DO AID DONORS REWARD INSTITUTIONAL REFORMS?:

A PANEL STUDY ON AID-RECEIVING COUNTRIES

by

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ABSTRACT

DO AID DONORS REWARD INSTITUTIONAL REFORMS?

A PANEL STUDY ON AID-RECEIVING COUNTRIES

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Foreign aid is an important component of financial flows to many developing countries. This study seeks to investigate how foreign aid flows are influenced by two factors: the gross domestic products (GDP) per capita of the recipient countries, and changes in institutional and economic factors. For example, do increases in the GDP per capita of recipient countries attract more foreign aid in support of the on going economic and institutional reforms, or does this send a signal to the donors that these countries are doing well, and do not need as much aid? The question is whether aid donors reward reforms in recipient countries with increased foreign aid.

This study finds that the recipients' GDP per capita have no significant influence on aid flows, and that institutional and economic reforms do not attract more aid. In fact, institutional and economic reforms lead to decreases in foreign aid to recipient countries.

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CHAPTER 1

INTRODUCTION

The paper contributes to our understanding of why many aid receiving low-income economies continue to lag behind in economic development, and fail their citizens in delivering some of the most basic needs when billions of dollars in foreign aid continue to flow into these economies. More specifically, the question is whether good institutional and rational economic policies are rewarded by increases in foreign aid, which in turn boosts GDP per capita, and directly benefit the livelihoods of the worlds poorest.

I attempt to measure two effects: one, how the recipients' gross domestic product (GDP) influence foreign aid flows, and two, how improvements in economic and institutional policies affect foreign aid flows.

The results from this study find the following: first, changes in the recipients' GDP per capita do not have any statistical or economic significance on foreign aid flows. Second, institution and economic reforms are not rewarded with increases in foreign aid; in fact, institution and economic reforms result in decreases in aid flows. Therefore, reforming governments do not receive the aid that is necessary to support and keep the reforms ongoing.

Whether aid significantly contributes to economic growth is a question that has yet to be conclusively answered. However, there is no doubt that good institutional and

sound economic policies draw a clear line between the developed and the least developed. One needs only look at the most developed countries and it is clear that the one thing they have in common is beneficial and well functioning institutions, and sound economic policies. Thus, as a basis for development, the governments of aid-receiving countries should actively participate and commit to effective and beneficial long-term institutional and economic reforms.

The rest of the thesis is structured as follows. Section 2 provides pertinent literature review, section 3 outlines the data used and their sources, section 4 provides the empirical models used which incorporates estimation procedures and hypothesis testing, section 5 provides implications, and section 6 provides concluding remarks.

CHAPTER 2

LITERATURE REVIEW

For many, there is an expectation or desire that the governments of developing countries spend a larger portion of foreign aid as a supplement to their capital stocks rather than their expenditures. This would in turn boost domestic production in these developing economies and their GDP per capita, improve the livelihoods of their citizens, and thus minimize the dependence on aid donors to meet their citizens' most basic needs. Unfortunately, most aid receiving countries fail to meet this expectation by becoming heavily dependent on foreign aid, with the aid intended to stimulate growth becoming the very cause that chokes it; in essence turning these developing economies into some sort of 'aid junkies'.

Foreign aid may have the undesirable effect of turning aid-receiving governments into rent-seekers notes Knack (2001, p. 313): "Foreign aid represents a potential source of rents, with adverse effects on the quality of the public sector and on the incidence of corruption. Rent seeking often takes the form of increased public-sector employment. Aid is commonly used for patronage purposes, by subsidizing employment in the public sector, or in state-operated enterprises, as foreign aid can provide funds for government to undertake investments that would otherwise be made by private sector investors." Thus, for many developing countries the expectation of increasing domestic production by building their capital stocks is largely unfulfilled,

suggesting that foreign aid is not used very effectively as a tool for spurring economic growth.

Additionally, Feyzioglu, Swaroop, and Zhu (1998) illustrate at length the issue of "fungibility" of foreign aid. Fungibility of foreign may result when recipient governments reduce their investment in sectors that receive aid. Instead of continued investment in these sectors, foreign aid enables recipient governments to increase their spending, the authors note. This supports the view that many developing countries may experience slow economic growth due to low capital stocks. Additionally, foreign aid is more likely to be squandered in economies with distorted economic and institutional policies, with the same factors that contribute to slow economic growth contributing to the squandering of foreign aid and thus negatively influencing the effectiveness of foreign aid.

The question of whether aid makes any significant contribution to economic growth is mired in controversy. Various studies show that foreign aid combined with favorable institutional and sound economic policies can contribute to economic development as long as aid does not erode these favorable economic and institutional policies.[1]

When aid undermines a country's institutions, the possibility of aid contributing to growth is minimal. Rajan and Subramanian (September 2005) note that aid causes real exchange rate overvaluation, which undermines the competitiveness of the labor

[1] See literature review on Knack (2001), Rajan and Subramanian (September 2005), and Van de Walle and Johnston (1996)

intensive or traditional exporting sectors: “As a result of the reduced competitiveness, employment growth in these sectors is slower, and these sectors account for a lower relative share of the economy in countries that get more aid” (pg. 4).

In his study of corruption and capital flows, Lambsdorff (2003) finds that corruption reduces the ratio of investment to GDP. For example, an increase in Colombia’s level of integrity to that of the United Kingdom would increase net annual capital inflows by three percent of GDP. However, Lambsdorff states that bureaucratic quality, civil liberty, and government stability are irrelevant, but that a country’s law and order tradition is the most crucial factor.

If we compare Sub-Saharan Africa to other more developed aid-receiving economies, economic and institutional policies should not be left to chance but should actively be reformed in an effort to create the necessary conditions under which foreign aid acts as a catalyst for growth. For example, Knack (2001) finds that the failure of aid in contributing to economic growth in Sub-Saharan Africa relative to other developing countries is not merely due to intercontinental differences, but is due to the quality of governance.

However, Botswana provides strong evidence of a Sub-Saharan African country whose government has committed to long-term beneficial institutional and sound economic policy changes, enabling the country to have one of the highest growth rates in the world. This has boosted Botswana’s GNI per capita ($3,410) to that of an upper middle-income economy, which is comparable to the GNI per capita’s of countries such as Argentina, Chile, Latvia, Costa Rica, Malaysia, et cetera. Botswana’s growth trend

versus aid trend supports the view by Burnside and Dollar (2000) that growth is more likely to be preceded by a decline in aid than an increase in aid. In contrast, the majority of the Sub-Saharan African countries reveal that when poor economic and poor institutional policies combine with poor allocation of foreign aid slow growth persists. Thus, foreign aid seems to be a double-edged sword in economic development, having positive returns in some cases and negative returns in others.

Alesina and Weder (1999) investigate whether corrupt governments receive less aid. The authors point out that multilateral and bilateral donors argue that their aid policies are selective and favor reforming governments. In this study, the authors find that both multilateral and bilateral aid donors do not discriminate between good and bad governments. The Scandinavian countries are an exception the authors note: Scandinavian countries give more aid to less corrupt governments, while the U.S tends to give more to corrupt governments even though it tends to favor democracies over dictatorships. In fact, they find that governments that are more corrupt receive more aid than governments that are less corrupt, after controlling for other factors that determine aid.

Alesina and Weder (1999) also investigate whether foreign aid and private flows react differently to institutional development, and the findings yield mixed results. They find that private flows such as foreign direct investment react negatively to corruption, but private flows may favor corrupt environments if they stand to benefit from the corruption. The authors conclude that a reduction in corruption does not seem to attract more aid.

According to Dollar, Devarajan, and Holmgren (2001), foreign aid has positive and long-term effects on economic growth for countries that undertake and adhere to certain policy and structural reforms. They observe that evidence shows that in practice aid has not been going to countries that have undertaken these reforms but to countries that have made little or no effort to reform. The authors add that it is not surprising that the Sub-Saharan Africa region continues to be one of the largest aid recipients in spite of the poor policy environment. Rodrik (1996) supports the view by Dollar, Devarajan, and Holmgren by adding that, aid can help reforming governments do well as much as it can help bad governments survive.

Collier and Gunning (1999) state that during the first half of the 20th century Africa was growing faster that Asia, however during the 1970s this ceased to be the case when most African governments were taken over by autocrats and dictators. The authors give the following as some of the reasons why Africa has grown slowly: low life expectancy and high population growth, poor soil quality and unreliable rainfall, high ethno-linguistic diversity, much smaller countries in terms of population and population density, high natural resource endowments per capita, etc. It is not that some of these factors in themselves are a problem; it is what results from them that is a problem.

For example, low life expectancy due to diseases like AIDS is a big financial burden for a continent that already has its share of financial woes, while high ethnic diversity in the presence of undemocratic regimes accounts for a high incidence of civil wars. Collier (1999) finds that "in democratic societies, ethnic diversity has no effect

on either growth or the quality of public projects, but that in dictatorships, high levels of diversity reduce growth rates by three percentage points and double the rate of project failure relative to homogeneity."[2]

Finally, "High levels of exported natural resources may lead to an appreciation of the exchange rate, which in turn makes manufacturing less competitive, yet manufacturing may offer larger growth externalities, such as learning, than resource extraction", Collier and Gunning (1999 pg. 9) observe.

