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Aid, policies and growth in sub-Saharan Africa

a panel data study on aid effectiveness

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Abstract

This thesis investigates the impact of foreign aid in 46 sub-Saharan countries. Furthermore, this study also examines what effect the interaction between policies and aid has on growth. This is done through a panel based OLS regression model on the years of 1996-2011. The main findings are that there's not a clear answer to whether aid has a significant effect on growth and that the result depends somewhat on specification. Regarding the interaction between policies and aid, this study does not find any significant evidence for its effect on growth.

Keywords: Foreign aid, policies, OLS, development

Abbreviations

2SLS – Two stage Least Squares

DAC – Development Assistance Committee

Eviews – Econometric Views

GDP – Gross Domestic Product

GNI – Gross National Income

IV – Instrumental Variables

LDC – Least developed countries

MDG – Millennium Development Goals

NGOs – Non-governmental organizations

ODA – Official Development Assistance

OECD – Organization for Economic Cooperation and Development

OLS – Ordinary Least Squares regression

UN – United Nations

WB – World Bank

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1. Introduction

Around 60 years since the beginning of modern foreign aid, Africa still face vast humanitarian, economic and institutional problems. The failure to solve these problems has sparked heavy debates in both academic societies and on the political stage. A majority of the parties agree that something has to be done, the question is only what and how. As a way to solve the poverty crisis in both Africa and the rest of the world, the Millennium Development Goals were adapted in the year of 2000. To achieve these goals not only actions such as debt relief were undertaken, but also large increases in aid.

At the time of the adaption most of the givers, in other words the developed countries, were experiencing a trend of globalization and economic growth. Since then, many of them have experienced an economic downturn started by the financial turmoil in 2008. Even though they still agree on the importance of the MDGs, the financial crises and the fact that new goals has to be stated after 2015, adds relevance to question of aid effectiveness.

Previous academic studies have not yet given a decisive answer on this matter. One set of researchers argue that aid works, and another set argues that it doesn't. To further extend the discussions, some researchers also argue that the effectiveness of aid is conditional upon policies. This debate has been especially highlighted by the contradictory studies of Burnside and Dollar (2000) and Hansen and Tarp (2000). To add to the complexity of the differing results, the connection between aid and growth also suffers from endogeneity problems. Therefore no real consensus exists on what model should be used in order to determine the effect of aid on growth. This uncertainty indubitably makes the aid question even harder to answer, but it also makes it even more interesting.

With the inconsistent results of different researchers as a basis this thesis main purpose is to, through a panel based OLS regression analysis, further try to extend the study by Burnside and Dollar (2000). The main questions which this thesis will try to answer are therefore:

1) Does aid contribute to growth? 2) Are the effects of aid further enhanced by the interaction of a constructed policy index?

These questions will be answered through using similar variables as Burnside and Dollar (2000), but to use another time period and to only use sub-Saharan countries. The reason for limiting this thesis to sub-Saharan Africa is based on that: 1) Some of the poorest countries in the world are located there, thus making the need for growth even more important 2) The amount of foreign aid compared to GDP is fairly large, hence aid should, if it has any effect, be observable. These reasons make sub-Saharan Africa in to a complex but interesting region to research.

As can be seen in chapter five, the main finding in this thesis is that there's not a clear relationship between aid and growth and that the results depends on specification. Furthermore, there's no evidence for that the effect of aid increases with the interaction of a constructed policy index.

The structure of this thesis is as follows; first a background on what aid is, its history and basic development theories are presented. This is followed by a chapter regarding previous research on aid. The fourth section presents the methodological approach used in this thesis. Results are presented in section five which is followed by an analysis in section six. Lastly, concluding remarks are found in section number seven.

2. Theoretical framework

2.1 What is Aid?

According to Riddell (2007, p. 17) aid can at its broadest be described as all sorts of resources (financial grants, physical goods etc.) transferred by donors to recipients. This broad definition may lead to different interpretations and OECD therefore defines aid under the abbreviation ODA. In this definition military aid and most peacekeeping expenditures are excluded but actions such as nuclear energy (provided that it's for civilian use) and some cultural programs are included. The definition reads:

"Those flows to countries and territories on the DAC list of ODA recipients and to multilateral institutions which are:

1) Provided by official agencies, including state and local governments, or their executive agencies; and

2) 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 per cent (calculated at a rate of discount of 10 per cent) – (OECD, 2014a)

ODA can be divided into bilateral aid, which is when aid goes from one country to another and multilateral aid, which is when aid goes through an organization such as the World Bank, IMF etc. Additionally, aid can also be distributed through NGOs (Todaro and Smith, 2011, p. 698).

Aid can also be separated between tied and untied aid where tied aid is given under some sort of condition, which usually is meant to benefit the giving country. The effectiveness of this type of aid has been heavily debated the last couple of years with many researchers and organizations such as OECD arguing for a move to only untied aid. Untied aid can be described as aid given without any specific purpose (Clay et al, 2009).

