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The impact of official development assistance on economic growth

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Master's thesis

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Official development assistance typically takes the form of continuous monetary support given by one country or organization to another country in the form of loans and grants. The purpose of official development assistance is to improve economic development and welfare and to reduce income inequality between countries. Numerous studies have considered the impact of development assistance on economic growth. These studies have had varying and conflicting results.

The aim of this thesis is twofold, namely (1) to research the impact of development assistance on economic growth and human development measurements, being life expectancy, level of education and mortality rate, and (2) to highlight issues in existing literature on the impact of development assistance on growth, specifically problems with econometric modelling and the functionality of gross domestic product as a measurement for the success of aid.

Neoclassical growth theories explain output as a function of labour, capital and technological progress. Neoclassical growth theories do not however explain cross-country differences. Institutional economics highlight the impact of institutions on cross-country growth differences. Well-functioning political and economic institutions ensure an efficient use and equal division of factors of production. In the development assistance literature the impact of institutions is highlighted as an important factor on the outcome on growth.

In this thesis econometric methods are used in order to research the impact of development assistance on gross domestic product, life expectancy, level of education and mortality rate. The data additionally includes institution measurements, arms imports, foreign direct investments and broad money. The methodology used consists of the fixed effects regression model.

According to this thesis development assistance has no impact on economic growth and the beforementioned development indicators. On the basis of existing literature and this thesis both the ability of aid to influence growth positively and the relevance of research methods used in the existing literature should be questioned.

Key words: official development assistance, economic growth, institutions, gross domestic product, life expectation, education, life expectancy, mortality rate

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Virallinen kehitysapu on yleensä maiden tai organisaation ja kohdemaan välistä jatkuvaa rahallista apua. Kehitysapua voidaan antaa kertaluontoisesti kestoltaan määräaikaisiin projekteihin, mutta yleensä se on luonteeltaan jatkuvaa, lainoina annettavaa rahallista tukea. Virallisen kehitysavun tarkoituksena on edistää taloudellista kehitystä ja hyvinvointia ja pienentää maiden välisiä eriarvoisuuksia. Kehitysavun vaikutuksista talouskasvuun on tehty laajasti tutkimuksia, mutta taloustieteilijät eivät ole päässeet yhtenäisiin lopputuloksiin sen toimivuudesta.

Tutkielmassa käsitellään virallisen kehitysavun vaikutusta talouskasvuun ja hyvinvoinnin mittareihin sisältäen eliniänodotteen, koulutusasteen ja kuolleisuusasteen. Lisäksi tutkimus ottaa kantaa olemassa olevaan kirjallisuuteen kehitysavun vaikutuksista, tuoden esille ekonometrisen mallintamisen ongelmallisuuden ja kyseenalaistaen bruttokansantuotteen toimivuuden kehitysavun onnistumisen mittarina.

Talouskasvun uusklassiset teoriat selittävät tuotannontekijöiksi työvoiman, pääoman ja teknisen kehityksen. Uusklassiset kasvuteoriat eivät kuitenkaan selitä maiden välisiä kasvueroja. Institutionaalinen taloustiede tarkastelee instituutioiden osuutta maiden välisten kasvuerojen selittäjänä. Toimivat taloudelliset ja poliittiset instituutiot takaavat tuotannontekijöiden tehokkaan kohdentamisen ja tasavertaisen jakautumisen. Kehitysapua tutkivassa kirjallisuudessa korostetaan instituutioiden osuutta kehitysavun onnistumisen takeena.

Tutkielmassa selvitetään ekonometrisin menetelmin virallisen kehitysavun vaikutusta bruttokansantuotteeseen, eliniänodotteeseen, koulutusasteeseen ja kuolleisuusasteeseen. Aineistoon kuuluu lisäksi instituutiomittari, asetuonti, ulkomaiset suorat investoinnit sekä lavea raha. Metodologiana toimii kiinteiden vaikutusten regressiomalli.

Tutkimuksen perusteella kehitysavulla ei ole vaikutusta talouskasvuun tai esiteltyihin hyvinvoinnin mittareihin. Olemassa olevan kirjallisuuden ja tämän tutkimuksen perusteella on kyseenalaistettava kehitysavun toimivuus ja toisaalta sitä tutkivan kirjallisuuden relevanttius.

Avainsanat: virallinen kehitysapu, talouskasvu, instituutiot, bruttokansantuote, eliniänodote, koulutusaste, kuolleisuusaste

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1 Introduction

736 million people in the world are living on less than 1.90 US$ a day (UN Stats 2020). Organizations such as the United Nations and the World Bank, as well as individual countries, have long been working towards the goal of reducing inequality. Development assistance is one of the tools used to achieve this goal.

The Organization for Economic Co-Operation and Development (OECD) defines official development assistance (hereafter aid) as aid that has a main objective of promoting "the economic development and welfare of developing countries". Aid can be used for once-off help for medical emergencies or natural disasters, but the majority of aid is continuous by nature. Aid can be multi- or bilateral, meaning that it is either provided by multilateral institutions or governments. The United Nations have set a goal for developed countries to give 0.7% of their gross national income to development aid. Only 6 countries achieved this level in 2019. (Development Initiatives 2021).

The economic research on the impact of aid on growth is indecisive. The results vary and while some researchers have found aid to have a positive impact on economic growth (Dalgaard & Hansen 2000; Elbadawi et al. 2012; Khan & Hoshino 1992) some conclude that aid has negative impacts on the economy (Boone 1995, Rajan & Subramanian 2009).

As neoclassical growth theories explain output as a function of labour, capital and technological progress they do not offer an explanation on cross-country differences. The early aid literature assumes capital as stationary, meaning that due to domestic capital shortages developing countries were not able to invest in growth promoting projects, thus requiring external finances in order to gain the needed capital. However, as stated by Boone (1995, 1) capital is not stationary, proven for example by the high income polarization in developing countries.

The differing levels of institutions can offer an explanation on cross-country differences. Acemoglu et al. (2004, 78-79) state that economic growth depends on the country's institutions and on how resources are distributed. The expansion of democracy and trade unions have had a positive impact on economic progress thus suggesting that political and economic institutions define the possibilities a country has in order to develop.

The impact of institutions has been considered in aid literature. Burnside and Dollar (2000) conclude that aid has a positive impact on growth if the recipient country has

strong institutions. They find that, in a well-functioning institutional environment, aid can be targeted towards growth promoting projects and thus have a positive impact on the society rather than only benefit the elite, which Boone (1995) states aid merely does.

When the recipient country's institutions are not democratic or balanced by a strong political opposition, the ruling elite can use external capital income such as aid for their own benefit. This can create rent seeking, which here means that the elite uses aid to gain wealth instead of redirecting it to growth promoting investments, such as creating a well-functioning taxation system or improving the educational system within the country. Aid can be distributed in order to improve the recipient's institutions, but according to the literature aid can also have negative impacts on institutional development (Bräutigam & Knack 2004; Djankov et al. 2008).

The research on the impact of aid on institutions as well as the impact of aid on growth faces a problem of causality. It is difficult to specify whether aid creates weaker institutions or whether the institutions would be weak or even weaker without the aid. Likewise, conclusions made of aid's impact on growth are difficult to make as aid can seem to have a negative impact on a country's gross domestic product (hereafter GDP) but it could also be that the level of GDP would be even lower without aid.

While GDP is often used as a measure of economic growth, its use when considering the impacts of aid may not be appropriate. The level of human development indicators, including life expectancy, infant mortality rate and education, (Human Development Index UNDP) undoubtedly impact a country's preconditions for economic growth, even if not directly. In addition, if economic growth is divided equally within the population, it should show as an improvement in the mentioned indicators. Boone (1995) researched the impact of aid on infant mortality rate and primary school enrolment and found aid to have no impact. After Boone, the literature has merely focused on GDP or level of institutions as a dependant variable.

As stated by Clemens (2011, 590) the diverse results of aid on growth research is due to timing. As aid can be used to a large variety of projects from creating a new school to building a new road, it is difficult to define a specific period in which aid should be noticeable in the output of the recipient country. Previous literature presents altering lags of aid from none to two years. It is however possible that aid shows no impact on output

even after several years, which would mean that the findings in such previous studies were incomplete.

The aim of this thesis is not only to study the impact of aid on economic growth but also to highlight issues in the methodologies used and conclusions made by the existing literature. As per stated by Bräutigam and Knack (2004, 255-256) the problems of understanding the causal relationship between aid and growth make the existing literature questionable.

Even after taking causality issues into consideration, the big picture raises questions on the functionality of aid. If the target of aid is to create economic development, why are areas like Sub-Saharan Africa, which receives 30% of all disbursed aid still experiencing low economic growth (Development Initiatives 2021)?

One possible explanation is the motivation of the donor country. The aggregate annual money flows from developing countries to developed countries outweighs aggregate annual money flows in the opposite direction. In 2011 developing countries received 1.3 trillion US$ from the developing countries, while developed countries received 3.3 trillion US$ from the developing countries. (Financial Flows and Tax Havens: Combining to Limit the Lives of Billions of People 2015). In addition, while aid cannot include any military equipment (Official development assistance – definition and coverage) the definition of aid does not exclude its use for buying arms from the donor country.

Aid can also be used to strengthen previous colonial ties. Rajan and Subramanian (2005, 11) find that donors are more inclined to give aid to countries if they receive influence over the recipient. The colonial ties are also visible from the statistics of top recipient countries of former colonizers. The top ten aid recipients of France and the United Kingdom are mostly countries that were under their colonial rule (Aid at glance charts; Former French Colonies 2020; The British Empire). Although a comprehensive analysis of the motives of donors falls outside the scope of this thesis, such motives are nevertheless necessary to understand why aid is given and why it may fail as a growth promoter.

This thesis does not argue that aid does not work for medical purposes or to help people after sudden natural disasters or political instabilities. Nor does it compare economic development to the help aid might give to current individual lives. The goal is merely to

showcase evidence on aid's functionality as a development promoter, and thus facilitate further discussion on whether aid really is necessary at all.

While the topic of this thesis has been considered at length by other authors this thesis will shed new light on the topic for three reasons. First, it considers the success of aid through its impact on human development indicators in addition to growth. Second, it provides a contextual analysis on aid by amongst other things considering a broad scope of literature (including literature that considers the motive of donors, colonial past, the impact of institutions and the possible economic outcomes of aid). Third, it highlights issues with existing discourse and research methods relating to aid and its impact on growth.

As the aim of the thesis is to analyse development, the somewhat outdated phrases "developed countries" and "developing countries" are used instead of Global North and Global South. In addition, it is noted that "strong institutions" as a term combined with the literature has Eurocentric features. Strong institutions throughout this thesis imply a high level of democracy and political participation. Stronger institutions and a broader definition of development would also include environmental impacts for example. However, the narrow definition of development as a measure of economic performance is used in order to keep the focus on aid and its impacts on economic growth.

The theoretical framework (which includes neoclassical growth theories and definition of institutions) of this thesis is explained in Chapter 2. Chapter 3 portrays the impacts of aid on economic growth according to the existing literature, including institutional and economic outcomes. The empirical research, including data and methodology descriptions, is set out in Chapter 4. The results are presented in Chapter 5. Chapter 6 includes the summary and conclusions as well as suggestions for further research.

2 Economic growth and cross-country differences

Development is the act of growing or becoming more advanced (Merriam-Webster). Economists have long tried to explain why countries develop at different rates, offering various reasons, including growth models and empirical research. The concept of growth in this thesis is limited to output and human development indicators, being level of education, infant mortality rate and life expectancy.

The sub-chapters of this chapter offer the theoretical framework for the thesis. Subchapter 2.1 introduces neoclassical growth models as a base for the research, Subchapter 2.2 offers an explanation of cross-country differences and Subchapter 2.3 highlights the importance of institutions on growth.