Collier and Gunning (1999) note that since the 1980's, the WB and the IMF have attempted to make policy reforms a condition for the receipt of aid. According to the authors, research does not find that policy conditions have prompted African governments to enact any significant or beneficial long-term reforms to their policies.

However, Collier and Gunning (1999 pg. 13) state, "The effect of aid on growth has been shown to be policy-dependent. Where policies are good, aid substantially raises growth rates, where they are poor, diminishing returns rapidly set in so that aid cannot significantly contribute to growth." In conclusion, the authors add that in many African countries, policy environments have not been conducive for aid to raise growth substantially: this suggests that Africa has largely missed the opportunity for growth which aid has provided.

Like Collier and Gunning (1999), Burnside and Dollar (2000) also support the view that aid substantially affects growth in countries that follow sound economic policies. They view aid as an income transfer that may or may not induce growth,

[2] Obtained from Collier and Gunning (1999 pg. 9)

depending on whether the recipient governments invest or consume the aid. If the recipient government invests the additional income in productive projects, growth will rise. However, if the government consumes the additional income, aid fails to induce growth; this is most likely to occur in countries whose governments follow distorting policies that discourage investment and growth.

In order to capture the effect of policies on aid and consequently growth, Burnside and Dollar propose a neoclassical model that measures real growth rates in terms of initial real gross domestic product (GDP), institutional and policy distortions, aid, and aid interacted with distortions. The researchers use aid data from the new approach proposed by Chang, Arias, and Serven (1999) which is discussed below. Their results show that aid spurs economic growth in good policy environments and even more so when the amount of aid allocated declines.

Collier (1997) examines the problem of aid and conditionality. Conditionality, occurs when the recipient government is required to make certain policy reforms as a prerequisite to receiving aid. Foremost, Collier observes that it is inherently difficult to monitor some policy requirements. An example, the author notes, is a condition that requires fiscal deficits not to exceed a certain level. The fiscal deficit is influenced not just by government policy, but also by shocks beyond government control. Thus, whether the policy target is met or not is subjective. The second problem with conditionality Collier notes is that it is enforceable only during the life of the adjustment program. A government in financial difficulties may agree to reforms and carry them out just to obtain funds. According to Collier, there is no strong commitment to these

reforms; they are likely to be reversed at the end of the program. Thus, conditionality fails to generate permanent policy reforms.

Dollar and Svensson (1998) examine why structural adjustment programs dependent on policy reforms are a success in some countries and a failure in others. They examine 220 World Bank supported reform programs and find that a few political economy variables can accurately predict the success or failure of a structural adjustment program 75% of the time. The authors conclude that structural adjustment programs are a success only when a recipient country initiates reforms on its own accord, rather than when prompted by a donor country or agency. They propose that the World Bank be selective in choosing adjustment loan recipients, by choosing only those countries that have promising reforms.

Easterly (2005) revisits three previous development economic concepts; the big push, poverty traps, and takeoffs. According to the author, his study is motivated by the UN Millennium Development Project which is of the view that low income countries and Sub-Saharan Africa are trapped in a vicious circle of poverty and need a 'big push' in foreign aid, investment, and a national plan, in order to 'takeoff' in economic development.

Easterly (1999) notes that the previous generation of development economists favored more government intervention in the poor economies while current development economists favor a free market system as concerns the big push. However, there is a similarity between the two groups in that current development

economists also favor large-scale public action led by someone at the center (centralized planning) as a means to escape the poverty trap.

In Easterly's (2005) review of Jeffrey Sachs new book *The End of Poverty*, two of Sachs ideas on why developing economies are in a poverty trap are that poor people do not save enough and that capital stocks fail to meet a minimum standard and are thus not useful. Sachs view is that the role of foreign aid in the big push is to increase the capital stock enough to cross the threshold level, enabling developing economies to Takeoff and become self-sustaining. Sachs and the UN Millennium Project argue that it is the poverty trap rather than poor governments that explains poor growth of low income countries and the failure to make progress towards the Millennium Development Goals.[3]

Easterly gives one criticism of the Big Push on central planning as presented by F.A. Hayek; Hayek feels that planners at the top do not have enough information about realities at the bottom to design the appropriate plans.[4] According to Easterly, the circumstances in most developing countries require more local knowledge than is usually available to top central planners, and the problem is worse when it comes to foreign aid because the actions and outcomes of those that implement the plans are often unobservable to the top planners.

Finally, when Easterly (1999) puts the three concepts i.e., the big push, poverty traps, and takeoffs through the rigors of empirical tests, there is little evidence of their

[3] Obtained from Easterly 2005, pg. 6

[4] Obtained from Easterly 2005, pg. 7

role in economic development and therefore they fail as justifications for foreign aid. However, Easterly finds sufficient evidence for democratic institutions and economic freedom as determinants of economic growth.

Knack (2001) looks at aid dependence and its erosion on quality of governance, as measured by the International Country Risk Guide (ICRG) indices of bureaucratic quality, corruption, and the rule of law. According to the author, in theory the impact of aid on the quality of governance is ambiguous. For example, training public employees, increasing salaries, etc., can use aid to support a more competent bureaucratic system, which minimizes the incidence of corruption/bribery, increases accountability, and thus improves the quality of governance. Additionally, the author states that aid can be used to relieve pressure on genuinely reforming governments with capital shortages; even though conditional aid is mainly ineffective, on the margin, such conditionality can prompt recipient governments to implement some meaningful reforms, and in the process improve governance.

On the other hand, Knack (1999) notes that when aid is in the form of programs transferred via technical assistance, which are often ill suited for developing nations, the result is largely wasted resources. For example, in Brautigam (2000), for 15 years Tanzania received large amounts of aid to build its auditing capacity, but the program failed because the Auditor General's office still does not use auditing firms to audit government expenditures.[5]

[5] Obtained from Knack 2001, pg. 312

Second, Knack (1999) adds that the loyalty of aid-recipient governments seems to lie with the donors rather than their citizens and thus aid helps undermine existing institutions. Third, aid undermines bureaucracies of recipient governments by luring the best local public employees to work for donor agencies or donor governments, with promises of much higher salaries. Van de Walle and Johnston (1996) like Knack (2001), also make this observation: For example, they state that higher salaries--often five to ten times higher--offered by donor agencies often lure civil servants in developing countries from their government jobs. The authors note that a WB program hired eight Kenyans for a project it was financing, and was paying them $3000 to $6000 a month compared to a total salary of $250 a month offered to senior economists by the Kenyan government.

Finally, Knack (2001) adds that foreign aid represents a source of rents, which seem to erode the quality of governance through corruption. Aid also supports some recipient government projects that are doomed to fail from the start, which in the absence of aid would be funded by private investors.

To test the hypothesis that aid erodes the quality of governance, Knack (2001) uses the ICRG index as the dependent variable and variations of aid/GNP, aid/government expenditure, population change/initial population, GDP per capita/initial GDP per capita, and dummies for the Franc Zone and Central America. The author estimates the equations via Ordinary Least Squares, Two-Stage Least Squares where he uses infant mortality, initial GDP per capita, and initial population as instruments, and ordered logit.

According to Knack (2001), the three estimation methods yield similar results with aid negatively and significantly affecting the quality of governance. For example, the results from 2SLS show that a 25% point rise in aid/GNP or a 60% point increase in aid/government spending is estimated to reduce the 18-point ICRG index by about three points. In conclusion, the above study finds that if aid is highly variable over time in a country, then it is less reliable as a source of funds and this reduced reliance may diminish the negative impact of aid on the quality of governance.

In Van de Walle and Johnston (1996) *Improving Aid to Africa,* the authors explain how economic policies/crisis of most African governments in the 1970s and 1980s had a negative impact on the quality of the public sector and, consequently, on aid effectiveness. To illustrate this point, I use the authors' examples of two African countries that have different policy environments: Botswana and Kenya. For example, the U.S. Agency for International Development (USAID) had a program that provided master's level training in the United States for 1300 civil servants since Botswana's independence. All but three of the 1300 have returned to Botswana, and have retained their positions because the Botswana government maintains competitive wages and gives them the means to perform their jobs.

On the other hand, the authors note that in Kenya, a project funded by the Canadian International Development Agency (CIDA) trained 13 economists to master's level, between 1985 and 1991. Within one year, ten had found jobs outside the government sector, and the other three, freshly returned from Canada, were looking for jobs in the private sector. Van de Walle and Johnston (1996 pg. 90) state that "the

problem is simply that master's level staff in the Kenyan government earn a fifth of what they could earn working for one of Nairobi's international management consulting firms or the resident mission of a donor agency." This supports the idea that governments have to be committed to sound reforms--such as in Botswana--by perhaps offering competitive wages, in order to enhance the effectiveness of aid on growth.

Rajan and Subramanian (June 2005), search for factors that hinder aid from having an impact on long-term growth, and examine the soundness of the aid-growth relationship from various perspectives: time spans such as long-run and short-run, sources of aid such as bilateral and multilateral, and types of aid such as food and economic.

By using both ordinary least squares and instrumental variables, the authors come to the conclusion that, there seems to be no positive relationship between aid and growth regardless of time spans, sources of aid, or types of aid. When the effectiveness of aid dependent on geography is estimated, only one out of five estimations based on time spans is significant. Additionally, the authors obtain significant results where aid and institutional/economic policies are concerned and suggest a focus on the aspects of aid that enhance or hinder growth. In conclusion, the authors do not imply that aid cannot be an effective tool in spurring growth, but that the shortcomings of aid have to be isolated, identified, and understood in order for aid to be used effectively in the future.

