



Swedish University of Agricultural Sciences
Faculty of Natural Resources and Agricultural Sciences
Department of Economics

A foreign aid dilemma

A study of budget support versus project aid

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A foreign aid dilemma: A study of budget support versus project aid

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Abstract

Foreign aid is a very debated and controversial topic. The most recent studies have focused more on GDP growth and foreign aid correlation, however not much of the debate has focused on what kind of foreign aid should be given. The most common foreign aid is budget support, often a bilateral funds transfer between two countries. This kind of foreign aid can be both conditional and unconditional from the donors' perspective. The most known type of foreign aid is project aid, often headed by a international organization, that see the entire project through, from raising funds, to actually be in the aid receiving country, establishing healthcare, education, road-construction etc.

Our purpose is to compare two micro-economic studies of budget support versus project aid. These two are using similar economic models. We are to draw conclusions of their models, and how or if, their conclusions can be applied on the real world. Different opinions of these two studies conclude towards different results but both points out that conditional budget support produces the most effective results in the receiving country.

Both to some extent neglect the role of project aid, and neither takes corruption into account as a factor for the lack of efficiency of budget support. Also the "crowding out"- effect of project aid has been one of the main topics in the debate against it. On the other hand, both authors aggregate the individual donor nations and organizations into one universal donor, taking the real-world un-coordination of conditional budget support out of the picture. We attempt to extend the perspective by offering suggestions on how to improve these models, based on the problems mentioned above.

We conclude that more variables need to be put into the equations, especially for the un-coordination by donors, as-well as corruption. We also acknowledge the difficulty to try to put an economic and social phenomenon that is foreign aid, into a simplified micro-economic equation.

Sammanfattning

Utlandsbistånd är idag ett väldigt debatterat och kontroversiellt ämne. De senaste studierna har fokuserat på BNP tillväxt och dess korrelation med utlandsbistånd. Dock har inte debatten fokuserat på vilken typ av stöd som borde ges till andra länder. Den mest kända typen av utlandsbistånd är budgetstöd, som ofta är bilateralt stöd mellan två länder. Detta stöd kan ges av givarlandet genom ett villkorligt stöd med krav på förutsättningar för att stödet ska kunna ges, eller ovillkorligt stöd. Den mesta kända av stödformerna är projektstöd, som ofta drivs av internationella organisationer, som övervakar varje steg, från kapitalanskaffningen till att vara närvarande inom mottagarlandet för etablerandet av sjukvård, utbildning, vägbyggen etc.

Vårt syfte är att jämföra två stycken mikroekonomiska studier kring budgetstöd gentemot projektstöd. Dessa två studier använder liknande modeller. Vi drar sedan slutsatser från modellerna om huruvida man kan applicera dem i verkligheten. Trots att båda två av dessa studier ger olika resultat, framhäver båda att det villkorliga stödet ger mest effektiva resultat i mottagarlandet.

Båda studierna bortser delvis från projektstödet roll i utlandsbistånd, samt tar ingen hänsyn till korruption som en faktor för bristen på effektivitet inom budgetstöd. Även ”undanträngningseffekten” i projektstödet har varit ett av huvudämnena i debatten mot projektstöd. Å andra sidan, båda studierna aggregerar givarländerna och givarorganisationer in i en större universell biståndsgivare, vilket tar bort verklighetens brist på sammanordning av villkorligt budgetstöd, från modellerna. Vi försöker utöka perspektivet på dessa modeller genom att ge förslag på hur man ska förbättra dem utifrån ovanstående problem.

Vi konstaterar att fler variabler behövs inom ekvationerna, speciellt för bristen sammanordning från givarna, samt en variabel för korruption. Vi vidhåller även svårigheten som finns i att försöka sammanfatta utlandsbistånd, vilket är ett ekonomiskt och socialt fenomen, i en simpel mikroekonomisk ekvation.

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1. Introduction

In this first chapter our aim is to give you the basic history of foreign aid, and the purpose and problems of foreign aid today and introduce the purpose of our thesis.

Foreign aid has a long historical pattern, even since nations and societies were formed, the economic collaboration between nations has been known. In the 20th century, this phenomenon was given a name, foreign aid. The Marshall plan saw to it that all major European countries scarred by the Second World War, were given a percentage of the GDP of the US budget. These countries that received the US aid were formally countries that the armies of the western powers reached before the soviet armies did. (Gillis et al. 1996, p. 394)

So the beginning of foreign aid was actually a cold war phenomenon. At the height of the cold war, aid was given to “third-world countries”, from the superpowers to stabilize these countries and secure them from switching political ideology. After the iron curtain fell and the Soviet Union collapsed, foreign aid was still used, but over the years it had been phased into a new direction, and is being used towards helping less developed countries.

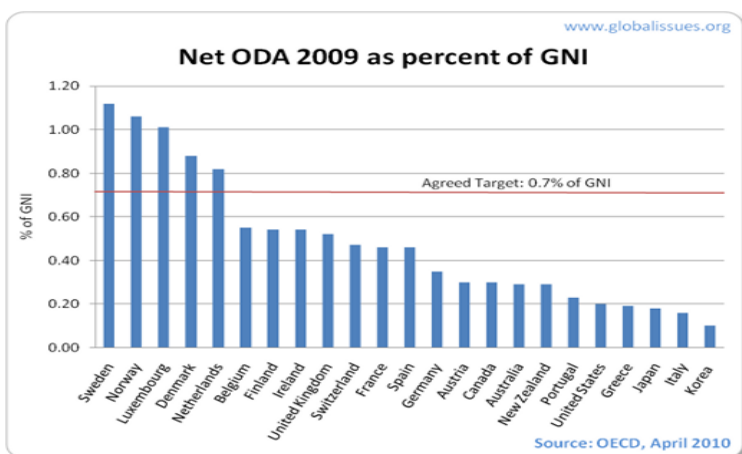
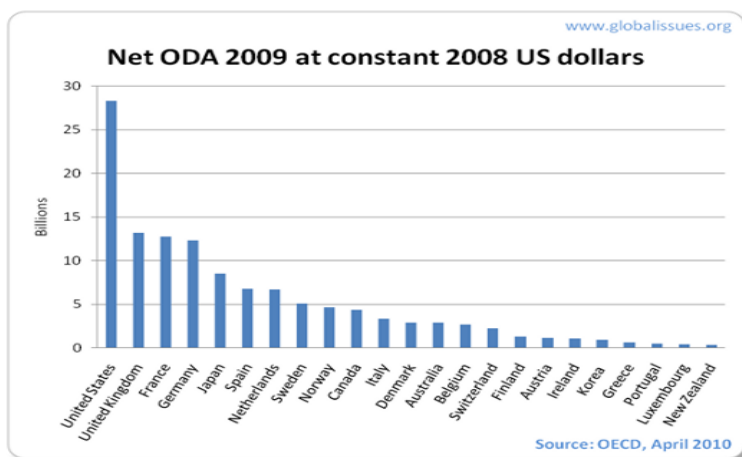


Table 1: Tables of total foreign aid and foreign aid as a percentage of GDI (Source: Organisation for Economic Co-operation and Development 2, 2010)

Today foreign aid is aimed towards the developing world. It is mainly used to support development and economic growth within the recipient country. For some countries it stands for over a quarter of their total GDP (Nationmaster, 2010), and in contrast, only two developed countries gives more than one percent of their GNI (Organisation for Economic Co-operation and Development 1, 2010).