2.1 Neoclassical growth theories

The neoclassical growth theories, first introduced by Robert Solow in 1956, assume that economic growth is affected by three factors, namely labour, capital and technology. There are two primary neoclassical growth theories:

- models that assume technology as exogenous, represented in this thesis by the Solow growth model
- models that assume technology as endogenous, represented in this thesis by the Romer growth model

2.1.1 The exogenous growth model

The Solow growth model is represented by the following formula:

$$Y_t = F(K_t, L_t)$$

The model consists of output Y, capital K, labour L and t which denotes time (Solow 1956, 66). The model assumes constant returns, meaning that if capital and labour double, output doubles. The production function is declining. (Romer 2012, 10). The implications here are that, for a country with relatively small capital formation, every input of capital has large marginal product. In a developing world context, this model implies that bringing external capital to the economy increases the output more than in a capital intensive country.

The Solow model assumes that capital depreciates. The following equation displays the way in which investments impact capital formation.

$$\dot{k}(t) = sf\big(k(t)\big) - (n + g + \delta)k(t)$$

s is an exogenous investment share of output per labour $f(k)$, δ is the capital depreciation, $sf(k)$ is investment per unit of effective labour, $(n + g + \delta)$ is break-even investment, which shows the amount of investment needed in order to keep k at its current level. Therefore, as effective labour is growing, more investments are needed to maintain k at its current level. Here n denotes the growth rate of labour over time and g denotes the growth rate of technology over time. The model assumes that all economies will reach their balanced growth path, in which only technological progress creates growth (Romer 2012, 16-18).

The Solow growth model thus presents two options for economic growth, either (1) increase the capital to labour ratio (if the economy has not yet reached its balanced growth path) or (2) increase the effectiveness of labour through technology (if the economy has reached its balanced growth path) (Romer 2012, 27). As technology is exogenous, the model does not present solutions for steady state growth. According to Romer (2012, 29), technology can be interpreted as education, strength of property rights, quality of infrastructure or entrepreneurial possibilities (or a combination of these) amongst other things.

2.1.2 The endogenous growth model

The endogenous growth models consider technology as endogenous and thus explain the changes in productivity by the choices of individuals within the economy. The first and simplest endogenous growth model is the AK theory, as presented below.

$$Y_t = AK_t$$

In the model, Y is output, A is constant technology, K is the stock of human and physical capital and t denotes time. Output can be used for either consumption or investment to new technology. The growth rate of capital is equal to the growth rate of output, and investments add capital. (Aghion & Durlauf 2009, 9). As per stated by Aghion and Durlauf (2009, 10), the World Bank's proposal to channel aid to investment rather than

consumption (in order to utilize capital for faster growth) was influenced to a large degree by this theory.

The more recent and widely used Romer-model represents production as a function of product variety. It supposes that new technology builds on existing technology without eliminating the impacts of old technologies. (Aghion & Durlauf 2009, 10). Romer (1990, 72) built his model on Solow's exogenous growth model. Like in the Solow model, technological improvements create economic growth. Technological change is however endogenous, and relies on the choices made by individuals and driven by the market. In addition, technological costs only occur once, meaning that once a new technological innovation is made, it can be used again and again at no additional cost. This resembles the trickle-down effect – new economic innovations can be utilized by everyone on the market.

The Romer model portrays two sectors, the research and development sector (hereafter R&D) which increases technology or effective labour, and the sector that produces goods using labour and capital without making new innovations. The R&D sector develops new ideas, thus creating innovations and new technologies. The core idea of the endogenous growth model is that labour and capital are shared between the two sectors thus either creating output with existing technology or new innovations. The endogenous growth model portrayed in Cobb-Douglas form (as portrayed by Romer 2012, 103):

$$Y(t) = [(1 - a_k)K(t)]^{\alpha}[A(t)(1 - a_L)L(t)]^{1-\alpha}, 0 < \alpha < 1$$

In which, a_L is the labour force and a_k is the capital used in the R&D sector which produces innovations and $1 - a_L$ is the labour force and $1 - a_k$ is the capital used in the sector that produces goods. The remaining variables are the same as in the Solow model. (Romer 2012, 103). The economic growth is thus now explained by the distribution of labour and capital within the two sectors.

As stated by Romer (2012, 144) knowledge can usually be used by everyone, thus this should result in all countries reaching the same level of development in time. This however is not the case and the development in many developing countries has stagnated, and even taken steps backward. As stated by Romer (2012, 144), one possible implication is that, as knowledge is more or less available for everyone, the cross-country differences occur due to the ability to exploit the knowledge available.

In order to explain the cross country differences more theoretical work has been conducted. As stated by Romer (2012, 150) the work has two major branches. The first branch concentrates on factors directly affecting income, such as quantities of capital and labour. The second branch concentrates on the underlying causes of development, such as institutions, religion or geography. Due to the variability and measurement difficulties of these variables, it is difficult to isolate a single defining cause. One of the leading schools of thought on cross-country development differences is that they are caused by differences in institutions.

2.1.3 Cross-country differences

Cross-country differences have been explained as consequences of differences in culture and religion. Culture and religion have a role in creating values, which in turn influence ideologies and thus could lead to different approaches to development and productivity. (Acemoglu et al. 2004, 15). Culture and religion are not however isolated to specific countries (for instance large parts of Sub-Saharan Africa share the same religion as their more developed European colonizers).

Another explanation for cross-country differences in existing literature is geographical. This argument assumes that developmental differences are caused by (1) climate, presuming that hot climates make people less effective, (2) the availability of technology and the impact of a hot climate on agricultural success and (3) diseases present in the area (highlighting the impact of diseases like malaria in hot climates). (Acemoglu et al. 2004, 14).

While many developing countries experience hot climates - not all hot climates give rise to developing countries (and the same is apparent in cold climates). Countries such as Brazil or Australia are evidence of this. In addition, while the rest of Europe was developing at a high speed, Finland – despite its cold climate – was mostly agrarian until 1980 (Koponen & Saaritsa 2019, 11).

Romer (2012, 174-175) disputes the geographical explanation, arguing that although poverty is more prominent closer to the equator, countries in these regions also suffer from inferior social infrastructure. Building on Romer’s argument, it is my view that the supposed geographical differences are the result of relatively more intensive colonialism in these areas, which resulted in weaker social infrastructure.

The institutional explanation of cross-country differences argues that developmental differences are caused by differences in social infrastructures, or "institutions", and differences in the way nations, governments and humans organize themselves. This includes differences in markets and their openness, which are caused by differences in institutions. (Acemoglu et al. 2004, 12).

Hall and Jones (1998, 21) found that the more likely a country was to have been colonized (which is measured according to a country's distance from the equator and whether the citizens of a country use English, French, German, Portuguese and Spanish as a first language), the stronger its institutions. This indicates that Western European colonizers have had a lasting positive impact on the strength of institutions in their former colonies. This is seen most prominently in countries such as Australia, the United States and New Zealand. These findings do not, however, consider the effects of European settlers on native people and the exploitative and harmful nature of colonization.

Acemoglu et al. (2001, 1370) state that institutional differences in colonized countries can be explained by the different approach that European colonizers had toward their colonies. For example, in the United States and Australia, Europeans settled and created similar institutions to their own, whereas in many countries in the Global South (such as Sub-Saharan Africa) the colonizer's primary aim was to extract natural resources – their participation in the development of local society and governance was limited. Belgian Congo is a prime example. Acemoglu et al. (2001, 1376) thus argue, supported by historical evidence and empirical research, that former non-settler colonies have weaker institutions today than their former settler colony counterparts.

Acemoglu et al. (2001, 1380) argue that colonizers had different approaches to their colonies due to settlement mortality. The main reason for settlement mortality was malaria and yellow fever. These diseases, in addition to causing the death of 80% of settlers, are still today prominent in the African continent.

In the light of the above, it appears that the best explanation for cross-country differences is the relative strength of the institutions in those countries. Not only is the argument for the direct impact of institutions on economic growth compelling, but all other explanations that have been offered in response to cross-country differences appear to be themselves explained by the relative strength of institutions.

Hall and Jones (1998) consider history and geography, but historical and geographical differences can be explained by the differences in social infrastructures. Acemoglu and Ventura (2001) argue that cross-country differences could be caused by terms of trade. In many cases however, trade openness is considered in determining the strength of institutions. Boone (1995, 1) states that, because capital is mobile and in developing countries the income levels are highly polarized, the cross-country differences are caused by differences in government spending. Again, however, the effectiveness of governments is typically a component of the institution quality determination.

2.2 Institutions

Institutions can be divided into political and economic. Political institutions are led by a group of elite who have political power and economic institutions set rules and constraints regarding economic operators (Acemoglu 2006, 1). In order to compare institutions with one another, it is necessary to define what strong institutions are within certain constraints. These constraints, and this definition, allow the mathematical comparison of the strength of institutions across countries.

2.2.1 Strong institutions

According to Acemoglu (2006, 1) economic institutions are defined by the level of property rights, entry barriers, regulation of technology and contacts enforceability. The variables of expropriation restrictions, taxation and technological redistribution are considered as part of his model of good economic institutions. Depending on the country, the elite in power use their forces on economic institutions. For example, according to Acemoglu (2006, 1), the elite can raise the middle class producer's tax levels in order to financially benefit from their resources.

Acemoglu et al. (2001, 1370) measure institutions in relation to the historic probability of European colonizers settling in the relevant country. They hypothesize that European settler mortality rates had an impact on the level of development today. They thus compared expected mortality rates of European settlers to the risk of expropriation index (as a proxy for current institutions). They find a strong negative correlation between mortality rates and GDP per capita.

According to Acemoglu et al. (2002, 51), Europeans were more likely to settle and create similar institutions to those in their home country in colonies that enjoyed climates more similar to their home country. In contrast, in colonies that had different, typically hotter climates, the European colonizers were less likely to settle and rather concentrated on exploiting natural resources and labour forces.

According to Acemoglu (2006, 1) if power is centered on a small elite group, this group will weaken institutions in order to gain personal benefit. An exception to this is where strengthening certain institutions is beneficial to the elite group – for example where a country has weak property rights and strengthening those rights will benefit the elite. As noted by Acemoglu (2006, 1), even though economists agree that strong institutions are important, weak institutions still exist, implying that groups that hold power benefit from such weak institutions.

Notwithstanding the above, Aghion et al. (2021, 208) argue that if certain components of institutions are too strong, it can have a negative impact on economic growth. For example, a country that protects intellectual property rights (hereafter IP rights) too zealously may keep crucial knowledge away from others, which, due to the impact of technological advancement explained in the description of the neoclassical growth models, can frustrate development.

The definition of strong institutions assumes strong IP rights. As per the above, however, if IP rights keep central information protected or blocked, technology cannot be reached by everyone equally. Too strong protection of IP rights protect the incumbent firms' market power, thus limiting the trickle-down effect of new innovations.

New innovations require a high level of education. If the level of education or the amount of schools in the given country are not sufficient, the opportunities for innovations or utilization of new technology are diminished.

Hall and Jones (1998, 1-2) assume differences in output are caused by differences in social infrastructure, by which they mean institutions and government policies. They find, in a cross-country study of 127 countries, a strong positive correlation between output per worker and the strength of social infrastructure. Hall and Jones (1998, 4) point out that it may be that developing countries are not able to build effective social infrastructures due to the low levels of output, which they control with geographical and linguistic properties

as instrumental variables. These properties are used in order to measure the influence of colonialism within the area.

The relationship between output and the strength of institutions is displayed in Table 1. The measure for output is GDP measured in purchasing power parity (hereafter PPP) (Penn World Table 10.0 2021) and the strength of institutions is represented by the PolityV dataset, Polity2 figure. The Polity2 figure is explained in further detail in chapter 5.1, but in order to view the figure, the dataset ranks countries from -10 to 10, from autocratic to democratic. The Figure is constructed from every country that has data available from both variables in 2018.

