Development Aid and Access to Commercial International Capital Markets

Katinka Kristine Holtsmark

Thesis for the degree

Master of Economic Theory and Econometrics

Department of Economics
University of Oslo

May 2011

Preface

This thesis is the conclusion of five years studies in economics. Apart from one year at Université des Sciences Sociales in Toulouse, France, I have spent these years at the Department of Economics, University of Oslo. I feel privileged to have been part of the environment here, and I am very thankful to the many knowledgeable and inspiring lecturers and researchers at the department. Among these are also Halvor Mehlum, who has been my supervisor during the work on my master thesis. His support, insightful comments and suggestions, and his questions forcing me to think reflectively, has been of great value to me.

I would also like to thank the Center for Equality, Social Organization and Performance (ESOP) for granting me a student scholarship, and for providing an inspiring environment during my writing of the thesis. Finally, my fellow students in our office deserve a great thanks, for being helpful and supportive, and for contributing to making this semester a great ending of the life as a student.

Contents

Abstract

Development aid comes in many different forms, and has a large range of effects on the recipient countries and their economies. There exists a vast literature - in economics and other fields of research - on consequences of foreign aid on the recipient economies. Scientific evidence suggests at least that few general conclusions can be made concerning these effects and consequences. It is clear, however, that there *are* consequences of aid that are not intended - and maybe not even foreseen - by the donors, and that some of these *might* be hindering economic growth and development. The first part of this thesis is a review of some of the contributions from economic literature on the effects and consequences of development aid on developing economies.

Some developing country governments might consider the negative effects of dependency on development aid as large. And even if they don't, a goal of growth, development and poverty reduction might lead to expectations of lower amounts of development aid flowing into the country in the future. Such expectations could lead the government to search for other sources of capital. An alternative way to finance public spending and investment for some countries receiving development aid, could be to enter international capital markets, and borrow money from commercial lenders.

The hypothesis laying grounds for this thesis is that inflows of development aid may hinder some developing countries from accessing commercial international capital markets. I analyze this hypothesis in a theoretical framework, building a stylized model of the interaction between a developing country, a commercial lender, and a donor of development aid. The main implication of the model is that - at least under some circumstances - the presence of an aid-donor *can* hinder the developing country from accessing the market, through increasing the riskiness of giving loans, perceived by the commercial lender.

1 Introduction

Among the challenges faced by the world today, many would argue that poverty - and distribution of assets and resources laying grounds for welfare - are the most important. Large parts of the world have seen unprecedented economic growth, and rapid improvements in living standards, during the previous century. Many countries that have lagged behind in this development, have been seen to catch up with the countries ahead, over the last decades. However, there are still many countries - a large part of them in Sub-Saharan Africa - that have not been a part of this. Large populations still live in deep poverty, and the road ahead is uncertain. Hopefully, this century will show that also these countries can to some extent escape poverty, and that it is possible to distribute our resources in a way that is more "fair" than what we see in the world today.

Development aid has been an attempt by the industrialized world to contribute to development and economic growth in other parts of the world. There exists a vast literature on different kinds of challenges for the recipient country, that might arise when they receive large amounts of foreign aid. The scope of this thesis is not to attempt to explain all the effects of inflows of aid in a developing economy, but to look at *one* potential problem that a government receiving such foreign aid might face. My hypothesis is that if a developing country government wants to enter international capital markets by issuing government bonds, they can be hindered by the mere fact that they receive foreign aid. I will put forward the argument that a potential commercial lender - the potential buyer of the bonds - might perceive the riskiness involved in buying the bonds as higher when the issuer receives development aid. In section 4, I build a theoretical model of the interaction between a developing country and a commercial lender, with and without the presence of a donor of development aid.

The first part of this thesis is a discussion and a review of the most relevant literature, on how development aid potentially affects the recipient economies. In section 2.1, I specifically focus on development aid in Africa, since many countries receiving large amounts of aid - and that have seen low levels of growth - are on this continent. I then look at a few specific issues concerning development aid, that are prevalent in economic literature, in section 2.2. The emphasis of this section

is on unforeseen - and possibly adverse - effects of foreign aid, which are not intended by the donors. The section investigates several possible explanations for the "lack of development" that has been seen in some countries receiving development aid over long periods of time. Section 2.3 provides a brief discussion of different ways in which the macroeconomy of the recipient country might be affected by inflows of development aid. Finally, section 2.4 provides a short summary of how development aid relates to economic growth and development.

In section 3, I look at commercial international capital markets, as a potential alternative for developing country governments to finance public spending and investment. Firstly,section 3.1 reviews some contributions from the literature on how flows of money in general may affect the recipient countries. Furthermore, section 3.2 and 3.3 discuss some features of these markets, and how development aid might potentially affect the possibility to enter the markets.

Finally, in section 4, I introduce the theoretical model, and discuss its implications. The model set up is presented in section 4.1, 4.2, 4.3 and 4.4. Subsequently, the main implication of the model, is discussed in section 4.5. In section 4.6, I relate the previous discussion to potential welfare effects of the existence of an aid donor in this set up. Lastly, section 4.7 introduces some relevant extensions to the model.

The main subject of this thesis is the potential effect of development aid on the access of developing countries to international capital markets. The opportunity to issue bonds, and in this way borrow money, in a commercial market, may by some countries be perceived as a better option than continued dependency on development aid. However, I will argue that foreign aid may in itself hinder access to the market, and some countries might thus be left "trapped". This is potentially one channel through which development aid might have adverse effects on growth and development in the recipient country.

When I discuss development aid, I do not very precisely state how I define this expression. Foreign aid is transferred in different ways, with different types of donors and with or without several types of conditionality connected to it. To clearly distinguish the effects and consequences of different kinds of development aid is out of scope for this thesis. A slight explanation is, however, needed here.

In my theoretical framework the term "development aid" should be viewed as some type of relatively unconditional transfers to the national government of the recipient country. Different kinds of projects directed towards specific groups, areas etc., or emergency aid, is thus not what I here have in mind. To keep the generality of the analysis, I do not specify this any further.

Development is another term frequently used in this thesis, with different meanings. The vast subject of how to define "development" or "economic development", will be left out of this thesis. However, I will use these expressions in the following sections, and some clarity is needed. When nothing else is specified, I will mainly refer to economic growth when using the term development. It is however clear, that in parts of my discussion, the effects mentioned may apply wider than only to pure growth in GDP. Thus I will keep the somewhat fussy term "development", to not reject this possibility.

2 Development Aid and Economic Growth

In "Was development assistance a mistake?", Easterly (2007) argues that the large amounts of development aid flowing from industrialized to developing countries over many decades, have not contributed to development, mainly because the prevalent assumptions regarding *how* to create development have not been the right ones.

After World War II, development aid has been given by loans and by grants, from different types of donors, to different countries, in different ways, and with different levels of conditionality. Inspired by the effectiveness of the Marshall Plan (The European Recovery Program); the actual ability of the United States to contribute to the rebuilding of Europe through large transfers, the industrialized countries of the West has attempted to support growth in the developing world by similar means. Besides, the threat from communism induced large and powerful economies to enter developing countries - with aid as one of their aims. In the rest of this thesis, I will focus on the large amounts of development aid that has been donated *after* the Marshall Plan.

Some countries which historically have received quite large amounts of development aid have also managed to generate economic development, among these some of the East Asian "Tigers". But more commonly - and perhaps surprisingly - growth rates in countries supposedly "helped" by foreign aid have been very low, some even negative. Among the countries of Sub-Saharan Africa, this tendency is striking. According to statistics from the OECD Development Assistance Committee (DAC); Benin, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Malawi, Gambia, Rwanda, Tanzania, Mozambique, Togo and Zambia are all among the group of countries receiving more than 10 % of their gross national income (GNI) in development assistance in 2009. As examples of extreme cases are Burundi (41.2 %), Democratic Republic of Congo (23.5 %), Liberia (78.3 %) and Sierra Leone (23 %, all numbers from 2009). In 2009, the total transfers from DAC-countries were according to the same source USD 120 000 million, 4 086 million of these came from Norway (OECD, 2010b,c).

According to Easterly (Easterly, 2007, p.329);

> Over the past 42 years, $568 billion (in todays dollars) has flowed into

> Africa, yet per capita growth of the median African nation has been close to zero.

Whether development aid is good or bad for development can of course not be understood by only comparing levels of aid with growth rates in developing countries. Economic growth in itself does not give a complete picture of a country's *development*, and even if economic growth is the focus of attention, a whole range of other factors than development aid obviously play important parts. In addition, the countries receiving development aid are not randomly chosen, which would make simple regressions give misleading answers to the question of whether economic development historically has been enforced or hindered by foreign aid. Nonetheless, there have been numerous attempts by economists to investigate this relationship, both theoretically and empirically. I will mention some of the contributions to this literature in the following. Though one cannot necessarily conclude that industrialized countries make matters worse in developing countries in their attempt to support development, many of the scientific studies in this area show that one should also be careful in drawing the opposite conclusion - that development aid will in general spur development.

Doucouliagos and Paldam (2008) provide a meta study on estimates of the effect of development aid on economic growth. On the basis of 543 estimates from 68 research papers, they find a small positive average effect. They emphasize, however, that the effect is statistically insignificant, and that the differences in results between studies are large. Their study can thus hardly be taken in favor of a positive view regarding whether development aid works or not. But even if the *average* effect of aid on growth rates is close to zero, there *are*, as mentioned, examples of countries that have seemingly made good use of foreign capital in the form of development aid, in supporting development. Burnside and Dollar published the highly influential "Aid, policies and growth" in 2000. They performed an empirical investigation of the relationship between foreign aid, economic policies and economic growth, and concluded that (Burnside and Dollar, 2000, p. 847);

> []aid has a positive impact on growth in developing countries with good fiscal, monetary, and trade policies but has little effect in the presence of poor policies.

Their findings resulted in a much larger attentiveness to how aid is allocated, and many donors and proponents of aid advocated the view that as long as domestic policies are "good", aid should be expected to give positive results.

Despite the somewhat optimistic view of Burnside and Dollar, later work has revealed several weaknesses of their findings. Easterly (2003) investigates the robustness and broader applicability of their results. He concludes that changes in the specifications of "good" and "bad" policies, "aid" and "growth", shows that the links found by Burnside and Dollar are not very robust, and the relationship between the effect of aid and economic policies in the receiving country is not as straight forward as many promoters of aid - supported by Burnside and Dollar - had been suggesting. Easterly's findings are based on both a review of other recent empirical work on this field, and on theoretical foundations for the connections between development aid and growth. Among the contributions referred to by Easterly is Boone (1996), who tests predictions regarding development aid effectiveness. Boone connects the effects of aid to the political regimes in the developing countries. Building a theoretical model, he suggests that lack of capital is not a crucial factor in countries with low growth, whereas distortionary economic policies put in place by policy makers, are. In this framework, development aid does not cause economic growth, because it does not change the incentives of policy makers, and as a consequence does not increase investment (rather consumption and the size of the government). These predictions are supported by empirical results, provided by Boone, showing no significant increase in investment when aid levels are high, and correspondingly no improvements in human development indicators, as a measure of benefits for the poor.

Hansen and Tarp (2001) to some extent confirm the lack of empirical evidence of positive effects of aid on growth. In addition to reviewing earlier empirical results, they use cross-country data, from countries both in Sub-Saharan Africa and on other continents, to look at the relationship between aid and growth in real GDP per capita. Their findings *do* show positive effects of growth, but are not robust, and are highly sensitive to both the choice of estimator and the set of control variables used in the regression. When controlling for investment and human capital, there seems to be no positive effect of aid. However, there might of course still be a positive relationship between aid and these two factors.

Roodman (2007) uses a similar approach, reviewing seven important papers investigating the aid-growth relationship, and testing robustness by slightly changing the specification choices. Roodman argues that since aid-growth regressions can be specified in so many different ways - and the choice of specification must to some extent be arbitrary - one could potentially get large discrepancies in results as a consequence only of specification. The conclusion he provides is that all results investigated appear fragile, and Roodman states that (Roodman, 2007, p. 275);

> Despite decades of trying, cross-country growth empirics have yet to teach us much about whether and when aid works.

Since other factors such as institutions, policy, domestic savings and investment, inequality etc. are of course decisive for development and economic growth, and also in various ways connected to development aid flows, it seems difficult to pin down explicit results regarding the ceteris paribus relationship between aid and growth, on the basis of empirical testing.

2.1 Development Aid in Africa

In Sub-Saharan Africa, growth rates have been especially depressing over the last decades. While there has been seen rapid economic growth in several Asian countries since the 1960's, the challenges posed by poverty and lack of development are still overwhelming in Sub-Saharan Africa. According to OECD statistics, some of the "worst cases", over the last decade has been Côte d'Ivoire (with average annual real GDP growth over the period 2001-2009 of 0.9 %), Eritrea (0.8 %), Guinea Bissau (1.1 %), Liberia (1.3 %) and Togo (1.8 %), not to mention the extreme case of Zimbabwe, who has had an average annual growth rate of real GDP of - 5.4 % over the period 2001 to 2009 (OECD, 2010a).

At the same time, several of these African countries have been the recipients of ample levels of development aid. There is a vast scientific literature, also in economics, attempting to explain the low growth levels in Sub-Saharan Africa, and the failure of development aid to change the trend. Both theoretically and empirically, economists have explored different ways in which development aid is connected to economic growth and development. Questions asked are such

as whether aid lowers or increases saving and investment, whether it creates or hinders financial development, whether it affects government's size or policies, or changes other important institutions etc. In summary; how does development aid affect options, opportunities and incentives of policy makers and other agents in the economy, in ways that affect economic growth and development?

To understand the foundations and motivation for development aid in the past, would be a starting point in trying to answer these questions. Dollar and Easterly (1999) look to the ideas that have laid ground for development aid in Africa over time. They argue that there has historically been two main "keys" to how aid could provide growth. The first is through increased investment. If aid can finance investment, and increased investment is crucial to economic growth, it would be plausible that aid *could* result in higher growth rates. However, when testing the relationship between aid and investment empirically, they do not find support for the hypothesis that development aid does in fact increase investment. The second "key" is aid-induced policy reform. Reforms of policy can be costly, and aid could potentially give developing country governments the opportunity to reform in a way that would enforce growth. Neither in this area do they find support for such positive effects of aid in empirical data. Dollar and Easterly conclude that a large part of the differences in economic performance and growth can be explained by differences in economic policies. However, reforms do not seem to be dependent on, or strongly influenced by, development aid.

As a preliminary conclusion, the scientific evidence regarding how development aid have influenced economic growth in Sub-Saharan Africa, must be said to be inconclusive.

Not only is it more than unclear in which ways aid affects incentives and possibilities of the government and the private sector, and which factor determines these effects, but it is a topic in itself to attempt to understand which other factors are important in creating economic growth. And not least to develop an understanding of why some countries have seen such low - or even negative - levels of growth, while others have managed to pull large parts of their population out of poverty during only a few decades. Sachs and Warner (1997b) provide an econometric investigation of the sources of slow growth in Sub-Saharan Africa. Firstly, they conclude that one do not need "special" explanations for this continent. The

factors hindering growth there, are mostly factors that are associated with low growth also elsewhere in the world. Poor economic policies, such as lack of openness to international markets and trade, the lack of appropriate institutions to support the market-economy, too little government saving etc., contribute to slow growth in countries both in Africa and on other continents. Geographical factors, such as tropical climate, and a large amount of the population not having access to the sea, are also known obstacles to growth. Though some of these factors are more prevalent in Sub-Saharan Africa than on any other continent, the effects on growth are also seen elsewhere. Nevertheless, it is clear that factors special to Sub-Saharan Africa may actually be parts of the explanations behind the proximate hinders of growth. Examples of such factors specific to the continent are the colonial legacy, and the ethnic divisions that are especially apparent in Africa. They also conclude that quantitatively, the lack of good institutions and appropriate policies are more important in explaining slow growth, than are geographical and other "predetermined" factors. This in some sense gives room for an optimistic view regarding growth in Sub-Saharan Africa; as opposed to the fact that a country is land-locked, the lack of good policies has the potential to be changed.

As a final note to this section, I would like to emphasize that there are clearly important factors connected to economic growth and development in Sub-Saharan Africa that I do not discuss in this thesis. Among them are the high prevalence of conflict and civil war that has been seen on this continent. I will touch on this subject superficially in some of the following sections, but mainly I leave it out of the scope to explore the explanations and consequences of devastating conflicts in Africa. Furthermore, it is obvious that the terms of trade faced by African countries, have largely contributed to the lack of growth in many countries. Though clearly connected to policies implemented in many donor countries of development aid, I leave this subject to be explored by others.

2.2 Perspectives on Aid, Institutions and Development

To have some ideas of what factors determine economic growth is crucial in trying to understand why development aid has not managed to create growth in many countries. If institutions and economic policies are important factors in deter-

mining whether a country will experience economic growth, it is vital to develop an understanding of how foreign aid changes - or has the potential to change - governments, policies and institutions.

In the following, I will touch on some of the mechanisms that have obtained focus in the economic literature attempting to explain the perceived lack of effectiveness of development aid.

2.2.1 The Samaritan's Dilemma

Industrialized countries, private companies, NGO's, and other aid organizations, might have a large range of underlying reasons for what seems as an attempt to "help the poor". The donors do in some cases have more or less hidden economic motives, there are in many cases international political reasons or a need for "goodwill" lying behind development aid. Furthermore, as people living in a developed country, most of us do to some extent get a "better conscience" knowing that we at least tried in some small way, to make matters better for people being less lucky than ourselves. However, at least some of the flows of money reaching developing countries, could be argued to be given on the basis of some sort of "altruism". A philosophical discussion of whether altruism is something that do in fact exist or not, is not in place here, but many people - and countries - do seemingly donate money because they "want to help". The change in incentives for some agents in an economy, caused by such altruism in other agents, and the lack of possibilities to commit to a certain behavior in the future, has been the foundation for the literature on a phenomenon now known as the "Samaritan's dilemma". Buchanan (1975) was the first to name this phenomenon or problem, which has been investigated further by several economists and other social scientists.

Among them is Coate (1995), who develops a theoretical model that shows how altruism of rich individuals in an economy can create inefficiency through changing the incentives of poor individuals to buy insurance against a possible future loss. This model could also be related to development aid, where aid organizations are the altruistic rich. By changing the incentives of the recipient government, donors of development aid might actually induce them to not carry out policies that would enhance the prospects for economic growth. In Coate's model, there

are three individuals, two rich and one poor, in addition to a government. The rich people are altruistic, in the sense that they care about the utility of the poor. The poor individual is risk-averse, and faces two possible states of nature in the future, one "bad" and one "good". He has the opportunity to buy insurance against the bad outcome. Before the outcome for the poor individual is realized, the rich has the possibility to transfer some amount to him. The government is at place to collect taxes from the rich, and redistribute to the poor, to remove the free-rider problem of the two rich people, and thus chooses to redistribute the optimal amount - according to the utility of the rich people. The inefficiency occurs because the two rich people also have the opportunity to make transfers after the outcome has been realized. Because the poor individual knows that if a bad outcome is realized, he will have further transfers from the rich, his incentives to buy insurance are weakened. The inefficiency arising here is due to the fact that the level of "insurance" is not chosen by the poor itself, but by the two rich people, who also face a free-rider problem in deciding their transfers after the outcome is realized. This problem would be removed if the rich had the possibility to commit to giving no transfer after the outcome is known. Coate also shows that the government can remove the inefficiency by publicly providing the insurance to the poor.

The parallel to development aid should be obvious. If the government of a developing country knows that "altruistic" aid organizations will increase the assistance in case of "bad outcomes", their incentives to reform policy in directions that would enhance growth, or provide "insurance" against bad outcomes, are lowered. Even though donors of aid might see this problem, it is not clear that they would be able to commit to not "helping out", in the case of a bad outcome, such as sustained low growth, and high levels of poverty and inequality.