The general aim of foreign aid is to improve the economical, political and social climate in the receiving country (Malmkvist, 2000). Despite these altruistic goals, foreign aid remains a debated topic. Critics argue that the aid is unaffordable in a time when many countries are indebted on their own. Others argue that aid is a tool to

control, created to open markets and influence policy. Another perception is that foreign aid is ineffective, that no clear link between foreign aid and economic development can be proven

(Global Issues, 2010). Today, the most debated question in the foreign aid topic is concerning the function of foreign aid, does it really work and when does it work?

1.1 Aid classification

Foreign aid is defined as “the international transfer of capital, goods, or services from a country or international organization for the benefit of the recipient country or its population” (Encyclopedia Britannica, 2010).

Foreign aid is divided into two broad categories. The first is named humanitarian aid, or emergency aid. It is defined as material or logistic assistance, as a response to man-made or natural crisis (Humanitarian Practice Network, 2010). When it comes to financial aid, or development aid, there are several categories of how aid can be disbursed within the recipient countries. The objective differs from humanitarian aid since it aims at securing a long period of development rather reacting toward an immediate crisis. For the benefit of this paper, development aid needs to be divided into sub-categories.

- Project aid is aid given to a specific project, such as building a school
- Budget support is financial aid directly inserted into the recipient countries financial system
- Technological assistance is the transfer of knowledge, in forms of educated personal, know-how or grants of intellectual property rights (Gillis et al. 1996, pp. 400-401).

Aid can be bilateral (given from one country to another) or multilateral (given from a group of countries to one or more countries).

1.1.1 Project aid

Project aid is one of the most publicly known methods of delivering foreign aid. Donors here take a direct part in both the design and implementation of the project. A project can involve donation of materials, transfer of knowledge and know-how, personnel on-site or all of the above. But the donors decide what is to be done, how and where (Jelovac & Vandeninden 2008, pp. 2-4).

This method has its advantages. If corruption is prevalent in the recipient country, donor-control can make sure that the all the funds are used for its intended purpose. It also provides transparency, the ability to show others what is being done. If the recipient country lacks infrastructure, this can to some degree be supplied by the donors (Gillis et al. 1996, Cordello & Dell’ Ariccia 2002, pp. 10-11).

Project aid also has drawbacks. Lack of coordination amongst donors creates inefficiencies. A single village may not need two schools, built by two different organizations. The projects may lack sustainability, if the donor’s interests change. And finally, the donor’s preferences may differ from the recipients. Simply put, who knows what is needed (Gillis et al. 1996, pp. 398-401, Cordello & Dell’ Ariccia 2002, pp. 10-11)?

1.1.2 Budget support

Budget support is financial aid directly inserted into the receiving countries budgets. The aid can be conditional, which means its use is specified for a certain purpose, or places requirements the recipient must comply with to receive aid at all. Budget support can also be unconditional, meaning that the recipient can use it to its own preference.

This method of foreign aid avoids some of the problems with project aid. When one organization controls the distribution of the funds, there is no crowding-out effect. The recipient government may also have a better overview, and transaction costs can be lowered (Jelovac & Vandeninden, 2008, pp. 2-4).

The problem with budget support is that the funds might go into an inefficient or corrupt system. In some countries the budget reports and the official records might not be trustworthy. This creates a transparency-issue which worries donors (Cordello & Dell' Ariccia 2002, pp. 7-8).

1.2 Purpose

The purpose of this thesis is to analyze and compare the two largest categories of foreign aid, budget support and project aid. The basis for this analysis will be two articles with different aspects of when these two categories are the most effective. This will be combined with the current academic debate on the effectiveness of foreign aid.

In the final chapter of this paper we're going to bring up our own conclusions on whether these theories can be relevant, and if they need to be improved or not.

1.2.1 Problem formulation

The critique against foreign aid has been the effectiveness, or lack of it, in the recipient country. The problem can be related towards the fact that many organizations and governments around the world today spend billions of dollars on foreign aid. But of all the money sent towards these countries in need, not all come to use in their developmental progress. In-fact much of the funds transferred gets lost on the way towards their goal. This can be related towards the relation between developmental goods that are focused on investment, and expand the economic growth, and non-developmental goods, that usually support consumption, and how this money is allocated between these two.

1.2.2 Limitation

This study will be a literature study on project aid and budget support. The thesis will draw upon two working papers that perform a micro-economic analysis on the subject, use these analyses and evaluate their relevance towards measuring aid effectiveness, and discuss eventual changes that need to be made.

Technological assistance is a complicated sub-category to estimate in economic terms. Moreover, it can act as a component of both project aid and budget support. With these two facts in mind, it has been left out of the analysis.

The primary target of humanitarian aid is crisis alleviation, not alleviating poverty through economic means. Humanitarian aid is therefore not included in this analysis.

It's also stated in the models we are studying, that aid efficiency means recipients complies with the donors developmental preferences. This is called a paternalistic view of foreign aid. We make no claim that this always holds true, but for the sake of this thesis we have accept this assumption.

2. Method

The method chosen is an analysis upon micro-economic work done in two papers, reviewing the two similar approaches on analyzing Budget support aid versus Project aid in their effectiveness. Since an empirical study is ruled out because of the limited time-frame, and the complexity of it for a bachelor thesis level, we chose to make a literature study.

Our scientific basis for this thesis is that these two papers measurements of aid effectiveness can be improved, by changing the micro-economic equations, used in their papers.

These are mostly based upon on advanced Cobb-Douglas utility functions with restrictions. These papers compare two goods. These two goods in development economics are mostly known as developmental goods, and non-developmental goods. Other names for these two types of goods are also investment goods and consumption goods.