As is evident from Figure 1, the stronger the institutions, the higher the output level of the country. However, notwithstanding the above, it is clearly possible for countries with weak institutions to have a high level of output, as is noted in the Polity2 score of -7 and level of GDP of almost US$ 20 billion – this particular outlier being China. The opposite is also true - Uruguay, boasting a Polity2 score of 10 has a PPP GDP of only US$ 73 billion.

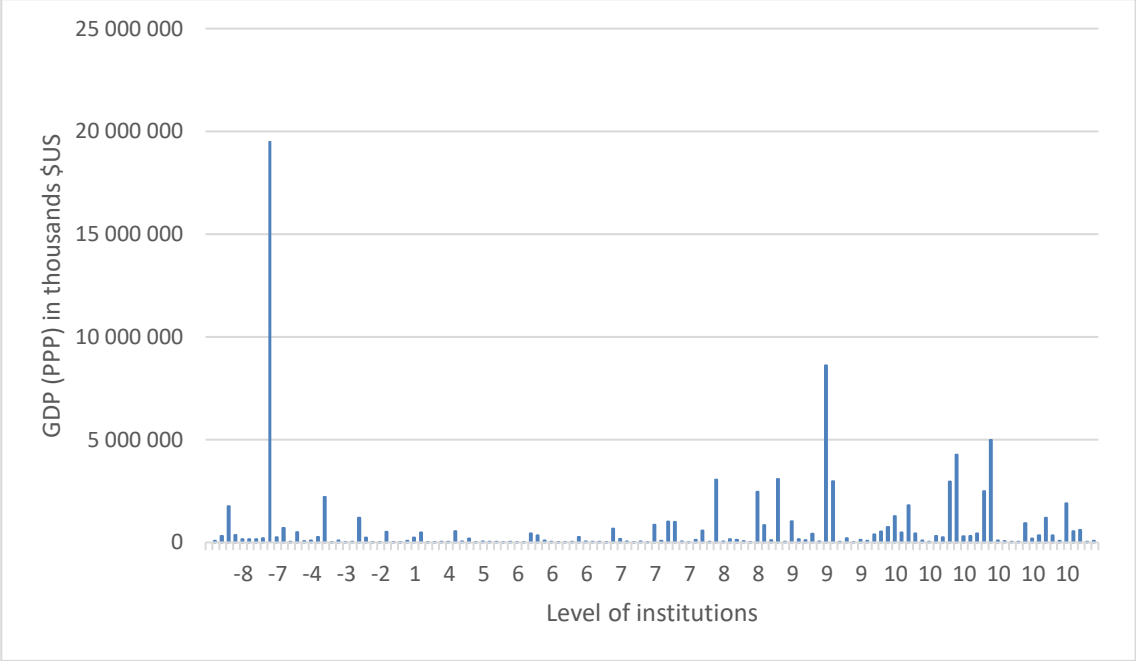

Figure 1 The relation between the level of institutions and output per country in 2018. Table constructed by the author. GDP (PPP) data available at: Penn World Table 10.0 (2021) Groningen Growth and Development Centre. https://www.rug.nl/ggdc/productivity/pwt/, PolityV (2018) Center for Systemic Peace. https://www.systemicpeace.org/inscrdata.html.

Given the above, in considering the impact of aid on economic growth, it is necessary to bear in mind the strength of the institutions of the country that is receiving such aid. Boone (1995) states that the connection between poverty and government has long been understood. The idea of institutional impact on growth was in fact noted first by Adam Smith (1776) in the Wealth of Nations. Despite this, as noted by Boone (1995), the interconnectedness of the strength of institutions and the effectiveness of foreign aid seems to be overlooked, as it is not used as a constraint when aid is distributed.

2.2.2 Measuring institutions

Romer (2012, 164) introduces the basic model for output affected by institutions.

$$\ln\left(\frac{Y_i}{L_i}\right) = a + bSI_i + e_i$$

In which Y/L is output per capita, SI is social infrastructure and e includes other influences on income. This equation is also used as a theoretical framework in this thesis. As stated by Romer (2012, 164), while the impact of institutions on economic growth and cross-country differences has been considered in many studies, these studies have two major obstacles, namely the measurement of institutions and procuring the data for these measurements.

Romer (2012, 163) divides institutional aspects into three categories, being (1) a government's fiscal policy, such as tax levels, (2) the environment in which private decisions are made, such as law enforcement and political stability and (3) government expropriation, such as corruption and property rights.

The datasets used for strong institutions do not vary much within the most prominent development aid-on-growth literature. The International Country Risk Guide (ICGR) index developed by the PRS Group was used by Bräutigam and Knack (2004), Dalgaard and Hansen (2001), Easterly et al. (2004), Elbadawi et al. (2012) and Rajan and Subramanian (2009). Unfortunately, the ICGR dataset is behind a payment barrier and thus is not used in this thesis. Burnside and Dollar (2000) created their own policy index using budget surplus, inflation rates and trade openness, which was also used by Khan and Hoshino (1992).

Sachs and Warner (1995) created their own openness index, which was later used by Easterly et al. (2004) and Rajan and Subramanian (2009). According to the index, the list of strong institutions excludes any country fulfilling any of the following qualities: (1) quota restrictions on a high amount of imports, (2) a high amount of exports covered by state monopolies and state-set prices, (3) a socialist economic structure or (4) a black-market premium over the official exchange rate of 20% or more.

Acemoglu et al. (2001, 1372) use the Polity 3 dataset developed by Political Risk Services in order to define strong institutions. The dataset includes risk of expropriation, constraints on executive powers and strength of democracy. The mentioned three variables all appear to have a positive correlation with economic growth in their research. Djankov et al. (2008) used the more recent Polity IV dataset, also created by Political Risk Services.

Since the most recent major development aid research, the Center for Systemic Peace has developed a new Polity V dataset (Polity V). The PolityV dataset includes information of the central government, scaled on a 21-point spectrum from hereditary monarchy (-10) to consolidated democracy (-10). The rating includes measures of executive recruitment, constraints on executive authority and political competition. In addition, the dataset stretches back to 1946, thus including all institutional changes during that time period. The PolityV dataset is used in this thesis, and explained more broadly in chapter 5.1.

Acemoglu et al. (2001, 1369) bring forth an example of North and South Korea and East and West Germany as an example of a natural experiment on institutions. As such precise natural experiments are hard to conduct, the mentioned datasets allow to compute the impact of institutions on economic performance.

Not all measurements of the strength of institutions yield same results. Figure 2 depicts three different measurements for the level of institutions in 2010 in a chosen country. The year is chosen based on the amount of data available from all datasets, and the countries included are limited to those that have data in each data set from 2010.

Property rights and rule-based governance dataset is gathered by the World Bank's Country Policy and Institutional Assessment (CPIA) and ranks countries in order from 1-6 based on the property rights and rule based governance (CPIA Property rights and rule based governance 2021). The Polity2 dataset is gathered by the Center for Systemic Peace

and evaluates countries based on democratic level and other factors from -10 to 10, explained in chapter 5.1 (Center for systemic peace PolityV 2021). The gender equality dataset is also gathered by the CPIA and sorts countries by the extent of which institutions and programs in the chosen country promote equality, on a range from 1 to 6 (CPIA gender equality 2021). The data is portrayed as a percentage of the highest score attainable within the relevant scale in order to allow for the comparison of the different datasets.

The data included in Figure 2 only represents a fraction of the different datasets available for measuring institutions, but were picked in order to provide an idea as to how much these datasets can differ. Polity2 has the highest percentages throughout, implying that either due to the information available or due to the errors in qualifications, it gives the highest values and the best institutional rating of the three datasets portrayed. The property rights appears to give the lowest values, and gender equality falls between the two. As the Polity2 dataset has most values and is used in the previous literature (eg. Djankov et al. 2008) it is used in this thesis in order to measure institutions. While it may provide a bias toward higher scores than other datasets, because it is used to measure relative strength of institutions across countries, this should not create any unreliability in the dataset used.

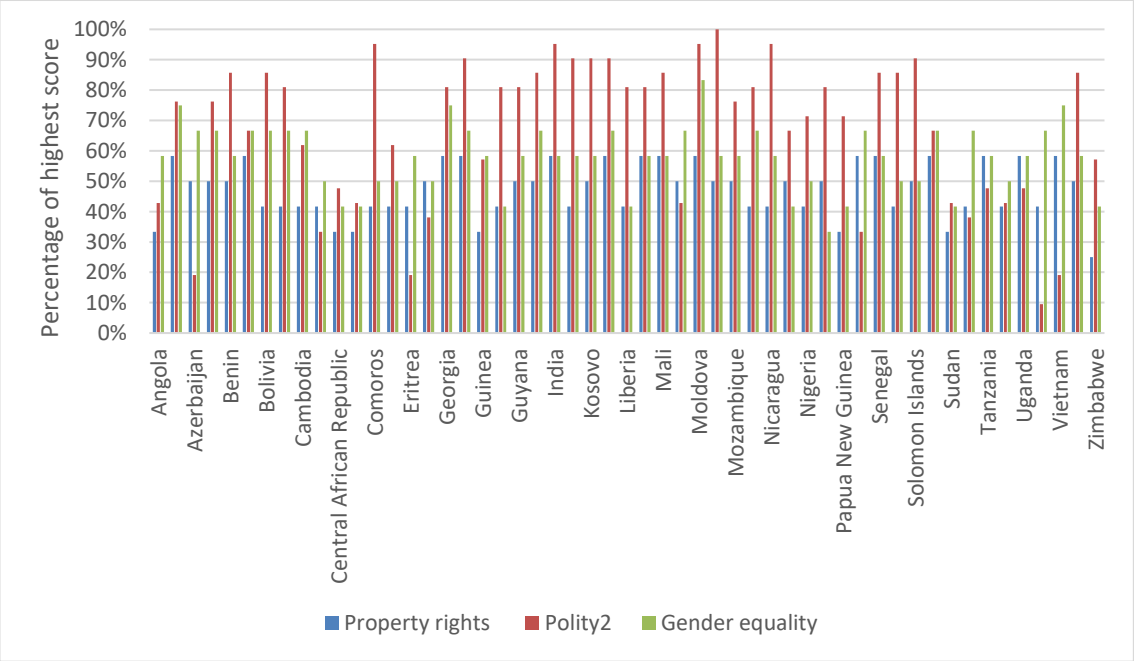

Figure 2 Comparison between institutional data sets including the CPIA Property rights and rule based governance, Polity2 and CPIA Gender equality. Constructed by the author. Data available at: CPIA property rights and rule-based governance rating (2021) The World Bank. <https://data.worldbank.org/indicator/IQ.CPA.PROP.XQ>, CPIA gender equality rating (2021) The World Bank. <https://data.worldbank.org/indicator/IQ.CPA.GNDR.XQ>, PolityV (2018) Center for Systemic Peace. https://www.systemicpeace.org/inscrdata.html.

3 The impact of aid on economic growth

The aid transactions in their current form started in 1960. Economic research has been conducted ever since. Subchapter 3.1 offers a definition of official development assistance and Subchapter 3.2 sets out the most prominent literature's view on the impact of aid on growth. The causality issues of aid-on-growth research is explained in Subchapter 3.3.

3.1 Definition of official development assistance

Official development assistance, referred to as aid in this thesis, includes aid and technical assistance. This definition is broader than only official development aid. In addition, official development aid excludes loans for military purposes directly, but it can be used by the recipient to arms purchases. Aid is typically constructed as part non-repayable grant and part repayable, interest bearing loan, with the latter the larger component.

Aid can be either bilateral or multilateral, in other words the aid agreement can be between two nations or between a receiving nation and an international organization. According to Kraay (2014, 172) the proportion of multilateral creditors have increased, but bilateral creditors still comprise up to 2/3 of the development loan creditors. In addition, loans are tied to a specific public spending project.