Pedersen (2001) analyzes explicitly how the incentives of recipient governments can be affected by development aid. His conclusion is that, through the channel of bad incentives, aid organizations can actually worsen income distribution, and even increase poverty, by providing development aid. He argues that the recipient governments adapt in order to "qualify" for aid, and that these problems might be even more severe if the aggregate aid budget is perceived as endogenous by these governments.

It is clear that incentives of many different agents in a developing country could be affected by incoming development aid, in ways that are not intended by the donors. Not only incentives for good policies or policy reforms, but a farmer's incentives to take care of his land, parents' incentives to send their children to school, the incentives a small-scale business owners to invest in human or real capital, and so on, might be changed. Even more directly, development aid might potentially be quite harmful to productive activity. A good illustration of such adverse effects can be found in Dambisa Moyo's book "Dead Aid" (Moyo, 2010, p. 44);

> There's a mosquito net maker in Africa. He manufactures around 500 nets a week. He employs ten people, who (as with many African countries) each have to support upwards of fifteen relatives. However hard they work, they can't make enough nets to combat the malaria-carrying mosquito. Enter vociferous Hollywood movie star who rallies the masses, and goads Western governments to collect and send 100,000 mosquito nets to the afflicted region, at a cost of a million dollars. The nets arrive, the nets are distributed, and a "good" deed is done. With the market flooded with foreign nets, however, our mosquito net maker is promptly put out of business. His ten workers can no longer support their 150 dependents (who are now forced to depend on handouts), and one mustn't forget that in a maximum of five years the majority of the imported nets will be torn, damaged and of no further use.

This short story illustrates that effort to improve a bad situation - even though maybe effective in the short run - can have severe consequences in the long run. Such effects as those described here, are probably in reality mostly connected to emergency aid, most aid organizations are aware of the danger posed by these sort of interventions. Still, the story illustrates the fact that the effects of aid are more complicated then they might seem, and that there clearly exists consequences that are not intended, and in many cases not foreseen, by the donors.

Finally, it is not difficult to connect Moyo's story to adverse incentive effects potentially posed by development aid. It should also be evident that not only does the foreign mosquito nets put the net maker out of business; frequent interventions

of this kind would probably teach entrepreneurs like the net maker and his peers, to not even try to go *into* business.

2.2.2 The Resource Curse

In the previous section, I briefly discussed adverse effects on incentives potentially created by development aid. Distorted incentives leading to inefficiency by poor allocation of resources, occur for a large number of reasons, and in many different ways. I will here continue this discussion of incentives and resource allocation, from a slightly different angle.

In the economic literature, it has been recognized for some time that the access to valuable natural resources is negatively correlated with economic growth. In the literature, this is commonly referred to as the "Resource Curse". There has been a substantial effort by economists to explain this seemingly paradoxical fact; that where there are large amounts of natural resources, there is, in general, low economic growth. Waist of resources to rent-seeking, perverse incentives of policy makers, deterioration of institutions, and high levels of conflict or war induced by the access to such values, are among the possible explanations. It is possible that development aid might work in similar ways as such natural resources. After all, development aid must also be considered a windfall resource, not directly dependent on productive activity in the recipient country. If this is the case, to understand the possible explanations for the "Curse of natural resources" could contribute to the understanding of the effects foreign aid has on the recipient countries and economies.

Sachs and Warner (1997a) and Sachs and Warner (2001) provide empirical evidence of a negative relationship between access to natural resources and economic growth. In the earliest of these two papers, they find that countries with a high ratio of natural resources to GDP in 1970, tended to grow slowly during the period between 1970 and 1990. They follow up on these results in their paper from 2001, by attempting to summarize results from previous research on the subject. From this investigation, they consider the evidence in favor of a resource curse quite strong. Furthermore, they investigate explicitly whether other factors, such as geographical or climate variables, may explain the negative correlation, and

find no evidence supporting that hypothesis. As a major explanation of the curse, Sachs and Warner suggest crowding out of other activities that drive growth. They argue that countries with high export of natural resources, tend to be high-price (and thus high cost) countries, and activities such as manufacturing, education and innovation suffer from this. But as we shall see, this is not the only way economists have suggested that valuable natural resource exports may adversely affect an economy.

A review of the most common explanations of the resource curse, by both economists and political scientists, is provided by Ross (1999). As Sachs and Warner, he emphasizes out-crowding of other sectors, as an important explanation from economic literature. The argument is that appreciation of the exporting country's real exchange rate leads to capital and labor being drawn away from the country's manufacturing and agricultural sector by raising the production costs, also known as the Dutch Disease. However, Ross points out that this explanation does not fit all developing states; many of these countries have surplus labor, and thus resource exports do not necessarily lead to higher wages. In addition, many countries have other sectors that import intermediate goods, and these sectors actually benefit from an appreciation.

As other explanations for resources not giving rise to economic growth, provided by economists, Ross emphasizes the instability of international commodity markets; giving unpredictability in government revenues and high levels of risk concerning private investment, and finally; poor linkages between resource and non-resource sectors, and lastly a decline in the terms of trade for resource exporting countries. Finally, he discusses explanations most commonly provided by political scientists, mainly connected to political aspects and poor management of the resources by governments. He divides these into three categories. The first is "cognitive explanations"; the argument is based on resource wealth causing a type of myopia of both policy makers and private actors in the economy, giving little growth in the long run. Secondly, he emphasizes "societal explanations", focusing on how resource booms can give power to non-state actors in the economy that have incentives of favoring growth-impeding policies. Ross points out that there is little empirical evidence, and several theoretical problems connected to both these two types of explanations. The third type of explanation is "state-centered".

Governments in resource rich countries can choose policies that potentially would give them higher support, but might be hindering growth in the long run. One example is that the government do not have to extract the same amount of money through taxes - when export revenues are high - and this could lead to a weaker link to the society governed, thus decreasing the pressure to provide good policies.

There has generally been a large focus on the political economy that is clearly connected to natural resources. As suggested also by Ross, effects on both willingness and ability of policy makers to provide sustainable and growth-enhancing economic policies are potentially severely affected by large windfall resources such as export of a natural resource. Auty (2001) makes use of and develops a theoretical framework for modeling competitive industrialization, in an attempt to investigate analytically how growth can be affected by natural resources through the political state. His analysis suggests that what he calls a "developmental state" is firstly a necessary condition for growth, and secondly associated with a poor natural resource endowment. A developmental state to Auty has two important characteristics; the state has sufficient autonomy to be able to pursue a sound and coherent economic policy, and the state sees it as its aim to raise welfare in the society in the long run. He argues that large values in natural resources undermines these two characteristics because scarce resources is necessary to put pressure on the government to allocate the resources efficiently, and thus promotes investment in human and social capital, and promotes efficient markets. In addition, pressure on land and other resources creates low tolerance in the whole society for rent extraction and redistribution to a small minority. Countries with large natural resources are also, according to Auty, more prone to promote policies that hinder international trade - which again will hinder growth in the long run - because they could experience Dutch Disease effects. These effects on incentives of the policy makers together might lead to failure of the government to implement sustainable policies that would promote economic growth, when they have access to high revenues from a natural resource.

Robinson et al. (2006) take a similar approach, by building a model of resource extraction, to try to explain the "curse". They investigate whether resource booms can trigger incentives for policy makers that might have negative effects on growth and development. Based on their analytical framework, they argue that incentives

related to re-election can lead to dysfunctional state behavior; some examples are over-extraction of the resource, and inefficient levels of redistribution to influence elections. Their model also emphasizes the importance of the quality of institutions, because high quality institutions might limit the ability of politicians to implement policies and redistribute wealth in ways that are destructive for development.

As already mentioned briefly; when there is a potential for very high revenues, there is also potentially a higher risk of large amounts of resources being allocated into "redistribution" of these revenues, through rent-seeking or grabbing. Torvik (2002) develops a model where an exogenous increase in income - in his model perceived as coming from export of a natural resource - results in a decrease in the number of entrepreneurs engaged in productive firms because rent-seeking becomes more profitable. Torvik shows that the decrease in income due to less productive activity may be higher than the exogenous increase in income, and thus the natural resource export may lead to a drop in aggregate income. Quite similarly, Baland and Francois (2000) investigate under what conditions resource booms induce increases in rent-seeking activities, and under what conditions it leads to increased entrepreneurship, by the use of theoretical modeling. Using their analytical framework, the authors conclude that whether an increase in income from a natural resource leads to increased rent-seeking activity or not, depends on the initial situation - or equilibrium - in the economy. An economy with low levels of entrepreneurial activity initially, might see increased levels of rent-seeking activity as a result of a resource boom. This theoretical framework can also contribute to the understanding of extensive differences in outcomes between economies that seem quite similar, due to the multiple equilibria possible.

It should be obvious - and Torvik also explicitly mentions this in his paper - that development aid flowing into a country might have similar effects on the economy as a natural resource. Export revenues from natural resources and foreign aid are similar "phenomena" in the sense that they are sources of income that do not arise directly from productive activity in the economy. Neither do any of the two income sources to a high extent depend on whether policy makers make the "right" choices. It is a paradox that valuable resources in so many cases do not decrease poverty, but scientists or economists can still not overlook the resource

curse. Similarly, both scientists and aid organizations are obliged not to disregard and ignore possible effects of the same kind, of development aid.

Lastly, it has been argued that whether a natural resource is a curse to a country or not, depends crucially on the quality of the country's institutions. Norway is of course a prominent example of a country that did not experience high levels of rent-seeking, increased corruption, deterioration of other institutions, or civil war, as a consequence of discovering large values in the form of oil and natural gas. It is clear that already existing sound economic policies, low levels of poverty, the ability to enforce property rights, and high quality of institutions on many levels, can contribute to the explanation of the way our small country has handled its natural resources.

Mehlum et al. (2006) investigates analytically how the effects of resource abundance is connected to the country's institutions. They also test the predictions of their model empirically, and their results suggest that different quality of institutions is an important determinant to whether countries are able to generate development when they get access to values from natural resources. Boschini et al. (2007) also show by empirical investigation that the impact of a natural resource on growth *does* depend on the quality of institutions. Besides this, their results indicate that the interaction between resources and institutions is also highly dependent on the type of resource the country has access to.

If it is so that a country to some extent needs to be "developed" to avoid the resource curse, and that development aid might also be "cursed" in a similar way as natural resources, it is maybe not so paradoxical after all that development aid does not do the trick in creating economic growth. By its means, development aid is in most cases transferred to countries that are not developed; the recipient countries might not be able to use such flows to create growth, in stead the aid potentially results in rent-seeking, corruption and deterioration of policies and institutions.

2.2.3 Institutions, Policy and Development Aid

In the last section, I discussed how export of natural resources have been seen to correlate negatively with economic growth. I also argued that one cannot rule

out the possibility that development aid might work in similar ways as income from natural resources. Among the proposed explanations for the curse of natural resources, was the potentially negative effects of a windfall resource (such as a natural resource *or* development aid) on institutions and policies in the recipient country. In this and the following sections, I will look specifically at how development aid might be influencing and interacting with policy makers and economic policies, institutions, and incentives for rent-seeking. Finally, I will discuss some possible macroeconomic effects of foreign aid.

Sound institutions and economic policies are probably crucial for economic growth in developing countries. If development aid undermines such institutions and policies, or hinders reform that would improve their quality, the consequence would be that foreign aid may obstruct growth. Djankov et al. (2008) empirically investigate whether they can find support for the hypothesis that development aid, as a windfall resource, may result in a "resource curse", using panel data for 108 countries receiving foreign aid in the period 1960-1999. Specifically, they assess the impact of foreign aid on institutions in the recipient country. Their results strongly suggest that there is a negative impact of aid on institutions. In their sample, the countries receiving the 10 % highest rates of foreign aid to GDP, see a 0.5 to 1 point decrease on a 10-point democracy index, which is a large effect. As a comparison, they do a similar analysis of effects of oil rents on political institutions, and conclude that "aid is a bigger curse than oil" (Djankov et al., 2008, p. 169).

As mentioned also by Ross (1999) discussed above, Schwalbenberg (1998) also argues - with basis in a theoretical model - that to increase its political support, a government receiving foreign aid will reduce taxation of the rich population (either by lowering tax rates directly, or by giving subsidies to specific groups), which increases support for the regime. As is well-known, taxes are distortionary, so Schwalbenberg does not conclude that this tax reduction is necessarily a "bad" policy. However, the model shows that incoming flows of aid may at least *change* economic policies. Potentially, lower tax levels can lead to lower accountability of the government towards its citizens, and thus reduce the pressure on the government to perform policy reform, and redistribute in a manner that would gain the economic development in the country. When testing the predictions of his model empirically, Schwalbenberg finds, however, little significant evidence suggesting a

strong connection between foreign aid and distortionary economic policies. His empirical results do thus stand in opposition to those of Djankov et al. (2008). The findings of Schwalbenberg also contradict the results of Knack (2001), who by by using his findings from cross-country data allege a strong negative relationship between aid levels and quality of governance. Knack measures quality of governance by indices of bureaucratic quality, corruption, and the rule of law, from the International Country Risk Guide (ICRG). The coefficients on aid are negative, and they are also highly significant. When foreign aid is removed from the regression, the R^2 is significantly lowered, suggesting that aid explains a large part of the variation in the government quality variables, in Knack's sample. When instrumenting for aid to control for possible reverse causality, the relationship between aid and governance actually seems to be strengthened. Furthermore, Knack's results do not provide evidence that the initial condition of government quality is essential.

Knack also reviews earlier empirical evidence on the relationship between foreign aid and the quality of governance, and concludes that (Knack, 2001, p. 314);

> this evidence on balance provides support for the more pessimistic [theoretical] predictions regarding aid's impact

In attempting to understand the underlying mechanisms behind this empirical relationship, Knack emphasizes five important factors. Firstly, he argues that the governments' accountability might be weakened when they have access to foreign aid. As I have mentioned earlier in this discussion, many governments use the opportunity to relief the tax pressure, and to subsidize groups to gain their political support. This creates a weaker link between the population and the government. Such changes in tax policy, and the lack of immediate pressure on resources, may reduce the pressure on the government to reform inefficient policies and institutions. Furthermore, as I have mentioned several times already, foreign aid encourages spending of resources on rent-seeking, and corruption. Even worse, aid funds may create devastating conflict over control.

Leaving aside the economic institutions, and looking specifically at the fiscal behavior of governments, Khan and Hoshino (1992), provide an empirical investigation of how development aid affects policies in five South and Southeast Asian

countries. Specifically, they consider public investment, public spending and taxation. They argue on the basis of their results that aid is taken as an increase in income, and leads to an increase in consumption. Furthermore, the average propensity to consume seems to be less than one, thus there is also some increase in investment. This increase in investment is however highly dependent on whether the foreign aid is given as a grant or a loan. Investment is higher when the recipient country is given a loan, suggesting that quite different incentives are in place when the country is expected to repay at a later point in time. Supporting this view, evidence also shows that taxation is increased in the case of loans, while lowered by grants.

Several others have investigated how policy and institutions are affected by development aid. Brautigam and Knack (2004) emphasize the fact that good governance is a public good, and thus there are too low incentives to provide it, since the benefits are non-selective. They discuss both the impact of aid on the quality of governance in general, and how aid delivered in different ways might give different results. When testing their hypotheses concerning these issues, they find a robust statistical relationship between high levels of foreign aid and deterioration of governance in Africa. In this paper, high quality governance includes a well-functioning bureaucracy, adherence to the rule of law, low levels of corruption, and good and sustainable management of the generation of public expenditure and revenue. Based on the evidence, Bräutigam and Knack also conclude that high levels of aid are strongly related to lower rates of taxes to GDP, with effects such as those discussed above. Although the empirical framework of Bräutigam and Knack is not explicitly designed to establish strong causal relationships, their results suggest that some ways to transfer development aid might have detrimental effects on the recipient economy.

Moss et al. (2006) provide a review of earlier literature from economists and political scientists on effects of aid on institutions and policies, and one of their conclusions based on empirical evidence is exactly that aid might decrease the need of the government to collect taxes, which subsequently lowers their need to maintain legitimacy. The authors argue that such states are less likely to develop good institutions.

A further investigation of foreign aid and governance in Africa is provided by

Goldsmith (2001). In opposition to the main conclusions of most of the papers discussed above, he finds little evidence in support of severe negative consequences of aid on the quality of governance, measured by Goldsmith as the "ability to make collective decisions democratically and to produce a capitalist institutional and legal framework" (Goldsmith, 2001, p.124). However, neither can his results be said to show that development aid has strong positive impact on these measures.

One specific area often discussed in connection to the effects of development aid on governance and institutions, is corruption. Though it is not clear that all kinds of corruption hinder economic development and growth, high levels of corruption do have the potential to be severely damaging. Mauro (1995) is among the empirical investigations concluding that high levels of corruption are strongly associated with low levels of economic growth. Of course, the direction of causality is not necessarily obvious here, but still; if foreign aid *can* lead to higher levels of corruption, donors should clearly be aware of this.

One paper suggesting that there might potentially be a causal relationship from inflows of development aid to corruption, is Andvig and Moene (1990). Andvig and Moene do not primarily focus on aid, but they build a theoretical model in order to explain how there might be several (self-fulfilling) equilibrium levels of corruption in an economy. On the basis of their model, they argue that when the "personal cost" of partaking in a corrupt act is different for different individuals in the economy, and because of this, shifts in exogenous variables such as the benefits from corruption or the punishment if being caught, might shift the economy from one equilibrium to another. Potentially, high levels of development aid flowing into a developing country, might thus move the economy from an equilibrium with a low level of corruption, to an equilibrium with a high level.

Tavares (2003) investigates the relationship between foreign aid and corruption empirically. Using indicators of the recipient country's geographical and cultural proximity to OECD donor countries, in interaction with the outflows from these OECD countries, as instrument for aid, Tavares actually finds a negative effect of aid on corruption. To the contrary, empirical results from Alesina and Weder (1999) suggest the opposite relationship. However, Alesina and Weder mainly investigates whether donors favor countries with lower levels of corruption, so no strong conclusion can be drawn from this.

Clearly, development aid is connected to governance and economic policies and institutions in a complex manner. The scientific attempts to understand the relationship does to some extent give differing answers, and it should be obvious that the effects depend crucially on characteristics of the recipient country, and on how the foreign aid enters the economy. However, those mentioned here, and other contributions from economic literature, should provide us with caution regarding the multifaceted ways in which our "aim to help" might affect the recipient economies in ways not intended by the donors.

2.2.4 Development Aid and Rent-Seeking

In the preceding section, I have discussed how policies and institutions might be affected by development aid. These effects work mainly through changed incentives of policy makers. Obviously, aid do not only have the potential to give perverse incentives to policy makers, but also to change incentives of private actors in the economy. Larger incentives for private or public actors in the economy to spend resources on rent-seeking or grabbing might be very harmful in an economy where resources are in from the outset relatively scarce. Increased amounts of resources allocated to rent-seeking was one of the possible explanations of the resource curse, that I mentioned in section 2.2.2 If revenues from export of a natural resource can increase rent-seeking activity, foreign aid flowing into a developing country could potentially have similar effects. Svensson (2000) uses this approach in a game-theoretical attempt to explain why the effects of aid on development seem to be so poor. One implication from his model is that the provision of public goods - and productive public spending - may be lowered by the increase in government revenue by foreign aid. Svensson also argues, on the basis of the model, that even the *expectation* of a windfall resource such as aid, might have similar effects. In addition to this analytical contribution, Svensson offers empirical evidence, suggesting that aid might give higher levels of corruption.