Rajan and Subramanian (September 2005), further examine why aid does not have a long-term impact on growth and identify two reasons why this might be so: aid

may weaken a country's institutions and aid may inhibit competitiveness. Aid weakens a country's institutions by providing a source of funds for the government, which reduces the government's responsibility of explaining its actions to its citizens and thus has a corrupting effect in the long run. Second, a country's competitiveness is inhibited when aid inflows result in an overvalued real exchange rate, which adversely affects the traded goods sector by pushing up prices of critical resources that are common to both the traded and the non-traded sector.

Rajan and Subramanian (September 2005) add that since the non-traded goods sector does not have external competition, it can raise output prices to compensate for the higher prices, while the traded goods sector cannot raise output prices because it faces fixed prices that are set by foreign competition, and thus looses competitiveness and profitability.

According to the authors, most poor countries have a comparative advantage in labor-intensive industries such as textiles, and these are the sectors where the overvalued real exchange rate is most harmful. Rajan and Subramanian (September 2005 pg. 4), find strong evidence that "in countries that receive more aid, labor-intensive (or traditional exporting) sectors grow slower relative to capital-intensive (or non-exporting) sectors. As a result of the reduced competitiveness, employment growth in these sectors account for a lower relative share of the economy in countries that get more aid."

Chang, Arias, and Serven (1999) argue that the commonly used measure of foreign aid, the Organization for Economic Cooperation and Development (OECD) Net

Official Development Assistant (ODA), has several shortcomings and propose a new measure, Effective Development Assistance (EDA) to correct these shortcomings. The authors state that "the main purpose of measuring foreign aid flows is to assess the portion of those gains that is due to a pure transfer of resources from donors to recipients through below-market, subsidized financial terms- - i.e., to assess the donors' net financial cost, rather than the presumably larger recipients' benefit" (pg. 3). Net ODA comprises of official financial flows with a development purpose in the form of grants, and loans with high and low concessionality minus amortization.

Chang, Arias, and Serven (1999) discuss several shortcomings posed by net ODA: under-estimation of aid content due to amortization, over-representation of loans with high concessionality, under-representation of loans with low concessionality, discount rates that do not reflect market rates, failure to account for credit risk, and the treatment of debt forgiveness. Thus, the authors propose a new approach, Effective Development Assistance, which measures aid in terms of grant equivalents.

Chang, Arias, and Serven (1999) define EDA as the sum of the grant equivalents of all development flows disbursed in a given period, which eliminates the distortion introduced by the deduction of amortization payments in net ODA. According to the authors, this method converts all inflows to a common denominator and eliminates the over and under estimation of the aid content of loans as measured by ODA, allowing for a correct aggregation of the aid included in grants and loans in terms of comparable units. In addition, the measure uses discount rates that reflect true market conditions. The authors obtain their data from the World Bank's Debtor

Reporting System (DRS), which takes into account reports provided by both the creditors and the debtors, unlike the OECD's measure whose data is creditor based.

However, one commonality between the two measures of aid is that EDA does not account for credit risk Chang, Arias, and Serven (1999) note: when a recipient country defaults the donor countries account for this as additional voluntary aid. Nevertheless, this is still a shortcoming, in that when a recipient country defaults on a loan, donor countries tend to offer future loans at higher concessional terms as a way to recoup past losses.

In conclusion, even though the above authors have some differing views on the various issues concerning foreign aid, the common theme with the majority of the authors is that, foreign aid can be an effective tool for laying the groundwork for economic development for countries with good institutional and rational economic policies.

CHAPTER 3

DATA AND THEIR SOURCES

First, to estimate the effect of the recipients' GDP's per capita on the supply of foreign aid, I use annual panel data covering the years 1968 to 2002. The data on foreign aid, GDP, and population are obtained from the World Bank's World Development Indicators.

Second, to measure whether good economic and institutional policies are rewarded by increases in foreign aid, I use data from the Economic Freedom of the World (EFW), which is obtained from the Frasier Institute. The EFW data is available every five years beginning in 1970 for some of the countries, and annually after 2000. The data used in the empirical models is the overall index rather than the individual components that make up the index, since the index captures a country's economic and institutional changes over time. Furthermore, Gwartney and Lawson (2004) recommend the use of the overall index for researchers doing longitudinal studies.

Two other indices are also available: the Index of Economic Freedom (IEF) from The Heritage Foundation and the Doing Business Survey (DBS) from the World Bank Group. The IEF data is available annually from 1995, whereas the DBS data is available only for 2004. These two indices are not used in the empirical models due to data limitations from their short time-spans. A detailed description of the two indices and their correlation matrices is provided in Appendix B for interested readers.

Although Lambsdorff (2002) observes that the use of a particular index can make the results differ substantially and recommends the use of various independent indices to back up empirical evidence, the short time-spans in the IEF and the DBS data impose limitations on capturing long-term effects of economic and institutional policies on aid flows. Nonetheless, all the data used in the study, are discussed in detail below, and Table A1.1 in Appendix A represents basic summary statistics for the three economic freedom indices in terms of their overall indexes and the indexes individual components.

3.1 Foreign Aid and Gross Domestic Product

The World Banks Aid Effectiveness Research Database defines aid as Official Development Assistance (ODA), which consists of financial aid and technical cooperation. Financial aid includes grants and concessional loans having a grant element of at least 25%. Technical cooperation takes the form of grants for education, training, or payments for services rendered.

The above definition can also include non-concessional loans by multilateral financial institutions and other official flows that are considered developmental, and other kinds of non-financial support such as analytical work, advisory services, et cetera, that are not included in ODA.

Additionally, aid sources are classified as multilateral and bilateral: multilateral sources include organizations such as the World Bank (WB), International Monetary Fund (IMF), United Nations Development Program (UNDP), World Food Program (WFP), etc., while bilateral aid is from one government to another government.

Foreign aid and GDP are measured in constant US dollars. The data on aid, GDP, and population are available from 1960 to 2003. There are some limitations imposed by the data because of missing values in aid, GDP, and population, especially in the earlier years. Some of these limitations are minimized since the empirical models utilize data that is aggregated in five-year periods, from 1968 to 2003, as is later illustrated.

In addition, some of the countries did not start receiving aid until the later years of the data sample, while others that were receiving aid at the beginning of the sample period drop out in the later years. For example, most of the former communist economies did not start receiving aid until early- to mid- 1990s, while countries such as Namibia and South Africa were not receiving aid due to war and apartheid respectively. For these reasons, countries such as South Africa, Namibia, Cape Verde, Afghanistan, and some of the former communist economies, such as, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Slovenia, Slovak Republic, Ukraine, Russia, et cetera, are excluded from the study; excluding these countries further minimizes the data limitations.

Even though there are shortcomings with ODA, these data are used because they are available from 1960, rather than the EDA data, which is available from 1975. Also, note that in Chang, Arias and Serven's (1999) proposal for a new measure of foreign aid, EDA is primarily intended to reflect the real cost to donors of providing aid; this is not a material factor in this study.

Additionally, in this study, ODA donors are defined as any of the multilateral organizations e.g., WB, IMF, and the 24 Organization for Economic Cooperation and Development (OECD) countries excluding South Korea, which was an aid recipient for 30 of the 44-year period.

3.2 Economic Freedom of the World Index

Foremost, measures such as the Economic Freedom of the World (EFW), Index of Economic Freedom (IEF) and the World Banks Doing Business Survey (DBS), show the relationship between economic freedom and economic growth, with less economic freedom similar to those faced by many developing countries leading to poor policy environments that inhibit economic growth.

These indices measure how changes in government policies affect economic freedom, with higher government involvement in various aspects of the economy constituting less economic freedom. In this study, the three indices are described at length to show how they compare to each other; however, due to data limitations, the EFW index is the only index that is used in the empirical models to investigate whether improvements in economic and institutional policies attract more foreign aid. The description for the EFW index follows below; the IEF and DBS indices are described in detail in Appendix B for interested readers.

According to Gwartney and Lawson (2004 pg. 5), "Institutions and policies are consistent with economic freedom when they provide an infrastructure for voluntary exchange and protect individuals and their property from aggressors seeking to use violence, coercion, and fraud to seize things that do not belong to them." The authors

go on to state that "economic freedom also requires governments to refrain from many activities such as actions that interfere with personal choice, voluntary exchange, and the freedom to enter and compete in labor and product markets" (pg. 5).

Gwartney and Lawson explain that the EFW index incorporates data from two sources: the Global Competitiveness Report and the International Country Risk Guide. The index measures economic freedom based on twenty-one sub-categories averaged into five broad categories.[6] The data used in the summary statistics shown in Table A1.1 in Appendix A run from 1970 to 2000 in five-year spans for a sample of 89 aid-receiving countries. The five categories are scored on a scale of one to ten with a high score implying more economic freedom. The five categories and their sub-categories are as follows:

- Size of government; expenditures, taxes, transfers and subsidies, and enterprises
- Legal structure and security of property rights; judicial independence, impartial courts, protection of intellectual property, military interference in rule of law and the political process, and integrity of the legal system
- Access to sound money; money supply, inflation variability, inflation rate, freedom to own foreign currency domestically and abroad
- Trade; taxes on international trade, regulatory trade barriers, actual size of trade sector compared to expected size, difference between official exchange rate and black market rate, international capital market controls

[6] For a detailed discussion of the EFW index see the 2004 EFW Annual Report at www.freetheworld.com

- Regulation of credit, labor, and business; credit market regulations, labor market regulations, and business regulations

To measure the degree of linear association between the categories, the correlation coefficients between the categories are calculated using the average scores in each of the five categories for the years 1970 to 2000 for a sample of 89 aid-receiving countries. This calculation excludes most of the former communist economies as mentioned earlier due to missing values.