2.1 Alternative methods

There is, as previously mentioned, the choice of an empirical study. In our case that would mean a regression analysis on budget support and a comparison with project aid. This sort of study would be made on a sample selection of a number of countries measuring aid effectiveness in country, applying a number of variables on them. Although we have not come across a regression analysis measuring both budget support and project aid, there is a lot of research that has been made on aid effectiveness and the correlation with good institutions. This point at foreign aid in correlation with good policies and institutions within the country will make the risk of aid funds disappearing because of corruption, bureaucracy and civil order. This kind of research has already been made to a large extent, by Craig Burnside, David Dollar and William Easterly, which has been the cause of a lot of debate. Their research will be covered in the theoretical section.

This sort of work with regression analysis and sustainable development is a more macro approach to the problem, measuring GDP growth and its correlation with aid. The Burnside and Dollar studies could be seen as a growth analysis done with regression, and putting variables into the model, to simulate results.

Our research will touch the subject of good institutions as we`ll be taking a different approach by using micro-economic theory and general model, instead of growth theory. In our study, a variable will affect the functions studied and provide a definite problem for the utility maximization.

Our familiarity with the nature of the Cobb-Douglas utility and expenditure functions, since previous courses, gives us a perspective on their methods, and also on the application of the functions. Our goal is with the knowledge of the functions at hand to discuss the relevance of the functions disposition and the alternatives to change them in order to suit our view of the problem better.

2.2 Critical review of the method

In similar work done, the authors mostly use an empirical study. Most information we have found has been closely linked to growth theory. The accuracy of our study could be questionable since we`re not basing this on any empirical research. Our goal is to reach a better explanation of foreign aid effectiveness in micro-economic terms. This means that this thesis can be more theoretical, and without definitive answers to the problems at hand.

3. Theory

This chapter details the economic theories and models used in the two reviewed articles. There will also be theories added that can confirm or expand the understanding of the results presented. At the end there will be a summary of the current academic debate on developmental aid.

The first chapter in this section shows that the assumptions made about foreign aid fits with the neo-classical model of economics. The second chapter explains the fungibility problem, an aspect of foreign aid. The third chapter deals with Game Theory, a perspective that could be applied on Project Aid. Lastly, the theories on corruption are explained, a perspective missed in the two working papers.

3.1 Aid and consumption

The aim of foreign aid is to increase the economical development. In the neoclassical economic model, this is achieved through an increase of investment. However, it has been difficult to prove a link between recipients of foreign aid and increase in GDP (Easterly, 2004, p.31).

There is a partial explanation for this in accordance with the neoclassical economic model. Assume a country which produces two goods, a developmental good and a non-developmental good. Their budget produces a production possibility frontier (PPF). When the country receives foreign aid their budget increases and the PPF shifts outward towards a higher utility level. The donors expressed preference is that all the aid should be devoted to investment. But if the social indifference curve (SIC) of the population is geared towards consumption, the increase in investment will be less than the total amount of aid (Gillis et al. 1996, pp. 399-401).

Consumption increases GDP, as GDP is a measure of a country's total consumption over a period of a year. But if the increase in consumption is greater than the increase in investment, it is likely that the increase in consumption is partly due to increased imports. Because of this, the increase in economic growth might be less than one could expect from the amount of foreign aid (Gillis et al. 1996, p. 401). We will in the continuation of this thesis call investment for developmental goods, and call consumption non-developmental goods.

This progression is not automatically reduced by switching to project aid. The recipient government may very well have been in the process of implementing these projects. Then funds may be diverted from these budget-sectors to more consumption-oriented areas, which would have the same effect (Gillis et al. 1996, pp. 401).

3.2 The fungibility problem

Fungibility is a term that describes the ease of which resources can be transferred from one sector to another. Financial funds are counted among the most fungible resources that exist. In most economies, there is no need to specify the origin of funds that purchase or finance a product (Carlsnaes, Risse-Kappen & Simmons 2005, p. 180)

In foreign aid, economists talk about the fungibility problem in relation to project aid. If a donor country builds a school, the recipient's resources are perfectly fungible to be transferred from the educational sector towards one that does not foster development. Then, despite the funds the donor spent, the net results may not have differed from no aid being given. Project aid has crowded out the recipient's own funds. (Jelovac & Vandeninden 2008, p.12).

3.3 Game theory

Game theory is a branch of applied mathematics, used in such varied fields as economics and biology. It is based on two or more players which all faces strategic decisions. The result from those decisions will impact the result for all players. To choose the right strategy, a player must make assumptions on how the other players will act (Gravelle & Rees 2004, p. 347).

These games can take many forms. The different decisions can have the same costs, or different ones. It is argued that all games will contain a Nash equilibrium, a state where neither player regrets its decision. That is not a guarantee that all games will be played towards the Nash equilibrium. It might not be sensible to play at all towards it. One player might also consider itself superior, or it might have reason to believe it can predict other player's behavior (Gravelle & Rees 2004, pp. 360-361).

A series of repeated games adds another dimension to the strategic decisions. Rational players will still strive towards maximum total utility, but have to beware retaliation. Repeated games also allow players to grasp opposing players' strategy, which can affect their own, and vice versa (Gravelle & Rees 2004, pp. 357-360).

3.3 Corruption

Corruption is defined as "the abuse of entrusted power for private gain". This problem exists to some degree in every country across the globe. Since corruption can take many shapes, it is hard to characterize or quantify the phenomena. Transparency international maintains the position that the cost of corruption is spread over four areas, political, economic, social and environmental (Transparency International, 2010).

Politically, corruption undermines democracies and the institutions of law. This is especially harmful for younger democracies which has yet to establish its legitimacy, and may revert a society towards despotism. On the economic side, corruption drains a country's financial resources. It prevents necessary long-term investments such as basic infrastructure and limits free-trade, two aspects which will lower economic investment. On the social side, corruption undermines the trust of government, institutions and leaders. Apathy and unrest follows when corruption becomes a part of the everyday life. Environmentally, corruption has been linked with resource-depletion and a tendency to pollute (Transparency International, 2010).

Transparency international is a debated and sometimes controversial academic organization. For this thesis, only their definitions will be used.

3.4 Current debate

Many of earlier studies made on aid effectiveness have been concerning the macroeconomic level. The percentage of GDP put in by a donor into recipient countries, boosting their economies in order to excel their economic growth. This perspective has been the focus on a lot of debate during the past decade.

In the late 1990th and in the beginning of the 2000th, two economists, Craig Burnside and David Dollar, two World Bank economists, published their research on foreign aid. Their research was formally on a more macro-economic level. They studied the correlation between foreign aid, economic policies and growth per capita GDP in developing countries during the period of 1970-73 and 1990-93. They used regression analysis with a number of variables, such as national income per capita, institutional and policy distortions, foreign aid, and foreign aid's interaction with recipient country's policies. They also used variables in their regression analysis that included civil order, political stability, ethnic fractionalization, political assassinations, sub-Saharan African countries, fast growing Asian countries etc. They also make a difference between low-income countries, and developing countries

Their claim was that in order for foreign aid to work, good economic developing environment was required in the recipient country; this meant that foreign aid needed to be aimed towards countries with high institutional quality, good developing policies, low corruption and high civil order to be able foster good economic development.