Murphy et al. (1993) offer a contribution to the understanding of how rent-seeking - that might result from, or be increased by, revenues from for example development aid - is so harmful to economic growth and development. They emphasize two reasons why this type of activity might have severe negative conse-

quences. Firstly, they argue that rent-seeking activities exhibit increasing returns to scale, which might give several equilibria in levels of rent-seeking. Rent-seekers have a "strength in numbers", because of lowered probability of getting caught, and due to the fact that such offenses in itself creates demand for new offenses. A relatively small increase in rent-seeking might thus lead the economy onto a path with continuing increases in non-productive activity, and eventually to a new equilibrium where much less resources are allocated to productive purposes. Especially, their model shows that even though both production and rent-seeking exhibit diminishing returns technologies, the relative returns from rent-seeking may increase in the activity itself. Secondly, Murphy et al. point to the fact that especially public rent-seeking, is likely to be more harmful to innovative activity than directly to production. Innovative activity is crucial to development in a somewhat longer time perspective, thus such effects might be important in order to understand the lack of growth in some developing countries.

I have until now primarily focused on contributions from the literature regarding potential effects of development aid that can be explained by microeconomic reasoning. In the next section, I will briefly discuss some macroeconomic effects of foreign aid flowing into a developing country.

2.3 Macroeconomic Instability

Large inflows of money to a country; from foreign investors, export revenues, development aid etc., might potentially have adverse effects on the macro economy. Such flows may lead to a real appreciation of the domestic currency, to higher levels of inflation, to crowding out of specific sectors and so on. Whether these effects are destructive to economic growth of course depends on a whole range of factors, among them; whether the speed of the changes is too high, whether the recipient economy has the possibility to adapt to the changes, and whether the changes at some point in time have to be reversed. Both in Asia and Latin America there have been large crises, with galloping levels of inflation, and economies out of control. Especially the East Asian crisis in the 1990s has been attributed to financial and capital market liberalization, and the instability that followed.

Capital flows from foreign countries into an economy take many different forms.

They range from multilateral aid transfers, through government lending (issuing of government bonds) and bank loans, to Foreign Direct Investment. The different characteristics of such flows result in different consequences for the recipient economy. Largely volatile short-term speculation flows of course affects the economy in ways different from for example Foreign Direct Investment, that has been seen to be of a much more stable and long-lasting character. Stiglitz (2000) reviews the main arguments for and against capital market liberalization. His discussion gives some important insights into what effects one can expect from incoming flows as a result of such liberalization. Because the effects of flows that are more volatile, are the most unclear, Stiglitz focuses his analysis mainly on such flows; flows that are speculative and short-term.

There are, according to Stiglitz, two important ways in which one would expect capital market liberalization to enhance economic growth. Firstly, one could expect efficiency to be increased by the opening up for foreign investment inside the country, or domestic investment in businesses outside the country. This is the obvious analogy to opening up for trade; capital should go where it is most productive, and should not be hindered by sovereign borders. To some degree, competition for funds should increase the efficiency and innovation in domestic firms, and create an economic environment that is attractive to investors. Secondly, open capital markets give a new possibility for diversification of risk, that could work stabilizing on the economy.

Stiglitz criticizes all these arguments to some extent, but mainly, he argues that liberalization of capital markets creates instability, rather than stability. He emphasizes that capital markets are in important ways different from standard goods markets, and this leads to other effects of open capital markets, than those seen from ordinary opening for trade in goods and services. The main difference is, according to Stiglitz, the large lack and asymmetry of information in capital markets. This leads to foreign investment being highly procyclical, thus increasing the macroeconomic instability experienced by the countries receiving the flows. Subsequently, the increased instability discourages further investment, and this could be harmful to growth in the developing economy. Stiglitz's arguments are coherent with the fact that when capital markets have opened, one have seen increasing levels of capital flowing *out* of developing countries, as opposed to the

predictions from economic theory where the lack of capital in these countries should create opportunities for high returns on investments.

Corbo and Hernandez (1996) provide a comprehensive overview of the typical macroeconomic effects of capital inflows, related to the Mexican crisis in December 1994. They investigate the experiences from four Latin American, and five East Asian countries from 1986 to 1993. The effects they emphasize are appreciation of the real exchange rate, larger trade deficits, and very high levels of inflation in countries with fixed exchange rates.

Clearly, the experiences of several developing countries, suggest that inflows of foreign capital do not only increase productivity and efficiency by leading to investment in sectors with high returns.

Potentially, development aid flowing into a developing economy might have adverse effects similar to those discussed above. Younger (1992) considers this hypothesis, by looking directly at inflows of capital from donors of development aid. Two main macroeconomic problems surface in his investigation. Firstly, such flows might give a large appreciation of the real exchange rate, and this often happens through domestic inflation rather than appreciation of the nominal exchange rate. Secondly, and of course connected to this, the private sector might be crowded out as a result of the inflows. Since the government is most often the recipient of development aid, the aggregate demand for domestic goods and services is increased, and this leads to higher costs in all sectors. Younger also argues that both these problems have been seen in Ghana, which has been a large recipient of foreign aid. However, Younger emphasizes that whether these changes are purely negative to domestic economic growth is not clear. The most important factor here is whether the flows of capital into the country are relatively stable or not. The serious problems surface when a recipient country faces large declines in inflows, that forces a reversal of the changes in the domestic economy.

2.4 Does Development Aid Create Growth?

In the preceding, I have discussed different ways development aid might affect economic growth and development, and mainly ways that are not necessarily intended - or even foreseen - by the donors. Firstly, I focused on development aid in

Sub-Saharan Africa, and the general economic situation on this continent. I then moved on to how development aid might affect institutions, policies and resource allocation, touching on both the Samaritan's Dilemma and the Resource Curse, as potential pitfalls for aid donors. Lastly, I mentioned some macroeconomic effects that have been seen to follow from flows of development aid.

It is clear from the preceding discussion that development aid affects the recipient economies in many different ways, and that many consequences of such flows are neither desired, nor predicted, by the donors. When the Marshall Plan and the recovery of Europe after World War II is set aside, the historical empirics cannot be said to support those arguing that aid is the way to create development. Even though one should probably not totally discard the opportunities of creating a world with smaller differences through redistributing between rich and poor by development aid, there should be a larger focus on other ways in which the poor countries of today could manage to create economic growth and development.

At the same time, it is obvious that there is a large need for capital to finance the building of infrastructure, institutions, education etc. in many countries of the world today. So the question is then whether there are other sources of such financing that might "work better" than development aid has been seen to do. One possibility would be for these countries to borrow money in commercial capital markets. Could this way of financing government spending and investment create other - and maybe better - incentives for agents in the developing economy, that would give better preconditions for economic growth?

I will attempt to give some indications of the answers to these questions, but firstly, I will in the next chapter discuss some characteristics of international capital markets.

3 Alternative Financing of Development

A number of developing countries, especially in Sub-Saharan Africa must be said to be dependent on development aid. Some countries have for several decades covered substantial parts of their public budgets through foreign aid (see examples in section 2). This dependency - leading to potential pressure from donors influencing decisions and policies, and lack of autonomy for the recipients of development aid - might be seen as a heavy weight by both governments and the general population in these countries. From the discussion in section 2, it is clear that there are potentially a whole range of damaging effects of the large amounts of aid flowing into these economies.

However, there is an obvious need for finance in many developing countries. Investment in infrastructure, human and real capital etc., is highly necessary to spur development. Furthermore, policy reform, the building of strong institutions, and the development of profitable and sustainable industries may be costly, and difficult to accomplish with budgets only built on domestic revenue. Thus, the emerging question is whether there are alternative possibilities for developing country governments to finance these investments in future development.

One obvious way to raise funds is for countries to borrow money in international capital markets. In principle, governments can issue government bonds, and with a promise to repay, foreign money can be used to finance whatever is needed. Potentially, this might be an opportunity for countries highly dependent on development aid, to get rid of this dependency.

If a developing country government perceives inflows from commercial loans as less harmful to the economy than developing aid, there might be several ways in which positive effects of reducing aid-dependency might be self-enhancing. Not only may a transition from being an aid-recipient to being a borrower in commercial markets have positive effects through reducing problems directly connected to aid flows, it might also affect the economy more indirectly. When budgets depend on such loans - rather than grants or loans with long repayment periods and low interest rates - there is evidently a more heavy pressure on governments to create economic environments that foster productivity and efficiency. When loans shall be repaid, and defaults have more severe consequences, the money must be used

in ways that makes repayment possible. Furthermore, to get access to such loans, the country must to some extent have financial markets that are well-functioning, and development of these markets might in itself support domestic productivity and economic growth.

Levine (1997) investigates the quantitative relationship between financial development and economic growth, and his results suggest that there is a complex relationship between the two. There seems to be a positive correlation between growth rates and the development of the financial system, and this might not be caused only by financial development following economic growth. Levine argues that enhancement of the financial system might in itself contribute to growth.

There is also reason to believe that when foreign investors put their money in government bonds in a developing country, this might increase the amounts of other types of capital inflows reaching the country and the economy. If the lack of capital - and low levels of investment - is a determining factor to low growth, Foreign Direct Investment (FDI), as an example of such flows, might be growth-promoting. I will return to this in the following.

However, is there reason to believe that the challenges discussed in the first chapter of this thesis, will not be the same when the inflows of money are commercial loans rather than development aid? My hypothesis is that the answer to this question is yes; for several reasons, there might be less adverse effects of inflows when these are commercial. In the following, I will put forward some arguments for why I believe this might be the case. Firstly, I will relate the discussion to the specific issues discussed in the last chapter. Following this, I will discuss some contributions from economic literature on the effects on developing economies of inflows of foreign capital - and the development and opening up of financial markets - in general.

3.1 Capital Inflows to Developing Countries

The first problem of development aid, discussed in section 2.2, was The Samaritan's Dilemma. The "altruism" of the developed world might lead to a lack of incentives for developing country governments to implement policies and build institutions that promote growth and development. Not only governments, but also other

agents in the economy, might be affected by adverse incentives when there are continuing flows of development aid entering the economy. Regional authorities, and even members of the general population, might see the gains of putting effort into improving their own situation as smaller, when they expect international aid organizations to step in if they don't. If the sovereign government perceives such effects as realistic, they might see a reduction of the inflows of aid as beneficial. This is possibly the most obvious argument in favor of an advantage of commercial loans compared to development aid. In international capital markets, there are no Samaritans; no investors will be willing to lend to countries that defaults on their loans, or to offer money simply because the state is bad in the country demanding loans.

The hypothesis of the second part of section 2.2 was that development aid might have similar effects as other windfall resources, that are statistically seen to impair economic growth and development. It is clear that also other types of foreign capital inflows could potentially have the same effects. However, one might argue that when foreign investors buy government bonds from the central bank in a developing country, they are kindly aware of such dangers, and will keep their money out of countries that are highly corrupt, experience vast conflict, or are expected to use it inefficiently. Some of the proposed explanations for the Resource Curse were also connected to the reduced scarcity of resources, and the potential for "waste" of resources that this creates. It is possible that such adverse effects are lower when the money has to be repaid with interest rates. The pressure from the population on the policy makers to make efficient use of resources, and to not engage in unproductive redistributive activities, are possibly less affected by the inflows when they are not grants that will never be paid back.

There might also be similar differences between commercial loans and development aid regarding the influence on policies, institutions, and resources allocated to rent-seeking, discussed in 2.2.3 and 2.2.4. As an example, reduced accountability of the government and the policymakers, due to lower levels of taxation - and thus a less clear "responsibility" of the government towards its citizens - might not be an appearing problem when the government needs to collect taxes in order to be able to repay the loans. The results of Khan and Hoshino (1992), that I mentioned in the discussion of how aid might affect policies and institutions in

2.2.3, support this view. Though they look only at different forms of development aid, their findings suggest that investment is higher, and the reduction in tax levels are lower (they even see increased tax rates), when aid comes in the form of loans rather than grants. Potentially, the differences would be even larger if one compared development aid grants with commercial loans.

3.1.1 Effects of Capital Inflows

Reisen and Soto (2001) investigates the effects on growth in developing countries of different types of foreign capital inflows. They review analytical arguments from the literature in this area, in addition to providing empirical evidence on the subject, using panel data from 44 countries in the period from 1986 to 1997. They distinguish between four types of flows; Foreign direct investment (FDI), portfolio equity investment, bond flows and short- and long-term bank lending. The authors suggest several ways in which inflows may be beneficial to the recipient economy. They emphasize firstly that foreign capital might add to domestic savings, and increase investment, and thus increase the level of capital and total production (to refer to the standard Solow-framework). Furthermore, it might raise efficiency in the recipient economy, through interaction with human capital, the reduction of capital costs for local entrepreneurs, and enhanced competition. In addition, consumption risks can be lowered. On the other hand, Reisen and Soto identify two important channels through which foreign capital flows can create risk in the recipient economy. Firstly, it might increase losses from distortion in consumption patterns. This is especially evident when the flows are largely volatile. Secondly such flows might generate output loss and bankruptcies, again due to volatility in the flows, and abrupt reversibility.

The empirical results of Reisen and Soto suggest that both FDI and portfolio equity investment do in fact stimulate long-term growth. FDI is seen to increase investment and contribute to smoothing intertemporal consumption levels. Portfolio equity inflows lowers the cost of equity capital, but has a higher degree of reversibility than does FDI. The authors conclude that "authorities are right to prioritize the encouragement of capital inflows" (Reisen and Soto, 2001, p.12).

In an earlier paper (Soto, 2000), Soto conducts a similar empirical investigation.

Also here, the conclusion is that FDI is positively correlated with growth, also when controlling for other variables traditionally used in growth analysis (to attempt to establish a causal relationship and show that the results are not only due to FDI going to countries with higher growth). Soto emphasizes that the low volatility in FDI is beneficial to the recipient country, because FDI, due to this, represents a smaller threat to the macroeconomic stability of the economy. In this paper, Soto points out that well-functioning financial institutions are important for a developing country to be able to benefit from foreign capital inflows. He also emphasizes the increase in the willingness of foreign investors to enter the economy when transparency standards are higher. These reflections support the view that positive effects of less dependency on aid might be enhanced if the economy relies in stead more heavily on commercial foreign capital, because the policy makers must then provide effort to develop these institutions.

In discussing the entrance of a developing country government on the international capital market by bond issuing, the effects of other flows such as FDI should also be considered. I will get back to risk assessment and some other features of this market below. However, it should be mentioned here that the probability of private investors entering an economy through for example FDI, might depend on to what extent the government has accessed the market issuing sovereign bonds. If the government takes measures to decrease the perceived risk for investors of buying sovereign bonds, this can highly influence the assessed risk of other activities in the economy, such as FDI. FDI - as an additional support for growth - might then be added value when the government decides to enter the market. As suggested by both papers discussed above, there *is* indeed reason to believe that FDI is a kind of foreign capital inflow that is less harmful, and has higher potential to spur growth, than several other types of capital inflows.

An empirical investigation provided by Borensztein et al. (1998) support this view. Using panel data from 69 developing countries in the 1980's and 90's, they find that FDI contributes relatively more to growth in developing countries than do domestic investment. The authors argue that the contribution to technology-transfers, and higher factor productivity of foreign firms, are important factors in explaining these findings. However, the results of Borensztein et al. also suggest that some quantity of human capital - giving the economy the possibility to absorb

the inflowing capital - is necessary for the recipient country to see such positive effects of FDI.

Using data from the 1990's, and instrumenting in several ways for the FDI variable, Ram and Zhang (2002) also find a positive relationship between FDI and growth, and argue that this is not only a result of FDI flowing into countries with higher growth rates. Ram and Zhang emphasize among other factors technology transfers, increased competition, and several types of spillovers, as explanations for their results.

3.1.2 The Lucas Paradox

As a final note to this brief discussion on capital flows reaching developing countries, I will look at some findings by economists who have studied the actual patterns of such flows over the last decades. Though out of the scope for this thesis, there are some paradoxical discoveries that should at least be mentioned. Neoclassical theory, and the standard Solow framework, tell us that in less developed countries with low levels of capital due to little domestic saving and investment, the marginal productivity of capital should be high, and when markets are opened, capital should flow from industrialized countries into these economies. In the real world, however, the pattern does not seem to be this simple. Lucas (1990) pointed out that the flows of capital from rich too poor countries are considerably lower than what is predicted by economic theory. This finding was thus named "The Lucas Paradox". Overall, the net flows are actually going *out* of developing countries.

Prasad et al. (2006) use an empirical approach in an attempt to characterize the patterns and consequences of capital flows between rich and poor countries. The Lucas Paradox is supported by their findings; more capital is flowing from poor to rich countries than the other way. Furthermore, over the preceding decades, this trend has been strengthened; the average per capita income of countries with surpluses on their current account has been declining. The authors also investigate the relationship between the current account balance and growth rates. Their somewhat surprising result is that even when controlling for standard growth-variables, net inflows of capital to developing countries do not have positive effects

on growth. In other words; the Lucas Paradox does not seem to hinder growth. As an explanation suggested for this finding, they argue that many developing countries do not have the proper markets, policies and institutions to be able to absorb inflowing capital in a way that would support growth. However, this is not to say that no developing countries could benefit from foreign capital. They also find that FDI follows growth quite closely. This suggests better opportunities for such investment in countries with higher growth rates, but it could also implicate that FDI does in fact contribute to growth, as suggested by some of the authors mentioned above.

Following up on this, Prasad et al. have also further investigated the relationship between foreign capital and growth, also distinguishing between the effects in industrialized and in developing countries (Prasad et al., 2007). They again confirm the Lucas Paradox, and the fact that countries relying to a lower extent on foreign capital, do not seem to grow slower than those receiving higher amounts of foreign capital. The additional contribution here, is connected to the results when they also look at industrialized countries. In these countries, the effects of foreign capital seem to be more adherent to the textbook economic theory; increased investment by foreign investors *does* give higher growth rates. These findings support the hypothesis that some institutions must be in place for a country to "make use of" the benefits potentially inherent in higher levels of foreign investment.

In this section, I have up until now discussed possible benefits for developing countries of reducing their aid-dependency by accessing international capital markets, and replacing at least some of the foreign aid they receive with commercial loans. However, gaining access to these markets is not necessarily very easy for a developing country. To see this more clearly, I will in the following give a brief overview of how these markets function, with a special emphasis on how the riskiness of different assets is evaluated.

3.2 Commercial International Capital Markets

In principle, every country, business or private person can collect money in international capital markets, from foreign investors. However, there might not always be investors interested in a particular asset, or potential investors may demand very

high interest rates. One reason for this would be that the perceived riskiness of the asset is high. This might be a challenge for sovereign states, or central banks, interested in issuing bonds in such international markets. Assets from the so-called "emerging markets" - bonds or stocks issued by governments or businesses in developing countries - are perceived to have higher risks than many assets issued in industrialized markets. Especially - sovereign bonds from many developing countries are considered much more risky than sovereign bonds from for example the Norwegian or European Central Bank. How the riskiness of a government bond is assessed is thus crucial to whether a country at all will get the possibility to collect capital in these markets, and if it does, what price must be paid.

At the time this thesis is written, the situation of several European countries is quite special. I will not discuss this further, but the interest rates of government debt from the PIIGS-countries (Portugal, Ireland, Italy, Greece and Spain), is a good illustration of what happens when investors perceive the risk to be increasing. The only possibility for these countries when they need further loans is to ask the European Union - or other possible lenders - to give them "emergency loans"; conventional borrowing is impossible under circumstances where default is considered not to be unlikely.

To develop a superficial understanding of how investors assess the riskiness of sovereign bonds, I will briefly look into some scientific contributions in this area. There are principally three large rating agencies that provide ratings of assets - both government bonds, stocks, and other types. These agencies are Moody's, Fitch Ratings and Standard & Poor's. They assign ratings to different assets, typically in the form of some letter codes such as AAA (the highest credit quality in the FitchRatings system), or C (assigned by FitchRatings to assets with exceptionally high levels of credit risk), and are meant as measures of relative risk. Especially in emerging markets - where investors themselves are in lack of knowledge, and have few means to assess riskiness themselves - the ratings provided by these agencies may to a large extent be determinant in what risk the assets are perceived by the investors to exhibit.