All of the estimated correlation coefficients are positive apart from the correlation between government size and legal structure and security of property rights whose coefficient is -0.028. Gwartney and Lawson explain that the larger the size of the government, the higher the degree of a country's reliance on government budgets and political decision-making rather than on personal choice and markets, which results to lesser economic freedom. Thus, I would conclude that the negative estimated correlation coefficient between government size and legal structure and security of property rights, though minimal, implies that a high degree of government involvement in the economic sector reduces the degree of protection accorded to individuals and their property.

Additionally, most of the estimated correlation coefficients are significant at the 5% level. Even though the categories are fairly correlated, they are not that highly correlated that the different categories cannot be differentiated from each other. Thus, the various categories do an adequate job of representing the various institutional and

economic factors. Table A1.2 in Appendix A represents the estimated EFW correlation coefficients.

3.3 Comparing EFW, IEF, and DBS Indices

Foremost, the EFW index data relative to the other two indices is available for a longer time span, which makes it more appropriate for use in the empirical model. Based on the estimated correlation coefficients of the different categories that make up the indices, the EFW index on average has lower correlation across its categories than the other two indices, followed by the DBS index, and finally the IEF. The low correlation estimates give confidence that the EFW index adequately measures and represents the various aspects of a country's economy and institutions. Additionally, the EFW index's five categories low correlation estimates imply that the categories are fairly independent of each other and do not replicate each other in their measurement of the various economic and institutional variables.

To enable direct comparisons across the indices, the estimated correlation coefficients for the three indices are computed from their overall indices. Based on data availability the first estimated correlation coefficient is between the EFW index and the IEF index for the years 1995 to 2003 for a sample of 85 countries. The data for each country is an average for the nine-year period. The estimated correlation coefficient is shown in Part 1 of Table 3.1 below.

Part 2 of Table 3.1 below represents the estimated correlation coefficients between the three indices using the 2003 overall indexes for 81 countries. Note that the 2003 EFW data was obtained from the Frasier Institute from the newly released 2005

Economic Freedom of the World Report. In addition, even though the DBS data represents the 2004 index, the data was collected in 2003; it can be argued that the data represents the various countries as they really were in 2003, and can thus be used for comparison purposes with the EFW and DBS indices.

Table 3.1 Correlation Coefficients between EFW, IEF, and DBS Indices

Part 1	EFW (1995-2003)	IEF (1995-2003)	
EFW	1.000		
IEF	-0.8189*	1.000	
Part 2	EFW (2003)	IEF (2003)	DBS (2003)
EFW	1.000		
IEF	-0.8335*	1.000	
DBS	-0.6105*	0.5895*	1.000

The correlation coefficient estimates from Parts 1 and 2 are all statistically significant at the 5% level. The EFW index and the other two indices are negatively correlated because the EFW index moves in the opposite direction from the other two indices, i.e., the higher the score a country gets in the EFW index the better. Even so, the estimated correlation coefficients do not change in magnitude, only in sign i.e., they

become positive when the EFW index is adjusted to move in the same direction as the other two indices.

The high correlation between the EFW and the IEF index adds confidence in the use of the EFW index as the economic freedom measure of choice because it is very comparable to the IEF. Thus, the EFW index is as good a measure as the IEF. Finally, the estimated correlations between the EFW and the IEF indices to the DBS index are lower, but the expectation is that the correlations will go up as the DBS index improves over time.

CHAPTER 4

EMPIRICAL MODELS

As mentioned in the introduction, I attempt to estimate two effects: how foreign aid flows are influenced by the GDP of the recipients', and two, whether institutional and economic improvements are rewarded with increases in foreign aid. The estimation methods used are the Fixed Effects (FE) approach and Feasible Generalized Least Squares (FGLS). The model specified below assumes that aid per capita is a function of the recipients' GDP per capita, the EFW index, other unobservable factors that affect aid flows and are fixed over time, and other unobservable factors that affect aid flows and vary over time.

(1) $aid/capita = f(recipientgdp, efw, post1983, fixedeffects, idiosyncraticerrors)$

All variables are in logs except the EFW index, which is in levels. An interaction term between the EFW index the post-1983 dummy investigates the observation by Collier and Gunning (1999) that since the 1980s, the WB and the IMF have attempted to make policy improvement a condition for the receipt of aid. This dummy represents years equal to or greater than 1983 or equivalently, data periods equal to or greater than four. See Table 4.1 below for the data periods.

The recipients' GDP per capita is influenced by economic and institutional factors. When an interaction term between the recipients' GDP per capita and the EFW

index is included, I expect a larger effect on aid flows in poorer countries from a change in the EFW index.

Finally, the fixed effects represent factors such as geography, colonial ties, ethnic diversity, etc. For example, Britain may be more generous to its former colonies due to colonial ties, while the number of ethnic groups (44) in Kenya is unlikely to change. Hence, these are factors that may affect aid flows, are unique to a country and time-invariant and are consequently captured by the fixed effects. On the other hand, the idiosyncratic errors represent factors that vary a little over time and across the cross-sectional units i.e., population, donor strategic interests, et cetera.

Since the EFW data is available every five years from 1970 to 2000, aid per capita and GDP per capita are adjusted accordingly. I aggregate aid per capita and GDP per capita data in five-year periods from 1968 to 2002 by taking an average for each five-year period. This results in seven five-year periods, with the 1970 and 1975 EFW indices corresponding to the 1968 to 1972 and 1973 to 1977 periods respectively, and so forth. The seven data periods are presented in Table 4.1 below.

Table 4.1 Data Periods

Periods	EFW indices (year)	aid and gdp periods (years)
1	1970	1968-1972
2	1975	1973-1977
3	1980	1978-1982
4	1985	1983-1987
5	1990	1988-1992
6	1995	1993-1997
7	2000	1998-2002

Having the seven time-periods allows the models to be estimated with period dummies. When the period dummies are included in the models, they capture the effects of time on aid flows.

After obtaining the above data periods, some of the countries have up to six periods of data missing. For this reason, countries such as South Africa, Namibia, and most of the former communist economies as earlier mentioned, are excluded from the study, not to mention that for most of the excluded countries, their EFW indexes are unavailable as well.

Wooldridge (2002) notes that as long as the reason we have missing data (attrition) is not correlated with the idiosyncratic errors, the unbalanced panel poses no

problems. The resulting estimates are unbiased, consistent, and efficient as long as the following assumptions hold: Strict exogeneity of the explanatory variables conditional on the fixed effect, time variation within each cross-section, and constant variance and no serial correlation in the idiosyncratic errors.

Additionally, the fixed effects approach allows for the control of time-invariant variables such as geography, colonial ties, etc., and allows for some correlation between these time-invariant variables and the explanatory variables. However, Bhargava, Franzini, and Narendranathan (1982) note that a common problem with the fixed effects model is that the error terms of the individual units are likely to be serially correlated due to the possible omission of relevant variables. Additionally, since there is a cross-section the errors are prone to heteroskedasticity. Thus, there is a need to test and control for serial correlation and heteroskedasticity in the error terms.

I begin the estimation process by illustrating the differences in the magnitude of aid flows to low-income economies. I calculate aid per capita accumulation and the shares of aid per capita to GDP per capita. Aid per capita accumulation for each country is obtained by simply summing the aid per capita received for the 44-year period i.e., 1960 to 2003. The shares of aid per capita to GDP per capita are calculated using the aid per capita and GDP per capita averages for the years 1998 to 2002 or the 7^{th} data period.

Table A1.3 in Appendix A shows the results for a sample of 53 low-income economies. The results indicate that The Gambia, Guinea-Bissau, Mauritania, Nicaragua, Papua New Guinea, Sao Tome and Principe, and Solomon Islands are

extreme outliers based on aid per capita accumulation. Burundi, Guinea-Bissau, Liberia, and Sao Tome and Principe are extreme outliers in terms of the share of aid per capita to GDP per capita. Sao Tome and Principe has the highest values in both categories, while India and Nigeria have the lowest shares of aid per capita to GDP per capita.

4.1 Effects of GDP per Capita and EFW Index on Aid Flows

The equation that that captures the effects that the recipients' GDP per capita and the EFW index have on aid flows is estimated in two parts; equation (2) measures these effects for a sample of 84 aid-receiving countries irrespective of the region, while equation (3) measures these effects for a sample of 27 Sub-Saharan African countries. Note that various version of the equations below are estimated via FE and FGLS for the 84 aid-receiving countries which are labeled 'World' and for Sub-Saharan Africa.