2.2 History and recent trends of aid

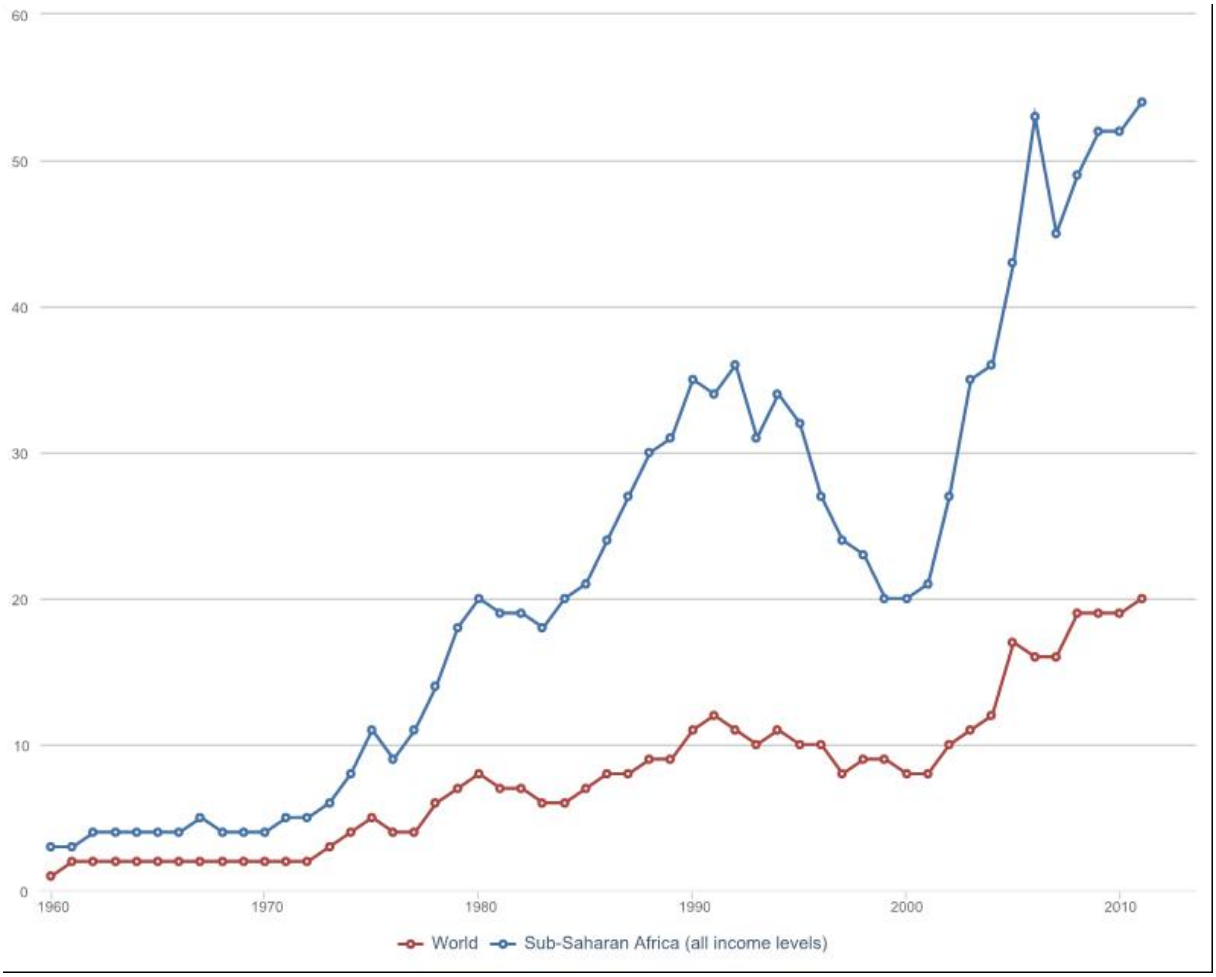
With the Marshall Plan in the 1940s it is reasonable to argue that the era of modern foreign aid began. The success of this plan, which mainly focused on the rebuilding of Europe after World War two, can briefly be said to been followed by the institutionalization of aid in the 1950s and 60s. The 1970s on the other hand increased the focus on poverty alleviation (this had surprisingly not been the main focus previously) and the 80s saw a focus on macroeconomic reforms (Riddell, 2007, p. 24-40). These different trends and actions lead to ambiguous results, and a growing skepticism towards aid effectiveness led to that the amount of aid given in real terms actually was lower in 1997 than in 1984. With the new millennium approaching, an international consensus grew that a global effort had to be made to reduce poverty and to increase aid effectiveness. Based on this consensus the UN adapted the MDGs in the year of 2000. These goals can in short be described as: 1) Eradicate extreme poverty and hunger 2) Achieve universal primary education 3) Promote gender equality 4) Reduce child mortality 5) Improve maternal health 6) Combat HIV/AIDS, malaria and other diseases 7) Ensure environmental sustainability 8) Develop a global partnership for development (UN, 2014a). These eight goals were not only explained as quantitative goals but also as:

"…but they are not only development objectives; they encompass universally accepted human values and rights such as freedom from hunger, the right to basic education, the right to health and a responsibility to future generations."

- Ban Ki-moon, MDG report 2008, foreword (UN, 2008)

In order to achieve these goals by 2015 several actions were agreed upon by the developed countries. Not only did they agree to more free trade and to write of debt; they also promised to increase the amount of aid to at least 0.7% of their GDP (UN, 2014a). Despite that the promise of 0.7% has fallen short (only Sweden, Norway, Denmark, Luxembourg and the Netherlands has fulfilled this promise) net ODA per capita has increased heavily since the adaption of the MDGs. This can be seen in graph 1.

Graph 1. Amount of aid per capita on the Y-axis and year on the X-axis.



Source: World Bank

The MDGs were followed by a number of summits and meetings of which the first was held in Paris in 2005 and resulted in that the Paris declaration was adopted. This declaration layered out a practical road map for aid effectiveness through both the establishing of a monitoring system to assess the progress and through five fundamental principles. These principles are: 1) Ownership, meaning that developing countries set their own strategies 2) Alignment, local systems should be used and donor countries align behind the developing countries chosen objectives 3) Harmonization, donor countries will do their best in making the process more effective 4) Results, both donors and developing countries should focus on measurable results 5) Mutual accountability, donors and partners are accountable for development results (OECD, 2014b).

After the Paris declaration, a meeting was held in Accra in 2008 which further focused on the implementation of the Paris declaration. Due to the increasing amount of aid inflows and the increasing administration that followed with it, the meeting strongly focused on coordination

among the donors through stronger leadership and more use of country systems for aid delivery (Sida, 2014a).

In 2011, a final meeting was held in Busan. This meeting applied a new form of collaboration through eight building blocks which aimed to develop voluntary unions instead of the previous consensus based approach. Furthermore the importance of transparency and the interaction with other actors such as the private sector and emerging markets was discussed (Sida, 2014b).

At the time of writing, the results of the MDGs are uncertain. Unquestionably, a massive amount of people have been lifted out of poverty, but this can mainly be explained by the rapid growth of China where extreme poverty dropped from 60 percent in 1990 to 16 percent in 2005. Contrary to this, the amount of people living in extreme poverty in sub-Saharan Africa actually rose from 290 million in 1990 to 414 million in 2010 and other important goals such as HIV prevention and universal primary education are unlikely to be achieved. Moreover, the amount of aid actually fell by 2 percent between 2010-2011 and by four percent between 2011-2012. This has mainly affected the LDCs disproportionately, for which the bilateral ODA fell by 13 percent in 2012, totaling at around $26 billion (UN 2013).

2.3 Why do countries give and receive aid?

Even though it might seem like a trivial question to answer, it's still important to have an understanding of why countries give and receive aid. After all, the donating country is giving away its own money and the receiving country somewhat puts itself in debt towards the donor.

According to Todaro and Smith (2011, p. 701-705) there are a number of reasons to why a country donates money of which the primary reason is political. The previously mentioned Marshall Plan is a perfect example of this since it not only aimed to rebuild Europe, but also aimed to stop the spread of communism in Western Europe. Other than political motivations there's also economical reasons. These are for example connected to the savings problem presented in the Harrod-Domar model and called the two-gap model. In this model it's implied that the savings gap and the foreign exchange gap are unequal in magnitude and are independent. This would propel that one of them is the primary reason for the lack of growth,

hence giving foreign aid a vital part as a bridge for overcoming the foreign-exchange constraint. Other than those there is also reasons such as technical assistance and self-interest.