Cantor and Packer (1996) provide an empirical analysis investigating firstly which factors are important in determining the credit ratings on sovereign bonds, and secondly, to what extent these ratings affect the yields on those bonds. They

focus on bonds issued in foreign currency, arguing that even though there has been seen increased demand for investments in local currency, foreign currency ratings are still the most important. They investigate the explanatory power of several variables, such as per capita income, GDP growth etc., on the ratings given by Standard & Poor's and Moody's, and find that their right hand side variables explain a large part of the variation in ratings. Following this, they carry out a similar analysis of how much of the variation in the yields of the bonds that can be explained by the same variables, and their results suggest large explanatory power of the same variables also in this regression. On this basis - and on the basis of relatively high correlation between bond yields and ratings - they conclude that ratings *do* quite strongly affect yields. The observed correlation is of course also due to the fact that investors themselves look to the same variables as the rating agencies when they assess risk, but this is according to Cantor and Packer not the whole story. When they look at changes in bond yields following changes in the assigned credit ratings, they find that yields follow the ratings when they change, supporting the view that investors *do* in fact look to the rating agencies' assessments. Larrain et al. (1997) also present empirical evidence supporting this view. They argue on the basis of their results, that credit ratings have a significant impact in the financial markets.

Furthermore, most institutional investors probably require an official rating before investing either in stocks or bonds in emerging markets. Thus, to understand what determines the interest rates paid by developing-country governments when issuing bonds, and the overall possibility of these countries to enter the markets, one should investigate how the ratings are set.

A whole range of variables potentially affect the ratings obtained by sovereign bond issuers. The findings of Cantor and Packer (1996) mentioned above, are based on regressions with per capita income, GDP growth, inflation, federal deficit/fiscal balance, current account balance, external debt, a dummy variable indicating whether the country is classified as industrialized or not by the International Monetary Fund, and a dummy for "default history" (indicating whether the country has defaulted after 1970), as left hand side variables. And as already mentioned, the results suggest that these variables in fact explain a large part of the variation in ratings. Other variables used in a similar investigation provided by Feder and

Uy (1985), are the average exports growth rates, and dummy variables indicating political turmoil and oil exports. Edwards (1984) also proposes the average propensity to import, the frequency of devaluation, and the rate of government expenditure to GNP, as additional variables potentially affecting the ratings.

Intuitively, the importance of the issuer's *willingness* to repay a loan is much more important in risk-assessment when the issuer is a sovereign state, than when it is a private person or a business. There is no international authority that has the ability to force a sovereign government to pay its debt, or to incur harsh punishment if the issuer chooses not to repay. Though the international community has the opportunity to use different kinds of sanctions towards a country not standing by its obligations, the possibilities of the lender in such a situation is quite limited in most cases. This is obviously even more important when loans are issued in the domestic currency, giving the government the opportunity to reduce the real size of the loan by a devaluation. However, when devaluation is regarded as likely, the willingness to give loans in domestic currency is probably very small, and most of my discussion here is thus placed on bonds issued in some other currency than the domestic.

All three agencies mentioned above share some information on how the ratings are set. It is clear that they in some way assess both the willingness and the ability of a government to repay, when the rating of a sovereign bond is determined. Standard & Poor's state that; "To assess the creditworthiness of an issuer, Standard & Poor's evaluates the issuer's ability and willingness to repay its obligations in accordance with the terms of those obligations." (Standard&Poor's, 2010, p. 11). Furthermore, several different factors are considered; "In rating a sovereign, or national government, the analysis may concentrate on political risk, monetary stability, and overall debt burden" (Standard&Poor's, 2010, p. 11). Fitch Ratings use a similar approach, and state that "The sovereign Issuer Default Ratings (IDRs), are a forward-looking assessment of a sovereign's capacity and willingness to honor its existing and future obligations in full and on time." (FitchRatings, 2010, p. 1)

Edwards (1986) provides an empirical analysis on developing countries' borrowing in international markets. His results support the hypothesis that the factors determining the assessed risk of bonds are different from those determining risk of

stocks. One of the explanations suggested by Edwards is that governments often guarantee for bank loans, thus the risk is lowered. Such lowering of risk is of course not possible for sovereign bonds.

Lee (1993) explicitly investigates whether credit ratings are based on willingness to repay. Based on a theoretical model, the author lists several variables that, according to Lee, affect the willingness to repay of the borrowing country. Among these are the ratio of total foreign debt to exports and the variability of changes in per capita GDP, that are both supposedly affecting the willingness to repay negatively. Furthermore, Lee includes the growth rate of per capita GDP, arguing that higher levels should increase the willingness to repay, and inflation, as an instrument for political stability (high levels are expected to decrease the willingness to repay). Thereafter, the author estimates to what degree these variables affects the ratings. The results suggest that several of the variables strongly affect the ratings, and can thus be taken to support the view that the perceived willingness to pay is important in determining the credit ratings of sovereign bonds.

If a developing country wants to finance investment and government spending through issuing bonds in international capital markets, it is thus crucial not only that there is action taken to improve the ability to repay, but also that the government manages to convince the rating agencies - and thus the investors - of its willingness to do this.

It is clear from the preceding discussion that many factors determine the credit ratings assigned by the rating agencies to bonds issued by developing country governments, and that these ratings affect the opportunities for the governments to borrow money in this manner, and eventually; the price they must pay. In the next section, I will argue that also the fact that a country receives vast amounts of development aid, might be one of these factors. The hypothesis is that development aid might lead to lower ratings through decreasing the willingness to repay that the rating agencies perceive the countries to have. If this is so, it would add to the unintended and unforeseen potential effects of development aid discussed earlier in this thesis.

3.3 Development Aid and Access to International Capital Markets

The ratings are determined by the probability of default perceived by the rating agencies. This probability of default is again determined both by the ability the borrower is believed to have, to repay, and by whether the borrower is perceived to actually be *willing* to repay. It is clear that when credit rating agencies assess a developing country government's willingness to repay, their analyses suffer from lack of information. The variables used as measures for this willingness must to some extent be the same for all countries, and many factors specific to some country or government are probably unknown to the rating agencies, as they are to the investors themselves. This of course also holds for the factors determining the perceived ability of a country to repay, but might be a more severe problem when assessing the willingness. Some attributes may be considered as giving higher risk of default, even though that is not necessarily the case for all countries. Factors such as low growth rates, low income per capita etc., might be interpreted as "signs" of low creditworthiness, through reducing the willingness to repay of a given country. However, some countries exhibiting these characteristics might still in reality have a strong desire to trade in the commercial capital market, and thus have a strong willingness to repay. If there is no way such a country could signal that such specific characteristics do not - for that specific country - imply that the willingness to repay is low, the country might be denied loans in the commercial market, due to this lack of information available to the potential lender.

My hypothesis is that development aid might have effects that hinder the access of some developing countries to international capital markets, due to asymmetric information regarding the actual willingness or wish of different countries to reduce their dependency on aid. I will in the following attempt to justify this hypothesis.

The mechanism that generally makes credit markets work is the threat of retaliation for default, in the form of future difficulties to obtain loans, or higher prices of loans in the future. In any credit market, there is to some extent asymmetric information; the lender does not have full knowledge regarding either the ability or the willingness of the borrower to repay in the future. However, if the lender knows that the borrower has a strong need for finance in the future, and that there are no other sources for finance the borrower can turn to if this lender does

not provide it, the lender at least knows that this provides strong incentives for repayment. And in most credit markets, a default on a loan will indeed not only induce the lender of *that* particular loan to hesitate in giving new loans, but other possible lenders will after such a default react in the same way.

My hypothesis is that in this framework, aid organizations and other donors of development aid might work as Samaritans, and thus also face the above discussed *dilemma*. The riskiness of giving a loan to a developing country is potentially perceived as considerably higher if this country is the recipient of foreign aid, exactly because the punishment mechanism discussed above is not in place to the same extent. If a country that is denied future loans in the commercial market can easily turn to aid donors and get finance from this source, this country might not see the loss from refused access to the commercial market as very severe. This will of course depend on how the country values the decreased dependency of aid that follows from getting access to the capital markets, but this valuation is *not* necessarily known to the lender! The point is that *in general*, international investors cannot distinguish between countries that have a real desire to change from aid dependents to commercial borrowers, and other countries or governments, that do only want to take advantage of an opportunity to take up a loan they never planned to repay. In this framework, there is a difference concerning the *types* of the developing countries demanding loans in the international capital market, and the type of a given country is not (necessarily) known to potential international investors.

The implications of this hypothesis would potentially be that development aid could *hinder* development. If some of the problems connected to aid discussed in section 2 are perceived as severe by a developing country government, but this government does not get the opportunity to reduce their aid-dependency by entering international capital markets *because* they receive foreign aid, the country might potentially be "trapped".

Yet, one could argue that many of the potentially grave consequences on growth and development posed by development aid - discussed in section 2 - would not pose large challenges if the government is of the "good" type, the type that actually desires development. If this is what the government wants, one would for example expect it not to use development aid as an "excuse" for not performing policy

reforms etc. that would enhance growth. However, as is obvious, not all the problems potentially brought about by development aid is of a character such that a "good" government could prevent them from surfacing.

For the sake of the argument, let me focus on the story of the Samaritan's Dilemma, discussed in section 2.2.1 (Buchanan (1975)). The most simple outline of this problem is the story where the central government loses its incentives to provide good policies and institutions to promote growth, because it knows that aid organizations will step in and provide the necessary assistance when the state of the economy is bad. Such a government must be said to be short-sighted, and there might be even worse incentives at play; for example this government might see it as more easy to redistribute to its "peers" when the money comes from development aid than if it had been obtained from commercial loans. In this situation, the problems connected to development aid are severe, but there is no reason to believe that such a government would want a lower dependency of development aid. Thus the asymmetric information problem discussed above is not really a problem for this country.

But the story might also be a little bit more complicated. The federal government might actually want to reduce aid-dependency and induce growth-enhancing policy reform, and one opportunity to do this would be through issuing bonds in international markets. However, there might still be large problems connected to development aid, because other agents in the economy - say regional governments or even members of the general population - are faced with adverse incentives due to the future "aid-possibility". In this case, there might potentially arise a situation where the government cannot avoid aid-induced problems, because it is denied access to alternative forms of finance.

Some countries obviously see aid-dependency as an obstacle to development, and has taken strong measures to show the rest of the world that they do not want to be among the countries dependent on development aid. India has a policy not to take development aid, and South-Africa has after the Apartheid regime showed that the country does not want to take charity, by paying off loans taken up by the previous regime. This might be a way to convey information to international investors that the added risk of being a recipient of development aid, should be removed, for a particular country. However, this is obviously not an attractive

path forward for many countries, that are in need of foreign finance.

Finally, a country that strive to create economic growth, and hope to escape the group of the poorest, might see the entrance on international capital markets as important. If they grow out of the group of countries that qualify for development aid, it would be beneficial to already have connections to the financial systems of the industrialized world. Such considerations should give strong incentives for poor countries with growth - or hope for growth - to attempt to access the commercial capital market.

In the next section, I will set up a theoretical model, in an attempt to give a more thorough evaluation of how development aid might affect the opportunities of recipient countries to access international capital markets. Even though the model is simple, it shows that if there *are* different types of countries and governments, development aid in some cases might add to already existing credit constraints faced by developing country governments.

4 A Simple Model

In this section, I will set up a stylized model to illustrate how loans or grants from the World Bank, or other donors of development aid, can affect the ability of developing countries to issue government bonds in commercial international capital markets.

Several authors have contributed to the literature investigating potential problems connected to asymmetric information, leading to credit rationing. One influential paper on this subject is Stiglitz and Weiss (1981). In the following, I provide a theoretical framework that investigates this subject from a slightly different angle. I do not use a moral hazard framework, but focus solely on the effects of (predetermined) differences between the countries demanding loans, and the problems that may arise when the potential lender cannot distinguish the characteristics of different borrowing countries.

The model presented in this section shows the type of choice the borrowing country has to make, and how the possible options of this country affect the willingness of agents in the commercial market to offer loans. The main feature that may create inefficiency in this model, is that there is hidden information concerning the utility of the borrowing country from getting a commercial loan - or the *type* of the borrowing country. Its type is only known to the developing country itself, and this information cannot be passed on to any other agent.

4.1 Introduction to The Model

There are three agents in this model; the "World Bank", B, a commercial international lender, L, and a developing country, D.

B offers a loan of size R to D in each period. The only exception occurs if D defaults on a loan from L. If D takes a loan from L in period t, and defaults on this loan in period $t+1$, there is only a probability $p \in [0,1]$ that B will offer a loan to D in this period $(t+1)$. In the period after default, one is back to business as usual. A loan from B to D is always repaid in this setup. These loans are considered development aid, and have a low interest rate, r^B.

L will in each period consider whether he wants to offer a loan, also of size R,

to D. If such a commercial loan is offered, the interest rate is $r^L > \overline{r} > r^B$, where $\overline{r}$ is the risk free interest rate L can get elsewhere.

If L offers a loan to D, and D takes this loan, but defaults in the following period, L will never offer a loan to this country again. In the first period ($t = 0$), or in any period where D has not defaulted on a loan in the past, L calculates a probability $q \in [0, 1]$, based on the information available, of D defaulting in the next period if offered a commercial loan. The decision of whether L will offer such a loan or not, will be based on this probability.

D in each period considers whether he wants to take a loan, and whether (if possible) he takes it from B or L. If he takes up a loan from B he always repays the loan, with interest rates, in the next period. In the case where L offers D a loan, and D chooses to accept this, D will in the following period have the possibility of defaulting. A default means that he does not pay anything to L. D's decision will be based on the present value of current and future utility from the different options. D discounts future utility by the factor $\beta = 1/(1+\rho)$, where $\rho > 0$ is the discount rate.

The hidden information that D has, concerning his own type, is the utility u^L that - when the loan is issued by L - is added to his utility from the loan. u^L is unknown to L, but is drawn from a known distribution with CDF $F(x) = P(u^L < x), F(0) = 0, \lim_{x\to\infty} F(x) = 1$.

4.2 Some Important Assumptions

As mentioned, all three agents are assumed to be risk-neutral. Especially the assumption that the borrowing country D is risk-neutral, is not very realistic. I do this to simplify the calculations, and to be able to focus on the main point of the model. Still, I elaborate briefly on this in section 4.7.4, to get an idea of how a change in this assumption would affect the model.

I also assume that $(1 + \rho) > (1 + r^L)$; D discounts the future sufficiently for a loan from L to be attractive if no other options are available, and he cannot choose to default.

$r^L > \overline{r} > r^B$ just shows that the interest rate on loans from the World Bank is low, compared to the commercial interest rate, and the interest rate charged on

loans to developing countries in the commercial market is higher than the risk-free outside option available to L. Together with the previous assumption, this also assures that if the only possibility for D is to take up loans from B and repay in each following period, he will do so.

In the main part of this thesis, I treat the interest rate paid on loans from L to D, r^L, as exogenous. This might seem unlikely, the usual assumption would be that this interest rate is changed by L depending on the the perceived riskiness of borrowing to D. However, one can argue that this is in fact not always what happens. Many investors have relatively strict rules regarding what levels of risk they can accept, and when the riskiness of an asset is perceived to be above some fixed level, the investor will not consider investing in that asset. In section 4.7.1, I look at how the implications of the model changes, when r^L is endogenous.

Futhermore, I assume that all three agents in the model live forever, so the time span goes from $t = 0$ to $t = \infty$. Another way to interpret this assumption, is that there are only three periods, but the last period lasts for a very "long" time. This assumption is useful, because it makes it easier to emphasize that the punishment from L when D defaults on a loan is quite harsh (never offering a loan to D ever again). Most importantly, this assumption assures that the model cannot be solved by backward induction. If this was the case, D would always have incentives to default in the last period, and this would cause no loans to be offered from L to D in any case.

In the model, I call the donor of development aid the World Bank. Of course, any other donor of development aid - a donor country, an aid organization etc. - would potentially create the same effects.

Furthermore, as is clear from the introduction to the model, this development aid donor may punish D in the case of a default on a commercial loan. It is of course possible that $p = 1$ (the World Bank offers a loan to the developing country regardless of whether this country has defaulted on a loan from the commercial lender in the same period), but I include the possibility that the World Bank may see it as beneficial to show that it will not support defaults in the commercial market. Additionally, one could imagine that if B does in fact want to punish D after a default, this punishment might be taken several periods into the future. In section 4.7.6, I elaborate briefly on how such an extension might change the

model. I also assume that this donor - the World Bank - does not offer loans to D in periods when D takes up a commercial loan. This might be justified by arguing that the World Bank may see a country receiving commercial loans as not qualifying for development aid.

The assumption that the commercial lender L will *never* again offer any loans to a country that has defaulted in the past, is meant to represent the fact that after a default, it is very difficult for a country to re-enter the commercial capital market. Though it is of course unlikely that a default results in a permanent exclusion from the market, this is a convenient way to show the severity of a default in the commercial market. The assumption can also easily be justified in the framework of this model, by arguing that if a country has defaulted in the past, L will perceive the default probability to be 1, and thus does not want to offer loans to this country ever again.

In the above introduction to the model, I have also assumed that a loan from B to D is always repaid. One way to justify this assumption, is by arguing that B might have sufficient means for sanctioning to always force D to repay him, and in this regard be in a much stronger position than the commercial lender L.

Finally, the utility u^L, that D gets from taking up a commercial loan, which is hidden from the commercial lender, is crucial to the implications of the model. I will therefore briefly discuss some possible ways to justify the appearance of this utility in the model. As is clear from the discussion in section 3.3, there are potentially several reasons why a developing country might find it beneficial to take up commercial loans to replace development aid. u^L represents the value one specific developing country puts on the opportunity to escape the dependency on development aid. The reason that a country - or a country's government - sees it as beneficial to replace development aid by commercial loans, might be as simple as some sense of "pride"; the country does not want to be a recipient of charity.

In relation to how u^L appears in this model, it is perhaps more appropriate to think of this utility as representing some additional gain from trading with L in the commercial market, not as directly connected to *not* taking up loans from the aid donor, B. If the developing country experiences economic growth, and hope to escape the group of countries qualified for development aid, the government might see the entrance on the commercial capital market as an important step towards

becoming a part of the industrialized world. When external finance is important, the building of connections to the global financial system should be started *before* the flows of development aid are gone, and this could explain why some countries get a higher utility from borrowing from L, than from taking a loan of the same size from B.

To state this clearly; u^L is added to the utility of the developing country, D, only in the case where the country gains access to the commercial capital market, by taking up a loan from L. It does not reflect the benefits from the inflowing money itself, but some external utility connected to accessing the commercial market.

In the following, I will firstly account for the choices that have to be made by the potential lender, L, and the borrowing country, D. Next, I investigate how the different options available to D can affect the resulting allocation of loans, through the probability the potential lender perceives of a default if he offers a loan to D. Finally, I discuss several possible extensions of the model.

4.3 The Choice of The Lender, L

Based on all available information, L calculates a probability of default, q, and based on this, decides whether he wants to offer D a loan or not, in period $t = 0$. His problem is to maximize the expected utility in the next period:

$$max\{(1 + r^L)R(1 - q), (1 + \bar{r})R\}$$

The condition that must hold for L to offer the loan is thus;

$$\begin{aligned} (1 + r^L)R(1 - q) &> (1 + \bar{r})R \\ \Rightarrow q &< \frac{r^L - \bar{r}}{1 + r^L} \end{aligned} \tag{1}$$

When calculating q, L considers the different options available to D, and based on what information is available, calculate the probability that a default is the option giving the highest utility, given that D demands a commercial loan.

It should be mentioned that I make a significant simplification here, in assuming

that L does not consider potential future gains from trading with D, when making this decision. This is by no means crucial for the main implication of the model, however, I investigate how changing this assumption affects the model in section 4.7.7.

4.4 The Choice of The Borrower, D

Which choices the developing country D has to make, depend on whether the World Bank is present and offers him development aid, or not. The case where the World bank is not present can be seen as a reference point, and the outcome when development aid *is* offered, should be compared with the outcome in this situation.

