Effect of Aid that Targets Institution-Building in the Health Sector

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Effect of Aid that Targets Institution-Building in the Health Sector

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ABSTRACT

There is increasing evidence for the negative effect of external aid programs on public health. Accordingly, it is essential to research how donors could effectively allocate their aid. It is established that institution-building in the health sector is crucial for enhancing public health, for example by fostering accountability and transparency. Aid that is spent on institution-building is expected to have a positive effect on public health. However, there is no empirical evidence for that, and therefore, this research contributes to the existing literature by answering the following research question: What is the effect of aid targeting institution building in the health sector on public health outcomes? Several linear regressions are performed to test the effect of Official Development Assistance for institution-building in the health sector on infant mortality, life expectancy, and immunization rates. The overall research findings show a positive, but small and insignificant relationship between health institutional aid and public health.

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1. Introduction

The United National General Assembly members committed to spending 0.7 percent of their gross national income on aid. That was for instance 19 billion dollars for the United Kingdom in 2020 (Loft & Brien, 2022). You could thus imagine how much money flows from the developed world to developing countries. Donor countries strive to improve health outcomes in the developing world, but they need to know how their aid could achieve that.

The quality of aid is being assessed by the Development Assistance Committee (DAC). The DAC is a forum of the Organization for Economic Co-operation and Development (OECD) and includes 31 members, which are the largest donors of aid. DAC monitors international aid flows and coordinates and promotes cooperation that contributes to development. DAC established five criteria to evaluate aid: relevance, effectiveness, efficiency, impact, and sustainability (Chianca, 2008). These criteria became the standards of development aid, and are the most adopted features in the field of development evaluation (Chianca, 2008).

Africa is the continent with the most people in need of better health solutions (OECD, 2018). This is demonstrated by more than half of the population lacking access to necessary healthcare, and African countries representing the top 10 receivers of aid (OECD, 2018). Aid programs in Africa often target public health issues such as AIDS, malaria, and COVID and providing clean drinking water (Hjortsberg & Mwikisa, 2002). Public health is related to the extent that everyone in society has access to health care (Ho, Khalid, Skead & Wong, 2022). Targets for enhancing public health include, for example, reducing maternal and infant mortality and ending epidemics of AIDS, tuberculosis, and malaria. Public health is an important goal of the UN's Sustainable Development Agenda and is established as vital for the well-being of individuals (Broom, 2019).

Institution building is recognized in the literature as a crucial process to improve public health (Johnston, 2006). That implies that providing aid to build institutions can improve public health. Acemoglu, Johnson and Robinson (2001), for example, find that institutional differences explain more than 50 percent of the variation in a country's development. Institutions are "the rules of the game—they influence which actors have political power, how political power is organized, and how actors mobilize power and participate in the policy process" (Ho et al., 2022, p. 2069). This research aims to examine how aid could have a positive effect on public health.

That is because there is more and more evidence of the negative impact of aid (Moyo, 2010; Wenar, 2006; Doucouliagos & Paldam, 2009; Djankov, Montalvo & Reynal-Querol,

2008). It is therefore increasingly important for legislators and taxpayers in donor countries to know how to allocate aid (Birdsall, Kharas, Mahgoub & Perakis, 2010). After economic crises and countries' daunting fiscal and debt problems, donor countries in the West have experienced a new emphasis on value for money and maximizing the impact of their aid budget (Birdsall et al, 2010). As a result, there is increasingly a political debate between proponents and opponents of aid.

On the one hand, it is argued that aid is easily stolen in countries with weak institutions (Wenar, 2006). On the other hand, the literature argues that in particular, such countries need institution-building to achieve better health (Birdsall et al., 2010). This research aims to contribute to existing literature with evidence of whether aid specifically for institution-building has a positive effect on public health. The research question is: '*What is the effect of aid targeting institution building in the health sector on public health outcomes?*'. Firstly, this research starts with a literature review and theory about aid and institutions, and thereby providing a hypothesis. Secondly, an analysis will be conducted, and the results will be explained, in part by providing a relevant case study. Lastly, this research concludes with a discussion and conclusion.