An important question to ask is also why countries accept aid when that not only puts a country in debt towards another, but also can be viewed as admitting to be in a crisis. The main reason for this is naturally economic, since aid in most cases gives the government a larger budget to spend. Aid is also considered by some countries to be a necessary condition for achieving growth. Another reason is that the aid is given from countries, which used to exploit the receiver and the aid is therefore seen as a righteous payback.

2.4 Theories on development

In the early stages of development theories, it was considered as a set of different stages which every country had to go through before growth would be underway. The most influential advocate of this theory was Walt W. Rostow who claimed that there were five stages which all developed countries had to go through. The first of these stages was the traditional society which was based agriculture. As agriculture developed and a national identity with its shared economic interests started to form, the next stage, pre-conditions to "take-off", developed. This was followed by the take-off where steady growth finally got underway and new technology even further spurred growth. After the take-off a long period of sustained progress occurred where 10-20% of the national outcome was steadily invested. This lead to the next stage which is the drive to maturity where the country's main effort move from natural resources such as coal and iron, to more complex innovations such as chemicals and electrical equipment. At the time that Rostow published his theories he argued that the US and Western Europe had entered the fifth stage, the age of mass consumption. This was when real income had risen and people were able to attain more things than just shelter, basic food, and clothing. According to Rostow all the developed countries had applied this "formula" and the underdeveloped countries therefore had to undertake these steps in order to get growth underway. (Rostow, 1991, p. 4-17)

One of the most important contributions of Rostow was the recognition of savings as a major element for growth. This was further investigated in the famous Harrod-Domar model. The model simply states that economic growth depends on the savings rate which can be explained through the simplified equation: $\frac{\Delta Y}{\mathrm{Y}} = \frac{S}{k}$. The Y in this model stands for GDP, the s for savings and the k for capital/output ratio. This implies that an increase in aid would lead to

countries being able to save more and hence increasing growth (Todaro and Smith, 2011, p. 112).

Another theoretical way of looking at some of the problems with getting the growth underway is "the big push", which demonstrates the possible coordination and poverty trap problems. This model has the starting point of a subsistence economy where no workers have enough money to buy the newly produced goods. Each time a new factory opens the customers spends some money on that factory which in turn leads to that the profitability of one factory depends on the opening of another. Meanwhile, the first factory has to train its workers, which puts a limit on wages if the factory wants to keep profitable. The more recently opened factories can in turn offer higher wages since they don't have the same training costs. This leads to a vicious circle where the first factory owner realizes the consequences and therefore chooses not train his workers at all. Since no training is done, no development gets underway. This simplified example shows the obvious problems that coordination failures can cause and it also demonstrates how massive nationwide commitment can be needed to get growth underway (Todaro and Smith, 2011, p. 164)

In the earliest theories of growth it was not only considered as different stages, but the state also played a major part through distributing and coordinating. With the 1980s approaching a new school of development theory, the neoclassical, began to form. This theory was based on the argument that underdevelopment originates from poor allocation due to incorrect pricing and too much state intervention. The cure for this according to the neo-liberalists was a combination of a free-market approach and minimum of state involvement. The Solow model contributed to this view through extending the Harrod-Domar model with labor as a second factor and by introducing technology to the equation. Mathematically this model can be viewed as: $Y = K^{\alpha}(AL)^{1-\alpha}$ where K is stock of capital, α denotes production elasticity and capital to income ratio, $Y(t)$ and A is the productivity of labor, in other terms knowledge. The Y as usual stands for gross domestic product. (Todaro and Smith, 2011, p. 129). According to Hagemann (2009) the main contribution of the Solow model was the evidence for the irrelevance of savings for long-run growth.

3. Previous research

3.1 Aid does promote growth

Through testing for variables such as terms-of-trade, inflation and budget deficit Hadjimichael et al (1995) was one of the first to conclude that aid promotes growth. They used a sample of 41 countries between the periods of 1986-1992.

Through both Cross-sectional and Panel Data on the years between 1970-1993 Durbarry et al (1998) came to a similar conclusion - foreign aid does have a positive impact on growth. The positive results could however be further enhanced in a stable macroeconomic policy environment and could also be applied in sub-Saharan Africa. In order to reach this conclusion they controlled for macroeconomic circumstances and policy distortions through variables such as private capital inflow and domestic savings. They also used an augmented Fischer-Easterley type model which was estimated through both cross-section and panel data techniques.

Minoiu and Reddy (2009) found that developmental aid does promote long term growth through both a cross-sectional OLS and panel data GMM approach. This result was significant and robust to different specifications and estimation techniques. Differently from other research, the paper separated between developmental (infrastructure, health, education etc.) and non-developmental aid (long term social projects, disaster relief etc.) since non-developmental aid according to them might lead to negative growth. They also used specifications that allowed aid effects to occur over long periods of time.

One of the most recent contributions to the aid-growth discussion was made by Justelius et al (2013) who found that aid contributed to long run growth in 36 sub-Saharan countries between the mid-1960s to 2007. This conclusion was reached through the use of an autoregressive (VAR) model.

3.2 Aid does not promote growth

Contradictory to the studies mentioned some researchers have found that aid does not promote growth. Through two highly debated panel data studies, Boone (1994, 1996) was one of the first to show this. Boone did both his studies between the years of 1971 and 1990 and

found that aid increased consumption but that the higher consumption did not benefit the poor. He also researched how different types of governments handled the short-term aid inflows and came to the conclusion that new liberal regimes may be more effective when it comes to reducing poverty.

Rajan and Subramanian (2005) conducted both a cross-sectional and panel data study but found no evidence for a positive relationship between aid and growth or that certain aid forms works better. They neither found that aid works better in superior policy or geographical environments. The data set consisted of most LDCs and was divided in to two time periods, 1960-2000 and 1980-2000. They also performed a later study in 2008, which used the same time period but used both an OLS and an IV estimation approach, and still reached the conclusion that aid doesn't work (Rajan and Subramanian, 2008).

3.3 Aid patterns

An important question to ask is who gives aid to whom and why? The most extensive answer to this question was given by Alesina and Dollar (2000). Through different variables such as colonial status and dummy variables for friends of UN, Egypt and Israel, they tried to explain the allocation of foreign aid. The chosen time period was between 1970-1994 and the data set consisted of bilateral donor contributions. They reached the conclusion that how foreign aid was allocated was not made on the basis of economic needs, but rather on political and strategic considerations such as colonial past and political alliances. This was especially prominent in the case of the US whom targeted around one-third of its aid to Israel and Egypt.

