient | -0.1464 | -0.2525 | -0.1185 | -0.3593 | 0.1328 | 0.2661 | 1.0000 | | | | |
| Income share by top 20% | -0.0534 | -0.3323 | -0.3459 | -0.3394 | 0.0907 | 0.2074 | 0.9479 | 1.0000 | | | |
| Control of corruption | 0.4336 | 0.2872 | -0.3093 | 0.7100 | -0.1613 | -0.5669 | -0.4608 | -0.3931 | 1.0000 | | |
| GDPPC (log) | 0.3420 | 0.3249 | 0.1587 | 0.6717 | 0.1243 | -0.8168 | -0.4699 | -0.3960 | 0.7731 | 1.0000 | |
| Aid (log) | 0.0494 | -0.3764 | -0.1534 | -0.2041 | 0.0456 | 0.3336 | -0.0067 | -0.1358 | -0.4377 | -0.5635 | 1.0000 |

# 국문 초록

**서울대학교 국제대학원**
**국제학과 국제협력전공**
**김세원**

본 연구는 대외원조가 수원국의 소득불평등에 미치는 영향을 실증적으로 분석하였다. 대외원조가 수원국의 경제성장에 미치는 영향에 대한 실증적 연구는 많이 있는데 반해, 소득불평등에 미치는 영향에 대한 연구는 많이 이루어지지 않은 상황이다. 따라서, 본 연구는 해당 효과를 알아보기 위해 기획하였다. 1997~2018년 World Income Inequality Database (WIID) 자료를 활용하여 패널자료를 통해 분석한 결과, 대외원조는 소득불평등을 해소하는 효과를 갖고 있는 것으로 나타난다. 거버넌스를 측정할 수 있는 민주주의 수준 정도와 부패 지수를 통제 변수로 넣어서 추가적으로 분석한 결과, 원조를 받는 수원국에서는 굿 거버넌스가 소득불평등을 해소하는 효과가 상쇄되어 오히려 악화시킬 수도 있는 것으로 보인다. 이러한 추정결과는 원조의 소득불평등 해소라는 긍정적인 측면을 확인하는 반면, 동시에 원조의 개발효과성을 제고하기 위해서 대외원조가 수원국의 거버넌스 측면에 미칠 요소를 세밀하게 고려하여 원조전략을 수립할 필요가 있음을 시사한다.

**핵심주제어:** 대외원조, 불평등, 원조효과성, 국제개발, 개발효과성, 거버넌스
**학번:** 2019-22247