2. Theoretical framework: how could aid have a positive effect?

A strand of the literature assesses aid as having a positive effect on health. Sachs (2014), for instance, argues that aid on public health has the "greatest breakthrough", with exceptional improvements in health in developing countries, by saving millions of lives (p. 8). Mishra & Newhouse (2009) are in line with Sachs (2014) and propose that aid that is given specifically on health issues has a larger effect on health outcomes than overall aid. They find that health aid has a significant positive effect on infant mortality. Similarly, Gyimah-Brempong (2015) and Han & Oh (2019) also describe that health aid has a positive and significant effect on health outcomes in African countries. These studies complement their findings by describing the indirect effect of health aid, as they argue that aid stimulates domestic health expenditure. Because the literature establishes that health aid has a better effect on health outcomes than general aid, this research also focuses on the effect of health aid. Health aid is different from other aid in the sense that health aid only targets health issues (Mishra & Newhouse, 2009). Next to health aid, there is for example humanitarian, economic, social, and governance aid.

Why might aid fail – corruption

Another strand of the literature argues that aid might not always work and that aid could even have a negative effect on public health. When you read the literature on why aid has negative effects, you see that it is often about political processes of institutions and capacity issues. This section explains how aid has a negative impact on corruption, and how corruption could have a negative burden on health.

Government corruption is "the misuse of public office for private gain" (De Medeiros-Costa, 2022, p. 1096). A lot of aid is extracted by corrupt politicians. Moyo (2010) argues that aid stimulates a cycle that blocks investment, inspires a culture of dependency, and facilitates systematic corruption, which has far-reaching negative consequences for development. Wenar (2006) explains how aid falls into the wrong hands; if a development project is implemented through the ministries of a country with weak institutions, the money and supplies may be diverted at national, district, or local levels of governance. Resource division is also a common problem when the implementing agency is a Non-Governmental Organization (NGO) (Wenar, 2006). NGOs often have to pay the government of a country with weak institutions directly to get permission for health projects. These payments stimulate the rule of authoritarian leaders and feed corruption in the bureaucracy (Wenar, 2006). Furthermore, authoritarian leaders and other individuals with illegitimate power are willing to receive aid, as that will increase their opportunities for patronage.

Corruption thus has widespread effects on the political system and health outcomes. An example of the influence of corruption on health outcomes is provided by a case study by Croke (2012), which shows why Uganda did worse on health interventions than Tanzania. It started with the political transition in Uganda, which led to corruption and Ugandan leaders trying to maximize power (Croke, 2012). Also, the Minister of Health was not chosen because he was seen as the best person for the job, but rather because he was loyal. The Minister of Health did not have much incentive to improve public health outcomes and therefore it was too hard to implement good policies. Other empirical evidence includes the study of De Medeiros-Costa (2022), which finds that corruption in Brazil negatively affects the performance of public services, and thereby also negatively affects health indicators. A general effect of corruption is the increased cost of health services (De Medeiros-Costa, 2022). Corruption hinders the relationship between financial and real resources. Because if resources are directed to the wrong people, they make services more expensive, such as access and quality of patient care (De Medeiros-Costa, 2022). Three indicators are used in the analysis to capture corruption: purchasing fraud, the diversion of public resources, and the overpricing of goods and services. The study concludes by stating the solution to reduce corruption: policies. Policies that guarantee good governance in the allocation of resources, especially procurement governance, decrease corruption and improve health indicators (De Medeiros-Costa, 2022).

In short, this section showed how aid can foster corruption and that corruption can negatively influence health. The next section describes other reasons why aid could fail.

Why might aid fail – effect of aid on accountability and political conflict

Aid could have a negative impact on accountability (Agyemang, O'Dwyer, Unerman & Awumbila, 2017). Political accountability refers to the extent that representatives or politicians are held responsible for their tasks (Agyemang et al., 2017). An aid program will involve a chain of intermediate institutions, which is usually a combination of governments of rich countries, governments of poor countries, international financial institutions, and NGOs (Wenar, 2006). There is little power of accountability located in these institutions (Wenar, 2006). No individuals have the ability to sanction these intermediate institutions for failing to provide the right resources for development, because it is too complex to know who is accountable for what. Citizens ideally have to hold their representatives accountable, but that is hard when politicians shift accountability to external aid donors (Wenar, 2006).