Further studies by Dollar and Collier (2002) investigated 59 countries in order to determine whether aid was allocated efficiently with regards to poverty reduction. They used growth rate per capita as the dependent variable, which was calculated as four-year averages between 1974-77 to 1994-97 and found that actual allocation is different from the poverty-efficient allocation. They also claimed that with efficient allocation an estimated 19 million people would be lifted out of poverty compared to the estimated 10 million that the inefficient allocation lifts out of poverty.

3.4 Aid and policies

In what might be the most debated article about aid, Burnside and Dollars "aid, policies, and growth" (2000), investigated the relationship between aid and policies. This was done through both an OLS and 2SLS panel growth regression on 56 developing countries and six four-year periods between 1970-1993. To test for the effect of economic policies they created their own policy index based on macroeconomic variables. Through this and by identifying outliers they concluded that the effectiveness of aid is conditional on good fiscal, monetary and trade policies. The opposite, that no positive effect on growth can be found in countries with poor polices, was also concluded. The results were robust in a variety of specifications and also showed no evidence for that aid has systematically affected policies. The findings were further extended through a cross-country research made on the 1990's, which also evidenced that the effectiveness of aid was dependent on the quality of institutions (Burnside and Dollar, 2004).

Burnside and Dollars (2000) conclusions prompted great controversy and lead to a number of countries and organization questioning their aid allocation. Their findings were however disapproved by Hansen and Tarp (2000) who researched the same time period but instead regressed through both OLS and GMM estimation. Their results showed that policy environment has no effect on the relation between aid and growth. Additionally Dalgaard and Hansen (2001) used the same data set as Burnside and Dollar (2000) and found that aid increases growth rates regardless of the policy environment. Their results did not however disapprove of the importance of good policies but simply argued that policy selectivity is insignificant for growth. Since Burnside and Dollar (2000) excluded outliers they also argued that their results were fragile and data dependent. Furthermore Morrissey (2001) argued that even though policies affect the impact of aid it is an unclear relationship. He also argued that poor policy doesn't necessarily mean that the government is "bad" since there can also be other factors that contribute. With this in mind he argued that it's important to recognize the importance of aid to all needing countries, even the ones with poor policies.

To further add to the discussion, Dalgaard et al (2004) found that aid promotes growth independent of policies. The study was conducted between 1970-1993 and featured both an OLS and 2SLS approach. Easterley et al (2004) on the other hand tried to extend the Burnside and Dollar (2000) study through prolonging the time frame and by filling in missing data. Their result showed that Burnside and Dollars (2000) findings were not robust when adding additional data.

4. Methodology

4.1 Data set

This thesis was, as mentioned before, inspired by Burnside and Dollar (2000). Therefore, GDP growth per capita was used as the dependent variable and macroeconomic, aid and policy variables were the independent variables. Unlike Burnside and Dollars (2000) study, ethnic fractionalization and assassinations were dropped due to missing data. As a main data source the World Bank and its World Development Indicators was used. To only use these as a source can be problematic and the data was therefore confirmed with other sources. This confirmation and the fact that most variables have been used in earlier research gives this thesis both high validity, which is that what you want measure gets measured correctly, and high reliability, which means that the results are replicable (Bryman and Bell, 2007, p. 157).

To start of with all countries located in Sub-Saharan Africa were included in the sample but due to the fact that Somalia has faced several civil wars and therefore lacks relevant data, it was excluded, thus making the number of countries to 46. For these countries most data was available and therefore making the number of observations to around 600-700 for most variables.

4.2 Time frame

The chosen period of time was between 1996-2011. The chosen starting time was based on that Burnside and Dollars study ends in 1993 and in order to recreate the same four-year averages whilst using the latest possible data, the year of 1996 was decided upon as a good starting year. A consideration regarding the time frame was that the results of aid are not visible immediately and that it takes time before investment in for example human capital show any effect. Prolonging the time frame however has the great disadvantage that it makes it even harder to distinguish the real effects of aid on growth. Furthermore, most of the sub-Saharan countries are all in desperate need of immediate help and it can therefore be argued to be not as relevant to see whether aid works in the long run. With this as a main argument no lagging of the aid variable or prolonging of the growth term whilst letting the variables be constant was undertaken. However, due to concerns of endogeneity, one of the chosen variables was lagged (see more in 4.3.2).

4.3 Variables

4.3.1 Dependent variable

Since the aim of this thesis was to investigate whether aid and/or polices have any significant effect on growth the dependent variable was GDP per capita growth. Using GDP per capita growth as a measurement of progress can be criticized but since it's the most common measurement on growth, it was used in this thesis. In order to avoid any short-term fluctuations affecting the regression, the GDP per capita was calculated as four-year averages.

4.3.2 Independent variables

In order to try and explain what affects the dependent variable a number of independent variables were used. Since the initial logarithm of GDP per capita has been used in most previous studies to exclude any possible outliers it was used in this thesis as well. By intuition this variable should be negative to growth, thus implying that it's negative to start with low GDP per capita.

As a second variable the World banks IDA resource allocation index was used as a proxy for institutional quality. The IDA index is a good proxy since it consists of an average of 16 different institutional policies provided by the World Bank[1]. It is also the variable which was considered to be most similar to the institutional quality index provided by Keefer and Knack (1995) and which was used by Burnside and Dollar. Due to the earliest indexes being from 2005 the earliest observation was extended backwards to account for the missing data between 1996-2004. The reason for such a procedure was that 1) The existing data doesn't change drastically throughout the years, hence implying that institutions change slowly over time 2) Burnside and Dollar used a similar procedure. Another approach tested was to average the index for all years but since this didn't change the result the first approach was used. Based on both intuition and previous empiric work, this variable was expected to be positive to growth.

An important factor for a country's growth is how developed its financial markets are. Therefore the amount of M2 (see appendix D for exact definition) over GDP was used as a variable. This variable was lagged one time period due to concerns of endogeneity (Burnside and Dollar, 2000) and was not believed to have any significant effect on growth.

[1] These are divided in to four categories which are: 1) Structural 2) Economic management 3) Social inclusion

Based on that Africa is a big continent with each region having their own characteristics, two regional dummies were included. The reasons for choosing these dummies to be Western and Eastern Africa were because they're believed to experience the highest growth the coming years (UN, 2014b). Based on these predictions it was believed that the coefficient for the dummies would be negative. Such a result could imply that future growth is enhanced by a bad starting point, thus making initial growth easier to achieve.