(2) $aid_{it} = \beta_0 + \beta_1 rgdp_{it} + \beta_2 efw_{it} + \beta_3 (efw * rgdp)_{it} + \delta_1 y83 * efw_{it} + t_t + a_i + \mu_{it}$

(3) $aid_{it}^{\ s} = \beta_0^{\ s} + \beta_1 rgdp_{it}^{\ s} + \beta_2 efw_{it}^{\ s} + \beta_3 (efw * rgdp)_{it}^{\ s} + \delta_1 y83 * efw_{it}^{\ s} + t_t^{\ s} + a_i^{\ s} + \mu_{it}^{\ s}$

it = country observation at time t

s = superscript s represents variables for Sub-Saharan Africa

aid = the log of aid per capita

β = average of individual intercepts

rgdp = the log of the recipients' GDP per capita

efw = EFW index

efw*rgdp = interaction terms between EFW index and log of recipients' GDP per capita

$y83 * efw$ = interaction terms between the EFW index and periods equal to or greater than period four

t = period dummies

a = time-invariant variables

μ = idiosyncratic error terms

4.2 Hypothesized Results

The two equations allow us to examine the following questions: do aid flows increase or decrease when there is an increase or decrease in the recipients' GDP per capita? Additionally, how do economic and institutional changes affect aid flows, and how have aid flows changed over time?

The expectations on the coefficients from the estimates are as follows: first, the intercept terms in the fixed effects models capture the average of the individual intercepts when all other variables are set to zero, and are therefore, not meaningful. Second, a negative change in recipients' GDP per capita may or may not attract more aid depending on the factors contributing to the decrease in GDP per capita. For example, if the decrease in GDP per capita results from bad governance, this may decrease aid flows, but if the decrease results from other extenuating circumstances such as drought, then this may increase aid flows. Most aid-receiving countries receive aid due to their low GDP per capita among other things; therefore, I expect the coefficient on the recipients' GDP per capita to be positive.

I expect an improvement in the EFW index to attract more aid with the resulting coefficient being positive, which is consistent with some donor agency requirements. I

expect the coefficient for the interaction term between the recipients' GDP per capita and the EFW index to be negative due to additional noise from the interaction. I expect the coefficient between the EFW index and the post-1983 dummy to be positive leading to the conclusion that good policies are rewarded with more aid for years equal to or greater than 1983.

Finally, the period dummy coefficients will be positive, with the magnitude of the coefficients increasing over time and then tapering off, since based on the available information, aid flows have increased over time.

CHAPTER 5

RESULTS AND IMPLICATIONS

Table 5.1 section 5.1 and Table 5.2 section 5.2 below represent the actual estimated coefficients for the World and for Sub-Saharan Africa consecutively. The implications are based on the fully specified FGLS models or models (8).

5.1 Results and Implications for the World

Table 5.1 World Estimates

WORLD (Dependent variable is the log of aid per capita in country i in period t)								
Independent Variables	(1) FE	(2) FGLS	(3) FE	(4) FGLS	(5) FE	(6) FGLS	(7) FE	(8) FGLS
ln gdp/cap	-0.546	-0.073	0.232	0.552	-0.498	-0.076	0.241	0.604
	(-3.64)*	(-3.21)*	(1.05)	(6.06)*	(-3.20)*	(-3.27)*	(1.08)	(6.85)*
EFW	-0.035	-0.040	0.938	0.770	0.010	-0.070	0.943	0.831
	(-0.68)	(-1.86)**	(4.38)*	(7.37)*	(0.15)	(-2.26)*	(4.39)*	(8.18)*
efw*lngdp/cap			-0.135	-0.111			-0.133	-0.120
			(-4.68)*	(-7.47)*			(-4.56)*	(-8.34)*
EFW*y83					-0.073	0.048	-0.031	-0.008
					(-1.10)	(1.49)	(-0.47)	(-0.24)
Period 2	-0.226	-0.022	-0.231	0.028	-0.221	-0.040	-0.229	0.030
	(-1.43)	(-0.28)	(-1.50)	(0.33)	(-1.4)	(-0.5)	(-1.48)	(0.34)
Period 3	-0.164	0.115	-0.161	0.195	-0.158	0.099	-0.158	0.197
	(-1.06)	(1.38)	(-1.06)	(2.18)*	(-1.02)	(1.16)	(-1.05)	(2.14)*
Period 4	-0.041	0.257	-0.018	0.344	0.338	-0.016	0.14	0.386
	(-0.27)	(2.99)*	(-0.12)	(3.71)*	(0.90)	(-0.08)	(0.38)	(1.77)**
Period 5	0.118	0.477	0.144	0.569	0.499	0.193	0.304	0.603
	(0.76)	(5.53)*	(0.95)	(6.14)*	(1.32)	(0.94)	(0.82)	(2.72)*

Table 5.1 - *Continued*

Period 6	-0.033	0.299	0.023	0.389	0.359	0.003	0.187	0.425
	(-0.21)	(3.43)*	-0.15	(4.16)*	-0.92	-0.01	-0.49	(1.88)**
Period 7	-0.381	-0.034	-0.345	0.047	0.019	-0.333	-0.178	0.083
	(-2.37)*	(-0.38)	(-2.21)*	-0.49	-0.05	(-1.56)	(-0.46)	-0.36
Constant	7.124	3.541	1.607	-1.013	6.551	3.741	1.446	-1.377
	(7.21)*	(19.55)*	-1.06	(-1.62)	(5.87)*	(16.49)*	-0.93	(-2.26)*
Observations	473							
Groups	84							

Equations (1-8) represent estimates for 84 aid-receiving countries (includes 25 Sub-Saharan African countries). The FGLS estimates correct for heteroskedasticity and AR (1) autocorrelation.
t-statistics in the fixed effects models and z-scores in the FGLS models are in brackets.
* and ** represent coefficients that are significant at the 5 and 10 percent levels respectively. Significance of the coefficients is from p-values.

The error terms in the fixed effects models are heteroskedastic and have autoregressive process of order one AR(1); the resulting standard errors are misleading and the resulting t-statistics are not valid for inference. Therefore, the FGLS model corrects for heteroskedasticity and AR (1) serial correlation and inference is based on the FGLS estimates. Additionally, a brief overview of equations (2), (4), and (6) is presented, but implications focus on the fully specified model i.e., model (8).

Equation (2) omits the interaction terms. The coefficient for the recipients' GDP per capita and that for the EFW index is negative, which was unexpected, even though the coefficients are statistically significant. Additionally, the period dummies have the expected sign, are statistically significant (except periods two and seven which are negative and insignificant), and show that aid flows have increased over time and then tapered off, with the coefficient for the fifth period having the biggest magnitude.

Equation (4) omits the interaction term between the EFW index and the post-1983 dummy. The coefficient for the recipients' GDP per capita and that for the EFW index are positive as expected and statistically significant. The interaction term between the recipients' GDP per capita and the EFW index is negative as expected and statistically significant. The period dummies are positive and statistically significant except the second and seventh periods, which are negative and insignificant.

Equation (6) omits the interaction term between the recipients' GDP and the EFW index. The coefficient for the recipients' GDP per capita and that for the EFW index are statistically significant but negative, which was unexpected. The interaction term between the EFW index and the post-1983 dummy is positive as expected, but not statistically significant. The period dummies are not statistically significant but if the periods are ranked according to the magnitude of the coefficients, they are consistent with the other FGLS equations.

From equation (8), the coefficient for the recipients' GDP per capita and the EFW index can be interpreted in terms of marginal or partial effects at the mean values of these variables.

$$\frac{\partial \log aip/cap}{\partial \log gdp/cap} = \hat{\beta}_{\log gdp/cap} + \hat{\beta}_{efw*\log gdp/cap} * \overline{efw}$$

$$= 0.604 - 0.120(5.449)$$

$$= -0.05\%$$

Thus, the marginal effect of a 1% increase in the recipients' GDP per capita (conditional on the mean value of the EFW index) is a 0.05% decrease in aid per capita,

as shown above. This result would imply that as economic performance improves in recipient countries, donors cut back on the amount of aid offered. However, this reduction in aid flows is neither statistically nor economically significant.

Additionally the marginal effect for a one-point improvement in the EFW index is as follows:

$$\frac{\partial \log aip/cap}{\partial efw} = \hat{\beta}_{efw} + \hat{\beta}_{efw*\log gdp/cap} * \overline{\log gdp/cap} + \hat{\beta}_{efw*y83} * \overline{y83}$$

$$=100[\exp (0.831 - 0.120(7.086) - 0.008)-1]$$

$$= -2.7\%$$

Thus, the marginal effect of a one-point improvement in the EFW index (conditional on mean values of the recipients' GDP per capita and years equal to or greater than 1983) is a 2.7% decrease in aid per capita.

To understand what the marginal effect for the EFW index implies, the following example--which makes comparisons between countries--utilize the aid per capita, and aid per capita/GDP per capita ratios in Table A1.3 in Appendix A. In calculating the changes in the ratio of aid per capita/GDP per capita, GDP per capita is held constant, because of lack of a good measure of the percentage of aid per capita that trickles down to GDP per capita.