4.4.1 The World Bank Not Present

When B is not present, D will always demand a loan from L in period $t = 0$. He can choose to repay in the next period or not, but his utility from getting a loan and not repaying will always be higher than not taking the loan at all. In other words; if D gets a loan from L, he can choose to default on it, and this strategy will always be better than not taking up the loan. Thus he is left with only one choice (that he has to make in period $t = 1$); whether to repay or not. Since every period is exactly equal, D will stick to the choices he makes in the first and the second period for all future periods, in the case where he does not default. Thus, if he is offered a loan in period $t = 0$, and chooses to repay in period $t = 1$, he will continue to repay in all periods $t = 3, 4, ...\infty$. If he chooses to default on the loan in period $t = 1$, he is left with no possibility to borrow money in any future period.

The present value of current and future utility for each of the two options can be represented by $\tilde{V}^P(R, u^L, r^L, \beta)$ and $\tilde{V}^D(R, u^L)$ with P representing repayment in all periods, and D representing default in period $t = 1$. I label these value functions with a tilde, to distinguish them from the functions in the case where D is also offered loans from the World Bank. D's utility from defaulting only depends on the size of the transfer R, and on u^L (the utility from trading with L, which is specific to this particular developing country). The utility from repayment in

each period also depends on the interest rate paid on the loans from L, and on the subjective discount factor β.

Obviously, D will - if he is offered a loan from L - choose to repay in all future periods if and only if

$$\tilde{V}^P(R, u^L, r^L, \beta) > \tilde{V}^D(R, u^L) \tag{2}$$

Whether this is the case or not, will depend on all the four variables, R, u^L, r^L and β.

4.4.2 World Bank Presence

When D can demand loans both from B and L, there are two different options available to him in the first period. He can choose to take the loan from B, or to demand a loan from L. If he chooses the last option, he will have to decide whether he shall pay his debt to L or not, in the next period. Using the same line of argument as in the previous section, it is clear that if he chooses not to demand a loan from L in the first period (and rather take the loans from B), he will do so also in all future periods. Similarly, if he *does* demand a loan from L (and is offered one), and chooses to repay his debt in period $t = 1$, he will continue to take loans, and to repay them, in all future periods. If he defaults in period $t = 1$, he is left with only one possibility in the future; taking the loans from B. D will choose the option that gives him the highest present value utility, and this will, in addition to the other variables, depend on the "external" utility he gets from trading with L, u^L.

If D chooses to demand a loan from L, the present value of current and future utility will depend on u^L, in addition to the size of the transfer and the discount factor, both in the case where he defaults in the next period, and in the case where he chooses to repay the loan in each period. If he defaults, the relevant interest rate will be r^B, because he will in the future borrow from B. If he repays, his utility depends on r^L. In the period immediately succeeding a default, his utility will also depend on the probability, p, that he does in fact get a loan from B. Thus, the present value of his utility can be represented by $V^D(R, u^L, r^B, p, \beta)$ and $V^P(R, u^L, r^L, \beta)$ respectively. If he does not demand or get a loan from L, but takes the loan from B, the value function is $V^B(R, r^B, \beta)$ (with B illustrating

that he chooses to borrow from B in all periods), only dependent on the size of the transfer, the World Bank-interest rate, and the subjective discount factor.

He will choose to demand a loan from L if and only if *either* V^P or V^D is larger than V^B. If this is the case, he will choose to repay his debt to L in all future periods if and only if

$$V^P(R, u^L, r^L, \beta) > V^D(R, u^L, r^B, p, \beta) \tag{3}$$

In this case, the probability p also contributes to the determination of whether this is the case or not.

4.4.3 Comparing The Probabilities of Default

PROPOSITION 1. *The probability that a given developing country D will choose to default on a loan from L, given that L offers him a loan and D takes this loan, is lower when the World Bank is not present, than it is under World Bank presence.*

Proof. This can be seen from calculating the exact probabilities for repayment in the two cases. In the case where the World Bank is not present offering loans, x_1 is the value of u^L making B indifferent between repaying and defaulting, given that he both demands and is offered a loan from L. The probability of default, given that D does actually demand the loan, will then be $F(x_1)$. Any country with $u^L < x_1$ will choose to default, while any country with $u^L > x_1$ will repay and continue to borrow from L. We have already seen that in this situation, D will always demand such a loan, thus x_1 will be given by;

$$\tilde{V}^P(R, x_1, r^L, \beta) = \tilde{V}^D(R, x_1) \Rightarrow x_1(R, r^L, \beta) \tag{4}$$

To calculate x_1, we thus need explicit expressions for these two value functions.

In Appendix A.1, the value function, and the critical value of u^L are shown to be;

$$\tilde{V}^P(R, u^L, r^L, \beta) = \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta} \tag{5}$$

$$\tilde{V}^D(R, u^L) = R + u^L \tag{6}$$

$$\Rightarrow x_1 = Rr^L \tag{7}$$

Any country with a value of $u^L < x_1$ will choose to default on a loan taken from L. As stated, the probability of default perceived by L if he offers a loan to D when the World Bank is not present, q_1, is thus;

$$q_1 = F(x_1) \tag{8}$$

The corresponding probability under World Bank presence is $F(x_2)$, where x_2 again represents the value of u^L that makes B indifferent between repaying and defaulting, given that he did actually demand a loan (and that L offered him one). x_2 is given by;

$$V^P(R, x_2, r^L, \beta) = V^D(R, x_1, r^B, p, \beta) \Rightarrow x_1(R, r^L, \beta) \tag{9}$$

The calculations are provided in Appendix A.2, giving;

$$V^B(R, r^B, \beta) = \frac{R}{1-\beta} - (1+r^B)\beta R\frac{1}{1-\beta} \tag{10}$$

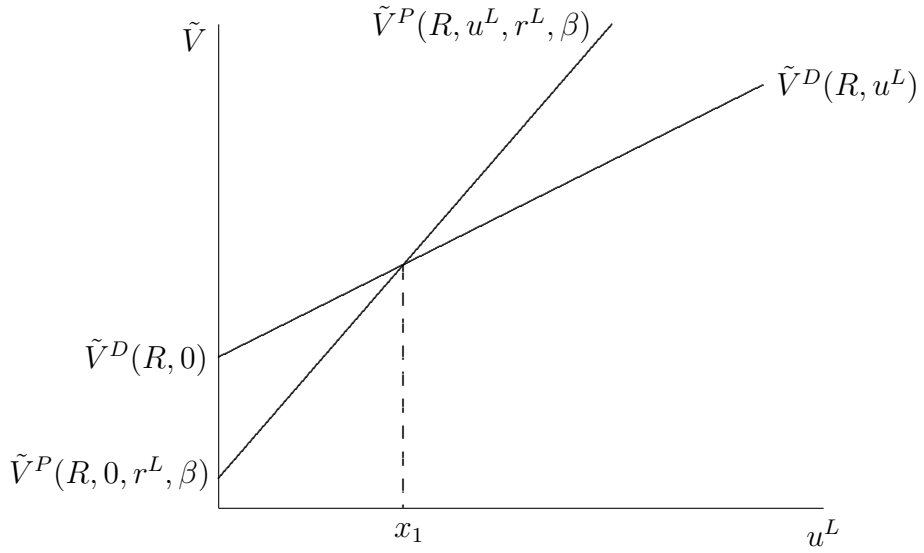
$$V^P(R, u^L, r^L, \beta) = \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta} \tag{11}$$

$$V^D(R, u^L, r^B, p, \beta)$$
$$= R + u^L + p\beta R + \beta^2 R\frac{1}{1-\beta} - (1+r^B)p\beta^2 R - (1+r^B)\beta^3 R\frac{1}{1-\beta} \tag{12}$$

$$\Rightarrow x_2 = r^L R$$
$$+ [p\beta R - (1+r^B)p\beta^2 R + \beta^2\frac{R}{1-\beta} - (1+r^B)\beta^3\frac{R}{1-\beta}]\frac{1-\beta}{\beta} \tag{13}$$

As in the case where the World Bank is not present, x_2 is the critical value for

Figure 1: The present value utility for D in the case where the World Bank is not present, depending on the choice made by D. x_1 represents the critical value of u^L; only countries with a higher value will choose to repay a loan from L.



u^L; any country with u^L lower than this value will choose to take a loan from L if offered one, but will than default in the next period. Thus the default probability will in this case be;

$$q_2 = F(x_2) \tag{14}$$

In Appendix A.3, it is shown that;

$$x_2 > x_1 \tag{15}$$

Since the Cumulative Distribution Function is of course (weakly) increasing, it follows that;

$$q_2 = P(u^L < x_2) = F(x_2) \geq F(x_1) = P(u^L < x_1) = q_1 \tag{16}$$

□

Figure 1, 2, and 3 illustrate the proof.

This result is the underlying reason for the proposed inefficiency induced by the fact that the World Bank is present offering cheaper loans to D, if D does

Figure 2: The present value utility for D under World Bank presence. x_2 represents the critical value of u^L, only countries with a higher value will choose to repay a loan from L.

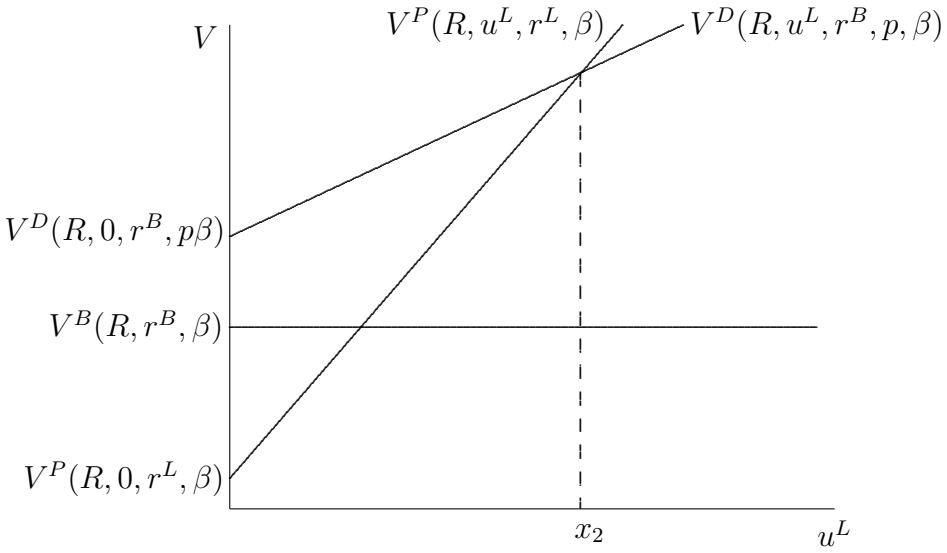
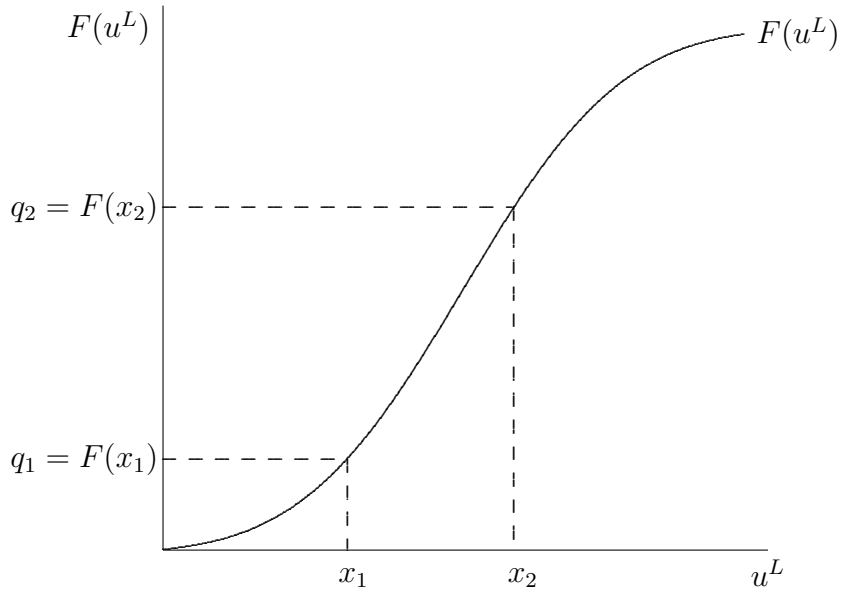


Figure 3: The exact default probabilities perceived by L, are determined by the known distribution of u^L, $F(u^L)$.



not demand - or get - loans from L. If L cannot distinguish between developing countries of different types (regarding the value of u^L), the probabilities q_2 and q_1 are the probabilities he will use to calculate his expected utility from offering D a loan in the two cases where B is present and not present.

4.5 Efficiency Considerations

When the potential lender, L, encounters a particular developing country, D, the probability for default will determine whether a loan is offered or not. It is thus clear from the above discussion that the presence of the World Bank *can* affect this decision made by L.

To be able to consider whether World Bank presence can induce some kind of inefficiency, I will first attempt to clarify what I consider efficient in this setting. Both L and D can potentially benefit from trading with each other. In the case where D does not default, L will gain from an interest rate that is higher than the risk free rate, and D will benefit from the fact that the country's dependency on development aid is reduced (formally depicted by u^L). In the case where D defaults, there are obviously benefits for D, but at the expense of a cost for L. Consequently, it is only in a situation where there is no default that the trade creates benefits for both parties. *Inefficiency* thus prevails in a situation where a country D demands a loan *and* plans to repay in the next period, but L does not supply the loan. This lack of supply from L is in such a situation caused by the asymmetry of information regarding u^L, which leads L to evaluate the risk of default as positive, even though if he *had* offered the loan, D would not have defaulted. Depending on the gap between the "emerging market" interest rate," r^L, and the risk free interest rate, $\bar{r}$, there is a critical level of the default probability, above which the loan will not be supplied. Denoting this probability with a *, the critical level (defined by equation (1)) is;

$$q^* = \frac{r^L - \bar{r}}{1 + r^L} \tag{17}$$

An *efficient* situation is thus the case where no country that *does* plan to repay is refused a loan. If L cannot distinguish between countries with different levels of

u^L, this would imply that L offers loans to *any* developing country. It is clear that there could still be some defaults, but the expected utility of both parties when a loan is granted is positive.

To see more clearly how inefficiency may prevail, and how this may depend on whether the World Bank is present or not, I will start by looking at the situation where all information is available also to L.

4.5.1 No Hidden Information

In the case where the value of u^L for any given country is known to L, there will be no uncertainty regarding whether one particular country will choose to repay a loan or not. This will be the case regardless of whether the World Bank is present or not. In exemplifying it, I will focus on the situation where the World Bank *is* indeed present. In this case, L will know that any country with $u^L < x_2$ will choose to default on a loan if he is offered one, and will thus choose not to offer loans to such a country. All other potential borrowers will have a default probability of zero, hence any country in this group *will* be offered a loan by L. To summarize, when there is no hidden information;

$$u^L < x_2 \Rightarrow \text{No loan offered}$$
$$u^L > x_2 \Rightarrow \text{Loan offered, no default}$$

In this case there is thus no *inefficiency*, in the sense that all countries which plan to repay a loan, will be offered one. This situation is also one where a loan that is granted is always repaid in the next period.

4.5.2 Inefficiency Under Asymmetric Information

As we have seen - as long as the information concerning u^L is hidden from L, and u^L is indeed varying across different developing countries - the perceived risk of default is positive regardless of whether the World Bank is present or not. Thus, the sort of inefficiency discussed above may prevail in both cases. However, the perceived default risk is *higher* under World Bank presence.

PROPOSITION 2. *Given the difference between the risk free interest rate*

and the interest rate charged by L on loans to D, there will always exist a distribution $F(u^L)$ with sufficient spread in u^L, such that the developing country D is denied access to the commercial international capital market if and only if the World Bank is present.

Proof. Since the perceived probability of default is higher when the World Bank is present than when it is not (Proposition 1), a situation may arise where ;

$$q_1 < q^* < q_2 \tag{18}$$

(expressions for the probabilities are given in equations (8), (17) and (14) respectively)

Whether this is the case or not, depends on the distribution $F(u^L)$, and on all exogenous variables in the model. If the inequalities in (18) hold, any country would be offered a loan if the World Bank was not present (resulting in an efficient allocation of loans), but no country would be offered a loan under World Bank presence. In this case, World Bank presence induces inefficiency. When (18) holds, the situation with and without World Bank presence can be summarized as;

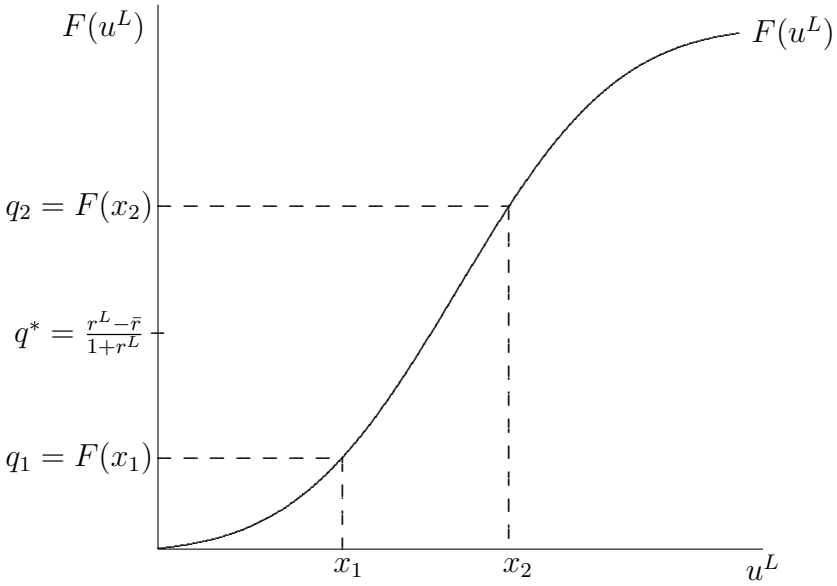
World Bank not present: Any $u^L \Rightarrow$ Loan offered, some defaults
World Bank present: Any $u^L \Rightarrow$ No loan offered

□

In figure 4, the situation where World Bank presence induces inefficiency is illustrated.

Inefficiency in allocation of loans is in the first place due to the asymmetry of information between the lender and the borrower, concerning the benefit the borrowing country has from trading in the commercial market. However, as is clear from the above discussion, this inefficiency may in some situations prevail if and only if the World Bank is present, offering development aid. I will here briefly elaborate on which factors that determine whether this is the case or not.

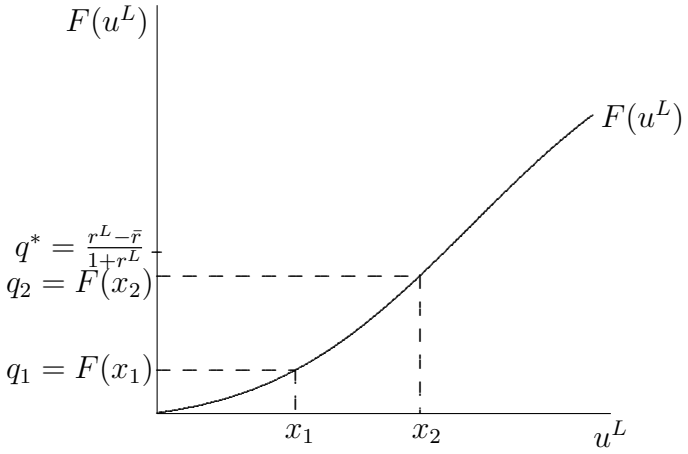
Figure 4: Inefficiency induced by World Bank presence.