Moreover, aid can influence political competition; by providing aid to one politician, and not to the other. As a consequence, aid can increase the risk of political conflict, because aid increases the incentive, 'the size of the pie', that different factions can fight over (Ferguson & Moyo, 2010).

Research about aid

Why is one strand of the literature so positive about aid (Sachs, 2014), while another strand is negative about aid (Ferguson & Moyo, 2010)? Doucouliagos & Paldam (2009) explain why a lot of research about the aid effectiveness may be so positive. They argue that much of the literature is financed by the aid industry and often authors work for an organization that has an interest in positive results. Authors and publishers could thus have a significant selection bias to publish certain results. It is important to take that into account.

Solution: spending aid specifically on institutions?

As mentioned above, the negative impacts of aid are often due to weak institutions (Ferguson & Moyo, 2010). Literature implies that aid works for countries with the right institutions (Acemoglu et al., 2001). Therefore it can be argued that the solution for aid lies in institution-building in developing countries. It is expected that institution-building helps to enlarge the effect of aid. Moreover, good institutions themselves are also associated with better health. Birdsall et al. (2010) argue that fostering institutions is central to development. If donors allocate aid through the recipient country's institutions, the aid is more likely to be "owned" by the recipient (Birdsall et al., 2010, p. 28). Sachs (2014) argues that aid works best in alliance with transparency and good governance. Good governance is ensuring the rule of law, strengthening institutions, and promoting transparency and capacity in public administration (Johnston, 2006).

Institutions, 'rules', can be formal or informal. An example of a formal institution is that you have to pay health insurance, whereas an example of an informal institution is that you wash your hands after going to the bathroom. Informal institutions are culturally or socially acknowledged rules, which are also very relevant for health (Williamson, 2009). The most apparent example of a formal set of effective institutions is democracy. Democracies are in general associated with better health (Ho et al., 2022). Democracy is in most cases good for development because every citizen in a democracy should be able to participate and thereby hold politicians accountable for stimulating public health (Warren, 2014). Politicians have thus a large incentive to deliver good health outcomes and democracy is therefore highly

desired in comparison to other regime types. The next section explains the role of institutions in the health sector.

Institution-building in the health sector

A way to understand the concept of institution-building in the health sector is as "a process of mutual learning about the functioning of the health system and of constructing an agreed set of formal and informal rules. These rules need to be grounded in a widely accepted set of values to become stable" (Bloom & Wolcott, 2013, p. 220). Health system governance includes the institutions that shape behavior and the organizations that have the capacity to operate within the rules of the institutions. (Siddiqi, Masud, Nishtar, Peters, Sabri, Bile, Jama, 2009). Siddiqi et al. (2009) argue that health governance covers a lot of actors as civil society, communities, private health providers, organizations, and development partners. International actors and institutions increasingly come into play. Good governance is the extent to which state functionaries include the views of all these (international) actors. Siddiqi et al. (2009) provide a framework with health system governance principles, which for example include strategic vision, rule of law, transparency, responsiveness, and accountability. These are all examples of institutions that have a positive effect, as they are good rules for governance in the health sector.

Transparency refers to the capacity of citizens to obtain valid and timely information about the activities of the government (Johnston, 2014). Transparency fosters the availability of true information. Individuals need the information to hold politicians accountable. For instance, when citizens have the information that there is a disease going around, such as malaria, they can hold public officials accountable for providing medicines and vaccinations. When they do not know what malaria is, or what medicines can do, they cannot hold anyone accountable to improve their public health. To have access to transparency and information, countries must have an overview of health issues, such as how many people are suffering from a disease.

Another example of a good institution in the health sector is cooperation and collective action, because it is described that there are a lot of actors involved in the health sector, who have to work together. One actor or individual cannot make a difference. Booth & Cammack (2013) describe why maternal mortality improved faster in Rwanda than in Malawi, Uganda, and Niger. The four countries had the same health policies, but the main difference was that Rwanda used collective action to make accountability mechanisms work. Reporting and oversight, for example, are socially rewarded in Rwanda. This is in contrast with the situation

in Niger, where the policies fail, because of the lack of collective action and cooperation. That is illustrated by nurses in Niger being unmotivated because they are appointed by patronage and nobody cleaning the health clinics. Booth & Cammack (2013) show that collective action and cooperation in the health sector are thus very important.