For instance, Nepal and Nicaragua have the following amounts of aid per capita, and aid per capita/GDP per capita ratios respectively: Nepal $16.66 and 7.14%; Nicaragua $134.93 and 17.72%. In Nepal, a 2.7% decrease in $16.66 aid per capita is

$16.21, which decreases the ratio of aid per capita/GDP per capita to 6.95%. In Nicaragua, a 2.7% decrease in $134.93 aid per capita is $131.29, and the ratio of aid per capita/GDP per capita decreases to 17.24%. Thus, the decrease in aid per capita resulting from a one-point improvement in the EFW index has no economic significance in either Nepal or Nicaragua. However, decreases in aid per capita/GDP per capita ratios show decreases in aid dependence.

The interaction term between the EFW index and the post-1983 dummy implies that a one-point improvement in the EFW index for years equal to or greater than 1983 results to a 0.8% (100[exp(-0.008)-1]) decrease in aid flows, even though the change is not statistically significant. The interaction term between the EFW index and the post-1983 dummy was used to investigate the observation by Collier and Gunning (1999) that since the 1980s, the WB and the IMF have attempted to make policy improvements a condition for the receipt of foreign aid. This result implies that aid rewards are no different from those in the pre-1983 period; in fact, institutional reforms in the post-1983 period have seen a 0.8% decrease in aid flows.

Finally, the period dummies measure the changes in aid per capita flows over every five-year period. The percentage point changes in aid per capita are as follows: period 2 saw about a 3% point increase from period 1, period 3 saw about a 16.7% point increase from period 2, period 4 saw about an 18.9% point increase from period 3, while period 5 saw about a 21.7% point increase from period 4. Additionally, period 6 saw about a 17.8% point decrease in aid per capita from period 5 while period 7 saw about a 34.2% point decrease in aid per capita from period 6. Thus, the percentage

point changes in aid flows in every period, except period 2, are economically significant, with period 5 having the biggest percentage point increase in aid flows and period 7 the biggest decrease.

In conclusion, the decreases in aid flows resulting from improvements in the EFW index lead to the conclusion that aid donors have not rewarded institutional reforms; in fact, institutional reforms have resulted in decreases in aid flows. Additionally, the period dummies yield consistent results across all the FGLS models, with period 5 having biggest increase in aid per capita; the general trend has been an increase in aid per capita over time with the increases tapering off.

5.2 Results and Implications for Sub-Saharan Africa

Table 5.2 Sub-Saharan Africa Estimates

SUB-SAHARAN AFRICA
(Dependent variable is the log of aid per capita in country i in period t)

Independent Variables	(1) FE	(2) FGLS	(3) FE	(4) FGLS	(5) FE	(6) FGLS	(7) FE	(8) FGLS
ln gdp/cap	-0.379	0.296	1.052	1.142	-0.324	0.285	1.073	1.312
	(-1.69)**	(6.27)*	(2.55)*	(4.82)*	(-1.40)	(5.21)*	(2.58)*	(5.56)*
EFW	0.109	0.108	1.488	1.107	0.190	0.363	1.528	1.501
	(1.49)	(2.71)*	(4.26)*	(4.46)*	(1.71)**	(5.53)*	(4.31)*	(6.31)*
efw*lngdp/cap			-0.243	-0.164			-0.240	-0.191
			(-4.02)*	(-3.76)*			(-3.95)*	(-4.50)*
EFW*y83					-0.115	-0.264	-0.083	-0.258
					(-0.98)	(-3.23)*	(-0.75)	(-3.35)*
Period 2	-0.442	0.162	-0.432	0.176	-0.412	0.307	-0.410	0.311
	(-1.72)**	(1.16)	(-1.79)**	(1.26)	(-1.59)	(2.05)*	(-1.69)**	(2.15)*
Period 3	-0.104	0.446	-0.113	0.491	-0.062	0.676	-0.082	0.716
	(-0.43)	(3.18)*	(-0.49)	(3.51)*	(-0.25)	(4.35)*	(-0.35)*	(4.76)*
Period 4	0.102	0.657	0.172	0.710	0.692	2.141	0.598	2.175
	(0.42)	(4.75)*	(0.75)	(5.07)*	(1.06)	(4.57)*	-0.97	(4.81)*
Period 5	0.411	1.018	0.470	1.048	1.003	2.459	0.896	2.485
	(1.70)**	(7.45)*	(2.06)*	(7.57)*	(1.54)	(5.19)*	(1.46)	(5.46)*
Period 6	0.288	0.886	0.408	0.963	0.889	2.347	0.840	2.401
	(1.19)	(6.41)*	(1.78)**	(6.88)*	(1.34)	(4.97)*	(1.35)	(5.28)*
Period 7	-0.138	0.434	-0.023	0.468	0.480	1.920	0.422	1.931
	(-0.57)	(3.15)*	(-0.10)	(3.35)*	(0.71)	(3.92)*	(0.66)	(4.10)*
Constant	4.861	0.426	-3.31	-4.753	4.099	-0.914	-3.749	-7.054
	(3.78)*	(1.32)	(-1.40)	(-3.55)*	(2.73)*	(-1.88)**	(-1.54)	(-5.33)*
Observations	145							
Groups	27							

Equations (1-8) represent estimates for 27 Sub-Saharan African countries. The FGLS estimates correct for heteroskedasticity and AR (1) autocorrelation.
t-statistics in the fixed effects models and z-scores in the FGLS models are in brackets.
* and ** represent coefficients that are significant at the 5 and 10 percent levels respectively. Significance of the coefficients is from p-values.

Implications for Sub-Saharan Africa are based on the FGLS models for the same reasons stated in section 5.1. The focus however, is on the fully specified FGLS model i.e., model (8). First, a brief overview of equations (2), (4), and (6) follows.

Equation (2) omits the interaction terms. The coefficient for the recipients' GDP per capita and that for the EFW index are positive and statistically significant, which is what was expected. Additionally, the period dummies have the expected sign, are statistically significant (except period two), and show that aid flows have increased over time and then tapered off, with the coefficient for period five having the biggest magnitude.

Equation (4) omits the interaction term between the EFW index and the post-1983 dummy. The coefficient for the recipients' GDP per capita and that for the EFW index are positive as expected and statistically significant. The interaction term between the recipients' GDP per capita and the EFW index is negative as expected and statistically significant. The period dummies are positive and statistically significant (except period two), with the coefficient for period five having the biggest magnitude.

Equation (6) omits the interaction term between the recipients' GDP per capita and the EFW index. The coefficient for the recipients' GDP per capita and that for the EFW index are positive and statistically significant as expected. The interaction term between the EFW index and the post-1983 dummy is negative, which was unexpected, but statistically significant. The period dummies are all positive and statistically significant.

From equation (8), the coefficient for the recipients' GDP per capita and the EFW index can be interpreted in terms of marginal or partial effects at the mean values of these variables.

$$\frac{\partial \log aip/cap}{\partial \log gdp/cap} = \hat{\beta}_{\log gdp/cap} + \hat{\beta}_{efw*\log gdp/cap} * \overline{efw}$$

$$= 1.312 - 0.191(4.939)$$

$$= 0.37\%$$

Thus, the marginal effect of a 1% increase in the recipients' GDP per capita (conditional on the EFW index) is a 0.37% increase in aid per capita, as shown above. This result would imply that as economic performance improves in Sub-Saharan Africa, donors increase the amount of aid offered. However, the increase in aid flows is neither statistically nor economically significant.

Additionally the marginal effect for a one-point improvement in the EFW index is as follows:

$$\frac{\partial \log aip/cap}{\partial efw} = \hat{\beta}_{efw} + \hat{\beta}_{efw*\log gdp/cap} * \overline{\log gdp/cap} + \hat{\beta}_{efw*y83} * \overline{y83}$$

$$=100[\exp (1.501 - 0.191(5.920) - 0.227)-1]$$

$$= -11.9\%$$

Thus, the marginal effect of a one-point improvement in the EFW index (conditional on the mean values of the recipients' GDP per capita and years equal to or greater than 1983) is a 11.9% decrease in aid per capita.

To understand what this implies, the following example--which makes comparisons between countries--utilize the aid per capita, and aid per capita/GDP per capita ratios in Table A1.3 in Appendix A. In calculating the changes in the ratio of aid per capita/GDP per capita, GDP per capita is held constant, because of lack of a good measure of the percentage of aid per capita that trickles down to GDP per capita.

For instance, Kenya and Sao Tome and Principe have the following amounts of aid per capita, and aid per capita/GDP per capita ratios respectively: Kenya $14.07 and 3.68%; Sao Tome and Principe $217.53 and 64.79%. In Kenya, an 11.9% decrease in $14.07 aid per capita is $12.40, which decreases the ratio of aid per capita/GDP per capita to 3.24%. In Sao Tome and Principe, an 11.9% decrease in $217.53 aid per capita is $191.64, which decreases the ratio of aid per capita/GDP per capita to 57.07%. While an 11.9% decrease in aid per capita, resulting from a one-point improvement in the EFW index is statistically significant, economic significance varies by country. Thus, the same percentage change in aid per capita brings about different economic responses in the two countries.

The interaction term between the EFW index and the post-1983 dummy implies that a one-point improvement in the EFW index for years equal to or greater than 1983 results to a 22.7% (100[exp(-0.258)-1]) decrease in aid flows. This change is both statistically and economically significant. The interaction term between the EFW index and the post-1983 dummy was used to investigate the observation by Collier and Gunning (1999) that since the 1980s, the WB and the IMF have attempted to make policy improvements a condition for the receipt of foreign aid. This result implies that

aid flows in the post-1983 period are substantially less than those in the pre-1983 period; in fact, institutional reforms in the post-1983 period have seen a 22.7% decrease in aid flows.