When the exogenous variables of the model are given, so are the critical values for u^L, x_1 and x_2, below which D will choose to default on a loan from L, in the cases without and with World Bank presence respectively. However, in determining the default probabilities, and their relation to the limit value $q*$ - below which L will be willing to supply the loan - the distribution $F(u^L)$ (or simply the mean value and the spread in u^L) is crucial. This can be illustrated graphically, by looking at three different shapes of the cumulative distribution function, when all exogenous variables are the same. With a distribution such as the one in figure 5, few countries have low values of u^L, and this leads to both default probabilities being below the critical level q^*. When this is the case, there is no inefficiency, independent of whether the World Bank is present or not. Any country, D, will be offered a loan in both cases, and there is a positive probability of default. This probability is higher when the World Bank is present, but still the expected utility for L is positive.

In figure 6, the distribution is such that there are many countries with low levels of u^L, and both default probabilities are too high for L to offer the loan. In this case, there *is* inefficiency due to asymmetric information. Because the expected utility of L from offering a loan is lower than his outside option, no country will be

Figure 5: u^L is distributed in a way that makes L offer the loan to any country, also under World Bank presence.



offered a loan. What is inefficient is of course that the county demanding the loan might be of a type that would not have defaulted, and the gains from trade for both parties are lost. However, in this situation, the World Bank does *not* induce this inefficiency. Whether a country demanding a loan is offered one or not, does not depend on whether the World Bank is present.

Finally, in figure 7 we see the situation also illustrated in figure 4. Inefficiency occurs only if the World Bank is present, because the default probability is then raised sufficiently for D to not offer loans to any country.

It is clear that the difference between the emerging market interest rate, r^L, and the risk free rate, $\bar{r}$, that determines the critical value of the default probability, will affect whether inefficiency prevails or not, and whether World Bank presence affects the result. If L can charge a very high interest rate on a loan to D, compared with the risk-free rate, it is more likely that the result will be the situation where all countries are offered loans independently of whether the World Bank is present or not (illustrated in figure 5). Correspondingly, a small difference between the interest rates increases the probability that no country will be offered a loan in any case (figure 6).

It is also interesting to consider how the difference between the two critical values of u^L is determined by the exogenous variables of the model. The difference $x_2 - x_1$ will - given the distribution of u^L - determine the difference between the

Figure 6: The distribution of u^L is such that no country D will be offered a loan, and this does not depend on whether the World Bank is present.

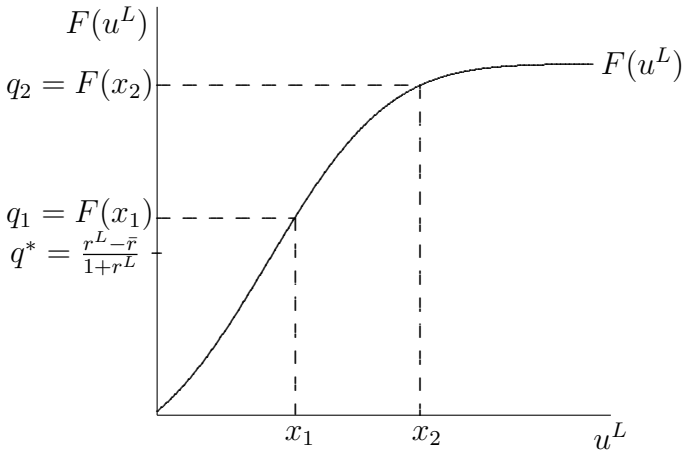
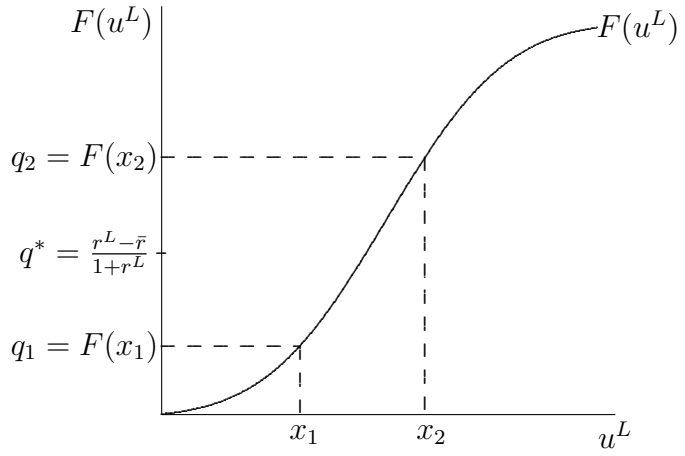


Figure 7: With this distribution of u^L, inefficiency prevails if and only if the World Bank is present.



default probabilities. It should be clear that the larger the difference $x_2 - x_1$, the higher is the probability that World Bank presence *will* in fact induce inefficiency. In appendix A.4, I have calculated the derivatives of $x_2 - x_1$ with respect to the size of the loans, R, the three different interest rates, r^B, $\bar{r}$ and r^L, and with respect to the probability of obtaining a loan from B after a default, p. From these calculations, some notes should be made.

Firstly, if the probability of getting a loan from B in the period after default, p, is increased, the cost of defaulting when the World Bank is present is lowered. This leads to an increase in the critical value of u^L under World Bank presence, x_2, and thus increases the difference between the two critical values. For any distribution, this will of course also increase the difference between the two default probabilities. Also, an increase in the loan size, R, gives a larger difference between the two critical values, and thus between the default probabilities.

Furthermore, an increase in the World Bank interest rate, decreases the benefits of borrowing from B, and thus makes it less attractive to default on a loan from L when the World Bank is present. By decreasing the critical value under World Bank presence, x_2, this leads to a reduction in the difference between the two critical values. Thus, for a given distribution, an increase in r^B decreases the difference between the default probabilities.

Finally, the effect of a change in $\bar{r}$ is obviously zero. So is the effect of a change in r^L. An increase in the interest rate paid on loans to L will increase the gains from defaulting, but this increase is exactly the same independent on whether the World Bank is present or not.

To end this section, I will emphasize again that the inefficiency is in the first place induced by asymmetry of information. However, as we have seen, World Bank presence *might* be determinant to whether such inefficiency prevails or not. Finally, we have seen that whether World Bank presence is crucial or not, depends on all exogenous variables in the model, including the distribution $F(u^L)$.

However, there are clearly some assumptions made in this section that are not particularly realistic. After a brief discussion of the welfare effects of World Bank presence, I will attempt to discuss the implications of changing some of these assumptions in section 4.7.

4.6 Welfare Effects of World Bank Presence

Until now, I have focused solely on how World Bank presence affects the ability of developing countries to enter commercial international capital markets. The above analysis suggests that - at least under some circumstances - the presence of a development aid donor such as the World Bank, may hinder access of some developing countries that do in fact not plan to default, to these markets. This is what I have termed "inefficiency" in the above. As already pointed out, the underlying cause of this potential inefficiency is the lack of possibilities for potential lenders to gain knowledge regarding the benefits the borrowing country has from taking up a commercial loan. This may lead to many countries being denied access to the markets, as a result of a perceived high risk of default, even though only some of these countries *would* actually default. The main implication of my model is that the presence of this type of inefficiency *might* be dependent on whether the World Bank is present or not.

This may suggest that World Bank presence - or the opportunity of developing countries to get cheaper loans from some development aid donor - is *bad*. However, it is important to keep in mind that what I have focused on analytically in this thesis, is not the total welfare effects of development aid. In section 2, I discussed several potentially adverse effects of aid. I do however not draw any conclusions regarding whether development aid is "good" or "bad". What my investigation is meant to convey is that *if* a developing country government sees dependency on development aid as a hinder to growth and development, the possibility of this country to escape this dependency, might be hindered by the fact that the country receives foreign aid.

For a country of this type, where the government sees aid-dependency as problematic, but is not able to use commercial loans as a substitute for financing highly necessary investments, what I have termed "World Bank presence", must be said to be bad. However, also in my model, there *are* countries that do not see it as highly beneficial to take up commercial loans to replace foreign aid. It is clear that to these countries, access to finance from an aid donor such as the World Bank can be perceived as "good". One can thus not conclude on the basis of this analysis that aid donors should stop offering "cheap" loans - or grants - to support

development in poor countries. The sole implication of the above model is that *one* effect of access to development aid, *might* be the loss of access to commercial capital markets.

4.7 Extensions of The Model

Among the obviously very simplified assumptions I have made in setting up the model, is the fact that the commercial market interest rate r^L is exogenous, and that the borrowing country is risk-neutral. In the following, I will elaborate briefly on these and a few other issues. In parts of this discussion, I will use an analytical approach, but mostly I will only verbally elaborate on potential effects of changing the assumptions, or widening the scope. Clearly, a thorough investigation of for example risk aversion in this model would be an interesting extension, but is beyond the scope for this thesis.

4.7.1 Endogenous Commercial Interest Rate

In the previous, the implications of the model are based on the fact that the interest rate charged on the commercial market, r^L, is determined outside the model. When this is the case, a commercial lender will only decide whether to offer loans or not, depending on the risk of default and the interest rate differential. As we have seen, presence of the World Bank as an alternative lender, may then lead to no loans being offered from L. The conclusion is thus that development aid, in the form of cheap loans from the World bank to developing countries, may hinder access of these countries to commercial loans.

The assumption that r^L is exogenous is, however, not necessarily realistic. When there is demand for loans, but a high risk of default, the natural reaction for L would not necessarily be to refuse to offer any loans, but rather to raise the interest rate. However, the conclusion that the presence of B may hinder access of developing countries to the commercial markets, does not rest very heavily on this assumption. When the interest rate is determined by L, and is thus endogenous in the model, the presence of B will lead to L setting r^L higher. In this case, D is not completely shut out of the market, but the price paid for loans is increased. The consequence is most probably still that fewer countries will make the transition

from development aid dependents to commercial borrowers.

If there is competition among lenders in the commercial market, the interest rate on loans from L to D would be determined by the risk free interest rate, and the probability of default;

$$\begin{aligned}(1+r^L)R(1-q_i) &= (1+\bar{r})R \\ \Leftrightarrow r^L &= \frac{\bar{r}+q_i}{1-q_i}\end{aligned} \tag{19}$$

denoting the default probability with $i \in (1,2)$, representing the two cases without and with World Bank presence.

The commercial interest rate is equal to the risk free outside option if the probability of default is zero, and it is increasing in this probability of default;

$$\frac{\partial r^L}{\partial q_i} = \frac{1+\bar{r}}{(1-q_i)^2} > 0 \tag{20}$$

Since this probability is higher when B is present - for any r^L - the interest rate charged by L will always be higher when B is present.

q_i is a function of r^L itself, leading to a multiplier effect. Whether B is present or not, the effect on the critical values x_1 and x_2 of an increase in the commercial interest rate is the same;

$$\frac{\partial x_1}{\partial r^L} = \frac{\partial x_2}{\partial r^L} = R > 0 \tag{21}$$

An increase in r^L will thus increase the probability of default in both cases;

$$q_1 = F(x_1) \Rightarrow \frac{\partial q_1}{\partial r^L} = F'(x_1)\frac{\partial x_1}{\partial r^L} = F'(x_1)R > 0 \tag{22}$$

$$q_2 = F(x_2) \Rightarrow \frac{\partial q_2}{\partial r^L} = F'(x_2)\frac{\partial x_2}{\partial r^L} = F'(x_2)R > 0 \tag{23}$$

A higher default probability due to presence of the World Bank leads to higher interest rates, and this effect is strengthened by the effect of the interest rate on q_2. When the World Bank offers development aid to the developing countries, the

interest rate on commercial loans is increased, which will probably lead to less trade between D and L.

As a final note here, it should be mentioned that the way this interest rate is set, of course depends on the functioning of the market that L is a part of. A further extension would be to include the functioning of this market more explicitly in the model, to provide a better understanding of how r^L is actually set.

4.7.2 Development Aid - Grants or Loans?

Going back to the original set up where the interest rate is exogenous, another interesting extension would be to look at the implications of this model if B does not offer loans, but *grants* to D. A large part of today's aid transfers *are* given as grants. Furthermore, one of the most problematic assumptions in the set up of the model, is indeed the assumption that D always repays a loan from B. It is therefore interesting to investigate how the implications of the model changes when the World Bank, B, offers grants in stead of loans, to D. This means that D does not repay when he receives money from B. Intuitively, it would be much more attractive for D to stick to development aid in this case. Even though the interest rate on the loans from B might be very low, there is a vast difference between a grant, and a loan that must be repaid in the next period. However, there might of course be countries that have values of u^L high enough to still want to take up and repay loans from L. The question is whether the previous conclusion that World Bank presence increases the probability perceived by L for default, is still valid if the development aid from L is given as grants and not loans.

Whether development aid is given as loans or grants is obviously unimportant in the scenario where the World Bank is not present. Thus the default probability in this case is also unchanged. However, the present value utility for D of the different options, the critical value for u^L, and the default probability are slightly different under World Bank presence. If D chooses to take a loan from L, and repay in all future periods, his utility will be the same, but the two other options now give higher utility. The calculations are provided in appendix B.1, here I will only touch on the implications of changing the model in this way.

When B gives grants, there is no longer a single critical value of u^L, above

which D will always choose to repay a loan from L. The reason for this is that now a range of values of u^L make the option of not demanding a loan from L at all, the best option. In the original set up all countries would choose to demand a loan from L, even a country with a very low value of u^L. However, when the aid from B is given as grants, the cost of potentially loosing this grant in one period, will for a country with a low value of u^L be sufficiently high for this country to choose not to demand a loan from L at all. If u^L is very high, D will still choose to demand a loan from L, and repay in all future periods if he is offered the loan. Only when u^L is in some "intermediate" range, will D prefer to default. More precisely;

$$(1-p)\beta R = x_{2,l} < u^L < x_{2,h} = r^L R + (1-p)\beta R + pR \Rightarrow \text{Default}$$

where $x_{2,l}$ and $x_{2,h}$ depicts the two critical values of u^L in this case. The value of the default probability in this case is denoted by a subscript G, (representing the case with grants in stead of loans), to distinguish it from the original default probability, and the two default probabilities are represented by;

$$q_{1,G} = q_1 = F(x_1) \tag{24}$$

$$q_{2,G} = F(x_{2,h}) - F(x_{2,l}) \tag{25}$$

with $x_1 = r^L R < x_{2,h}$ and $x_{2,h} > x_{2,l}$.

Without knowing the exact distribution of u^L among the potential borrowing countries, these two probabilities cannot be compared. It *might* be the case that the default probability is higher under World Bank presence, but the opposite might be true as well. The reason for this is that while the presence of the World Bank induces some countries to choose to default in stead of repaying, the presence also induces some countries that would default if B was not present, to not demand loans from L at all. What happens to the total size of the group of countries that would demand a loan, but default in the next period if the loan is offered, thus depends on the relative strength of these two effects. This again depends on the distribution $F(u^L)$. Thus, when considering how World Bank presence affects D's access to the market - in the case where development aid is given as grants instead

if loans - further investigation is needed to make use of this model in drawing any conclusions.

4.7.3 World Bank Presence and Ability to Repay

In section 3.2, I briefly discussed how the riskiness of different assets is measured by investors in international capital markets, and the importance of rating agencies in this process. From this discussion, it was evident that both the willingness of a borrower to repay, and his ability to do so, affects the perceived risk of lending to him. In my model I have completely disregarded the fact that some countries might not be *able* to repay either commercial debt or loans regarded as development aid. This is quite obviously an oversimplification. However, it was made in an attempt to isolate potential effects of development aid on the perceived risk of lending to a development country government, through the *willingness* of this borrowing country to repay.

It is clear not only that the ability of a borrower to repay will be determinant to whether he does so or not, but also that development aid - that has been in the center of my analytical investigation - may affect the borrower's ability to stand by his obligations. Though I will not attempt to explain how these relationships might work, it should be noted that there *are* probably links between development aid and a developing country's ability to repay. Such effects on the ability to repay, might work in different directions compared with the effects on the *willingness* that I have discussed. They should obviously be taken into account in an investigation attempting to give some sort of overview of effects of development aid on access of developing countries to international capital markets.

Furthermore, it should be noticed that uncertainty regarding the borrower's future ability to repay, might create even more severe problems connected to asymmetry of information than those discussed here. I have assumed that the borrowing country always has the *means* to repay, if he defaults it is because the gains outweighs the costs of this action. When this is the case, a potential lender will know that a country that has defaulted, did this because he chose to do so, not because he was forced by some "bad" circumstances. An interesting extension of the analytical framework presented in this thesis, would be to take into account

potential moral hazard problems that would occur if this assumption had not been made.

Lastly, in the analytical framework presented in this thesis, the "external" utility, u^L, that the developing country gets from trading with L, is predetermined - for a given country, it has the same value in all periods. A clearly relevant extension of the model would be to include the possibility that u^L is drawn (from a known distribution) in every period, and may thus be different - for the same country, D - in different periods.

4.7.4 Risk Aversion

In my model, I have assumed that both the lender, L, and the borrower, D, are risk-neutral. This simplifies the calculations, but is of course also potentially a simplification that might change the results and implications of the model. It is beyond the scope of this thesis to do a thorough investigation of the consequences of relaxing this assumption. However, I will here provide an extension to the original set up, that might give some indications of what risk-aversion of the borrowing country would imply. I will keep the assumption that the utility of D is linear, but add a "disutility", $-Y$ in every period where D does not get a loan at all. This way, I at least include the probable fact that a period with no external financing might be especially damaging to the developing country.

As can be seen from the calculations in appendix B.2, the main implication of the original model - that World Bank presence might induce inefficiency through increasing the default probability perceived by L - is not necessarily affected by this additional feature.

The critical value of u^L, and thus the default probability, in the case where the World Bank is not present, are decreased. It is much less attractive to default on a loan from L, when the disutility is added in periods with no loan.

When the World Bank is present, the situation is, however, more complex. Depending on the size of Y, there are several possible outcomes regarding the change in the default probability in this case. I have not calculated the critical values of u^L in all cases, but figure 10, 11 and 12, in appendix B.2, illustrate them graphically. Some calculations to support the figures can also be found in

appendix B.2. The present value utility of D is the same as in the original set up, if he chooses either to take development aid from B, or to borrow from L *and* repay in all periods. However, if he chooses to default on a loan from L, the expected present value utility is reduced, because there is a possibility that he will not get any loan in period $t = 1$.

If Y is relatively small, the present value of defaulting will still always be higher than not demanding a loan from L at all. In this case, the default probability is reduced. But the default probability is reduced *less* when the World Bank is present, than when it is not. Thus the probability that World Bank presence induces inefficiency is greater than with no such "risk aversion". The relationship between the two default probabilities is;

$$q_{2,\delta} - q_{1,\delta} = F(x_{2,\delta}) - F(x_{1,\delta}) \geq F(x_2) - F(x_1)$$

since;

$$x_{2,\delta} - x_{1,\delta} = x_2 - x_1 + Y(1 - (1-p)(1-\beta)) > x_2 - x_1$$

When the Y is high, the picture is somewhat more complicated. Firstly, for some "intermediate" values of Y, the cost of default is increased sufficiently for some countries to prefer only demanding loans from B. In this case, there will be two critical values of u^L, and it cannot be determined whether the default probability is highest under World Bank presence or not. This is what is illustrated in figure 11 in appendix B.2.

And finally, for quite high values of Y, the default probability is reduced to zero also when the World Bank is present. In this case, the disutility from one period with no loan, is sufficiently high for any D to prefer to avoid this situation with certainty, and thus choose either to demand a loan from L and repay it, or to only take the loans from B. This case is illustrated in figure 12 in appendix B.2.

Without having discussed risk aversion directly or in detail here, it seems like a plausible preliminary conclusion could be that if D is *sufficiently* risk averse to never want to default on a loan from L (even with only a small punishment from B), this will remove the possibility that World Bank presence might lead to the

type of inefficiency discussed in section 4.5. However, for somewhat lower levels of risk aversion, the main implication of the model might still hold, but this still depends on the size of Y, and on the shape of the distribution $F(u^L)$.