Their analysis pointed out that if these requirements were not met, the impact of foreign aid would be very limited. They advocated the idea that developing countries needed to fulfill these requirements in order for foreign aid to work. (Burnside & Dollar, 2004, p. 1)

The controversy in this was the fact that the study recommended to exclude the developing countries without good institutions and policies from foreign aid. It excluded the least developed countries in the world, and basically those that needs foreign aid the most. These ideas came to be the starting point for the new aid policies in the beginning 21st century, and were adapted by the US Bush administration as well as the World Bank. (Easterly, 2004, p. 25)

This was the spark for a huge debate on foreign aid, and raised several criticizing voices. William Easterly, professor of economics at New York University, is one of the loudest critics towards Burnside's and Dollar's theories on Foreign Aid.

Using the same datasets as Burnside and Dollar original study, Easterly recreates the same study and expands it, concluding that the link between aid and economic growth is fragile, since the studies made, are in measured in shorter periods of time. Easterly argues that for measuring real effects, one would have to look at longer time sequences in the analysis, up 12 years. (Easterly, 2004, p. 30)

Easterly also claims that today, unlike Burnside and Dollar, that there is no clear model that explains the link between foreign aid and growth. The one model that for longer periods of

time has been the main model is the two gap model. The first gap is the lack of financing for investment within the economy, and the second is the lack of import for a given level of production. Since the second gap mainly represents consumption, the focus lies on investment (*this model can be related to the assumption of developmental goods and non-developmental goods, used in by the chapter 4*). This model, based on a Leontief assumption, that states that in the short- to medium-run, capital and labor are fixed, and the relation between investment and growth to be linear. (Easterly, 2004, p. 31)

Easterly instead brings up the Solow neoclassical model, with investment as an exogenous variable, and the result of it as only a temporary growth GDP in the short-run. But none of the mentioned models brings up the quality of the investment. Both these models rely on the incremental capital-output ratio (ICOR). This basically says that an investment rate of 20 percent into the recipient country, and the ICOR at 4, that means that GDP rises with 5 percent. But according to Easterly, the investment and the raise of the GDP doesn't mention anything of the quality of the investment. (Easterly, 2004, p. 32)

Easterly's conclusions is that aid agencies take great comfort in their aid disbursement, and GDP growth as a measure of effectiveness, since the policy environment within a recipient country, and other circumstances usually makes aid effectiveness very hard to measure. And they take a lot of comfort in the Burnside and Dollar study, showing that GDP growth and good policy environment always tends to lead to growth.

A definite problem here, according to Easterly is the selectivity of aid. Basically, the well-performing country will receive funds based on conditionality, with the purpose to have more direct impact on the country. While a poor country with bad policy performance, will receive less quality funds anyway. According to Easterly, "the imposition of conditions is no more than a wistful hope, rather than a policy with consequences." (Easterly, 2004, pp. 36, 38)

Burnside and Dollar have been defending their research, in a later research paper from 2004, they conclude that the dataset which they used for their first analysis, and which has been used by academics to prove even more correlation between foreign aid and good policies that lead to economic growth, is outdated. Instead they present a new dataset, based specifically on 1990th. The purpose is to measure aid effectiveness in a post cold-war world, which gives a more accurate depiction of today's problems in foreign aid. (Burnside & Dollar, 2004, p. 12)

In their research paper, they introduce three usual foreign aid hypothesis; (Burnside & Dollar, 2004, p. 6)

- I. *First, foreign aid works everywhere independent from institutional and policy quality,*
- II. *Second, foreign aid works with conditionality when it comes to institutional and policy quality,*
- III. *Third, foreign aid doesn't work at all.*

They base their work on a statistical regression analysis with OLS estimation on the theory of aid aimed at countries with good institutions, fosters growth. The main problem is to avoid being tricked by the effect of having an immediate GDP growth due to the external aid-flow. The direct effect doesn't really say anything about institutional quality. To counter this problem, a number of variables have been introduced. These variables include the language barriers of the between the donor country and recipient country, the distance to the equator (since most developing countries today is located near the equator), the logarithm of population in the area, and the logarithm population interaction etc. (Burnside & Dollar, 2004, p. 14-15)

Treating the institutional quality as an exogenous variable, and aid in correlation with institutions, they come up with the same conclusions as in their previous work, institutional quality does make a difference. And their result strongly supports the second hypothesis of foreign aid. Though Burnside and Dollar does actually mention that there is theory that in some cases points at the third hypothesis, that foreign aid doesn't work at all. (Burnside & Dollar, 2004, p. 18)

However their argument against the third hypothesis is first of all, one would have to assume a degree of perfect capital world markets, and no conditionality in order for foreign aid to have no impact on low-income countries, a situation they describe as implausible.

Second of all, they mention that the Marshall plan that accelerated European growth after the Second World War was a success story, and was largely successful due to the political institutions and the policy environment within Europe. This historical evidence should disapprove the third hypothesis. Also as seen in history, South Korea made had an extraordinary growth from being a poor country in the 1960th and through aid and support, become a leading industrialized country. On the other hand, Kenya and Zimbabwe have had many similar project and investments during the same time-period, but almost all have failed.

In their conclusions they also make a point that a regression analysis cannot prove everything. There are a lot of other variables and theories that does have an effect on the growth situation, and the ability to put together a coherent economic growth model (Burnside & Dollar, 2004, pp. 19 - 21).

As seen, the most recent research done on foreign aid effectiveness includes regression analysis. Easterly together with fellow researchers Ross Levine and David Roodman concluded in a article from 2004 in *American economics review* that Burnside's and Dollar's theories on foreign aid is not conclusive enough to come with a definitive answer on the aid effectiveness issue, and that further research will have to be made on foreign aid in both macro-economic and micro-economic perspectives to answer these questions. (Easterly, Levine & Roodman, 2004, p. 779)

As of this point there has been little definition of what type of aid being used for their work. Our study will try to bring light to this by comparing budget support and project aid. By evaluating the differences, a forgotten aspect will be brought towards the debate.

4. Literature study

A large part of our study will be, as previously mentioned, a comparison between two working papers that compare two types of foreign aid, budget support and project aid. These two uses micro-economic theory, and applies a set of variables into Cobb-Douglas functions and restraints. The aim is to see differences between conditional- and unconditional budget support versus project aid. In this section we will make a brief review of these papers, the mathematics behind it, and conclude their results.