Finally, the period dummies measure the changes in aid per capita flows over every five-year period. The percentage point changes in aid per capita are as follows: period 2 saw about a 31% point increase from period 1, period 3 saw about a 40.5% point increase from period 2, period 4 saw about a 145.9% point increase from period 3, while period 5 saw about a 31% point increase from period 4. Additionally, period 6 saw about an 8.4% point decrease in aid per capita from period 5 while period 7 saw about a 47% point decrease in aid per capita from period 6. Thus, the percentage point changes in aid flows in every period are economically significant, with period 4 having the biggest percentage point increase in aid flows and period 7 the biggest decrease.

In conclusion, the decreases in aid flows resulting from improvements in the EFW index lead to the conclusion that aid donors have not rewarded institutional reforms; in fact, institutional reforms have resulted in decreases in aid flows. Additionally, the period dummies yield consistent results across all the FGLS models, with periods four and five having biggest increases in aid per capita; the general trend has been an increase in aid per capita over time with the increases tapering off. Finally, from the period dummies, Sub-Saharan Africa had substantial increases in aid in the early-to-mid sample periods, while the late sample periods had dramatic decreases in aid flows.

CHAPTER 6

CONCLUSION

An extension of the research may include the donors' GDP per capita which has been excluded from this study. Estimates for equations including the donors' GDP per capita show that it is an important determinant of foreign aid flows. The donors' GDP per capita was excluded from this study because it is the same for all countries in the panel. Even though aid donors give different amounts of foreign aid to different countries, the breakdown of aid by donor country was not available. When the donors' GDP per capita is included in the equations together with the period dummies, multicollinearity occurs resulting in one of the period dummies being dropped from the estimated equations. It was more important to include the period dummies to estimate the post-1983 effect and measure the changes in aid flows over time.

Additionally, researchers doing short-term studies may utilize both the EFW index and the IEF, to observe how sensitive the results are to the use of different economic freedom measures.

The results from both the World sample and the Sub-Saharan African sample are largely consistent, even though the Sub-Saharan Africa results are more robust. First, changes in foreign aid flows resulting from changes in the recipients' GDP per capita are neither statistically nor economically significant.

Second, donors became more generous as they became wealthier in the early-to-mid sample periods since these periods experienced substantial increases in aid flows. The trend in the late sample period is that of dramatic decreases in aid flows, especially in Sub-Saharan Africa, signaling changes in the donors' generosity, probably due to pressures in their own economies. Overall, foreign aid flows have not been significant enough--or they have been, but have been squandered by the recipient governments--as to have a significant economic impact on the welfare of the recipients, by perhaps offsetting some of the factors that hinder the growth of GDP per capita.

Third, institutional reforms are not rewarded with increases in foreign aid. Improvements in the EFW index result in decreases in aid flows. The negative coefficients from the interaction terms between the EFW index and the post-1983 dummy refute the claim that donor agencies have made policy improvements a condition for the receipt of foreign aid. In fact, a one-point improvement in the post-1983 period has seen a 0.8% and 22.7% reduction in aid flows in the World sample and Sub-Saharan Africa respectively. This finding is consistent with that by Alesina and Weder (1999), where the authors find that both multilateral and bilateral donors do not discriminate between good and bad governments.

Finally, increases in foreign aid to Sub-Saharan Africa and many other low-income aid-receiving countries fail to convert into increases in GDP per capita. Thus, foreign aid fails to have the desired effect of boosting GDP per capita and consequently fails to improve the livelihoods of the worlds poorest. In conclusion, foreign aid can be

beneficial; however, the manner in which the donors' allocate the aid and what the recipient governments choose to do with it determines the outcome.

APPENDIX A

SUMMARY STATISTICS

Table A1.1 Summary statistics (Economic Freedom Indices)

Variable	Mean	Standard Deviation	Minimum	Maximum
EFW *Overall Index*	5.433	0.870	3.5	8.5
Government size	5.497	1.419	2.7	9.5
Legal structure & property rights	4.673	1.142	2.2	7.7
Money	6.106	1.468	2.1	9.1
Trade	5.571	1.260	1.8	9.5
Regulation of credit, labor, business	5.293	0.953	2.8	7.6
Number of observations (89)				
IEF *Overall Index*	3.361	0.646	1.52	4.8
Trade	3.787	1.001	1.0	5.0
Fiscal burden	3.679	0.686	1.54	4.9
Government intervention	3.361	0.795	1.65	5.0
Monetary policy	3.141	1.201	1.0	5.0
Foreign investment	2.961	0.851	1.0	5.0
Banking	3.175	0.849	1.0	5.0
Wages & prices	2.938	0.733	1.3	5.0
Property rights	3.206	0.925	1.0	5.0
Regulation	3.558	0.828	1.0	5.0
Informal markets	3.820	0.977	1.0	5.0
Number of observations (137)				
DBS *Overall Index*	1.450	0.336	0.515	2.483
Starting a business	1.137	0.491	0.356	3.028
Hiring & firing	2.063	0.974	0	4.126
Property registration	0.985	0.386	0.294	2.091
Getting credit	2.982	0.638	0.692	4.7
Protecting investors	0.622	0.262	0	1.0
Enforcing contracts	1.027	0.289	0.493	2.416
Closing a business	1.319	0.448	0.109	3.055
Number of observations (121)				

Table A1.2 Economic Freedom of the World correlation matrix

	gov't size	legal structure & property rights	sound money	trade	regulation of credit, labor, business
government size	1.000				
legal structure & property rights	-0.028	1.000			
sound money	0.352*	0.258*	1.000		
trade	0.194	0.521*	0.485*	1.000	
regulation of credit, labor, business	0.449*	0.343*	0.390*	0.469*	1.000

The table shows the estimated correlation coefficients for the Economic Freedom of the World representative of 89 aid-receiving countries for the period 1970-2000. The indices do an adequate job of measuring the various economic and institutional variables. * indicates coefficients that are significant at the 5% level.

Table A1.3 Accumulated aid/capita and share of aid/capita to gdp/capita for 53 low-income economies.

Country	accumulated aid per capita (1960-2003) US $	average aid per capita (1998-2002) US $	average gdp per capita (1998-2002) US $	ratio of aid/capita to gdp/capita (%)
Bangladesh	374.41	8.58	359.17	2.39
Benin	1110.77	38.55	411.25	9.37
Bhutan	1720.17	79.84	665.61	11.99
Burkina Faso	1022.33	35.44	269.21	13.16
Burundi	898.98	20	95.49	20.94
Cambodia	620.81	32.2	293.04	10.99
Cameroon	969.93	35.92	633.27	5.67
Central Afr Rep	1323.29	19.73	276.49	7.14
Chad	925.65	24.11	225.77	10.68
Congo Dem Rep	478.72	27.13	99.59	27.25
Congo Rep	1614.47	21.52	839.5	2.56
Côte d'Ivoire	1133.58	28.28	733.81	3.85
Ethiopia	386.03	15.87	98.21	16.16
Gambia	2041.73	37.82	302.96	12.49
Ghana	856.67	34.09	318.6	10.7
Guinea	1080.71	30.56	434.34	7.04
Guinea-Bissau	2393.93	55.82	153.78	36.3
Haiti	899.46	24.67	448.47	5.5
India	88.34	1.38	482.39	0.29
Kenya	767.47	14.07	382.23	3.68
Kyrgyz Rep	496.86	43.29	308.38	14.04
Lao	1284.95	51.82	322.99	16.05
Lesotho	1865.5	31.62	501.38	6.31
Liberia	1358.45	22.47	157.2	14.3
Madagascar	801.68	24.52	274.37	8.94
Malawi	1140.51	41.29	167.62	24.63
Mali	1237.1	36.97	273.67	13.51
Mauritania	3292.84	94.6	364.39	25.96
Moldova	212.4	28.62	354.97	8.06
Mongolia	1094.41	91.28	433.1	21.08
Mozambique	1299.01	62.81	210.77	29.8
Myanmar	168.38	2.33	187.85	1.24
Nepal	490.76	16.66	233.39	7.14
Nicaragua	2618.42	134.93	761.47	17.72
Niger	1121.36	25.1	191.84	13.08
Nigeria	60.3	1.76	352.01	0.5
Pakistan	381.98	9.25	510.32	1.81
Papua New Guinea	2966.45	42.68	644.74	6.62
Rwanda	1320.4	42.44	222.44	19.08

Table A1.3 - *Continued*

Sao Tome &Principe	6156.9	217.53	335.78	64.79
Senegal	1949.69	46.55	516.05	9.02
Sierra Leone	887.6	48.32	141.25	34.21
Solomon-Islands	4212.99	117.68	652.26	18.04
Sudan	704	10.01	432.01	2.32
Tajikistan	204.5	23.4	190.92	12.26
Tanzania	1007.83	35.77	274.11	13.05
Togo	1149.43	12.18	321.57	3.79
Uganda	686.94	31.69	248.46	12.75
Uzbekistan	62.08	7.03	497.4	1.41
Vietnam	387.88	19.14	419.15	4.57
Yemen	1053.51	22.33	521.41	4.28
Zambia	1903.99	59.17	357.88	16.53
Zimbabwe	732.61	15.24	616.5	2.47
Average	**1225.96**	**42.41**	**369.2**	**13.4**
Maximum	**6156.9**	**233.82**	**839.5**	**64.79**
Minimum	**60.3**	**1.38**	**95.49**	**0.29**
Std. deviation	**1067.525**	**45.18**	**178.52**	**12.68**