4.7.5 Signalling

In section 4.5, I considered how the presence of the World Bank potentially affects the allocation of loans in the presence of asymmetric information, and compared this to the case with no hidden information, i.e. with u^L known also to L. With no asymmetry of information, the result was that any country with sufficiently high u^L, prefers repaying L over defaulting, would obtain a loan from the commercial lender. This, however, was shown not to be the case when u^L is unknown to L. In this case, World Bank presence potentially induces inefficiency. An obvious solution to this problem of asymmetric information, would be that the developing country found some way to signal his type (or more precisely his value of u^L), before the decision of whether to offer a loan or not is made by L in period $t = 0$.

As mentioned in section 3.3, some countries have to some extent refused "charity" from the industrialized world, among them are India and South Africa. This might indeed be a way for these countries to attempt to signal that they strongly prefer to be independent from development aid, and to participate in the global markets, including the international capital market.

For many developing countries, however, the cost of this type of signalling might be regarded too high. Several periods without any external financing might be necessary, and there would potentially be high uncertainty connected to future access to the commercial capital market.

In any case, an interesting extension of the model presented in this thesis, would be to allow for this type of signalling. If D could affect the decision of L in the future, by for one or more periods not taking the loans from B, the problems connected to asymmetric information might be reduced. However, such a possibility could also lead to the arise of several interesting issues concerning the incentives of countries with different levels of u^L to use the opportunity to signal their type. It might clearly be the case that also some countries that do not plan to repay a loan from L, might see it as attractive to attempt to *signal* that they

would repay.

I will not discuss this issue in further detail here, but it should be emphasized that if costless signalling was possible, a country with a high value of u^L would give this information to L, and the problem of asymmetric information would disappear.

4.7.6 The Punishment From B After Default

In the original model, it was assumed that the World Bank *do* react when a developing country defaults on a commercial loan, by decreasing the probability of offering development aid in the following period to $p \in [0, 1]$. This might however be a quite weak punishment. It is, of course, possible to allow for B to extend the punishment several periods into the future. Analytically, this can be done by assuming that the probability of getting the loan from B is $p \in [0, 1]$ for $n > 1$ periods after the default. Or, the probability of getting the loan might be $p_1 \in [0, 1]$ in the first period after default, $p_2 \in [0, 1]$ in the second period after default, and so on, to allow for the probability to change over time.

I will only sketch the implications that this would have. When the punishment from B is more severe, the cost of defaulting is higher in the case where the World Bank is present. This gives a lower critical value of u^L in this situation. Thus the difference between the default probabilities will - for a given distribution of u^L - be decreased. As a result, the probability that World Bank presence induces inefficiency is reduced.

To relate this to the discussion in section 4.5.2, on how the exogenous variables affect the default probabilities, extending the punishment into the future would qualitatively have similar effects as decreasing p. A decrease in p makes a default under World Bank presence less attractive, and thus reduces the default probability in this situation. The result is that the difference between the default probabilities - and thus the probability that World Bank presence induces inefficiency - is reduced.

4.7.7 Forward-Looking Commercial Lender

Until now, I have assumed that the potential lender, L, does not consider potential future gains from trading with D. L only compares the expected gain from offering

a loan to D in period $t = 0$ with his outside option in the same period. However, since there is a difference between the risk free interest rate and the rate L can charge from D, L would in reality probably also consider the *future* gains from lending to D. If D does not default in period $t = 1$, L will know that he will continue to repay in all future periods. The interest rate differential will then lead to larger revenues for L in all future periods.

The only consequence of bringing the fact that the lender is forward-looking into the model is that the critical value of the default probability, above which L will refuse to offer the loan in period $t = 0$, is somewhat higher. When also considering the potential future gains, L will be willing to take a risk that is slightly larger. The difference between the two critical values of the default probabilities of course depends on the subjective discount factor of L.

The critical value in the situation where the potential lender is forward-looking is calculated in appendix B.3. Denoting the critical value with a hat, and using the discount factor δ (to allow for the possibility that L and D do not discount the future in exactly the same way), it is shown to be:

$$\hat{q} = \frac{r^L - \bar{r}}{(1 + r^L) - \delta(1 + \bar{r})} > q^*$$

This does not change the main implication of the model. The default probabilities are still different in the two cases where the World Bank is present or not present, and depending on the distribution $F(u^L)$, a situation where World Bank presence induces inefficiency may still arise.

There are obviously also a whole range of possible extensions of the model that I have not discussed here. Due to the limited time at disposal, I have to leave this for future investigation.

5 Conclusion

The aim of this thesis was to investigate a potential link between development aid and the recipient country's possibility to enter commercial international capital markets. In a theoretical framework, I have analyzed the hypothesis that development aid might be a hindrance for access to these markets for some developing countries. The main implication of the analytical model presented in this thesis is that the presence of a donor of development aid - such as the World Bank - under some circumstances will increase the probability of default perceived by a commercial lender sufficiently for this lender not to offer any loans to the receiver of the foreign aid. Inefficiency - understood as mutually beneficial private lending arrangements not being carried out - may prevail as a result of the presence of this donor. This happens because developing countries eager to borrow money - and to stand by their obligations in the future and repay their loans - are denied access to such loans, due to the fact that the riskiness is perceived to be too high for the commercial lender.

Although I do not draw any conclusions regarding the overall effects of inflows of development aid to a developing country, it is clear that there are *potentially* adverse effects at place. The opportunity to use commercial capital markets as an alternative way of financing investment that can spur development, and reduce their dependency of development aid, might be seen as beneficial by a developing country government. A developing country with a growing economy should also be prepared for a reduction - or even a removal - of the amounts of development aid received. The possibility to enter international capital markets is crucial for such a country. It is thus clear that if development aid hinders access to international capital markets, a country is potentially trapped in a situation with high dependency on foreign aid.

References

Alesina, A. and B. Weder (1999). Do corrupt governments receive less foreign aid? NBER Working Papers 7108, National Bureau of Economic Research, Inc.

Andvig, J. C. and K. O. Moene (1990). How corruption may corrupt. *Journal of Economic Behavior & Organization 13*(1), 63–76.

Auty, R. M. (2001). The political economy of resource driven growth. *European Economic Review 45*(4-6), 839–846.

Baland, J.-M. and P. Francois (2000). Rent-seeking and resource booms. *Journal of Development Economics 61*(2), 527–542.

Boone, P. (1996). Politics and the effectiveness of foreign aid. *European Economic Review 40*, 289–329.

Borensztein, E., J. De Gregorio, and J.-W. Lee (1998). How does foreign direct investment affect economic growth? *Journal of International Economics 45*(1), 115–135.

Boschini, A. D., J. Pettersson, and J. Roine (2007). Resource curse or not: A question of appropriability. *Scandinavian Journal of Economics 109*, 593–617.

Brautigam, D. A. and S. Knack (2004). Foreign aid, institutions, and governance in Sub-Saharan Africa. *Economic Development and Cultural Change 52*(2), 255–85.

Buchanan, J. (1975). The Samaritan's Dilemma. In *Altruism, Morality and Economic Theory*. E. Phelps (ed.), New York: Russel Sage Foundation.

Burnside, C. and D. Dollar (2000). Aid, policies, and growth. *The American Economic Review 90*(4), pp. 847–868.

Cantor, R. M. and F. Packer (1996). Determinants and impact of sovereign credit ratings. *Economic Policy Review 2*(Oct), 37–53.

Coate, S. (1995). Altruism, the samaritan's dilemma, and government transfer policy. *The American Economic Review 85*(1), pp. 46–57.

Corbo, V. and L. Hernandez (1 March 1996). Macroeconomic adjustment to capital inflows. *World Bank Research Observer 11*, 61–85(25).

Djankov, S., J. G. Motalvo, and M. Reynal-Querol (2008). The curse of aid. *Journal of Economic Growth 13*, 169–194.

Dollar, D. and W. Easterly (1999). The search for the key: Aid, investment and policies in Africa. *Journal of African Economies 8*(4), 546–577.

Doucouliagos, H. and M. Paldam (2008). Aid effectiveness on growth: A meta study. *European Journal of Political Economy 24*, 1–24.

Easterly, W. (2003). Can foreign aid buy growth? *The Journal of Economic Perspectives 17*, 23–48.

Easterly, W. (2007). Was development assistance a mistake? *The American Economic Review 97*, 328–332.

Edwards, S. (1984). LDC foreign borrowing and default risk: An empirical investigation, 1976-80. *The American Economic Review 74*(4), pp. 726–734.

Edwards, S. (1986). The pricing of bonds and bank loans in international markets : An empirical analysis of developing countries' foreign borrowing. *European Economic Review 30*(3), 565–589.

Feder, G. and L. V. Uy (1985). The determinants of international creditworthiness and their policy implications. *Journal of Policy Modeling 7*(1), 133–156.

FitchRatings (2010). Sovereign rating methodology.

Goldsmith, A. A. (2001). Foreign aid and statehood in Africa. *International Organization 55*(1), pp. 123–148.

Hansen, H. and F. Tarp (2001). Aid and growth regressions. *Journal of Development Economics 64*, 547–570.

Khan, H. A. and E. Hoshino (1992). Impact of foreign aid on the fiscal behavior of LDC governments. *World Development 20*(10), 1481–1488.

Knack, S. (2001). Aid dependence and the quality of governance: Cross-country empirical tests. *Southern Economic Journal 68*(2), pp. 310–329.

Larrain, G., H. Reisen, and J. von Maltzan (1997). Emerging market risk and sovereign credit ratings, working paper no. 124. *OECD Development Centre*.

Lee, S. H. (1993). Are the credit ratings assigned by bankers based on the willingness of ldc borrowers to repay? *Journal of Development Economics 40*(2), 349–359.

Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature 35*(2), pp. 688–726.

Lucas, Robert E., J. (1990). Why doesn't capital flow from rich to poor countries? *The American Economic Review 80*(2), pp. 92–96.

Mauro, P. (1995). Corruption and growth. *The Quarterly Journal of Economics 110*(3), 681–712.

Mehlum, H., K. O. Moene, and R. Torvik (2006). Institutions and the resource curse. *Economic Journal 116*(508), 1–20.

Moss, T., G. Pettersson, and N. van de Walle (2006). An aid-institutions paradox? A review essay on aid dependency and state building in Sub-Saharan Africa. *Center for Global Development Working Paper 74*(74).

Moyo, D. (2010). *Dead Aid*. The Penguin Group.

Murphy, K. M., A. Shleifer, and R. W. Vishny (1993). Why is rent-seeking so costly to growth? *The American Economic Review 83*(2), pp. 409–414.

OECD (2010a). African Economic Outlook 2010 OECD, basic indicators 2009. [http://www.oecd.org/document/0,3746,en_2649_201185_46462759_1_1_1_1,00.html], Accessed 01.04.11.

OECD (2010b). Aid statistics, recipient aid charts. [http://www.oecd.org/countrylist/0,3349,en_2649_34447_25602317_1_1_1_1,00.html], Accessed 01.04.11.

OECD (2010c). Table: Net ODA from DAC countries from 1950 to 2009. [http://www.oecd.org/searchResult/0,3400,en_2649_34447_1_1_1_1_1,00.html], Accessed 01.04.11.

Pedersen, K. (2001). The samaritan's dilemma and the effectiveness of development aid. *International Tax and Public Finance 8*(5), 693–703.

Prasad, E., R. G. Rajan, and A. Subramanian (2006). Patterns of international capital flows and their implications for economic development. *Proceedings*, 119–158.

Prasad, E., R. G. Rajan, and A. Subramanian (2007). Foreign capital and economic growth. *Brookings Papers on Economic Activity 1*(13619), 153–230.

Ram, R. and K. H. Zhang (2002). Foreign direct investment and economic growth: Evidence from cross country data for the 1990s. *Economic Development and Cultural Change 51*(1), pp. 205–215.

Reisen, H. and M. Soto (2001). Which types of capital inflows foster developing country growth? *International Finance 4*(1), 1–14.

Robinson, J. A., R. Torvik, and T. Verdier (2006). Political foundations of the resource curse. *Journal of Development Economics 79*, 447–468.

Roodman, D. (2007). The anarchy of numbers: Aid, development, and cross-country empirics. *The World Bank Economic Review 21*(2), 255–277.

Ross, M. L. (1999). The political economy of the resource curse. *World Politics 51*(2), pp. 297–322.

Sachs, J. D. and A. M. Warner (1997a). Natural resource abundance and economic growth. *Center for International Development and Harvard Institute for International Development*.

Sachs, J. D. and A. M. Warner (1997b). Sources of slow growth in African economies. *Journal of African Economies 6*(3), 335–376.

Sachs, J. D. and A. M. Warner (2001). The curse of natural resources. *European Economic Review 45*(4-6), 827–838.

Schwalbenberg, H. M. (1998). Does foreign aid cause the adoption of harmful economic policies? *Journal of Policy Modeling 20*(5), 669–675.

Soto, M. (2000). Capital flows and growth in developing countries: Recent empirical evidence, working paper no. 160. *OECD Development Centre* (160).

Standard&Poor's (2010). Guide to credit rating essentials. [http://www.understandingratings.com], Accessed 15.03.11.

Stiglitz, J. E. (2000). Capital market liberalization, economic growth, and instability. *World Development 28*(6), 1075–1086.

Stiglitz, J. E. and A. Weiss (1981). Credit rationing in markets with imperfect information. *The American Economic Review 71*(3), pp. 393–410.

Svensson, J. (2000). Foreign aid and rent-seeking. *Journal of International Economics 51*, 437–461.

Tavares, J. (2003). Does foreign aid corrupt? *Economics Letters 79*(1), 99–106.

Torvik, R. (2002). Natural resources, rent seeking and welfare. *Journal of Development Economics 67*(2), 455–470.

Younger, S. D. (1992). Aid and the dutch disease: Macroeconomic management when everybody loves you. *World Development 20*(11), 1587–1597.

A Present Value Utilities and Calculation of Default Probabilities

A.1 World Bank Not Present

In period $t = 0$, the present value of current and future utility for $D$from lending from L and repaying in all future periods consists of the discounted value of all current and future transfers, and the present value of all (current and) future repayments (with interest rates);

$$\begin{aligned}\tilde{V}^P(R, u^L, r^L, \beta) &= R\sum_{t=0}^{\infty}\beta^t + u^L\sum_{t=0}^{\infty}\beta^t - (1+r^L)R\sum_{t=1}^{\infty}\beta^t \\ &= \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta}\end{aligned}$$

In the second line, I use the fact that since β is strictly smaller than 1, the geometric succession can be simplified; $\sum_{t=0}^{\infty}\beta^t = 1/(1-\beta)$, and equivalently $\sum_{t=1}^{\infty}\beta^t = \beta/(1-\beta)$ and so on.

Correspondingly, the present value utility if he chooses not to repay the loan in period $t = 1$, will be;

$$\tilde{V}^D(R, u^L) = R + u^L$$

The value of u^L that makes B indifferent between the two, x_1, can then be calculated as;

$$\begin{aligned}&\tilde{V}^P(R, u^L, r^L, \beta) = \tilde{V}^D(R, u^L) \\ \Leftrightarrow &\frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta\frac{R}{1-\beta} = R + u^L \\ \Leftrightarrow &\beta\frac{R}{1-\beta} + \beta u^L\frac{1}{1-\beta} - (1+r^L)\beta\frac{R}{1-\beta} = 0 \\ \Leftrightarrow &u^L = (1+r^L)R - R = r^L R \\ \Rightarrow &x_1 = r^L R\end{aligned}$$

Finally, the default probability perceived by L when the World Bank is not

present, q_1, will then be;

$$q_1 = P(u^L < x_1) = P(u^L < Rr^L) = F(Rr^L)$$

A.2 World Bank Present

The present value of current and future utility for D in the three cases where he borrows from B, borrows from L and repays and where he borrows from L and defaults, can respectively be calculated as;

$$\begin{aligned} V^B(R, r^B, \beta) &= R\sum_{t=0}^{\infty}\beta^t - (1+r^B)R\sum_{t=1}^{\infty}\beta^t \\ &= \frac{R}{1-\beta} - (1+r^B)\beta R\frac{1}{1-\beta} \end{aligned}$$

$$\begin{aligned} V^P(R, u^L, r^L, \beta) &= R\sum_{t=0}^{\infty}\beta^t + u^L\sum_{t=0}^{\infty}\beta^t - (1+r^L)R\sum_{t=1}^{\infty}\beta^t \\ &= \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta} \end{aligned}$$

$$\begin{aligned} V^D(R, u^L, r^B, p, \beta) =& R + u^L + p\beta R + R\sum_{t=2}^{\infty}\beta^t - p\beta^2(1+r^B)R - (1+r^B)R\sum_{t=3}^{\infty}\beta^t \\ =& R + u^L + p\beta R + \beta^2 R\frac{1}{1-\beta} - (1+r^B)p\beta^2 R \\ & - (1+r^B)\beta^3 R\frac{1}{1-\beta} \end{aligned}$$

An this case, it is not necessarily enough to find the value of u^L that makes D indifferent between repaying or defaulting on a loan from L, to find the default probability. This probability must be calculated *given* that D actually demands the loan (thus given that he does not choose only to demand a loan from B). However, it can be shown that with these expression for present value utility, D will - for no values of u^L, choose to not demand a loan from B, even if he has this opportunity. The intuitive explanation for this is that the the gain from taking

up a loan from L and defaulting on this loan in the next period, is always higher than the expected punishment from B (a probability $p \leq 1$ of getting a loan in the period immediately following the default).

The easiest way to see this mathematically, is by looking at what values the value functions take when $u^L = 0$, and then how the functions change as u^L increases;

$$\begin{aligned}
\frac{\partial V^B}{\partial u^L} &= 0 \\
\frac{\partial V^P}{\partial u^L} &= \frac{1}{1-\beta} < 1 \\
\frac{\partial V^D}{\partial u^L} &= 1 \\
\Rightarrow \frac{\partial V^P}{\partial u^L} &> \frac{\partial V^D}{\partial u^L} > \frac{\partial V^B}{\partial u^L}
\end{aligned}$$

When $u^L = 0$, the three functions take the values:

$$\begin{aligned}
V^B(R, r^B, \beta) &= \frac{R}{1-\beta} - (1+r^B)\beta R\frac{1}{1-\beta} \\
V^P(R, 0, r^L, \beta) &= \frac{R}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta} \\
V^D(R, 0, r^B, p, \beta) &= R + p\beta R + \beta^2 R\frac{1}{1-\beta} - (1+r^B)p\beta^2 R - (1+r^B)\beta^3 R\frac{1}{1-\beta}
\end{aligned}$$

These expressions yield

$$
\begin{aligned}
&V^B(R,r^B,\beta) - V^P(R,0,r^L,\beta) \\
&\quad = R/(1-\beta) - (1+r^B)\beta R/(1-\beta) - R/(1-\beta) + (1+r^L)\beta R/(1-\beta) \\
&\quad = (r^L - r^B)\beta R \frac{1}{1-\beta} > 0 \\
&V^D(R,0,r^B,p,\beta) - V^B(R,r^B,\beta) \\
&\quad = R + p\beta R + \beta^2 \frac{R}{1-\beta} - (1+r^B)p\beta^2 R - (1+r^B)\beta^3 \frac{R}{1-\beta} \\
&\qquad - \frac{R}{1-\beta} + (1+r^B)\beta \frac{R}{1-\beta} \\
&\quad = R + p\beta R + \beta^2 \frac{R}{1-\beta} \overbrace{-R - \beta R - \beta^2 \frac{R}{1-\beta}}^{=-\frac{R}{1-\beta}} \\
&\qquad - (1+r^B)p\beta^2 R - (1+r^B)\beta^3 \frac{R}{1-\beta} \\
&\qquad + \overbrace{(1+r^B)\beta R + (1+r^B)\beta^2 R + (1+r^B)\beta^3 \frac{R}{1-\beta}}^{=(1+r^B)\beta\frac{R}{1-\beta}} \\
&\quad = -\beta R(1-p) + (1+r^B)\beta R[1+\beta(1-p)] \\
&\quad = \beta R[(1+r^B)(1+\beta(1-p)) - (1-p)] > 0
\end{aligned}
$$

$$
\Rightarrow V^D(R,0,r^B,p,\beta) > V^B(R,r^B,\beta) > V^P(R,0,r^L,\beta)
$$

This is was is illustrated in figure 2. V^D, or both V^D and V^P, will aways be higher than V^B.