4.1 Article 1: IM F working paper

The first article, “*Budget support versus project aid*” are written by Tito Cordello and Giovanni Dell’ Ariccia and published in the IMF Journal in 2003. We will refer to it as Cordello *et al.* It compares project aid with budget support. The model assumes the donors as a homogenous group. The model also assumes utility (U_R) for the recipient country as a function of expenditures on two goods ($V(s)$ and $V(m)$). One good, the developmental good (s) is appreciated by both donor and recipient. The other, non-developmental good (m) is appreciated by the recipient but not by the donor.

$$U_R = \alpha V(s) + (1 - \alpha)V(m) \quad (1)$$

Both goods are produced with two inputs, k and e . K is capital and observable by the donor, e is other types of costs for factors such as managerial and administrative resources, and is not observable by the donor. The recipients developmental preferences are represented by α , which ranges from zero to one. The assumption in this model is that donors can observe the capital input k , but not the input e or the good m . But they can observe the total non-capital expenditures (z).

$$z = e + m \quad (2)$$

The constraint here is a balanced budget, which may or may not receive aid.

$$k + z \leq G + \delta A \quad (3)$$

G represents the countries income (GDP) and A the amount of budget support. δ is a dummy variable, which takes the value one if aid is given, zero if not. Since the donor’s preference lies with good s , their objective function can be written as

$$W = s(k, e) \quad (4)$$

4.1.1 Unconditional budget support

Then authors then analyze a situation with no conditionally on the budget support, meaning that the recipients are free to spend the funds as they see fit. The recipient will seek to maximize its utility given its budget constraint. Any amount of aid received will increase the welfare of the recipients. The results show that for any $\alpha \leq 1$, the donors and the recipient’s

objectives are not perfectly aligned and funds will be diverted towards the non-developmental good.

4.1.2 Conditional budget support

With conditional budget support, the donors will seek to maximize their welfare (equation 4) given the recipients individual rationality constraint (equation 5). The received budget support can only be spent on the developmental good s . The donor can only set their conditions upon the component k and the recipient is free to allocate their own resource in the form of the component e . As long as the recipient's utility in the case of no aid (U^{NA}) is lower than their utility in case of conditional aid (equations 2, 3 and 4 substituted into equation 1), the recipients will accept conditionality. In other words, the donors will choose the degree of conditionality based on the recipient's response, in order to maximize output.

$$U^{NA}(\alpha) \leq \alpha V(s(k, \hat{e}(k))) + (1 - \alpha)V(G + A - k - \hat{e}(k)) \quad (5)$$

Using this, the authors find a value k^{IR} for which the amount of capital makes the IR exactly binding. For the recipient, this makes not spending the required amount of k and the corresponding amount of the component e a loss of utility. From this, the authors prove that conditional budget support will increase production of the developmental good. But since the proportions of resources have been altered, there will be a less efficient process.

The authors acknowledge that this model takes a simplistic view on conditionality. Here it is simulated as a minimum budget level, where in reality it is often competitive loans, social regulations etc.

4.1.3 Project aid

For the estimation of project aid, the authors need to adapt it so comparisons can be made with the two types of budget support. The assumptions made about project aid are; i) The donors are in full control of the resource-allocation ii) No funds are diverted.

Since the donors are in full control, they choose the most efficient allocation of resources ($k=e$). In addition, the authors note that the donors fund may not be perfect substitutes for the recipient's funds. Another aspect of project aid is the fungibility problem. Nothing prevents the recipient to relocate their funds away from the development sector, after learning about the projects the donors intend to implement.

The authors then present the following production-function; $q=\lambda s(A/2)$. This is the maximum amount of the developmental good that can be produced, given A amount of aid. λ describes the degree to which the project "fits" the recipients own strategy. Then, the cost for the projects imperfect fit can be described with $c=(1-\lambda)s(A/2)$.

The authors prove that there is a point at which conditional budget support becomes the preferable strategy. If the amount of aid is small, there is a greater chance of avoiding the imperfect fit. The recipient also has more room to adapt their own budget to accommodate the donor's projects.

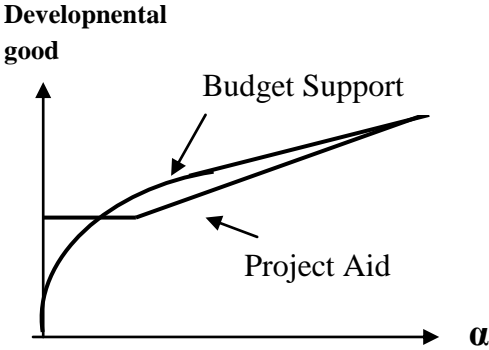


Figure 1: Shared preferences (α) as a function of the developmental good

The article then follows up with a short section discussing the limitations of their model. Comparing these two instruments of foreign aid is undoubtedly something that would benefit the donor. But many might ask why an aid practitioner could not attempt a combination of the two, for example impose conditions on project aid. The authors acknowledge that this might be a possibility, but difficult for two reasons. First, the donors will be in a weak position to “punish” recipients who breach the pre-set conditions. It will benefit no one to halt

the building of a school halfway through, for example. The second reason they mention is the fact that donors prefer project aid in cases where the recipient government share very little of the donors interests. In other words, project aid works best in cases where the donor wants targeted measures that may have to bypass the government to some degree.

4.2 Article 2: GATE group working paper

The second article, “How should donors give foreign aid? Project aid versus budget support” is written by Izabela Jelovac and Frieda Vandeninden in 2008, and published in through the GATE group of the economic institution in the University of Lyon. We will refer to it as *Jelovac et al.* This article is partly based on Cordello’s and Dell’ Arricia’s. It compares project aid and budget support, using a similar model with two goods and many of the same assumptions that Cordello and Dell’ Arricia’s did.

The difference between the two perspectives lies in the production function. Cordello et al assumed a symmetric productivity, whereas Jelovac et al assumes an increasing productivity as transparency increases. Aid dependency is also addressed. The more dependant of aid the recipient is, the more likely they are to accept conditionality.

The authors present a model with donors and recipients. The donors favor the production of a developmental good; $s(k,e)=k^{1-a} e^a$ (6). The capital is denoted k, e is the unobservable component and a its productivity. The recipient also favors a second good m, a non-developmental good. The recipient’s benefits are described by a Cobb Douglas utility function; $V(s,m)=m^{1-a} s^a$ (7).

For project aid, they assume the same measure of imperfect fit as the earlier article. Of the total amount of aid given through project aid, only the share γ impacts the production of the good s. The cost of the imperfect fit can then be estimated by $c=(1-\gamma)A$.

The donors offer the total amount of aid, T . This can be divided into amounts of project aid A and Budget support B . Given conditionality, the donors decide how much of B is spent on the developmental good.