As a measurement of how debt affects growth external debt stocks as percentage of GNI was used as a variable. This variable explains how much a country needs to borrow from abroad both in short- and long-term and is therefore a good measurement on if a country has its own finances under control. Due to recent debate and unclear empirical work on the connection between debt and growth this variable was not believed to have any significant effect[2].

Based on that researchers such as Fischer (1993) regard the inflation rate as the best single indicator of macroeconomic policies, it was used as an indicator of a country's monetary stability. This variable was measured as percentage and was supposed to have a negative correlation with growth.

Since debaters often argue that there's a correlation between openness and growth this was also included as a variable. As opposed to Burnside and Dollar (2000) who turned openness into a dummy variable, openness in this study was measured as exports percentage of GDP. This variable was expected to be positive to growth.

As it was of especial interest for this thesis, aid was included as a variable. Aid was defined as ODA (see section 2.1 for exact information on this) and measured as percentage of GDP. Theoretically it was hard to determine whether the aid variable should be positively or negatively correlated to growth. It could be positive, based on that aid can increase overall spending, but it could also be negative according to Bräutigam and Knack (2004), who argued that aid can promote a government to remain inactive since aid provides a revenue stream regardless of performance. This aid stream also usually decreases the better a country is doing, hence providing incentives for inaction. Based on this and on the uncertain results from previous empirical work, no predication of the outcome of the aid variable was given.

[2] For further discussion about the debate about the uncertain connection between growth and debt I recommend Reinhardt and Rogoff (2010) and the controversy that followed from their article.

One of the main inventions of Burnside and Dollar (2000) was the creation of a policy index. The creation of such an index has been heavily discussed and this thesis therefore recreates and observes its effect on sub-Saharan Africa. The policy index was created through interacting the coefficients of the external debt stocks, inflation and export in regression (2). The reason behind using three different variables was that only one endangers that the interaction is proxying for interactions with different policies (Burnside and Dollar, 2000). The index was therefore formed by:

$$Policy = constant + coeff * debt - coeff * inflation + coeff * export.$$

The index can be interpreted as the countries predicted growth rate given its budget, inflation and trade policies assuming that it had the mean values of other characteristics (Burnside and Dollar, 2000). After calculating the index it was interacted with the aid variables $(\frac{aid}{gdp}) * policy\ index$ and through a quadratic term $\left(\frac{aid}{gdp}\right)^2 * policy\ index$.

Table 1	Description	Unit	Year	Observ	correlation
Dependent variable					
GDP per capita	Growth	4 year averages	1996-2011	728	N/A
Independent variable					
Initial GDP per capita	LOGgdp	log, USD	1996	46	Negative
Ida Resource Allocation Index	Instiqualit	average, index (1-6)	2005-2011	315	Positive
Amount of M2 to GDP	LagM2	% of GDP	1997-2011	656	-
Western Africa	WA dummy	1 or 0	1996-2011	690	Negative
Eastern Africa	EA dummy	1 or 0	1996-2011	690	Negative
External debt stock	Debt	% of GNI	1997-2011	651	-
Inflation	Inflation	%, CPI	1997-2011	626	Negative
Exports of GDP	Export	% of GDP	1997-2011	679	Positive
Aid of GDP	Aid	% of GDP	1996-2011	728	-
Policy index	Policy index	See section 4.3.2	1997-2011	683	Positive
Aid of GDP $*$ policy index	Policy index 2	See section 4.3.2	1997-2011	683	Positive
$(Aid\ of\ GDP)^2 * policy\ index$	Policy index 3	See section 4.3.2	1997-2011	683	Positive

4.4 Regression model

As can be seen in previous studies it should be obvious to the reader that there are a number of different econometrical approaches that can be used for evaluating the effects of aid on growth. This lack of a universal model naturally makes it more complicated to determine which model to use, even though it simultaneously gives the researcher more flexibility.

For this thesis a panel based approach was used. One of the major advantages with this approach is that it can solve the problem of unobserved heterogeneity which is a common problem in for example cross-sectional data (Dougherty, 2011, p. 514)[3]. For making the regressions the econometrical program Eviews was used. Eviews is, just like most statistical programs, based on the OLS regression model and aims to investigate how a set of independent variables, x_n, both individually and together can explain the dependent variable y. This can roughly be shown by:

$$Y_i = C + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_n X_{ni} + u_i$$

The different coefficients, b, explain how the dependent variable is affected by the independent variables. Hence, a larger coefficient reveals a larger impact on the dependent variable (Dougherty, 2011, p. 86).

A possible problem when making a regression is the occurrence of heteroskedasticity, which means that the variance of the disturbance term is not the same for all observations. This is especially likely when the values of the variables vary substantially and leads to OLS is longer the most efficient estimator (Dougherty, 2011, p. 283). To determine if there was any heteroskedasticity white's test was performed.

4.4.1 Basic regressions

In order to determine the different variables effect on growth the first regression included all but the aid and policy variables. Regression (1) was therefore:

$$growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 debt_{it} + B_7 inflation_{it} + B_8 Export_{it}$$

The second regression added the aid variable in order to determine what effect aid has on growth and how the introduction of aid affects the other variables. This lead to regression (2) being:

$$growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 debt_{it} + B_7 inflation_{it} + B_8 Export_{it} + B_9 Aid_{it}$$

[3] For more information on the complexity on deciding which econometric model to use I recommend Deaton (2010).

4.4.2 Regressions without macroeconomic variables

After this regression the policy index in its original form was included in to the regression but without the macroeconomic variables. This made regression (3):

$$growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 Aid_{it} + B_7 Policy_{it}$$

The next regression included the policy index and the interacted aid-policy term, thus making regression (4): $growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 Aid_{it} + B_7 Policyindex_{it} + B_8 Policyindex2_{it}$

To observe if there exists non-linearity the interacted term was also squared. Regression (5) was therefore: $growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 Aid_{it} + B_7 Policyindex_{it} + B_8 Policyindex2_{it} + B_8 Policyindex3_{it}$

4.4.3 Regression with macroeconomic variables

To control for what effect the inclusion of macroeconomic variables would have, they were included in regression (6) and (7). Since the policy index has the macroeconomic variables in their original form included in the index it was excluded. Therefore regression (6) was:

$$growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 debt_{it} + B_7 inflation_{it} + B_8 Export_{it} + B_9 Aid_{it} + B_{10} Policyindex2_{it}$$

And (7):

$$growth_{it} = C + B_1 loggdp_{it=0} + B_2 instiquality_{it} + B_3 lagm2_{it=-1} + B_4 WA\ dummy_{it} + B_5 EA\ dummy_{it} + B_6 debt_{it} + B_7 inflation_{it} + B_8 Export_{it} + B_9 Aid_{it} + B_{10} Policyindex2_{it} + B_{10} Policyindex3_{it}$$

5. Results

5.1 Basic regressions

The first regression (1) measured the impact of institutional, regional and macroeconomic variables on GDP per capita. The r-squared of this model was 16.7% which can be interpreted as that the model and its variables can explain 16.7% of the variance of GDP per capita.