It should then be clear that to find the default probability perceived by L in the case were the World Bank is present, it is sufficient to find the level of u^L that is such that $V^P(R,u^L,r^L,\beta) = V^D(R,u^L,r^B,p,\beta)$;

$$
\begin{aligned}
&V^P(R,u^L,r^L,\beta) = V^D(R,u^L,r^B,p,\beta)\\
\Leftrightarrow&\frac{R}{1-\beta}+\frac{u^L}{1-\beta}-(1+r^L)\beta\frac{R}{1-\beta}\\
&=R+u^L+p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}\\
\Leftrightarrow&\beta\frac{R}{1-\beta}+\beta\frac{u^L}{1-\beta}-(1+r^L)\beta\frac{R}{1-\beta}\\
&=p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}\\
\Leftrightarrow&u^L=-R+(1+r^L)R\\
&+[p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}]\frac{1-\beta}{\beta}\\
&=r^LR\\
&+[p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}]\frac{1-\beta}{\beta}
\end{aligned}
$$

$$
\begin{aligned}
\Rightarrow x_2 &= r^LR\\
&+[p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}]\frac{1-\beta}{\beta}
\end{aligned}
$$

Finally, the default probability perceived by L when the World Bank *is* present, q_1, will then be;

$$
\begin{aligned}
q_2 =&P(u^L<x_2)\\
=&P(u^L<r^LR\\
&+[p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}]\frac{1-\beta}{\beta})\\
=&F(r^LR\\
&+[p\beta R-(1+r^B)p\beta^2R+\beta^2\frac{R}{1-\beta}-(1+r^B)\beta^3\frac{R}{1-\beta}]\frac{1-\beta}{\beta})
\end{aligned}
$$

A.3 Comparing Default Probabilities

Some further calculations are then necessary to show that the default probability perceived by L is lower when the World Bank is not present, than it is under World Bank presence. Firstly, I show that $x_2 > x_1$

$$\begin{aligned}
&x_2 - x_1 \\
&= r^L R \\
&\quad + [p\beta R - (1+r^B)p\beta^2 R + \beta^2 \frac{R}{1-\beta} - (1+r^B)\beta^3 \frac{R}{1-\beta}] \frac{1-\beta}{\beta} \\
&\quad - r^L R \\
&= [p\beta R - (1+r^B)p\beta^2 R + \beta^2 \frac{R}{1-\beta} - (1+r^B)\beta^3 \frac{R}{1-\beta}] \frac{1-\beta}{\beta} > 0 \qquad (26)
\end{aligned}$$

because

$$\begin{aligned}
&p\beta R - (1+r^B)p\beta^2 R \\
&= p\beta R(1 - (1+r^B)\beta) > 0
\end{aligned}$$

and

$$\begin{aligned}
&\beta^2 \frac{R}{1-\beta} - (1+r^B)\beta^3 \frac{R}{1-\beta} \\
&= \beta^2 \frac{R}{1-\beta}(1 - (1+r^B)\beta) > 0
\end{aligned}$$

since

$$\frac{1}{\beta} = 1 + \rho > 1 + r^B \Leftrightarrow (1+r^B)\beta < 1$$

Since the Cumulative Distribution Function is of course (weakly) increasing, it follows that;

$$q_2 = P(u^L < x_2) = F(x_2) \geq F(x_1) = P(u^L < x_1) = q_1$$

Where q_2 and q_1 are the probabilities for default perceived by L when the World Bank is present and when the World Bank is not present, respectively.

A.4 Determinants of The Default Probabilities

For a given distribution $F(u^L)$, the default probabilities are determined by x_1 and x_2. The probability that World Bank Presence will give inefficiency if it is not the case when no development aid is available, is larger the larger the difference between these two critical values. I here calculate how this difference is affected by the exogenous variables in the model.

In A.3, it was shown that;

$$x_2 - x_1 = [p\beta R - (1 + r^B)p\beta^2 R + \beta^2 \frac{R}{1-\beta} - (1 + r^B)\beta^3 \frac{R}{1-\beta}] \frac{1-\beta}{\beta}$$

The partial derivatives can then be calculated as;

$$\begin{aligned}
\frac{\partial(x_2 - x_1)}{\partial p} &= R(1-\beta)(1 - (1 + r^B)\beta) > 0 \\
\frac{\partial(x_2 - x_1)}{\partial R} &= (\beta + p(1-\beta))(1 - (1 + r^B)\beta) > 0 \\
\frac{\partial(x_2 - x_1)}{\partial r^B} &= -\beta R(p(1-\beta) + \beta) < 0 \\
\frac{\partial(x_2 - x_1)}{\partial \bar{r}} &= 0 \\
\frac{\partial(x_2 - x_1)}{\partial r^L} &= 0
\end{aligned}$$

For a given distribution of u^L, the difference between the default probabilities when the World Bank is not present and under World Bank presence is thus increasing in p and R, and decreasing in r^B.

B Calculations For Extensions

B.1 Default Probabilities With Grants From B

The default probability when the World Bank is not present, is obviously not affected by whether development aid is given as grants of loans. However, it does change when the World Bank is present. The present value of current and future utility for D in this situation is for the three options respectively;

$$V_G^B(R,\beta) = \frac{R}{1-\beta}$$

$$V_G^P(R,u^L,r^L,\beta) = \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta}$$

$$V_G^D(R,u^L,p,\beta) = R + u^L + p\beta R + \beta^2 R\frac{1}{1-\beta}$$

where the subscript G representing grants.

$V_G^P(R,u^L,r^L,\beta)$ is unchanged compared to the situation with loans, but if D chooses either of the other two options, he now gets a higher utility than if B gave loans. It can easily be seen that

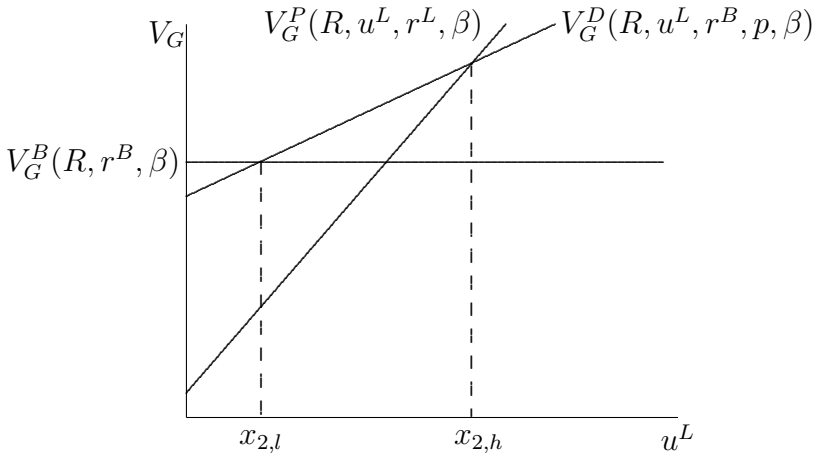
$$V_G^B(R,\beta) > V_G^D(R,0,p,\beta) > V_G^P(R,0,r^L,\beta)$$

and furthermore, that

$$\frac{\partial V_G^P}{\partial u^L} > \frac{\partial V_G^D}{\partial u^L} > \frac{\partial V_G^B}{\partial u^L}$$

To find the default probability in this case, I first find the values of u^L that would lead D to demand a loan from L, but default in the next period. This is

Figure 8: The value functions for D in the case where the World Bank is present, and offers grants to D.



equivalent to finding when the three function cross each other;

$$V_G^B(R, \beta) = V_G^D(R, u^L, p, \beta) \Rightarrow u^L = (1-p)\beta R = x_{2,l} \geq 0$$
$$V_G^P(R, u^L, r^L, \beta) = V_G^D(R, u^L, p, \beta) \Rightarrow u^L = r^L R + (1-p)\beta R + pR = x_{2,h} > 0$$

l and h representing the low and high critical value of u^L. It is easily seen that $x_{2,h} > x_{2,l}$.

As long as the probability, p, of B offering the grant in a period with default is not zero, there are some (low) values of u^L that leads to D choosing not to demand a loan from L at all, namely those $u^L < x_{2,l}$. Any country with $u^L > x_{2,h}$ will demand loans from L, and repay in all future periods. A country with $x_{2,l} < u^L < x_{2,h}$ would demand the loan, but default in the next period. The two critical values are illustrated in figure 8. The default probability perceived by L in this situation is thus;

$$q_{2,G} = F(x_{2,h}) - F(x_{2,l})$$

Remembering that the default probability when the World Bank is not present was $q_1 = F(x_1)$, with $x_1 = r^L R < x_{2,h}$, it is clear that the default probabilities with and without World Bank presence are not directly comparable in this situation. Which one is highest cannot be determined without knowing the shape of the

distribution $F(u^L)$.

B.2 Default Probabilities With Disutility From Absence of Loan

If D has gets a disutility with absolute value Y in each period when he does not receive a loan neither from L nor from B, the present value of current and future utility will be different when he defaults. Here, I will set up the value functions of D when this is the case, and from this calculate the default probabilities with and without World Bank presence, when this disutility from absence of loan is present. To distinguish the value functions, the critical values of u^L and the default probabilities, from those in the original model, I here note these with a subscript δ (representing the case with disutility).

B.2.1 Disutility When World Bank Not Present

In this case, the value functions take the form;

$$\tilde{V}_\delta^P(R, u^L, r^L, \beta) = \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1+r^L)\beta R\frac{1}{1-\beta} = \tilde{V}^P(R, u^L, r^L, \beta)$$

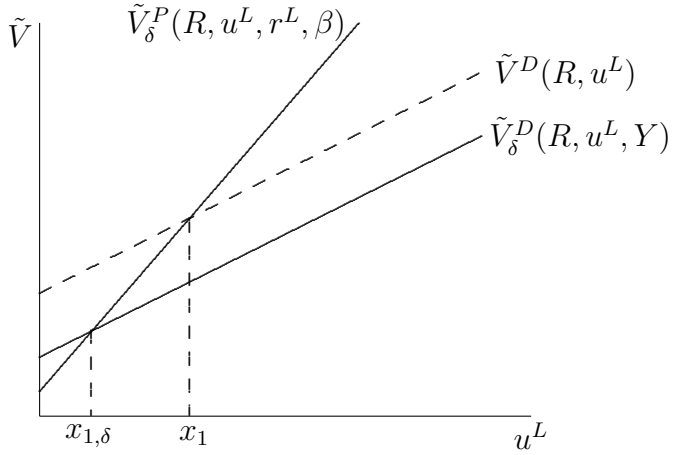
$$\tilde{V}_\delta^D(R, u^L, Y) = R + u^L - Y\frac{\beta}{1-\beta} = \tilde{V}^D(R, u^L) - Y\frac{\beta}{1-\beta}$$

And using the same approach as in appendix A, the critical value for u^L, and the default probability perceived by L, is calculated, giving;

$$\begin{aligned} x_{1,\delta} &= r^L R - Y = x_1 - Y \\ q_{1,\delta} &= P(u^L < x_{1,\delta}) = F(x_{1,\delta}) < F(x_1) \end{aligned}$$

where x_1 is of course the critical value for u^L in the original set up, where the disutility Y is not present. The value functions in this case are illustrated in figure 9. The critical value of u^L, and thus the default probability, are reduced. If $Y > x_1 \Leftrightarrow Y > r^L R$, the default probability without World Bank presence is zero.

Figure 9: The present value utility in the situation where the World Bank is not present, adding a disutility in every period with no loan.



B.2.2 Disutility Under World Bank Presence

The value functions when the World Bank is present, are;

$$V_\delta^B(R, r^B, \beta) = \frac{R}{1-\beta} - (1 + r^B)\beta R \frac{1}{1-\beta} = V^B(R, r^B, \beta)$$

$$V_\delta^P(R, u^L, r^L, \beta) = \frac{R}{1-\beta} + \frac{u^L}{1-\beta} - (1 + r^L)\beta R \frac{1}{1-\beta} = V^P(R, u^L, r^L, \beta)$$

$$\begin{aligned} V_\delta^D(R, u^L, r^B, p, \beta, Y) =& R + u^L + p\beta R + \beta^2 R \frac{1}{1-\beta} - (1 + r^B)p\beta^2 R \\ & - (1 + r^B)\beta^3 R \frac{1}{1-\beta} - (1-p)\beta Y \\ =& V^D(R, u^L, r^B, p, \beta) - (1-p)\beta Y \end{aligned}$$

If Y is relatively small, the present value of defaulting will still always be higher than not demanding a loan from L at all. In this case, the default probability is

Figure 10: The value functions with disutility from no loan, under World Bank presence, for a relatively low value of Y

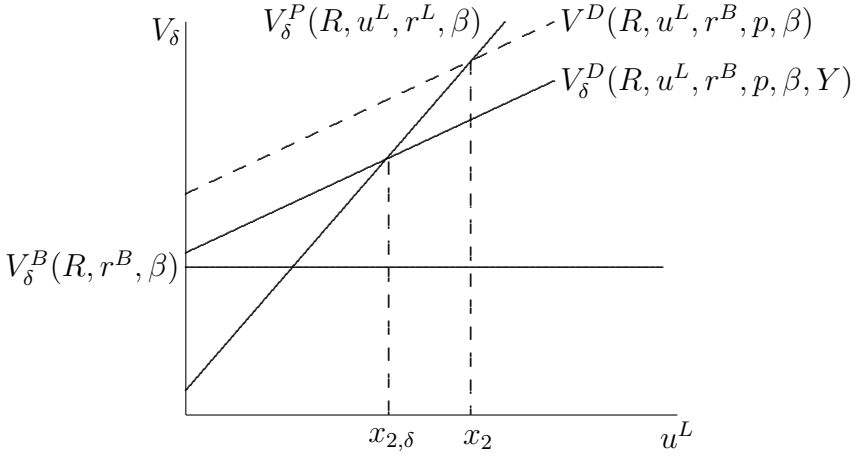


Figure 11: The value functions with disutility from no loan, under World Bank presence, for intermediate values of Y.

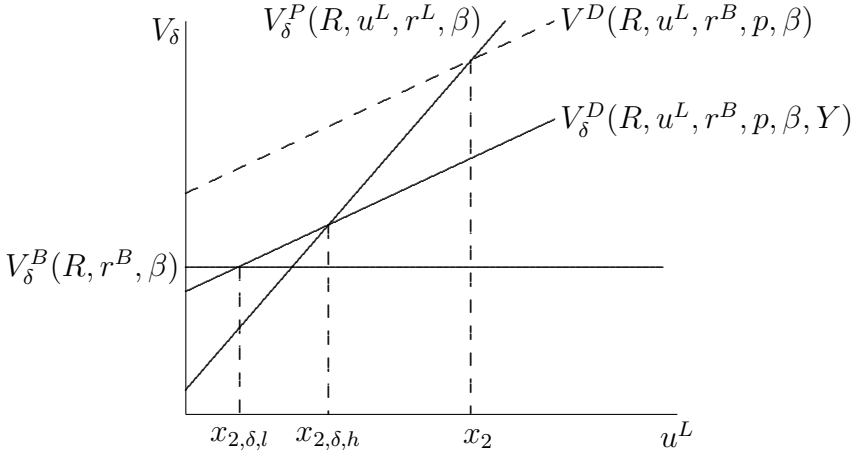
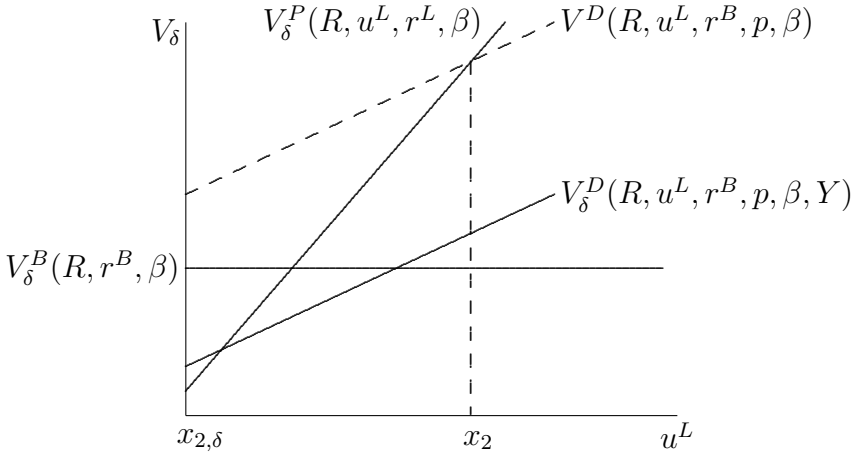


Figure 12: The value functions with disutility from no loan, under World Bank presence, for high values of Y



reduced, and the situation is illustrated in figure 10. This is the case if;

$$V_\delta^D(R, 0, r^B, p, \beta, Y) > V_\delta^B(R, r^B, \beta)$$
$$\Leftrightarrow Y < R[(1 + r^B)\beta - 1] > 0$$

The critical value of u^L, and the default probability is then calculated as;

$$\begin{aligned}
\Rightarrow x_{2,\delta} &= r^L R \\
&+ [p\beta R - (1 + r^B)p\beta^2 R + \beta^2 \frac{R}{1-\beta} - (1 + r^B)\beta^3 \frac{R}{1-\beta}] \frac{1-\beta}{\beta} \\
&- Y(1-p)(1-\beta) \\
\Rightarrow q_{2,\delta} &= P(u^L < x_{2,\delta}) = F(x_{2,\delta}) < F(x_2)
\end{aligned}$$

In this case, the default probability is reduced *more* when the World Bank is not present, than when it is present, and thus the probability that World Bank presence induces inefficiency is greater than with no such "risk aversion". The relationship between the two default probabilities is;

$$q_{2,\delta} - q_{1,\delta} = F(x_{2,\delta}) - F(x_{1,\delta}) \geq F(x_2) - F(x_1)$$

since;

$$x_{2,\delta} - x_{1,\delta} = x_2 - x_1 + Y(1 - (1-p)(1-\beta)) > x_2 - x_1$$

However, when the Y is high, the picture is somewhat more complicated. Firstly, for some "intermediate" values of Y, the cost of default is increased sufficiently for some countries to prefer only demanding loans from B. In this case, there will be two critical values of u^L, and it cannot be determined whether the default probability is highest under World Bank presence or not. This is what is illustrated in figure 11.

And finally, for quite high values of Y, the default probability is reduced to zero also when the World Bank is present. In this case, the disutility from one period with no loan, is sufficiently high for any D to prefer to avoid this situation with certainty, and thus choose either to demand a loan from L and repay it, or to only take the loans from B. This case is illustrated in figure 12.

B.3 Forward-Looking Lender

If the potential lender is forward-looking, the expected revenues (and thus utilities) that he compares will be;

$$\pi_1 = (1+\bar{r})R\frac{\delta}{1-\delta} - R\frac{1}{1-\delta}$$

if he does not offer a loan to D in period $t = 0$. And;

$$\pi_2 = q(1+\bar{r})R\frac{\delta^2}{1-\delta} + (1-q)(1+r^L)R\frac{\delta}{1-\delta} - R\frac{1}{1-\delta}$$

if he *does* offer D the loan in period $t = 0$. Where q is the perceived default probability, and δ is the subjective discount factor of the lender.

The default probability that makes L indifferent between the two options, can the be calculated as;

$$\hat{q} = \frac{r^L - \bar{r}}{(1+r^L) - \delta(1+\bar{r})} > q^*$$

This critical value of the default probability will be higher than in the case where the lender is not forward-looking, where the value is $q*$. This is easily seen from the expression; $\delta = 0 \Rightarrow \hat{q} = q^*$, while $\delta > 0 \Rightarrow \hat{q} > q^*$.