According to the OECD, a money transfer must comprise at least the following percentage of non-repayable grants in order to be considered aid:

- Least developed countries and low-income countries: out of bilateral loans to the official sector a share of 45 % must be grants
- Lower middle-income countries: out of bilateral loans to the official sector a share of 15 % must be grants
- Upped middle-income countries: out of bilateral loans to the official sector a share of 10 % must be grants
- Out of loans to multilateral institutions a share of 10 % must be grants

(OECD).

As stated above, in any given aid transaction, the grants component of the aid is outweighed by the loan component, meaning more than half of all aid transactions must be repaid with interest. Aid transactions thus create a market for cheap loans, creating a fiscal benefit for the providing country. It should be noted that the definition stated above applied from 2018 onward only, meaning that some of the research cited in this thesis might include aid under a different definition. Another constraint of the aid definition created and applied by the OECD is that 25% of the loan should be grants. However, the main requirements have been same, meaning that most of aid have been loans and it can be either bi- or multilateral.

The aid data gathered by the World Bank and used in this thesis is in net form thus excluding loan repayments. Currently the list of countries receiving ODA is made up of 150 countries, but the historical data from the World Bank includes a larger variety of 217 countries. This implies that aid recipient countries have historically changed.

The United Nations have set the target for donating ODA as 0.7% of donor's GNI. In 2020 six countries met the target (Sweden, Norway, Luxembourg, Denmark, Germany and United Kingdom). Aid disbursements reached an all-time high in 2020, with US$ 161 billion of aid being transferred to the developing world. Sub-Saharan Africa is the largest aid recipient area with 30% of the global amount (Development Initiatives 2021).

Figure 3 portrays the sectoral division of ODA in 2019 according to OECD.

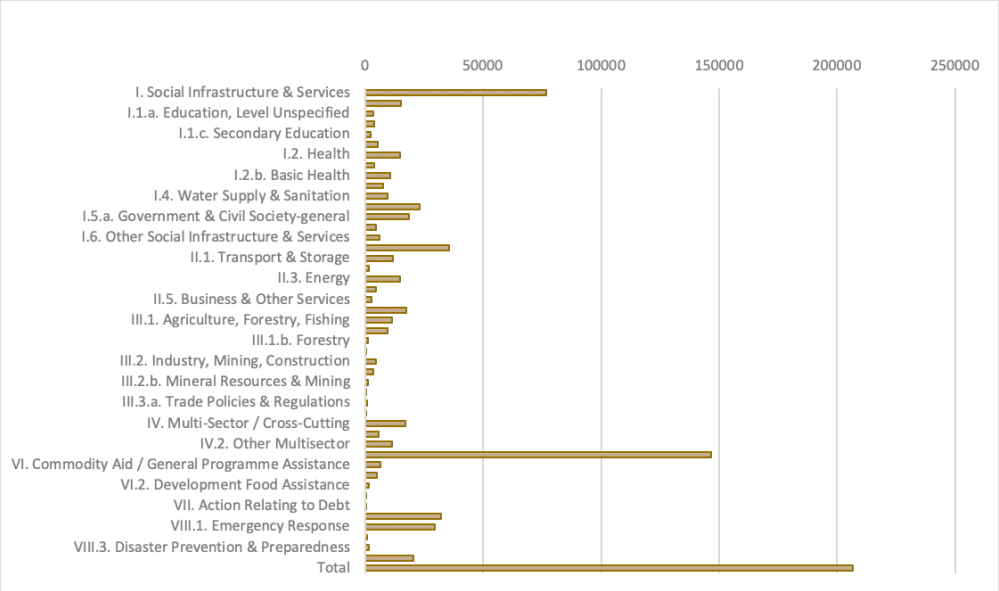

Figure 3 Sectoral division of official development assistance. Constructed by the author. Data available at: *https://stats.oecd.org/viewhtml.aspx?datasetcode=TABLE5&lang=en*

According to Figure 3 the largest share, 37% of aid, is targeted towards social infrastructure and services. 14.% went towards emergency response, giving the impression that donors react to sudden changes in receiver needs. Government and civil society also received a large share of 11.3% as aid is often used in order to develop governments. Education received 7.3% of the total aid.

Aid transactions started after the second world war with the Marshall Plan in 1947. The aid comprising the Marshall Plan differed significantly from modern day, however, in that it was a once-off transfer that had a specific goal and target. The amount of aid transferred each year has grown since 1960 (when aid statistics begin).

Milton Friedman stated in 1995 (2) that aid will, in the long run, retard economic development. He argued that it is more important to remove the obstacles to international trade and support private international investment. The International Monetary Fund, the World Bank and the U.S. Department of Treasury entered into an agreement called the Washington Consensus that includes economic policy recommendations for developing countries. The 1980 consensus has a neoliberal bias and emphasizes the importance of a free market and the development of economic institutions. The new policies included inflation control, reducing government budget deficits and increasing the property rights. (Washington Consensus 2020).

3.2 Empirical study implications

The impact of aid on economic growth according to the literature is divided to institutional and economic outcomes. The outcomes align with each other, but the most prominent findings are explained within the following sub-chapters. Subchapter 3.2.1 offers a summary of research results as portrayed in the most prominent aid-on-growth literature. Subchapter 3.2.2 discusses the impact of aid on institutions and Subchapters 3.2.3 and 3.2.4 set out the economic outcomes of aid. The division here is made to moral hazard (3.2.3) and real exchange rate misalignment and Dutch disease (3.2.4). The terminology is explained in the relevant subchapters.

3.2.1 Summary of research results

The literature on aid's impacts on growth is substantial and offers varying results. The most significant aid-on-growth literature - significance here is based on the quality of the

paper in which such research was published in and the number of times the paper has been cited in other significant papers - compares aid to different dependent variables (including government spending, strength of institutions, change in strength of institutions, mortality rate, primary school enrollment ratio, GDP per capita and the growth rate of real value added in industry) with numerous conflicting and contrasting outcomes. Table 1 summarizes the findings relevant to the impacts of aid on the relevant dependent variable in the significant literature reviewed.

Out of the nine papers cited in Table 1 aid is found to have a positive impact in four papers, a negative impact in four papers no impact in one paper. A positive impact is found on aid to government spending (Khan & Hoshino 1992), aid to real per capita GDP growth (Burnside & Dollar 2000; Dalgaard & Hansen 2001; Elbadawi et al. 2012). Negative impacts are found on aid to institutions (Boone 1995; Bräutigam & Knack 2004; Djankov et al. 2008), infant mortality rate (Boone 1995), primary school enrollment ratio (Boone 1995) and growth rate of real value added in industry (Rajan & Subramanian 2009).

Authors	Dependent variable	The impact of aid on the dependent variable
Khan & Hoshino (1992)	Government spending	Positive, aid has a positive effect on income, consumption and investments, loans creating more investments than grants
Boone (1995)	Political regime (institutions) and infant mortality rate, primary school enrollment ratio	Negative, aid increases consumption but only benefits the elite, no impact on investment in countries receiving less than 15% of aid/GNP, no impact on infant mortality rate and primary school ratios
Burnside & Dollar (2000)	Real per capita GDP growth	Positive, aid has a positive impact if recipient country's institutions are good
Dalgaard & Hansen (2001)	Real per capita GDP growth	Positive, good institutions only diminish the positive impacts as they also work as a growth promoter
Bräutigam & Knack (2004)	Quality of governance (institutions)	Negative, aid weakens institutions
Easterly et al. (2004)	Real per capita GDP growth	No impact
Djankov et al. (2008)	Change in institutions	Negative, aid has a negative impact on institutions
Rajan & Subramanian (2009)	Growth rate of real value added in industry	Negative, aid weakens the real exchange rate and thus weakens exportable sectors
Elbadawi et al. (2012)	Real per capita GDP growth	Positive, aid has a small negative impact on the real exchange rate, but a larger positive impact on growth

Table 1 The impact of aid in the most significant aid to growth literature. Constructed by the author.

According to Clemens et al. (2011, 590) the diverse results of aid-on-growth studies are caused by the timing of expected results. Aid impacts the economy within different timeframes depending on the target of that aid. Some aid is intended to have an instant impact, while other forms of aid is intended to take several years. For example, if aid is used to build a new road, the impact should be noticeable only after a few years. If the aid is targeted towards building new primary schools, the impact could take up to several decades. If aid is targeted towards creating better governments, the timing of the effect is even harder to isolate.

A big portion of previous literature uses GDP as the dependent variable. This, to my mind, is problematic because of the differences in the timing of aid's impact on output. As the results expected of aid are dependent on the specific target aid is aimed for, it is problematic to set targets that determine when that aid should show results on economic growth. In addition, country specific sectoral data on aid targeting is hard to reach.

Elbadawi et al. (2012), Dalgaard and Hansen (2001) and Burnside and Dollar (2000) use one-year lags on regressors of broad money (M2/GDP), arms imports, aid/GDP and policy. Boone (1995) uses twice lagged aid/GDP. Djankov et al. (2008) use lagged democracy and lagged arms imports and Rajan and Subramanian (2009) and Khan and Hoshino (1992) use no lags. Assuming that the impact of aid is consistent, considering its impact without any lag will still show the impact of aid given in previous years on growth. Despite this, it seems that, in order to reach more accurate results, a more extensive set of lags should form part of the analysis of aid on economic growth.

3.2.2 The impact of aid on institutions

Out of the 9 prominent literature pieces used in this thesis, Burnside & Dollar 2000 find that aid has a positive impact on growth if institutions are strong, Dalgaard & Hansen 2001 find that strong institutions diminish the positive impact of aid as it strong institutions have their own, separate positive correlation with growth and two studies find that aid has a negative impact on institutions (Bräutigam & Knack 2004; Djankov et al. 2008).

Rajan and Subramanian (2009) take a neoclassical approach to evaluating the impact of aid on growth. According to Rajan and Subramanian (2009, 636) aid can impact growth in one of two ways, either by (1) helping the receiving country to reach its steady state

faster through increased capital input, or (2) adjusting the steady state growth path to a higher level, through added technology or knowledge. Rajan and Subramanian (2005, 6) find that 1 percentage point increase in aid lowers the long-run GDP growth with 0.1 percentage points per year.

According to Boone (1996, 2), earlier research has assumed aid as a necessary capital input to developing countries (see Rajan and Subramanian's (2008, 636) first impact possibility). This assumption, according to Boone (1996, 2) was a result of the perception that capital stocks were stationary, and developing countries did not have enough capital to create growth on their own. This assumption, however, according to Boone (1996, 2), is incorrect, as capital is not stationary. He concludes that the impact of aid depends rather on the strength of institutions and the way in which the receiving country is able to use the added capital flows.

Burnside and Dollar (2000) found similar results, concluding that aid has a positive impact on growth if the political institutions of the receiving country are strong and negative impact in weak or average strength policy countries. According to Burnside and Dollar (2000, 847) the effectiveness of aid depends on whether it is targeted towards consumption or investments, with the latter being beneficial and the former inefficient.

According to Burnside and Dollar, bad governments use aid for government consumption, which has no impact on economic growth. In addition, they state that since 1995 (to 2000) no aid was targeted towards policy development. As per stated by Burnside and Dollar (2000, 849) aid is often given for the donor's own motivations and not purely to benefit the recipient country. In addition, while it is clear that aid only provides a positive impact when given to countries with good governments, having a good government is not used as a determining factor when a donor decides its aid recipients. However, they do state that as the institutional environment is developing in developing countries, the climate for aid is getting better, while the total real amounts are getting smaller.

Dalgaard and Hansen (2001) disagree with Boone, stating that as strong political institutions have a positive impact on growth, the impact of aid appears to be positive, but actually the impact is non-existent due to their nature as substitutes. Thus, according to Dalgaard and Hansen (2001, 18), the notion of the impact of aid depending on the level

of institutions is not robust. Instead, they find that aid works in any political environment and conclude that constraints on policies or institutional levels are not necessary.