The recipient observes the amount of aid, its allocation and/or its conditionality. Then the recipients decide how to allocate their own budget G . The authors present the following optimization-problem for the recipient;

$$\underset{k,e,m}{\text{Max}} \quad V(m, s(k, e)) = m^{1-\alpha} e^{a\alpha} k^{\alpha(1-a)}$$

$$\text{subject to: } k + e + m \leq G$$

If there is no aid present, the government allocates resources according to its developmental preferences. This also depends on the productivity of the two factors.

In the presence of aid, the production function for the developmental good in the recipient country is altered.

$$\text{Max}_{A,B} s(k + \lambda A, e) \quad \text{subject to} \quad k + e \leq G + A$$

The authors first analyze the “best scenario”, in which donors and recipients preferences are perfectly aligned ($\lambda=1$). In this case, the recipient and the donors are indifferent between budget support and project aid. Nothing of the aid received is diverted from the production of the developmental good. As soon as there is a conflict of interest, the best scenario is unavailable. The “second best” scenario is all instances where $0 \leq \lambda < 1$.

4.2.1 Unconditional budget support versus project aid

The article then analyzes the case where conditionality is not available for the budget support. The optimization is done by first addressing the indirect utility of the recipient, subject to constraint (3). Deriving the optimal amount of k from this, the authors show that project aid has a negative effect on the domestic production of the developmental good. For each amount of project aid, the recipient will shift some of its resources away from the production of the developmental good. This is negative incentives. This illustrates the crowding out-effect.

Optimizing the donors utility, subject to the budget constraint $A=B+T$ provides a simple answer. Budget support is preferable as long as $\gamma < 1$. Because of the nature of the production function, budget support being preferable means that all aid should be allocated to this category, and none towards project aid. Only when $\gamma = 1$ is the donor indifferent between project aid and budget support.

In summary, the authors conclude that budget support dominates project aid. Also, without conditionality, some of the donor’s funds will be devoted to the non-developmental good.

Fungibility coupled with mis-matched preferences results in less economic improvement than expected.

4.2.2 Conditional budget support versus project aid

When the donors impose conditionality, they require of the recipient to allocate a certain amount of capital, $k_{\tilde{}}$ towards production of the developmental goods, otherwise they receive no aid. The authors start this section of the article by maximizing the recipient’s welfare when receiving aid.

$$\max_{k,e,m} V(m,s) = m^{(1-\alpha)} e^{a\alpha} (k + \gamma A)^{(1-a)\alpha}$$

subject to: $k + e + m \leq G + B$

and: $B > 0$ if $k \geq \tilde{k}$, $B = 0$ if $k \leq \tilde{k}$

The recipient will accept the conditionality, and receive aid, if and only if the utility from doing so is greater than not doing so. This maximization lets the author’s present three cases, depending on the critical level of capital, denoted k_M ;

1) $\tilde{k} \geq k_M$ the level of conditionality does not satisfy the recipients individual rationality

constraint. The recipient is better off not receiving aid and allocates their resources according to their own preferences

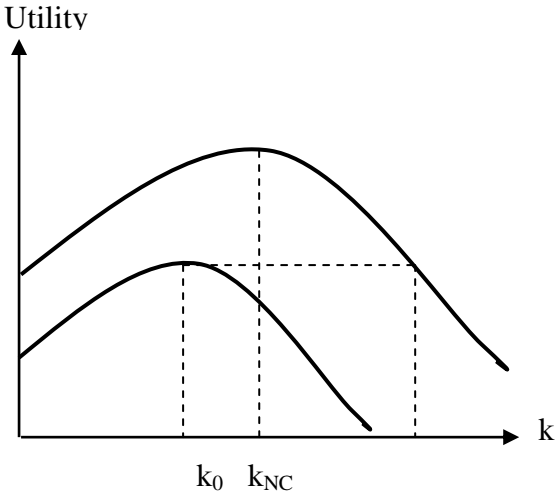


Figure 2: Utility as a function of capital, with no aid, unconditional BS (k_{NC}) and conditional BS (k_M)

2) $\tilde{k} \leq k_{NC}$, the critical amount of capital is lower than what the recipient would have spent either way. In this case, the budget support does not impose any conditions.

3) $k_{NC} \leq \tilde{k} \leq k_M$, the optimal case. The recipient’s utility is increased when they subject themselves to the donor’s conditions. The recipient will spend the critical level of capital.

This shows that recipients who’s preferences are further removed from the donors are less likely to accept

conditionality. For this kind of recipient, a lower level of capital should be required. Conversely, recipients with similar preferences as the donors can handle harsher conditions.

The article then present the level of BS and PA that maximizes the production of the developmental good, subject to the donor’s budget and its conditionality.

$$\begin{aligned}
& \max_{A,B,k} S_C(A,B,k_C) \\
& = \left(\frac{\alpha a}{1 - \alpha - \alpha a} \right)^a (G + B - k_C)^a (k_C \\
& + \gamma A)^{1-a} \text{ subject to } \begin{cases} A + B = T \\ k_C = \begin{cases} \max \{ \tilde{k}, k_C \} & \text{if } \tilde{k} \leq k_M \\ k_0 & \text{if } \tilde{k} > k_M \end{cases} \end{cases}
\end{aligned}$$

As before, this optimization leads to three scenarios.

1) If $k_C = k_0$ then the recipient's individual rationality constraint is violated and they will not accept the conditional budget support. In this case the optimal type of aid is $T=A$, meaning all aid is given through project aid.

2) The second case is calculated for the conditional level of capital being lower than the non-conditional one. Here, the conditionality is not a constraint. This produces a solution equal to the one calculated in the section on unconditional budget support.

According to the model, the two cases above always yield a sub-optimal production of the developmental good. To strict a level of conditionality, the recipient chooses not to accept budget support. Then all aid is given through project aid, which due to the fungibility-problem leads to inefficiencies. If the conditionality is too lax it serves no purpose and we have the same allocation of resources as with unconditional BS.

3) The final scenario is presented as the optimal allocation of resources. If the required amount of capital lies between the critical amount and the non-conditional amount, then the recipient will comply with the optimal amount of capital.

From this analysis, the authors conclude that the optimal allocation of aid is always $T=B$ and $A=0$ (All aid given as budget support). Further, according to the model, conditionality will increase the production of the developmental good when the preferences of both the donor and the recipient are relatively aligned. In correlation, the authors reach the conclusion that for recipients whose preferences are not aligned with the donors, unconditional aid is better than conditional aid. Project aid is only preferable if there are no efficiency losses. But even then the proportion of project aid needs to be limited to avoid fungibility

5. Analysis

In this section, the two articles are analyzed and compared. After this, the analysis focuses on how well the models manage to describe the problems and situations faced by foreign aid in the real world.