APPENDIX B

IEF AND DBS INDICES

B.1.1 Index of Economic Freedom (IEF)

According to Miles, Feulner, and O'Grady (2005) the IEF uses a list of fifty sub-categories aggregated into ten broad categories, for a sample of 161 countries. These categories encompass a wide variety of factors such as corruption, labor market regulations, and rule of law. Each sub-category is scored and an overall score ranging from one to five is assigned to each of the ten categories. The higher the score on a category the lesser the economic freedom a country enjoys. The countries are classified into four groups based on an average index of the ten categories; Free for those with a score of 1.99 or less, Mostly Free for a score of 2 to 2.99, Mostly Unfree for a score of 3 to 3.99, and Repressed for a score of 4, or higher. [7] The ten categories and their sub-categories are as follows:

- Trade policy; weighted average tariff rate, non-tariff barriers, and corruption in the customs service
- Fiscal burden of government; top marginal income and corporate tax rates, and year-to-year change in government expenditures as a percentage of GDP
- Government intervention in the economy; government consumption as a percentage of the economy, government ownership of business and industries, share of government revenues from state-owned enterprises and government ownership of property, and economic output produced by the government
- Monetary policy; average inflation rate

[7] See the 2005 Index of Economic Freedom, pg. 58-75 for a detailed discussion of the ten categories and country classifications.

- Capital flows and foreign investment; foreign investment code, restrictions on; foreign ownership of business, repatriation of earnings, capital transactions, industries and companies open to foreign investors, restrictions and performance requirements on foreign companies, foreign ownership of land, equal treatment under the law for both foreign and domestic companies, and availability of local financing for foreign companies
- Banking and finance; government ownership of financial institutions, restrictions on the ability of foreign banks to open branches and subsidiaries, government influence over the allocation of credit, government regulations, and freedom to offer all types of financial services, and insurance policies.
- Wages and prices; minimum wage laws, freedom to set prices privately without government influence, government price controls, extent to which government price controls are used, and government subsidies to businesses that affect prices.
- Property rights; freedom from government influence over the judicial system, commercial code defining contracts, sanctioning of foreign arbitration of contract disputes, government expropriation of property, corruption within the judiciary, delays in receiving judicial decisions, and legally granted and protected private property.
- Regulation; licensing requirements to operate a business, ease of obtaining a business license, corruption within the bureaucracy, labor regulations,

environmental, consumer safety, and worker health regulations, and regulations that impose a burden on business.

- Informal market activity; smuggling, piracy of intellectual property in the informal market, agricultural production, manufacturing, services, transportation, and labor, all supplied on the informal market.

To calculate the correlation coefficients the data used is a ten-year average, 1995 to 2004 across each of the ten categories for a sample of 137 aid-receiving countries. The estimated correlation coefficients for all of the variables are positively correlated and most of the variables are significant at the 5% level. Compared to the EFW index, the categories in the IEF index are more highly correlated, though they are not that highly correlated that the different categories cannot be differentiated from each other. See Table B1.1 below for the estimated correlation coefficients.

Table B1.1 Index of Economic Freedom correlation matrix

	trade	fiscal burden	gov't inter-vention	mone-tary policy	foreign invest-ment	bank-ing	wages & prices	property rights	regu-lation	informal markets
trade	1.000									
fiscal burden	0.490*	1.000								
gov't inter-vention	0.354*	0.155	1.000							
monetary policy	0.096	0.189*	0.068*	1.000						
foreign investment	0.542*	0.261*	0.535*	0.297*	1.000					
banking	0.568*	0.426*	0.519*	0.342*	0.761*	1.000				
wages & prices	0.463*	0.363*	0.555*	0.287*	0.738*	0.770*	1.000			
property rights	0.561*	0.439*	0.330*	0.445*	0.655*	0.701*	0.625*	1.000		
regulation	0.524*	0.402*	0.342*	0.430*	0.631*	0.685*	0.617*	0.841*	1.000	
informal markets	0.517*	0.453*	0.253*	0.435*	0.513*	0.618*	0.561*	0.796*	0.754*	1.000

The table shows the estimated correlation coefficients for the Index of Economic Freedom representative of 137 aid-receiving countries for the period 1995-2004. * indicates coefficients that are significant at the 5% level.

One probable explanation why the variables in the IEF index are more highly correlated than those in EFW or the DBS indices is that the IEF index has more categories with some of the categories seeming to overlap in their measure of certain aspects of the economy. One example is the estimated correlation coefficient of 0.841 between regulation and property rights. Both categories have subcategories that measure related factors. For example, corruption within the bureaucracy in the regulation category and corruption within the judiciary in the property rights category: corruption within the judiciary is a factor of corruption within the bureaucracy.

B.1.2 Doing Business Survey (DBS)

On the other hand, the Doing Business Survey includes twenty-four sub-categories aggregated into seven broad categories, for 144 countries. These categories cover several of the factors mentioned in the IEF, but from the perspective of starting, running, and closing a commercial or industrial firm.[8] For example, the category 'starting a business' includes variables such as those under the category 'regulation' in the IEF, with both including variables such as, licensing requirements to operate a business, ease of obtaining a business license, and regulations that impose a burden on business.

The seven categories and their sub-categories are as follows:

[8] Visit www.doingbusiness.org/ for a detailed explanation of the seven factors and the methodology used, as illustrated by Djankov et al. (2002, 2003, 2004, and 2005)

- Starting a business; number of procedures, average time spent during each procedure, official cost of each procedure, and the paid-in minimum capital
- Hiring and firing workers; rigidity of employment index, and cost of firing indicator
- Registering property; number of procedures, time, and official costs
- Getting credit; cost to create and register collateral, legal rights of borrowers and lenders, credit information availability, coverage of public registries, and coverage of private bureaus
- Protecting investors; disclosure of ownership and financial information
- Enforcing contracts; number of procedure, time, and official costs
- Closing a business: includes time, cost, and recovery rate

First, unlike the IEF or the EFW, the DBS does not have an overall score across the twenty-four sub-categories that make up each of the seven categories. Thus, to enable comparisons across the three indices I develop an overall score for each of the seven categories as follows.

(1) Obtain maximum and minimum values from the 144 countries

(2) Obtain the range by subtracting the minimum value from the maximum value

(3) Divide each value in the sub-category by the range to obtain weighted values

(4) Sum the weighted values in the sub-categories to obtain the overall value for each category

Table B1.2 below illustrates the above example using data for the country Albania.

Table B1.2 Calculating the weighted value for each category in the DBS

Category:- Starting a business:-Albania					
Sub-categories	Values	Maximum	Minimum	Range	Weighted Value
Number of procedures	11	19	2	17	11/17=0.6471
Duration in days	47	203	2	201	47/201=0.2338
Cost (% of GNI per capita)	32.2	480	0	480	32.2/480=0.0671
Minimum capital (% of GNI per capita)	47	744.7	0	745	47/744.7=0.0631

Albania's overall value in the category starting a business is 1.01, i.e. the sum of the weighted values. This score is close to the sample average, which is 1.137, and it means that on average, in Albania the policies are conducive to starting a business.

Second, unlike the IEF where overall a high score on a category signals low economic freedom, in the DBS, for six of the twenty-four sub-categories a high score means less hurdles faced in starting a business. These six sub-categories are; legal rights of borrowers and lenders, credit information availability, coverage of public registries, coverage of private bureaus, disclosure of ownership and financial information, and recovery. These six sub-categories are adjusted to move in the same direction as the other categories by simply taking the weighted value as calculated above, and subtracting it from one, with the resulting value moving in the same direction as the rest of the values.

Finally, the estimated correlation coefficients between the seven categories for a sample of 121 aid-receiving countries show that the seven categories are fairly positively correlated just as in the other two indices. Table B1.3 below shows the estimated correlation coefficients.

Table B1.3 Doing Business Survey correlation matrix

	opening a business	hiring & firing	property registration	getting credit	protecting investors	enforcing contracts	closing a business
opening a business	1.000						
hiring & firing	0.525*	1.000					
property registration	0.604*	0.521*	1.000				
getting credit	0.304*	0.294*	0.253*	1.000			
protecting investors	0.271*	0.115	0.097	0.269*	1.000		
enforcing contracts	0.593*	0.369*	0.539*	0.258*	0.305*	1.000	
closing a business	0.393*	0.252*	0.171	0.206*	0.312*	0.423*	1.000

The table shows the estimated correlation coefficients for the Doing Business Survey representative of 121 aid- receiving countries for 2004. Though the indices are fairly correlated, they do an adequate job of measuring the various economic and institutional variables. * indicates coefficients that are significant at the 5% level

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BIOGRAPHICAL INFORMATION

Wairimu Mugo obtained her strong academic foundation in Kenya, which she supplemented with a bachelor's degree in marketing from the University of Texas at Arlington, and a master's degree in economics from the same university. Wairimu is interested in economic development, in which she aspires to build a career, and seeks to understand the complexities and challenges of economic growth in developing countries.