This is contradictory to the ideas of institutional economics. As the strength of institutions is considered to be causally connected to economic success, it is unlikely that when handling large amounts of external finances, the strength or weakness of a government would have no impact of the impact of aid. However, aid can impact growth via more complicated routes. Dalgaard and Hansen (2001, 2), who find that aid has a positive impact on growth, also find that aid increases the levels of investment. They also conclude that because aid can have negative impacts on total productivity, the positive impacts override the negative ones.

Aid can impact investment in two primary mechanisms. First, aid can attract foreign investments. Selaya and Sunesen (2012) find that when aid is invested in complementary inputs, for example public funded infrastructure, aid attracts foreign investments. However, when aid is targeted toward projects that could also attract foreign investment, aid tends to crowd out investments. This to me, seems to have a connection with the decision made by political and economic institutions.

Second, as stated by Boone (1995), in small economies, the amount of aid has reached such a high percentage level of GDP that it creates the illusion of positive correlation. Boone found that in countries where aid receipts contribute more than 15% of GDP, aid appears to have a positive impact on GDP. This, however, is because such large transactions stand out in the data. For example, if a large bridge project is financed with aid that comprises more than 15 % of a nation's income, the results will show on output data. This should not however be interpreted as creating long-term growth, according to Boone.

Despite the institutional effect on the impact of aid being widely discussed, Bräutigam and Knack (2004, 255) point out that donors keep giving aid to countries with a low level of governance. They find that aid has a negative impact on growth due to its impact on institutions in countries with low social infrastructure. In addition, they (2004, 256) find that a higher amount of aid has a larger negative impact.

Rajan and Subramanian (2008, 637), however, find no evidence, even after taking the institutional environments into account, that aid has an impact as a growth promoter.

Rajan and Subramanian (2008, 638) find the impact of good policies on growth significant, but aid inefficient no matter the level of institutions.

Bräutigam and Knack (2004, 257) find that even after controlling for changes in per capita income and political violence, aid still has a negative impact on GNP and the quality of governance. Botswana is, however, an outlier, as aid has according to Bräutigam and Knack (2004, 260) been able to develop strong institutions. They find that aid weakens institutions via high aid transaction costs, the fragmentation of projects and taking away the possibility to learn from the mistakes of governance without aid. In addition, as found by Boone (1995) aid in fact increases the recipient's government size.

The causal relationship between aid and growth as set out in these studies varies according to different distributions of the sample countries based on their features. According to Rahnama et al. (2017, 155) the sample of countries studied has an impact on the results, as they find differences between low- and high-income developing countries (hereafter LIDC and HIDC). According to their study, aid has a positive impact on growth in HIDC countries, and a negative impact on LIDC countries.

According to Rahnama et al. HIDC countries have better institutions, and thus are able to utilize aid better. According to their study, unemployment, high levels of inflation and corruption diminish the impact of aid, and high capital formation, budget surplus and trade openness make the impact more positive. In addition, according to their study, aid has a positive impact on investments but a negative impact on employment. However, according to Boone (1996, 2) aid is used on consumption in its entirety and not on investments. According to Rahnama et al. (2017, 164) corruption has a negative impact on economic growth, and aid increases levels of corruption.

If aid increases corruption and corruption has a negative impact on growth, one could conclude that aid should not be given to corrupt countries. According to the Corruption Perception Index, created by Transparency International (2021), as shown in Figure 4, the level of corruption is high in aid receiving countries. On a scale of 0 (highly corrupt) to 100 (very clean) all aid receivers are on the highly corrupt end of scale.

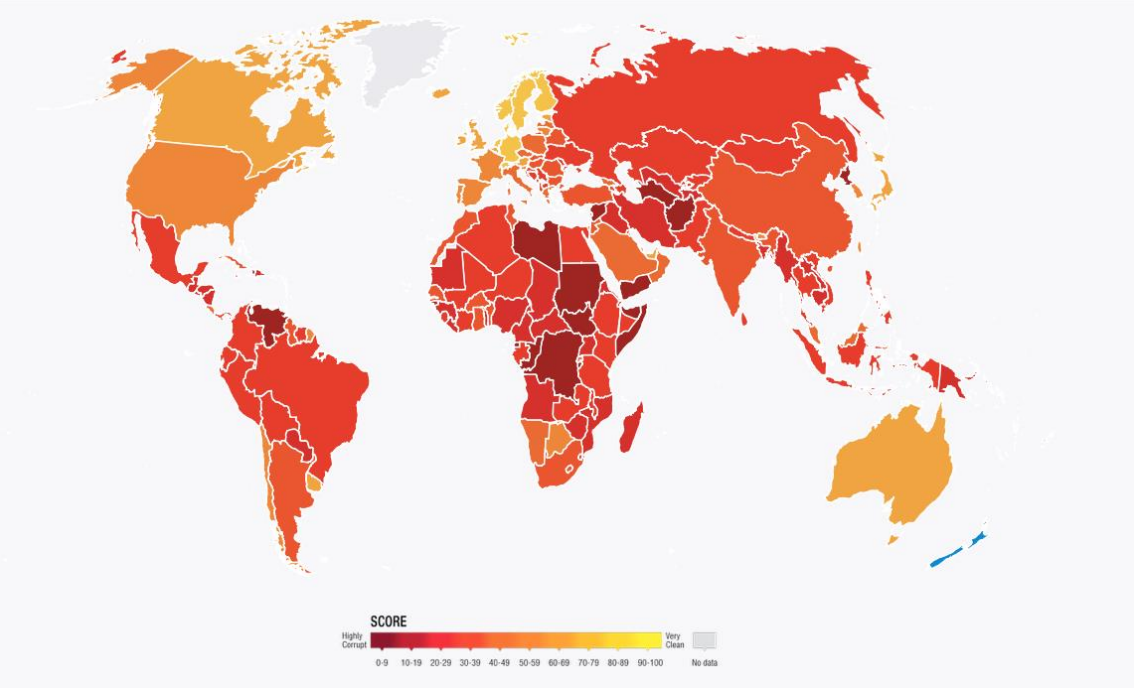

Figure 4 Corruption Perception Index (2020). Transparency International. https://www.transparency.org/en/cpi/2020/index/nzl

According to the corruption index in Figure 4 combined with the findings of Rahnama et al. (2017), it seems that aid should not be given as it is now, and that continuing to do so only worsens the situation for the receivers. According to Alesina and Weder (2002, 1128), in addition to the fact that corrupt governments receive more aid than less corrupt, aid does make corruption worse.

As stated by Easterly (2007, 329) economists do agree that development is a result of "some combination of free markets and good institutions", the uncertainty lies in what that combination is. Easterly (2007, 329) concludes that even though aid was a mistake, it does not need to be stopped completely but rather used to specific tasks and short projects.

3.2.3 Moral hazard and rent seeking

Moral hazard describes the circumstance whereby an incentive to take unusual risks is created due to a lack of consequences. The party taking risks understands that it is not necessarily morally right or the best option for all parties involved, but nevertheless takes the opportunity to enjoy the benefits (Kenton 2020). In the context of aid, moral hazard refers to the government using aid in a riskier manner than they would use another form of income (for example, tax revenues).

As aid is often given to a specific, externally determined project, it is easy for governments to leave the responsibility of outcome expectations of aid to donors. As the recipient government could know better than the donor how to use aid in order to create growth, it is more plausible for them to leave the responsibilities to others and not invest their own time to the development projects. (Bräutigam & Knack 2004, 260).

According to Bräutigram and Knack (2004, 263) moral hazard is evident because long-lasting levels of high aid result in government allowing corruption in customs bureau or ineffective aid usage. The ineffective use of aid can be attractive because when targeted correctly, aid could possibly actually increase growth, which would result in the levels of aid receipts decreasing. In addition, receiving an outer source of income may deteriorate the development of tax system.

Figure 5 portrays the tax revenue and aid to GDP ratio of countries where both datasets were available from 2019 onward. The y-axis shows both the aid and tax revenue as a percentage of GDP. The x-axis shows the countries included in the dataset, with names from every other country (in alphabetical order). As seen in the figure, in Kiribati, Marshall Islands, Micronesia (between Mexico and Moldova) and Somalia, the percentage of aid to GDP exceeds the percentage of tax revenue to GDP. As by nature the countries included are aid receivers, the figure does not show that aid is always larger than tax revenue, but rather shows the issue raised by Bräutigam and Knack (2004), being that when aid income is high, it is not necessary to develop the taxation system to be larger than the income provided by aid.

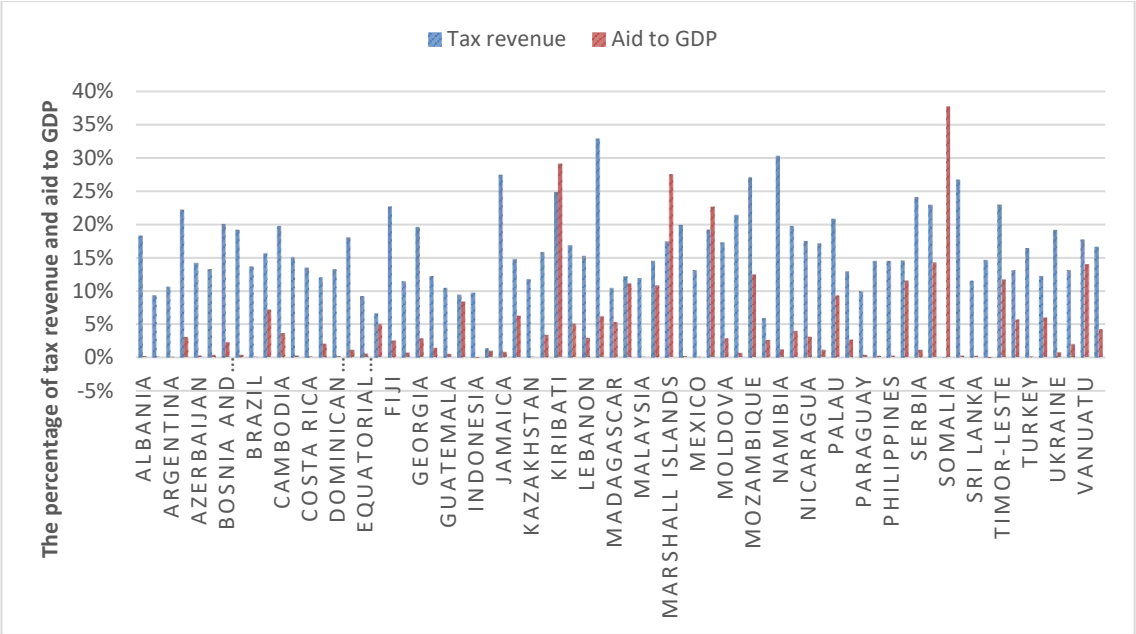

Figure 5 Tax revenue and aid to GDP. Table constructed by the author. Data available at the World Bank: Tax revenue (% of GDP) https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS, Net official development assistance and official aid received (current $US) https://data.worldbank.org/indicator/DT.ODA.ALLD.CD.

According to Djankov et al. (2008, 4-5) aid works similarly to natural resources. Corrupt politicians can enjoy the profits without having to take measures to add to the taxation level. In addition, aid can increase rent seeking. Rent seeking means the action of looking for added wealth or benefit without contributing to productivity. (Majaski 2021). This has similar implications as moral hazard. The ruling elite could use aid in order to gain private benefit, without using it for growth promoting investments or developments.

Djankov et al. (2008) conclude that aid creates an even higher incentive for rent seeking than has been found in studies into the rent seeking incentives created by oil, thus indicating that aid can create an even bigger rent-seeking problem than at least some natural resources. Djankov et al. (2008, 9) argue that natural resources weaken the quality of institutions and strength of democracy by the design of the governments, who is incentivised to do so in order to take advantage of the added income from the resources for their own benefits. They conclude that aid has a similar effect thus creating a negative impact on institutions.