As can be seen in the provided table all variables except debt turned out to be significant. However, the different coefficients varied. For instance one of the most interesting variables, institutional quality, was significant and had a positive coefficient of 1.579. Meanwhile exports was also significant but only had slightly positive coefficient of 0.038 revealing that exports has a somewhat small effect on GDP growth.

The most surprising finding of this regression was that inflation, which has been argued to be a one of the best measurement of how well a country manages its finances, was not as significant as excepted. Another surprising result was that the lagged M2 variable, despite that it was believed to have no significant effect on growth, had a negative coefficient. This implies that an increase in M2 has a negative impact on growth. Furthermore, an interesting point was that both dummies for Western and Eastern Africa turned out to be highly significant with a negative coefficient. This indicates that it as excepted was negative to be a part of these areas compared to other African regions.

Table 2

Regression No.	**(1)**	**(2)**
Observations	**479**	**479**
C	-2.938	-3.124
	(0.841)***	(0.804)***
LOGgdp	0.006	0.006
	(0.001)***	(0.001)***
Instiqualit	1.579	1.514
	(0.252)***	(0.261)***
LagM2	-0.027	-0.029
	(0.005)***	(0.004)***
WA Dummy	-0.976	-0.883
	(0.253)***	(0.246)***
EA Dummy	-0.788	-0.661
	(0.244)***	(0.228)***
Debt	0.000	-0.000
	(0.000)	(0.001)
Inflation	-0.004	-0.004
	(0.002)*	(0.002)*
Exports	0.038	0.044
	(0.008)***	(0.007)***
AID		2.725
		(1.472)*
R-squared	0.167	0.178

*The dependent variable is GDP per Capita averaged over four years. ***,** and * denote significance at the 1%, 5% and 10% level respectively. All standard errors were computed using White's heteroskedasticity consistent standard errors and are shown in the brackets.*

In regression (2) the aid variable was added. This marginally increases r-squared but the aid variable turned out only to have moderate explanatory power. The coefficient was however quite big thus implying that aid could have a large effect on growth.

5.1.1 Construction of the policy index

Through the findings in regression (1) the policy index was constructed. As explained in the methodology section this index was constructed through multiplying the coefficients of the macroeconomic variables with the collected data. Consequently, the index was constructed through, $Policy\ index: -2.93 + 0.000 * external\ debt - 0.004 * inflation + 0.038 * exports$

5.2 Regressions with policy index

Table 3.

Regression No.	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Observations	**535**	**535**	**535**	**479**	**479**
C	-0.033	0.261	0.253	-3.189	-3.199
	(0.777)***	(0.923)	(0.919)	(0.861)***	(0.845)***
LOGgdp	0.006	0.006	0.006	0.006	0.006
	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.001)***
Instiqualit	1.381	1.378	1.395	1.516	1.597
	(0.260)***	(0.260)***	(0.269)***	(0.260)***	(0.263)***
LagM2	-0.024	-0.025	-0.025	-0.029	-0.028
	(0.002)***	(0.003)***	(0.003)***	(0.004)***	(0.004)***
WA Dummy	-0.604	-0.524	-0.537	-0.870	-0.925
	(0.335)*	(0.328)	(0.344)	(0.249)***	(0.251)***
EA Dummy	-0.661	-0.554	-0.560	-0.643	-0.671
	(0.197)***	(0.219)**	(0.221)**	(0.250)**	(0.243)***
Debt	-	-	-	-0.000	0.000
				(0.001)	(0.001)
Inflation	-	-	-	-0.004	-0.004
				(0.002)	(0.002)*
Exports	-	-	-	0.045	0.043
				(0.012)***	(0.011)***
AID	2.664	1.135	1.117	2.132	-0.497
	(0.176)***	(0.295)***	(0.280)	(3.940)	(4.567)
Policy index	0.934	-0.442	-1.157	-	-
	(1.012)***	(2.942)	(3.567)		
Policy index 2		-1.762	-1.669	-0.323	-0.356
		(1.808)	(1.698)	(2.360855)	(2.125)
Policy index 3			-0.592		-1.509
			(1.410)		(1.215)
R-squared	0.165	0.167	0.167	0.179	0.181

*The dependent variable is GDP per Capita averaged over four years. ***, ** and * illustrates significance at the 1%, 5% and 10% level respectively. All standard errors were computed using White's heteroskedasticity consistent standard errors and are shown in the brackets.*

5.2.1 Regression without macroeconomic variables

To investigate what, if any, effect the introduction of a policy index would have on the aid-growth regression the policy index in its original form was added into regression (3).

This inclusion resulted in that aid as well as the policy index was highly significant in regression (3) and that the aid variable had a coefficient of 2.664. Furthermore, results from this regression were similar to regression (1) and (2) in that significant variables, such as institutional quality and lagged M2, also proved significant in this regression. The only variable that lost significance was the Western Africa variable, which only had modest explanatory power in this regression.

As one of the objectives of this thesis was to see whether the effectiveness of aid depends on the implementation of good policies, the aid variable was interacted with the policy index in regression (4). The results from this were interesting and clear, neither the policy index nor the interacted aid and policy index term were significant. The aid term however remained significant but the Western Africa dummy lost its significance whilst the East African dummy dropped to a 5% level of significance. The r-squared, which was 16.5% in regression (3), only increased marginally and remained quite low at 16.7%.

To solve for outliers and non-linearity, regression (5) added the squared aid-policy variable. The results from this was surprising in that the aid term which had been highly significant in the two previous regressions lost its significance. This could be interpreted as that outliers possibly affected the results in regression (3) and (4).

5.2.2 Regression with macroeconomic variables

In the last two regressions performed the macroeconomic variables were once again included whilst also including the interactive aid-policy variable. The policy index was omitted since the inclusion of in its original form would be almost identical to the macroeconomic variables.

In regression (6) only the interacted aid-policy term was inserted. This however contributed little to none to the regression since the r-squared only increased by 1% and neither the interacted term nor the aid term proved to be significant. An interesting observation in this

regression was that neither of debt or inflation was significant. Surprisingly the Western Africa dummy also became highly significant in this regression.