Both articles base their model on the same basic assumptions. Donors are seen as a homogenous group with shared preferences. The receiving country is simplified as an economy that produces two goods, one developmental and the other non-developmental. To produce these goods, the economy relies on two resources. One of these resources, denoted capital is observable and supportable by the donor. The other, simply denoted e , is unobservable and un-transferable by the donor.

In the article by Cordello & Dell' Ariccia, the non-developmental good is specified as for example military expenses and other governmental spending. This implies that the good m represents large-scale government projects. In the article by Jelovac & Vandeninden does not specify the non-developmental good at all. For the purpose of this paper, we have chosen for the non-developmental good, to include consumption. With this assumption, the two models fit with the results predicted by the neo-classical model of economics.

While the two models have the same basic structure and assumptions, they do differ in their respective methods. Cordello et al base their calculations on a utility function for the recipients (equation 1). This is later optimized subject to different budget constraints. Jelovac et al includes a Cobb-Douglas production function (equation 6) that represents the transparency of the recipients' economy. This adds another element to their model. The optimal allocation of production resources will now depend both on the utility gained from the goods and the transparency of the economy.

Both models assume the donors as a single controlling unit with shared preferences. In practice, this takes the characteristics of bilateral aid. This is another simplification of reality worth noting. Developing countries receive foreign aid from a number of sources. If conditionality is put upon different aid packages, recipients can face conflicting incentives. Similarly, multiple donors willing to supply project aid might act in such an uncoordinated manner that efficiency is lost. In both models, a parameter for the imperfect fit of project aid is included, but none for donors supplying budget support.

5.1 Unconditional budget support

Cordello et al analyze this situation by optimizing the recipient's objective function subject to the budget constraint. If no aid is given, this allows them to determine the recipient's individual rationality constraint. Since they have not defined any properties of the production function for the developmental good, the optimal level of k equals the optimal level of e .

Without conditions, any amount of aid will increase the welfare of the recipient. As long as α is not zero (no alignment of the preferences) the production of the developmental good will

increase. However, as long as α is less than one (there exists a misalignment of preferences), the production of the developmental good would increase if conditionality were imposed.

Jelovac et al uses a wider analysis. The added production function makes the optimal level of the resources in-determined. The previous solution, $k^*=e^*$ is still a possibility, but just one of many possible allocations. Jelovac et al also includes the possibility of project aid in the budget constraint, comparing unconditional budget support directly with project aid. Since Jelovac et al uses Cobb-Douglas function both for production and recipients utility, their analysis is two-fold. From the recipients perspective, they find that project aid, because of the fungibility problem, decreases the recipients production of the developmental good, while budget support increases it. Project aid also increases the production of the non-developmental good, but even there it leads to a weaker allocation of resources.

From the donors perspective, Jelovac et al finds that unconditional budget support dominates project aid as long as there is any misalignment of their respective preferences. In the case where the donors are indifferent between project aid and budget support ($\gamma = 0$), the portion of project aid still has to be limited.

5.2 Conditional budget support

Both articles simulate conditional budget support as a minimum level of the resource k from the recipient. This is the biggest simplification these models make, in regards to the real situation, something that will be discussed in the next chapter.

Cordello et al analyses conditional budget support by imposing a minimal level of k that the recipient have to spend towards the developmental good. The recipient will then maximize their utility by spending a corresponding amount of the unobservable resource e . The conditionality should be set so that the required levels of the resources produce the same utility as receiving no aid. From this the authors note that the optimal conditional level of k increases with α , meaning that stricter conditions can be imposed on recipients with similar preferences as the donor.

The final stages of their model prove two things. Firstly, that conditional budget support leads to an increased production of the developmental good. Secondly, that conditionality changes the allocation of resources away from its optimal production level. The authors note that both parties would benefit from being able to impose and control conditions upon the unobservable resource.

Both authors agree on that conditional budget support could be put in the perspective of aid not being granted. If a similar utility level could be reached with conditional budget support compared to as of not being granted aid at all, therefore, a level of capital component k_M is better than a level k_0 , where no aid is given at all (*see chapter 4.2.2*).

Jelovolac et al proceed in the same manner as before, using backward induction. The recipients utility is maximized for three levels of k being spent; i) the case of no aid received ii)

the case of unconditional budget support being received and iii) conditional aid received. Optimal conditionality is set such that the utility gained from i) = iii), see figure 1.

5.3 Project aid

Cordello et al constructs a formula for project aid so that it becomes comparable with the other types of aid. Their results show that project aid is preferable when the amount of aid is low relative to the recipient's government revenue. When aid funds are large relative to the recipient's government revenue, unconditional budget support is preferred.

Jelovac et al finds no situations, no circumstances at all where any foreign aid shall be given as project aid, except the outlier case where preferences are completely shared.

5.4 Comparisons

The first published article, written by Cordello et al produces a more varied result, both concluding that project aid could work in initial stages of foreign aid development, and that budget support could be effective in a later stage of development. Project aid works better in the initial stages when the focus lies on building infrastructure, taking steps towards initial education and health-care, basically starting up a functioning society. Another situation where project aid works is the case of a relatively wealthy country, with little focus on development. Here project aid can be seen as a targeted measure in an economy large enough to accommodate the conflict of preferences.

Jelovolac et al have a more straight forward approach towards project aid, saying that it's not preferable in any situation. This is because of the fungibility problem. Any aid given as project aid should be heavily outweighed by budget support programs to avoid this effect.

For budget support to work there is a need of functioning government, which can disburse the foreign capital investment wisely. In this of course comes the argument of whether or not conditionality should be applied. Cordello et al draws the conclusion that conditional budget support always dominates unconditional one. This is again conflicted by the results produced by Jelovac et al, who predict that in the case of two conflicting preferences, conditionality will be rejected and no aid will be given.

The first published article has limited itself when it did not specify a Cobb-Douglas production-function. In their model, the optimal allocation of resources is always $k=e$. For the donors, this means that the recipient's economy is half observable and half unobservable. Jelovac et al makes use of more flexible assumption, where the transparency of the economy is allowed to vary. While this reflects the difference of recipients, it makes it much more difficult to decide the optimal allocation of resources. For example, highly shared preferences could be cancelled out by low transparency.