Ali et al. (1999) argue that aid fails when it is allocated in poor-policy environments. Therefore, they suggest fostering the institution of accountability to the recipient country of aid, to accomplish an "ideal aid system". Accountability in the health sector is a very relevant example of a good institution and could be established by a mechanism of co-working between the donor and recipient. Burnside and Dollar (2000), likewise, find that aid only has a significant positive result in a good policy environment. "Good policies" are policies that stimulate growth, such as low inflation. Good policies are produced by institutions such as democracy and have to be implemented by a strong state capacity. People have to comply with good health policies. The next section discusses how the institution of trust affects complying with health policies.

Institutions of trust and legitimacy & health

Institutions play a role in the process of developing health policies, because these policies are made at the political level. When a country knows democratic institutions, the policies are indirectly in line with the wishes of a lot of people in society (Warren, 2014). Health policies have to be made by politicians, but compliance with the policies needs to be done by society. "There is an important distinction between health policy design and implementation" (Ho et al., 2022, p. 2070). The implementation only works with a strong state capacity to implement a policy. Nevertheless, strong institutions and state capacity are not a panacea for successful health policies. Because for compliance, they need legitimacy and trust. Health policies need to be recognized by the citizens. People need to comply for example with health policies such as vaccinating your child and paying for health insurance. The degree to which citizens believe that institutions are legitimate, and internalize rules as moral and ethical, influences the institution's stability (Bloom & Wolcott, 2013). Rules thus need to be socially and culturally legitimate. Bloom & Wolcott (2013) argue that health policies need to address the needs of everyone. If people do not comply with health policies, health outcomes are not improving.

An example that also indicates the importance of addressing health for everyone in society, is the study by Renne (2014). She studies the case of Nigeria, where the government tried to eradicate polio by vaccinating children. This was challenging because a lot of citizens

did not trust the government. The absence of trust and legitimacy was mainly a result of the government participating in conflict with Boko Haram, but was also a result of the widespread poverty and parents' concerns with malaria and measles. Renne (2014) argues that government programs that address the institutional problems in healthcare and poverty can encourage people's trust in the government and strengthen the legitimacy of federal rule. The author argues that the most successful solution to eradicate polio is, therefore, addressing institutional problems instead of forcing parents to have their children vaccinated. People need to trust the government or people that propose health policies and need to be willing to adopt them (Renne, 2014).

Another case study about the importance of legitimacy and trust is about the introduction of smallpox vaccination in two different provinces, Canton and Madras (Singh, 2015). In Madras, very few people were willing to adopt the vaccination. They had little trust in the government that was striving for the vaccination, because it was adopted from the West, and was provided free of cost (Singh, 2015). The vaccination was presented by the colonial government to bring 'superior' European knowledge to 'ignorant' natives, and hereby the cultural and social beliefs of the people in Madras were ignored. The public health intervention in Madras thus largely failed, while in Canton it had succeeded. In Canton, the new policy for the vaccination did not come from the government, but was introduced by natives (Singh, 2015). The vaccination was presented as embedded in the existing cultural beliefs and was a financial opportunity for people in Canton. These cases show that it matters whether policies are introduced within the institution of the cultural beliefs of the citizens.

Reasons why institutional aid might not work

Institutions could both have negative and positive impacts on governance and health outcomes (Agyemang et al., 2017; Birdsall et al., 2010). It is established that institutions such as cooperation, transparency, accountability, and legitimacy in the health sector are examples of good institutions that have a positive effect on health outcomes.