In the final regression (7) all variables except the policy index in its original form was used. This did not however reveal any major changes to the model despite having the highest r-squared. The aid and policy variables remained insignificant and only the inflation variable gained moderate significance.

5.3 Robustness tests

In order to test for heteroskedasticity Whites test was performed. This showed indications of heteroskedasticity which was fixed with White heteroskedasticity consistent standard errors. Moreover, tests for correlation was performed. A basic guideline is usually to only accept correlation up until 0.8 and some of the policy variables came close to this. However, as they did not exceed the limit and no evidence of autocorrelation was detected no subsequent action was performed.

6. Discussion

6.1 General discussion

The first question which this thesis attempted to answer was if aid has any positive effect on growth. The findings in section 5 present a somewhat uncertain result on this matter. First of, aid was moderately significant when included in the basic growth regression, gained high significance in regression (3) and (4) and finally lost its significance when almost all variables were used. These results are inconsistent both towards the findings by Burnside and Dollar (2000), who presented no significant results without the interaction of the policy index, and towards Hansen and Tarp (2000) who found that aid spurs growth regardless of specification.

There are a number of reasons for these somewhat uncertain results. First of aid can by both intuition and theory (the Harrod-Domar model for example) be argued to improve growth. Aid adds money to a country's budget and this should in a simplified world increase savings and GDP, which can be assumed to be one of the aims of the MDGs. However, when a development country spends money on schooling, malaria nets, vaccines etc. this does not guarantee any traceable short-term effect on growth. Instead, the GDP effect might be visible later. This can be described as a sort of micro-makro paradox where the effects are visible immediately at a smaller level but not on a national surface[4]. Additionally, as argued by Bräutigam and Knack (2004) it's not certain that all aid is actually spent on growth improving activities since this could lead to a decrease in future aid flows. It can also be that corrupt governments are afraid of improving the living standards of the poor since this historically has lead to higher demands for democracy, thus making it more likely for a corrupt government to lose their power.

Another factor, which is especially relevant for sub-Saharan Africa, is the complexity of different regions. As discussed in the methodology section terms such as ethnic fractionalization and assassinations were dropped due to missing data. Even though they can't be argued to be perfect representation of how well unified a country is, those variables could've provided valuable insights on the possible problems that can occur in a divided country. This is especially relevant in many of the sub-Saharan countries who's not only experienced civil wars, but also experiences big distrust in-between different groups of people

[4] For the interested reader I suggest Mosley (1987) for more on this matter.

and towards institutions. The effects of distrust are hard to measure but can nevertheless have significant effects for how effective a country distributes its resources, aid being one of them. Furthermore, it also makes it harder to find countrywide solutions to problems such as the ones presented in the "big push" theory (Todaro and Smith, 2011).

Despite this, it's not to forget that in the models where aid was significant the coefficient was large, thus implying that when aid has effect, it affects growth in a major way. This further induces the question of if poor aid allocation affected the results. In accordance with previous research this thesis mainly measured the impact of aid before more general donor recommendations were set up (such as the ones agreed on in Paris 2005), and no further extensive research can be argued to exist on the impact of these recommendations. With this in mind it would be interesting to see a new study such as the one by Alesina and Dollar (2000) to see whether aid allocation as they concluded, is still based on political and strategic reasons rather than economic ones. Undoubtedly, one of the goals of the MDGs has been to distribute aid effectively but this does not mean that the goals have presented a solution to the most effective allocation. Likewise, it's also likely that it takes time before the most effective ways in dealing with increased aid flows are implemented. It's therefore not impossible that the last four years of the MDGs, when both the donors and the receivers have experience in dealing with large aid flows, mutual accountability exists (as agreed in the Paris Declaration, 2005) and the private sector is involved (as agreed in Busan, 2011) just to name a few examples, actually contributes the most to the goals. With this as a basis, it's also important for the donors to ask whether their own policies are in need of improvement and therefore have contributed to the previously unclear results.

The second question of this thesis concerned if the effects of aid could be further enhanced by the interaction of a constructed policy index. Here the results were conclusive; even though the policy index was significant in its original form, no measurable effect can be shown from the interaction between aid and policies. With this said it's however important to point out that this thesis does not suggest that policies have no affect on growth. Institutional quality and the created policy index in its original form were significant and had large coefficients, which proves that they are important factors. The possible analysis from this, that institutions and policies matter, shouldn't however be a very big surprise to anyone, but it's important to stress that this does not imply that the effectiveness of aid automatically depends on a constructed policy index. This is especially true if you consider that the constructed policy index only included macroeconomic variables. Based on this I would argue that my results on

the aid-policy matter can be said to be somewhere close to the results of Dalgaard and Hansen (2001) since policy selectivity seems to be insignificant for growth.

When it comes to other variables it's important to note that variables such as the lagged M2 was significant and negative throughout all regressions. A possible reason for this could be that the financial markets in sub-Saharan Africa are so underdeveloped that a move to more complex money structures actually weakens rather than enhances growth. Furthermore, export was also significant through all regressions, thus highlighting the importance of that Africa agrees on free trade both towards other continents but also in-between themselves. This has been discussed for a long time and it's therefore elevating to see free trade agreement such as the one agreed upon by 26 African countries (BBC News, 2008). Even though the coefficient of export in this thesis was rather small, agreement such as these should be seen as positive steps towards growth and poverty alleviation

6.2 Discussion on robustness

As a final note it's important to briefly discuss which methodological actions that were considered and if they could've contributed to more robust results. This is especially relevant since there exists a variety of different econometrical models and the results display how dependent aid is of specification; structured in one way, it was significant, structured in another it was not. Another factor that makes this issue important is the relatively low r-squared which implies that there are missing variables.

As have been noted in almost all articles the biggest problem with aid data is the problem of endogenity and this thesis was no exception to this. One possible way of trying to solve this would've been through an IV approach such as 2SLS, which is used in many previous studies, or through an AR model such as the one used by Justelius et al (2013). However, as results from previous studies have not changed drastically when comparing results from a panel based model and for example a 2SLS model, it was not believed that a more complex econometrical approach would have contributed to more robust results. With this said however, it's not unlikely that some results could've been different with another econometric approach and that this would've added another dimension to the analysis.

Some previous studies have in certain cases opted to exclude outliers in order to prevent them from biasing the result. This could've been a valid approach in dealing with some variables

such as inflation and export (see appendix B for more information) but it was was however decided against since this thesis aimed to give a true description of aid in sub-Saharan Africa; even if this meant that outliers had to be included. Since there also exists different definitions on what an outlier actually is and much of the criticism of Burnside and Dollar (2000) was related to their exclusion of outliers, it was believed that an exclusion could lead to an even more ambiguous results.