5.5 Conditionality

In these models, conditionality on budget support is simulated as a budget requirement put on the donors. This is arguably where the models differs the most from the actual situations in

the real world. Conditionality on foreign aid can come in many forms, often social or political aspects (requirements for working conditions, ability to form unions, regulations regarding elections etc). These kinds of conditions would be really hard to include in the models used in the articles. The benefits are not immediately tied to the production of the developmental good, and they may not have costs in strict monetary terms either. Nevertheless, this means that the models are blind to a big aspect of conditional budget support. The intuition regarding social and political conditions is that they would have the same effect as the developmental conditions (in other words, recipients with similar preferences as the donors would be more likely to accept strict conditions)

Would these invisible aspects make calculations on conditional budget support untrustworthy? Not necessarily, since neither costs nor results from conditions regarding the social or political climate is factored into the models. But if one were to accept Burnside and Dollar's view, that the presence of good institutions are necessary for foreign aid to promote growth, the argument for conditionality grows stronger.

5.6 Incentives

Jelovac et al states that unconditional budget support is preferable in situations where the donor and recipient do not share preferences. If too harsh conditions are imposed, the recipient will reject foreign aid. Even if a large part of the unconditional budget support leads to the production of the non-developmental good, it is still better than no foreign aid at all. Cordello et al, quoting reports by Easterly, argues in their concluding remarks that people respond and adapt to incentives, and that unconditional budget support does not deliver any. Without taking the mathematical calculations into account, it is hard to argue against either position.

But both articles deal with the short-run perspective on foreign aid. If we apply the economic perspective of game-theory, with repeated games, the outlook will change. The recipient faces two strategic options, they can accept conditionality on budget support or they can reject it. If one takes the perspective of Jelovac et al, the donor's play with pre-determined options. Low developmental preferences shall be met with unconditional budget support and the recipients who care about the development shall receive budget support with conditions. Since the domestic utility is actually higher for unconditional budget support, there is not any reason for a country to change its preferences. In the long run, this lack of incentives set a dangerous precedent. The scenario with repeated games only works with the assumption that preferences can change over time. But since a country's preferences depend on so many things (official policy, political climate, grass roots-movements, neighbors etc) there is no discernable reason to assume it cannot.

The recommendations made in the article by Cordello et al provide decision-possibilities with clearer incentive. Project aid is still available, which can act as the response towards recipients with little care for economic development.

It should be noted that the game-theory perspective takes a very paternalistic view on foreign aid. There is no guarantee that the donors actually know best what will foster economic development in the receiving country. This factor has been acknowledged by both articles, but it has been abstained for the purpose of a coherent model. For the purpose of this paper, we will make the same acknowledgement. While an interesting debate, there simply isn't enough space to add this aspect.

5.7 Corruption

Both models base their calculations on two goods, one developmental and one not. This is an assumption that allows for reasonably simple calculations and a coherent model. It also fits with the neo-classical model of economics that describes how foreign aid can lead to an increase in consumption. But this does not address the major concern amongst donors and the general public in donor countries that is corruption. Consumption may not foster economic development but to many interest-groups it is more preferable than corruption. In these articles, both corruption and consumption is included in the category non-developmental good. In other words, the articles do not address two of the major arguments for project aid, less fund-diversion and transparency. For example, the general donor may know that consumption, such as providing milk to school-children or hygiene-articles for families may not increase economic development. But they would more readily accept that a percentage of the funds go towards such efforts, rather than just having funds disappearing into a corrupt system.

5.8 The fungibility problem

In both articles conditionality is concluded as a positive method to increase economic development. Conditionality is an economic tool connected to budget support. But in reality, could not project aid come with conditionality? Cordello et al touches upon this subject in their article and lists two major problems with this. Their first argument is simply the fact that donors are unlikely to abort projects that are already underway because of a breach of the conditions. This is certainly true in the short run, but it fails to acknowledge repeated games according to game-theory. Donors could make it clear that recipients that comply with conditions would receive project aid in the future. This would be a less effective incentive than the conditions on budget support, but it may lessen the drawbacks created by the fungibility problem.

6. Discussion

In these past chapters we have both summarized to aspects of foreign aid and then concluded the different aspects of these two authors. Regarding the two models, we hold them to be necessary contributions to the foreign aid debate. The real world is simply too complicated, to multi-faceted, to endlessly look for the link between transferred funds and increased GDP.

First of all, it has to be noted that these papers try to put an economic and social phenomenon into micro-economic equations. Our first concern is how this can describe the reality, is the limitations of these two models justified, and how can we apply this?

It is very important that the debate on foreign aid also starts to focus on what kind of aid should be delivered. Our belief is that the three kinds of aid evaluated in this thesis have its place. It is also our belief that these two models have a slight bias against project aid.

First off, the issue of corruption is probably the most blatant example. As discussed in the analysis, making no difference between corruption and aid-funds directed towards consumption serves little purpose. For supporters of foreign aid, it will create an unrealistic prognosis's. For detractors of foreign aid, it will be seen as not acknowledging a large problem. In the contexts of the model, one of the strengths of project aid, its high transparency, is ignored.

To be able to make a conclusion of when project aid can be applied, we have to make a difference between the assumptions of a low-income country and a least developed country. Low income countries might still have a functional government, with good institutions, but with lack of finances. The conclusion here is that budget support is an effective instrument to expand growth within the economy. A least developed country on the other hand cannot support things that represent good welfare; for example; education, healthcare, infrastructure, and therefore needs direct foreign assistance.

It is also worth noting that some of the inefficiencies of project aid lie on the donor side. Transportation costs, and especially un-coordination, could be decreased. This contrasts with budget support, where all the responsibility lands on the recipient.

Jelovac et al addresses briefly the possibility of imposing conditions on project aid, which we feel merits further investigation. The conditions would be weaker than the incentives accompanied with budget support, but they could damper the fungibility-problem somewhat. It would require long-term commitment by the donors both to punish recipients (declining future project aid) and reward recipients (delivering future project aid). But again, this is an aspect were the donors themselves can make the difference.

How can we improve these micro economic equations then? First of all, making a difference between consumption and corruption is required; a dummy variable for corruption is needed in the restraint in the equations.

Second, we want to bring into light, that in reality there is no universal donor utility maximization, and every donor has its own preferences. In multilateral aid, this adds a level of un-coordination to the conditional budget support between different donors and the recipient. The receiving countries may have to forsake some aid because of conflicting conditionality.

The issue is, if adding more dummy variables, could we be making a more accurate micro-economic equation, that's fits the reality better?

As finish comments we want to add to the debate by claiming that, unlike Jelovac et al, that project aid has a role to play as target action. If we take into aspect, the fact that some countries, usually least developed countries, do not have the capability to invest in projects that expands their society, project aid as a targeted action will be more effective.

If project aid can be coordinated, this can work in conjunction with conditional budget support. We also believe that there are many problems with foreign aid that can be solved by the donors, by starting coordinate their actions more effectively. Coordination of both project aid and conditional budget support can lead towards longer commitments and incentives from the receiving countries; something that both Cordello and Dell' Arricia's, and Jelovac and Vandeninden does not take into account.

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