Added capital should raise output. Kraay (2014) conducted a study on government spending multipliers from the transactions done by official creditors to developing country governments. His research includes 60 000 loans from multilateral banks and bilateral agencies to developing countries in 1970-2010.

According to Kraay (2014), development loans offer a major source for public spending for many developing nations. In addition, the loans are usually conditional, meaning that they are tied to a specific development project within the country, which can last several years. These loans disburse over several years, depending on the project success. He finds that within the first year after the loan is given, 22% is disbursed, 18% in the second year, 13% in the 3rd year and 50% after. According to Kraay (2014, 172) the one-year government spending multiplier in developing countries is approximately 0.4, meaning that one dollar spent on government spending raises the output by 40 cents.

Khan and Hoshino (1992, 1486) study the impact of aid on government spending in less-developed countries. They find that foreign aid has an impact on the revenue and expenditure of receiving governments, the marginal propensity to consume out of foreign aid is less than one, which implies that it is used for public investments. In addition, they find, that 85 cents of a loan received goes to investment and 32 cents of grants goes to investment, thus if the purpose is investment, loans work better. Loans increase and grants reduce the tax burden.

As portrayed by North (1990, 356) the most important part of a government's growth are transfer payments. A functional taxing system is crucial in order for a government to work. North (1990, 364-365) states that institutional change is a cumulative process that includes the work of individuals and organizations, institutions affect the profit organizations can make, and vice versa companies have an impact on the institutional framework. Thus, institutional development is not achieved by external capital inputs.

3.2.4 Real exchange rate misalignment and Dutch disease

Real exchange rate (hereafter RER) refers to the country's currency compared to other currencies and portrays the country's trade capabilities. If domestic currency weakens in comparison to other currencies, the tradeable goods are cheaper for other countries, thus resulting in the rise of exports and a more favourable current account. If RER appreciates, the domestic prices rise and as imports become less expensive, the level of exports lowers. (Hayes 2021).

The Dutch disease refers to a situation where a sudden increase in one production sector of a nation leads to real exchange rate appreciation and thus to weakened current account. After a natural gas discovery in the Netherlands, the Dutch guilder rose, leading to a lower

level of exports as the domestic prices were now higher compared to foreign prices. (Chen 2021). In the context of aid, Dutch disease may occur if aid is targeted towards a specific sector, which leads to the rise of price levels and wages.

Elbadawi et al. (2012) find aid useful in promoting growth, with a weaker impact in countries with overvalued exchange rates. They state that large surges in aid might cause Dutch disease. The way in which aid creates Dutch disease is that aid increases spending on non-tradable good and services, thus impacting RER by growing domestic prices, thus making exports and imports less feasible. In addition, they state, that RERs are especially important in Sub-Saharan Africa, the largest aid receiving area, due to small domestic markets, low level of technology and human capital.

On the other hand, Elbadawi et al. (2012, 688) find that even though long-term aid in high amounts contributes to real exchange rate appreciation, the positive effects overshadow the negative. According to their study (2012, 696) if countries that grow are able to avoid the effects of RER appreciation, aid has a positive impact on investments, policies and aggregate efficiency. Thus aid has a negative impact if RER misalignment is allowed, and positive if the financial environment are good enough to prevent the appreciation. Thus, according to their study, financial development is the most important factor in creating growth. As Dutch disease or RER misalignment arise as risks when aid is targeted towards non-tradable goods, one may argue that aid should be targeted towards the development of exportable industries. Mills (2021, 2) points out that if historical aid disbursements had been invested in infrastructure, 200 000 kilometres of new railroads could have been built. However, as shown in Figure 2 in chapter 3.1, aid is mainly targeted towards social infrastructure, education, general assistance and transport.

This however introduces another issue with the evaluation of the literature on aid. While it is true that investments in social infrastructure may cause Dutch disease and not benefit the exporting sector, it is intuitively likely that improvements in said sectors will benefit the recipient economy in the long-run. For example, investing in education creates knowledge, which then can benefit exports overall in the long-run. This again highlights the importance of assessing the impact of aid over appropriate time periods (as discussed above). In addition, targeting aid toward the manufacturing sector may seem questionable to aid donors as it is hard to explain why aid should be used in the economy instead of benefitting the people more directly.

3.3 Causality issues

The causal relationship between aid and growth is hard to define. As stated by Bräutigam and Knack (2004, 255-256) it is difficult to research the causal relationship of aid on growth because aid is usually given to countries with the lowest levels of growth. Even though research results imply that as the amounts of aid are increased, the level of output is decreased, in reality this could be due to the fact that as the levels of GDP and development are decreasing the amounts of aid given are increased. If aid is given in greater amounts to countries that have a greater need, this may create an endogeneity issue (Rajan and Subramanian 2005, 6), as aid would then be dependent on the amount of GDP.

Assessing the impact of aid on GDP can thus be compared to the assessing the causality of hospital treatment and sick patients. The people in hospitals are usually sicker than people who are not, which could give the picture that hospitals make people sick. This however, due to selection bias, is a false conclusion. The people who are in hospitals are already sicker than the ones who are not. Applying the same logic to aid, where the countries receiving aid are worse off than the countries not receiving aid, it could be that the finding that aid does not impact growth may also be a false conclusion.

Rajan and Subramanian (2006, 637) have similar concerns. They consider the nature of aid as a solution to sudden needs. According to them, aid can be increased due to sudden needs, such as natural disasters, which then in data shows as less growth, more aid. In addition, the amount of aid can be reduced due to economic growth, showing a relationship of more growth, less aid. In addition, the nature of panel data, according to Rajan and Subramanian (2006) is such that the small but positive impacts of aid cannot show. According to them, a more valuable study would be to examine the ways in which aid can affect growth, rather than its explicit results in regression analysis.

Despite the above, the total amount of aid given to countries does not change materially on a yearly basis, which implies that natural disasters do not have a significant effect on the amount of aid given. On average, the amount of aid has grown 8.7% in all countries from 1960 to 2021 in constant 2018 US$. Indonesia 2016-2017 is one notable outlier, experiencing a 182% decrease in the amount of aid received. During that period, PPP real GDP grew 1%. Another outlier is a 31 109% increase of aid 1993-1994 in Palau,. This increase is explained by the fact that Palau only started to receive aid in 1992. (Net official

development assistance and official aid received). As per stated by Easterly (2004) and later by Rajan and Subramian (2005, 6) regressions can be driven by outliers. Rajan and Subramanian (2005, 6) tested for outliers and found two for the period of 1980-2000, and none for the others.

According to Easterly (2007, 329) aid requires an advanced set of explanatory variables due to endogeneity issues. According to Easterly, "it is very likely that low-growth countries got more aid because they had low growth". Thus he suggests utilizing population size and geostrategic factors as the variables.

According to Alesina and Weder (2002, 1127), the lack of causal inference diminishes the results of all research on the impact of aid on growth. As the countries receiving aid are experiencing slow growth, it is impossible to tell whether the growth would be even slower without aid.

Notwithstanding the above, in practice donor countries seldom give aid to the countries most in need, but rather donate regarding their own motives. Donor's own motives can include arms trade (the aid recipient need to use some parts of aid to buy arms from the donor) and colonial relationships, to name a few. Colonial relationship are clear in the aid donor – recipient relationships and the amount of aid given to recipients.

For example the United States', the largest net aid donor, top ten aid receivers in 2018-2019 were Afghanistan, Jordan, Ethiopia, Kenya, Nigeria, Syria, South Sudan, Yemen, Iraq and Tanzania (Aid at a glance charts). According to the World Bank GDP per capita data (2021), the lowest levels of GDP per capita were in Burundi, Somalia, Central African Republic, Mozambique, Afghanistan, Madagascar, Sierra Leone, Niger, Democratic Republic of Congo and Malawi. Out of the top 10 receivers and top 10 lowest GDP per capita only Afghanistan appears on both.

France's top 10 aid recipients are Morocco, Côte d'Ivoire, Cameroon, India, Senegal, Colombia, Turkey, Indonesia, Tunisia and Vietnam (Aid at a glance charts). Apart from Colombia, Turkey and Indonesia all other top recipients share a colonial past with France (Former French Colonies, 2020). The pattern is also clear in the case of the United Kingdom - out of its top 10 aid receivers (Pakistan, Ethiopia, Afghanistan, Nigeria, Syria, Bangladesh, Yemen, Democratic Republic of Congo, Somalia and South Sudan (Aid at a glance charts)) most share a colonial past (The British Empire). Considering all aid given

in aggregate (Net official development assistance received 2021), the top ten current receivers are Syria, Ethiopia, Bangladesh, Yemen, Afghanistan, Nigeria, Kenya, the Democratic Republic of Congo, Jordan and India.

Rajan and Subramanian (2005, 11) research the impact of aid on growth by viewing the donor-recipient relationships. They find that the more influence over the recipient country the donor gets, the more they are inclined to give aid. They measure this with colonial ties and size relation (determined by population – which is a questionable dataset).

A thorough analysis of the motivations of aid donors does not, apart from solving some endogeneity issues perhaps, directly disclose how aid impacts GDP. It is thus an analysis that falls outside of the scope of this thesis. It is, however, clear that aid is not targeted toward the least developed countries. This casts doubt over whether, while the primary purpose of aid is to promote economic growth and welfare, it is used in a functioning way at all (OECD). Given this finding, it is questionable whether aid can be expected to raise the level of development at all. Instead, it is arguable that aid should in fact rather be measured by its ability to give rise to results that the donating country intended when it gave the aid.

As argued by Rajan and Subramanian (2005, 6) regardless of the donor motives and the causality of aid on growth, the amount of GDP can change due to business cycles. Growth can change due to exogeneous factors that aid cannot overcome. The problem of business cycles has been considered by taken value averages over several years in these studies. Rajan and Subramanian (2005, 23) use 40, 30, 20 and 10 year averages, Dalgaard and Hansen (2001, 10) and Burnside and Dollar (2000, 849) use six four year periods, Bräutigam and Knack (2004, 267) use one 16 year average for 1982-1997, Djankov et al. (2008, 1) use an eight five year periods, Boone (1995, 46) uses four samples of an average of five years and Clemens et al. (2011, 606) use nine four year periods.

Thus, as per all regression models, it is important to remember that correlation does not imply causality - while relationship between aid and growth can be correlated, but as per the endogeneity issues stated above, it is not necessarily the case that it is also a causal relationship.

One quality that makes aid different when compared to the other economic input of a country is its nature as something that should end. The idea behind aid is that it will help

a country to move from a developing to a developed country, ultimately making aid unnecessary. This is different to other growth promoting factors, such as capital, labour or technology, which are expected to keep growing and not end after a certain level of output or well-being is achieved.

While the stated goal is to assist countries to develop to a level where aid is no longer needed, the colonial ties that maintain global power relations and the benefits that donor countries receive from aid suggests that ending aid would not benefit all parties involved. Therefore while aid can help individual lives and thus have successful features, it seems to fail its long-term goal of promotion of economic development.

When investments are made in order to increase the level of education or FDI's in a given country, the intention is to at least maintain the existing level of education (or, if possible, improve that level). Aid, which was intended to be once-off in nature with clear end goal, has become more of a constant source of income for recipient countries, thus leaving recipients without much incentive to use the aid to reach a level of development where aid is no longer required. This is especially the case where the ruling elites of the recipient country are the direct beneficiaries of the aid.

Ideally, aid should thus both create growth and become less useful over time. Taking into account the benefits that donor countries receive from aid, however (including interest payments, strengthening ties with recipient countries or secured enhanced arms trade) makes it questionable whether donating countries have an incentive for the global aid mechanisms to stop.

In 2015 the Global Financial Integrity (GFI), Centre of Applied Research at the Norwegian School of Economics, Jawaharlal Nehru University, Instituto de Estudos Sosioeconomicos and Nigerian Institute of Social and Economic Research conducted a study into financial flows to and from developing countries. Adding up all financial transfers in 2011, developing countries received 1.3 trillion US$ from developed countries, while 3.3 trillion US$ went from developing countries to the developed. (Financial Flows and Tax Havens: Combining to Limit the Lives of Billions of People 2015).