As can be seen above it's is clear that more research and econometrical tests can and should be done before any major analysis can be made from this thesis. However, before turning to more complex econometrical models (which seems to be the main trend), it's important to point out that in order to the make the results more robust and trustworthy, available data must be improved. Even though there was available data for almost all variables the authenticity of this data should be questioned since sub-Saharan Africa has large informal markets and most statistical units are in need of improvement. This fact causes a potential problem for this thesis and other study's since it's unclear whether all variables display an honest picture of the country. With this and the other robustness problems discussed, no larger conclusions should be made without these in mind.

7. Concluding remarks

The objective of this thesis was to further extend the research made by Burnside and Dollar (2000). This objective was reached through a panel based OLS regression model on 46 sub-Saharan African countries where both an aid term as well as a constructed policy index was included amongst several control variables. The results from this thesis show that the effect of aid on growth is somewhat conditional on specification. However, when the aid term was significant, it had large positive implications on growth. Furthermore, the interaction between a constructed policy index and aid did not reveal any implications on growth.

The somewhat uncertain results from this thesis can be seen as an extension of the problems surrounding foreign aid and which have been discussed in previous studies. These results can become especially problematic if the economic turmoil in the developed countries continues. It will therefore be interesting to observe what effect this could have on the post-millennium goals. A possible scenario could be that some sort of track record will be needed to receive aid and that there will demands for faster results. If this scenario becomes true I strongly believe that, based on the difficulty in determining the effect of aid, the track record shouldn't be of quantitative nature. This is based on that it could lead to countries that are in desperate need not getting the help they need, whilst the ones who don't need it, are the ones receiving. This is especially dangerous if politicians only measure aid effectiveness based on macroeconomic variables and only view aid as something that can be distributed by governments, hence neglecting the vital part of for example NGOs.

The discussion above should also be considered especially relevant since there exists no universal model to measure the effects of aid. Furthermore, the presence of endogeneity highlights that there exists a "hen or the egg" problem. Does a country take bad care of aid because of bad institutions or do they have bad institutions because they don't receive enough aid? This is naturally extremely hard to determine, regardless of how complex the econometrical model is. As this probably will be a continuous problem it leads to a possible conclusion being that the givers, in other words the developed countries, shouldn't make hurried decisions regarding aid allocation based on policies. This is especially important, based on what Morrisey (2001) said, to recognize since bad polices doesn't necessarily mean that the government is "bad" and that there can also be other factors in play. This entails that if a country has poor policies, this does not make enough reason to stop trying to help the

countries inhabitants. Instead, poor policies should be seen as a sign of that other ways has to be found. Therefore I argue that the focus of future studies should move from if aid works, to how we're going to make it work. This could for example be done through a more qualitative rather than quantitative approach and to focus more on the micro- rather than the macroeconomic aspects of aid. How we're going to make aid work, whilst also promoting matters such as gender equality and the environment, I subsequently argue should be the main focus of the post-millennium goals. Therefore I warmly welcome initiatives such as the sustainable development goals by Jeffrey Sachs which I believe is a good steppingstone for long-term growth in not only the world, but also in sub-Saharan Africa (Sachs, 2012).

As a final note I would argue that, based on the discussion above this thesis lands in three recommendations: 1) Since the effect of aid seems dependent on specification, donors shouldn't take impulsive decisions regarding it without substantial evidence 2) A policy index just based on macroeconomic variables is not sufficient to judge whether a country should receive aid or not 3) The focus of both future studies and the post-millennium goals should move from if aid works, to how we're going to make it work.

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9. Appendix

Appendix A: List of countries used

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

Appendix B: Descriptive statistics

Variable	**Mean**	**Median**	**Maximum**	**Minimum**	**Std. Dev.**
Growth	2.304802	1.794813	36.48290	-7.425405	4.715095
LOGgdp	12.99345	2.630801	282.3558	1.860500	49.16879
Institutional quality	3.130606	3.154167	3.950000	1.400000	0.500355
LagM2	30.86129	23.26141	151.5489	2.072555	24.45590
WA dummy	0.326087	0.000000	1.000000	0.000000	0.469120
EA dummy	0.326087	0.000000	1.000000	0.000000	0.469120
Debt	94.56833	64.21720	1380.766	2.158723	132.6027
Inflation	15.23064	6.328198	728.6657	-9.616154	51.33563
EXPORT	32.61244	27.49957	107.2918	4.428757	20.61650
Aid	0.111945	0.091418	1.471683	-0.002519	0.125409
Policy1	-1.692201	-1.867800	1.354051	-4.367694	0.811429
Policy2	-0.214883	-0.159189	0.354040	-2.423434	0.248231
Policy3	-0.051332	-0.014080	0.092570	-3.079964	0.186574

Appendix C: Correlation matrix

Variables	LOGgdp	Instiqualit	lagM2	WA dummy	EA dummy	Debt	Inflation	Export	AID	Policy	Policy2	Policy3
LOGgdp												
Instiqualit	0,2849											
lagM2	-0,0384	0,0800										
WA dummy	-0,2060	0,1244	0,0483									
EA dummy	0,3619	0,1499	0,1940	-0,5689								
Debt	-0,0572	-0,2262	-0,1644	0,1022	-0,1201							
Inflation	-0,0386	-0,2470	0,2010	-0,1449	0,0394	0,0780						
Export	-0,1254	-0,2251	0,0237	-0,0069	-0,2131	0,0784	0,1904					
AID	0,0877	0,0443	-0,0378	0,0142	-0,0322	0,3984	-0,0283	-0,2297				
Policy1	-0,1174	-0,1621	-0,0652	0,0554	-0,2388	0,1621	-0,1528	0,7350	-0,1736			
Policy2	-0,1090	-0,0709	0,0324	0,0355	0,0108	-0,2341	-0,0265	0,4407	-0,7261	0,4208		
Policy3	-0,0100	0,0523	0,0131	-0,0422	0,0705	-0,2349	-0,0041	0,1157	-0,6840	0,0901	0,7138	

Appendix D: Detailed description of three variables

Money and quasi money (M2)

"Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government. This definition of money supply is frequently called M2; it corresponds to lines 34 and 35 in the International Monetary Fund's (IMF) International Financial Statistics (IFS). Data are in current local currency."

External debt stocks

"Total external debt is debt owed to nonresidents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Data are in current U.S. dollars."

IDA Resource Allocation Index

IDA Resource Allocation Index is obtained by calculating the average score for each cluster and then by averaging those scores. For each of 16 criteria countries are rated on a scale of 1 (low) to 6 (high).