Most of the literature cited investigates the impact of aid on GDP. Out of the cited papers, only Boone (1996, 5) tests the correlation of aid on human development factors. Boone

uses infant mortality rates as according to Boone, it is a good measurement of development due to its quick response time to added consumption and developed health sector. Boone finds no impact on aid on infant mortality rates, levels of education or life expectancy. According to Boone (1996, 5) the only people benefiting from aid are the receiving country's elite.

The literature has a clear gap on aid's impact on human development. The human development index, often used to study overall development instead of GDP, is a summary of life expectancy, education and GNI per capita (Human Development Index UNDP) In considering the impact of aid on growth, this thesis thus takes into consideration life expectancy and education in addition to GDP growth. Life expectancy and education are a more robust description of development than GDP, due to GDP's possibility of uneven distribution within the country.

4 Empirical research

The aim of this thesis is, in addition to considering and reviewing existing literature on the topic, conduct a new, value-adding empirical analysis of the impact of aid on growth. The empirical research is thus considering not only the impact of aid on GDP, but also on human development indicators. Longer time lags than those that have been considered in previous studies have also been introduced. The empirical research is conducted as quantitative research. The study is based on growth theories, literature and the theory that growth depends on institutions. Subchapter 4.1 introduces the data used, while the methodology is presented in Subchapter 4.2.

4.1 Data

The data used in this empirical study is fixed unbalanced panel data. The total dataset includes 169 countries over the time period of 1960-2019. The data has no area constraints – all countries that are net aid receivers were included in the dataset. The countries included can themselves be aid donors, but receive more aid than give out. The dataset is constructed to include every year of the 169 countries in which the corresponding country was a net aid receiver. All data points from all other years were excluded from the dataset.

Given that data for each year for every variable was not available for every country, the inclusion of every net aid receiver gives a larger sample than restricting the sample size in other manner. Including every country that has been a net aid receiver also offers a wider, less homogenous dataset than constraining the research to one area or a particular set of countries. Due to the missing values, the data set is unbalanced. Fixed panel data means that same countries are observed for each period. The dataset only includes a maximum of one entity per observation.

Variables used are destringed into numerical values on Stata. Destringing values transforms the values to a ten digit accuracy, thus meaning that some values are not as precise as in their original format. Selected variables are explained and argued in this chapter.

Net official development assistance and aid received (aid) is in constant US$ 2018 figures and extracted from the World Bank data bank (2021). The data excludes countries that have no available data for received aid or are primarily aid donors. Donating aid can

have a positive impact on the donor's economic performance, but are not the area of interest for this thesis and are thus excluded. This dataset includes 169 countries and thus constraints the sample as such. The number of observations equals 8 321.

Expenditure side real GDP in purchase power parity in millions 2017 $US is extracted from the Penn World Table (PWT) 10 (Feenstra et al 2015). A purchase power parity GDP is used in order to compare countries to each other. The PWT is constructed by University of Gröningen. The dataset covers 124 countries and the number of observations is 6 035. Due to the transitional nature of GDP growth, the dependent variable used is GDP per capita, which showcases the level of GDP rather than its short-term fluctuations. Thus, GDP growth is more affected by business cycles. (Hall & Jones 1998, 1-2).

Polity2 score is from the PolityV dataset constructed by the Center for Systemic Peace. It is formulated from the AUTOC minus the DEMOC score, which include and ranges from +10 to -10, from strongly democratic to strongly autocratic governing entities. AUTOC is the value for institutionalized autocracy, which stands for a lack of political competition and political freedom. DEMOC stands for institutionalized democracy, which stands for (1) the presence of institutions and procedures that citizens can use to express a will to alternative policies, (2) institutionalized constraints on the exercise of power by the executive and (3) guarantee of civil liberties to population in their daily lives and political participation. Other aspects included are plural democracy (also known as the rule of law), systems of checks and balances and freedom of the press.

The Polity2 score includes values of -88 and -77, being missing values that were deleted from the dataset. The polity2 score is created for time-series analysis and is used in this research. It has changed the -66, -77 and -88 to polity scores within the range of -10 to +10 such as: -66 system missing, -77 interregnum which means a change of power, between two ruling seasons, -88 balances the missing scores between changing from the starting score to the final score with an average per year. Polity2 gives a full 10 to countries including: Cape Verde 2001-2018, Mauritius from 1982-2018, Australia 1901-2018, Finland 1919-1929 and 1944-2018 and -10 to Swaziland in 1973-1977, Iran 1800-1906, 1954-1978. The polity5 dataset includes 167 countries. When deleting countries that are not aid receivers, polity2 has data for 114 countries, including 5 314 observations.

Arms imports data is gathered by the Stockholm International Peace Research Institute (SIPRI) and portrayed in the World Bank databank. The imports are not portrayed in a sales price amount but as unit production costs and represents the transfer of military resources (SIPRI Arms Transfers Database). Arms imports can have a connection with the amount of aid received, as countries can be motivated to give aid in order for the receiver to buy arms from the donating country. This is used as a variable due to its effects on minimizing the impact of aid on GDP or human development indicators. (See for example Burnside & Dollar 2000; Easterly et al. 2004). Arms imports has data for 151 aid receiving countries. Total amount of observations used is 4 126.

Education variable consists of net primary school enrollment rate extracted from the World Bank, gathered by UNESCO Institute for Statistics. It is a percentage value of all primary aged kids within the country. (School enrollment primary 2021). Education is a measurement used for the human development index. According to the OECD, 8% of total aid given in 2019 went towards education (Aid ODA by sector and donor 2021). It can thus be considered a sector that aid should improve. Education has data for 160 aid receiving countries, total amount of observations is 3 066.

Mortality rate variable states the infant mortality rate out of 1 000. The data is extracted from the World Bank dataset (2021) and is constructed by the UN Inter-agency Group for Child Mortality Estimation. Out of aid receiving countries the dataset includes 157 countries and 7 617 observations in total.

Foreign direct investment inflow (hereafter FDI inflow) variable includes net FDI inflows as a percentage of GDP. It is extracted from the World Bank dataset (2021) and is constructed with the International Monetary Fund, International Financial Statistics and Balance of Payments databases, the World Bank, International Debt Statistics and OECD GDP estimates. Out of aid receiving countries the dataset includes 159 countries and 5 958 observations in total. According to Selaya and Sunesen (2012, 2155) aid can promote FDI if targeted correctly.

Broad money indicates the amount of money circulating in the economy, and thus the financial depth of the aid receiving country. It is portrayed as a percentage of GDP and is extracted from the World Bank databank (2021), assembled by International Monetary Fund, International Financial Statistics and data files and the World Bank and OECD GDP estimates. It is widely used in the literature (see for example Burnside & Dollar

2000; Dalgaard & Hansen 2001; Easterly et al. 2004; Rajan & Subramanian 2009). A high broad money ratio indicates that the economy has lots of financing at hand for companies (Liberto 2020).

4.2 Methodology

The research is conducted with a regression analysis. The fixed effects model is used to analyze the impact of variables that vary over time. In the panel data used, all variables vary within time, and there are no time-invariant characteristics. The fixed effects equation as per Park (2011) is shown as such

$$Y_{it} = \alpha_i + \beta_k X_{k,it} + \varepsilon_{it}$$

in which i denotes countries, t time, α_i is an unknown intercept, Y is the dependent variable, X represents the independent and control variables, β_k represents independent and control variables and ε_{it} is the error term.

In the random effects model it is assumed that the variation between countries are random and uncorrelated with the independent variables, and that the error term is not correlated with independent variables. According to Dougherty (2011, 421) if the sample is a random sample, one can test for fixed effects or random effects with the Hausman test. If the Hausman test does not indicate significant differences in the coefficients, one can use the Lagrange multiplier to test whether to use random effects or pooled ordinary least squares (hereafter OLS).

As both the fixed effect and random effects regressions are run with the dependent variable of natural logarithm of GDP, and independent variables of net assistance, natural logarithm of population, FDI inflows, Polity2, broad money and arms imports, the null hypothesis was that random effect model is appropriate and the alternative hypothesis was that fixed effect model is appropriate. The P-value was 0.00 thus rejecting the null hypothesis. Therefore in this case fixed effects was an appropriate model.

The Breusch-Pagan Lagrange multiplier was then used to compare the random effects and pooled OLS model. The null hypothesis was that Pooled OLS model is appropriate, and the alternative hypothesis was that random effect model is appropriate. The P-value is 0.00, thus rejecting the null hypothesis and confirming that, of these two, the random

effect model was appropriate. Therefore, the fixed effects model was used, as the Hausman test rejected random effects model.

In checking for heteroscedasticity of the selected fixed effects model, the Modified Wald test was run for groupwise heteroskedasticity. The null hypothesis here was that there is no heteroscedasticity problem, and the alternative hypothesis was that there is a heteroscedasticity problem. The P-value is 0.00 thus implying that there is a heteroscedasticity problem. The robust fixed effects model was thus used in order to account for heteroscedasticity.

Four analyses were conducted, each containing 4-5 regression models with different lags on aid. The impact of aid was researched with the dependent variables being output, education, mortality rate and life expectancy.

5 Results

The results conclude findings from four models, including the impact of aid on output (Subchapter 5.1), education (Subchapter 5.2), mortality rate (Subchapter 5.3), and life expectancy (Subchapter 5.3). Throughout, the results are in line with literature and expectations. The robustness and scope of the results are best used with the literature and earlier studies, supporting and revisiting the conclusions.

5.1 Output

The dependent variable on output model is natural logarithm of PPP GDP (Penn World Table 10.0 2021). The independent variables used include: natural logarithm of aid, aid with 1, 2, 5 and 10 year lags (Net official development assistance and official aid received 2021), natural logarithm of population (Penn World Table 10.0), FDI inflows (FDI inflows 2021), Polity2 (PolityV 2018), broad money (Broad money 2021) and arms imports (Arms imports 2021). The robust fixed effects regression results are shown in table 1. Regression 1 has log of aid with no lags, regression 2 log of aid with 1 year lag, regression 3 log of aid with 2 year lag, regression 4 with log of aid with 5 year lag and regression 5 with log of aid with 10 year lag.

The number of countries for the first regression model are 96. Observations vary from 2 223 to 2 283, due to the lags eliminating every countries first aid data. According the results, aid with all lags have no effect on GDP, but the results are insignificant. Polity2 has a modest positive 0.0155 effect on GDP with the aid lags of 0, 1 and 2 years, and 0.0118 for 5 years and 0.0109 for 10 years. The results are significant with a P-value of <0.1. According to the results, population and broad money have a significant positive impact on growth, with a P-value of <0.01.

As per stated in chapter 3.3, the regression analyses on aid to GDP have several causality issues. Primarily, it is difficult to define all the things that impact growth, and in addition, as aid is given to countries that are performing poorly economically, the results might showcase a negative correlation despite the fact that the relationship could have been a stronger negative correlation if aid was not given in the first place.

Table 1 Robust fixed effects regression. Dependant variable is the natural logarithm of per capita GDP (PPP)

Regression	(1)	(2)	(3)	(4)	(5)
Aid	-0				
	(0)				
ln population	0.339***	0.336***	0.337***	0.330***	0.378***
	(0.117)	(0.117)	(0.115)	(0.112)	(0.104)
FDI inflows	-0.00419	-0.00427	-0.00429	-0.00552	-0.00766*
	(0.00433)	(0.00432)	(0.00432)	(0.00453)	(0.00453)
Polity2	0.0115*	0.0115*	0.0115*	0.0118**	0.0109*
	(0.00590)	(0.00591)	(0.00592)	(0.00593)	(0.00565)
Broad money	0.00930***	0.00933***	0.00930***	0.00945***	0.00897***
	(0.00175)	(0.00177)	(0.00177)	(0.00183)	(0.00194)
Arms imports	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)
Aid 1 year lag		-0			
		(0)			
Aid 2 year lag			-0		
			(0)		
Aid 5 year lag				0	
				(0)	
Aid 10 year lag					-0
					(0)
Constant	2.595	2.639	2.629	2.734	1.983
	(1.899)	(1.901)	(1.878)	(1.837)	(1.699)
Observations	2,283	2,280	2,276	2,261	2,223
R-squared	0.385	0.383	0.381	0.381	0.388
Number of countries	96	96	96	96	96

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.2 Education

Table 2 represents the results on the impact of aid on education, here meaning the net primary school enrolment rate. The dependent variable is natural log of education (School enrolment primary 2021) and the independent variables are: natural logarithm of PPP GDP per capita (Penn World Table 10.0 2021), natural logarithm of aid with 1, 2, 5 and 10 year lags (Net official development assistance and official aid received 2021), Polity2 (PolityV 2018) and natural logarithm of population (Penn World Table 10.0). Regression 1 has log of aid with 1 year lag, regression 2 log of aid with 3 year lag, regression 3 log of aid with 5 year lag and regression 4 with log of aid with 10 year lag.

The number of observations included vary from 1 804 to 1 859, with less observations with higher lags of aid. The number of observations is based on data available from the datasets used, with a lack of education information meaning some of observations used in Table 1 could not be included in this analysis. The number of countries is 95 with aid with lags of 1 to 5 years and 94 countries with aid with a lag of 10 years. According to the results, aid with a 1 year lag has no impact on education with significant results as P-value is <0.05. The rest of the lags also no significance to education, with lags of 5 and 10 years being insignificant and lag of 2 years being significant with a P-value of <0.1.

In addition, only population seems to have a significant positive impact on education, with P-value of <0.01. As the education level here is portrayed as a percentage of all primary aged kids, it is surprising that a higher population seems to have a positive effect on education levels. It may be that the level of development does not show best in primary school enrollment figures, and thus an interesting research question here would be to observe the impact of aid on education rates on higher levels.

Even though insignificant, it is surprising that GDP is shown to have a negative effect on education. This could be because GDP is not equally distributed through the whole population, thus meaning that even though the GDP levels of a nation are high, it is possible that the output only benefits a small proportion of the population.

Table 2 Robust Fixed effects regression. Dependant variable is natural logarithm of education.

Regression	(1)	(2)	(3)	(4)
Aid 1 year lag	0**			
	(0)			
ln GDP per capita (PPP)	-0.0281	-0.0286	-0.0310	-0.0384
	(0.0434)	(0.0436)	(0.0432)	(0.0429)
Polity2	0.00489	0.00478	0.00452	0.00386
	(0.00361)	(0.00361)	(0.00363)	(0.00355)
ln population	0.475***	0.477***	0.483***	0.503***
	(0.114)	(0.114)	(0.114)	(0.113)
aid 2 year lag		0*		
		(0)		
aid 5 year lag			0	
			(0)	
aid 10 year lag				0
				(0)
Constant	-2.977*	-3.004*	-3.083*	-3.326**
	(1.615)	(1.620)	(1.625)	(1.630)
Observations	1,859	1,856	1,846	1,804
R-squared	0.437	0.435	0.435	0.440
Number of countries	95	95	95	94

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3 Mortality rate

Table 3 represents the impact of aid on mortality rate. The dependant variable is natural logarithm of mortality rate (Mortality rate 2021) and the independent variables include aid with 1, 2, 5 and 10 year lags (Net official development assistance and official aid deceiver 2021), per capita PPP GDP (Penn World Table 10.0 2021), Polity2 (PolityV 2018), natural logarithm of population (Penn World Table 10.0 2021) and terms of trade (Terms of trade adjustment 2021). The variables are similar to the research conducted by Boone (1995). Aid without lag was excluded due to reasoning that it would be difficult

for same year aid to impact the mortality rates. The regressions include 89 countries with observations ranging from 2 700 to 2 777.

As per the aid to GDP regression, aid seems to have no impact on mortality rates, values however being insignificant. Per capita PPP GDP and population have a significant negative impact on mortality rate with a P-value <0.01 and Polity2 has a significant negative impact with a P-value <0.05. A negative correlation here can be translated as a positive impact as lower mortality rates are considered more desirable. The results on GDP's and institutions' impacts are in line with Boone's (1995) research on the impact of aid impact on mortality rates, but according to Boone's (1995, 321) research, population growth had a positive impact on mortality rates, thus meaning that a larger population results in higher mortality rates.

According to the child survival hypothesis increased child survival rates result in the decline of family sizes and new born babies. This is in line with the idea that in less developed countries as child mortality is a high risk and social welfare or family planning is not prominent, families reproduce more. (Taylor et al. 2011). The contradictory results shown in Table 3 could be due to omitted variable bias or some other underlying factor that is not seen in the research.

Table 3 Robust Fixed effects regression. Dependent variable is ln mortality rate.

Regression	(1)	(2)	(3)	(4)
Aid 1 year lag	0			
	(0)			
ln per capita GDP (PPP)	-0.488***	-0.487***	-0.482***	-0.473***
	(0.0765)	(0.0767)	(0.0772)	(0.0811)
Polity2	-0.00964**	-0.00963**	-0.00981**	-0.00986**
	(0.00468)	(0.00469)	(0.00471)	(0.00474)
ln population	-0.821***	-0.821***	-0.821***	-0.828***
	(0.103)	(0.103)	(0.103)	(0.105)
terms of trade	0**	0**	0*	0
	(0)	(0)	(0)	(0)
Aid 2 year lag		0		
		(0)		
Aid 5 year lag			0	
			(0)	
Aid 10 year lag				0
				(0)
Constant	21.16***	21.15***	21.11***	21.16***
	(1.482)	(1.485)	(1.495)	(1.510)
Observations	2,777	2,773	2,752	2,700
R-squared	0.771	0.771	0.772	0.772
Number of countries	89	89	89	89

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.4 Life expectancy

Table 5 depicts the impact of aid on life expectancy. The dependant variable is natural logarithm of life expectancy (Life expectancy at birth), and independent variables are aid with 1, 2, 5 and 10 year lags (Net official development assistance and official aid received 2021), natural logarithm of PPP GDP per capita (Penn World Table 10.0 2021), Polity2 (PolityV 2018) and natural logarithm of population (Penn World Table 10.0 2021). The regressions include 98 countries and observations varying from 3 576 to 3 680.

As per previous models, aid shows no impact on life expectancy. As other aid variables are insignificant, 10 year lag of aid is significant with a P-value <0.05. As expected, GDP has a significant positive impact on life expectancy with a P-value <0.01. Yet again, population shows surprising results, as the impact of population seems to be positive with a P-value of <0.01.

Table 4 Robust Fixed effects regression. Dependent variable is ln life expectancy.

Regression	(1)	(2)	(3)	(4)
Aid 1 year lag	0			
	(0)			
ln GDP per capita (PPP)	0.0365***	0.0363***	0.0357***	0.0342***
	(0.0112)	(0.0112)	(0.0113)	(0.0119)
Polity2	0.00127	0.00127	0.00127	0.00120
	(0.000989)	(0.000991)	(0.000997)	(0.00100)
ln population	0.197***	0.198***	0.199***	0.202***
	(0.0184)	(0.0184)	(0.0184)	(0.0187)
Aid 2 year lag		-0		
		(0)		
Aid 5 year lag			-0	
			(0)	
Aid 10 year lag				-0**
				(0)
Constant	0.657**	0.651**	0.640**	0.605**
	(0.275)	(0.276)	(0.275)	(0.277)
Observations	3,680	3,674	3,648	3,576
R-squared	0.612	0.613	0.614	0.616
Number of countries	98	98	98	98

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

According to the regressions conducted, aid has no impact on growth or human development indicators. No impact meaning that no conclusions of aid's positive nor negative effect can be made. The results are in line with Boone (1995) as he also found aid to have no impact on mortality rates or primary school enrolment ratios. In addition,

the results on the impact of aid on GDP seem to be in line with Easterly et al. (2004) as they found no impact of aid on real per capita GDP growth. Most importantly, the study appears to be in line with the literature and the causality issues presented with the implications that aid on growth -research is problematic and the relationship of aid on growth is hard to define.

6 Summary and conclusions

The aim of this thesis was to (1) research the impact of aid on output, education, mortality rates and life expectancy and (2) highlight the issues of causality in research conducting into the impact of aid on growth literature, in each case with a view to stimulating and inviting further dialogue on the effects of aid. This chapter offers a summary (Subchapter 6.1) and the conclusions (Subchapter 6.2) of the thesis. Suggestions for further research are presented in Subchapter 6.2.

6.1 Summary

The impact of aid on growth has been widely researched, without consistent or compatible results. Some economists find aid to have a positive impact on growth, some find no impact and some portray a strong negative impact.

While neoclassical growth theories offer a baseline for economic growth, they fail to explain cross-country differences occurring between the developing and developed countries. Institutional economics explain the differences as consequences in variations on institutional levels, suggesting that a country's growth level is mostly related to its institutional development.

As measuring strong institutions can be difficult, varying datasets have been developed in order to mathematically observe the differences. Strong institutions usually entail a high level of democracy, trade openness and political participation. As the impact of aid on institutions is not clear, most of the prominent literature reviewed agrees that the impact of aid depends on the strength of institutions, meaning that it does not have a positive impact if the institutions are weak. This notion invites to question whether aid is functional in the first place, as aid receivers are globally most corrupt and least democratic.

The aid on growth research, much like the research on the impact of aid on institutions, involves causality issues as it is difficult to conclude whether aid creates weak institutions and lower GDP, or would these be even lower without the aid disbursements. As aid can cause rent seeking, a moral hazard, real exchange rate misalignment and Dutch disease, it is plausible that the aid mechanisms benefit the aid donor's as well. The motivations of aid donors can include maintain colonial power relations, increasing the donor country's

arms sales in addition to the well-meaning ideology of helping the people in developing countries.

The research results suggest that aid has no impact on output, education, life expectancy or infant mortality rates. The research results appear to be in line with the literature and the notion that the causality and even correlation of aid on growth is often difficult to define. Even though lags on aid up to 10 years were introduced, it is difficult to point out when the results of aid disbursements should be seen in the dependant variables. According to this thesis and previous literature, the impact of aid should be further researched and especially when it comes to long-term economic growth, even questioned.

The aid-on-growth research contains major causality issues, which are not by any means excluded from the scope of this thesis. However, this thesis brings forth and represents the issues in a manner that invites the reader to question the prominent literature.

6.2 Conclusions

This thesis adds to the aid on growth discourse highlighting the importance of questioning the functionality of aid. As some results in the literature relating to the functionality of aid are positive, the presented institutional and economic outcomes are worrying. If the goal of aid is to create economic growth, the effectiveness must be questioned as economists have yet to show conclusive results on the functionality of aid.

However, if the outcomes of aid depend on institutional levels, it is promising to notice that historically the strength of institutions and the global levels of output seem to increase. On the other hand however, the climate crisis suggests a stronger polarization of global wealth and an increase of migrational and environmental issues concentrated especially in the developing countries.

Like economic growth of developing nations, the aid-on-growth literature appears to have halted. The literature mainly consists of alternating findings of a study finding a positive impact followed by another study finding negative impact. I thus think that it is more worthwhile to concentrate studies on other factors that could help developing countries. Such instruments include the impact of foreign direct investments and the reduction of trade barriers. Instead of maintaining the aid system, it could be fruitful to consider increasing trade with developing nations and making exports from such nations more feasible. It is also vital to highlight the motives of donor countries, thus allowing further

discourse on who is benefitting from aid, and in doing so, focussing on the real outcomes of aid instead of the heavily emotionally-charged nature of aid discourse to date.

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