However, there is a lot of evidence for why aid for institution-building would not work. An influential argument is the concept of isomorphic mimicry, which allows organizations and states to maintain legitimacy by adopting or copying institutions of successful states, even without their functions (Pritchett, Woolcock & Andrews, 2013, p. 15). Institutions can create an ecosystem in which isomorphic mimicry is the optimal strategy for states and their leaders. It seems like the optimal strategy, but copying institutions is not the same as maintaining their objective. It could be that the aid that is spent on institution-building is a form of isomorphic

mimicry. The modernization theory describes that copying organizational forms leads to development (Marsh, 2014). Nonetheless, this theory assumes that institutions work in any context and ignores differences in legitimacy for institutions, history, and whether these institutions matter for development. The argument of isomorphic mimicry suggests that it might be a mistake for donors of aid to spend money on western institutions, because that would not necessarily work for developing countries. Another argument for why aid for institution-building could fail, is the concept of 'premature load bearing', in which the legitimacy of change and support of political constituencies are undercut by the placement of unrealistic expectations (Pritchett et al., 2013). Governments of developing countries do not always have the capacity to implement institutional reform.

These are some strong statements that need to be taken into account. It is important to keep in mind that the written 'form' of an institution is not the same as the actual working. An example that indicates that is a case study in Congo, which finds that the people in villages with an elected chief were not less likely to be severely ill (Van der Windt &Vandoros, 2017). However, the institutions of democracy in Congo are quite weak and even though it is believed that some village chiefs are chosen democratically, often not even every adult citizen is allowed to vote. There was a 'form' of democracy, but the essence was not how a democracy works. That could explain why democracy in this study was not associated with better health.

If aid is spent on institution-building in the context of the developing country, it would be expected to be effective. However, the threat of isomorphic mimicry and premature load bearing has to be taken into account. Aid has to be spent on the real 'substance' of good institutions, such as accountability and transparency, and states need the capacity to implement them, for aid to have an expected positive impact on health outcomes.

Hypothesis

The theory established that aid that is spent on institutions is expected to solve the problems of corruption, accountability, and political competition. Institution-building in the health sector includes fostering health policies, accountability, transparency, cooperation, trust, and legitimacy. Although some arguments involve isomorphic mimicry and premature load bearing, it is still expected that aid in institution-building has a positive effect, because the literature argues that institutions are central to development. Aid on institution-building does decrease the negative effect of aid, by combating weak institutions. Furthermore, the stronger the institutions, the better the associated public health. Accordingly, the hypothesis is: '*Aid*

that targets institution building in the health sector has a positive effect on public health outcomes'. The next section will explain how this hypothesis is tested, by providing the methodology of this research.

3. Methodology & Data

To answer the research question, the research design measures the effect of aid on institution-building and health outcomes. There are a few risks that need to be taken into account when providing an answer to the research question. One risk is reverse causation, as it could be the case that the better the health in a country, the more institutional aid it receives. Furthermore, there is a risk that confounding variables have an impact on public health and health institutional aid. For example, GDP per capita could foster both the dependent and independent variables. To limit these risks, and to be able to say something about a possible causal relationship between institutional ODA and public health, this research design includes a statistical approach with relevant control variables. In this section, the sample will be discussed, the variables will be conceptualized and operationalized, the dataset will be explained, and the statistical model will be provided.

The sample covers all 54 African countries. The cases that are selected for the analysis are African countries, because it is better to focus on one region or continent, rather than on several. That is because African countries are more comparable as they are on the same continent. Developing countries in South-East Asia, for example, know a different history, climates, culture, landscapes, et cetera. All these differentials could have an effect on health outcomes. African countries, for instance, have to some extent a similar colonial history, which is in contrast with the history of South-East Asian countries. Colonial history has a lot of influence on the current institutions and health outcomes (Bauer, Platas & Weinstein, 2022). Furthermore, a lot of African countries are developing countries and receive official development assistance, therefore, they are seen as legitimate cases for this analysis. However, it is important to acknowledge that the fact that African countries are on the same continent does not account for all geographical, historical, and other variation between the countries.

The independent variable is aid targeting institution-building in the health sector. ‘Aid’ is conceptualized as ‘Official Development Assistance’ (ODA). ODA is defined as government aid that promotes and specifically targets the economic development and welfare of developing countries (OECD, 2020). ODA is provided by official agencies, including the state and local government. ODA always includes international flows that originate in an official sector of the donor and has to be implemented on concessional terms, with a grant element of

at least 25% on loans (Ali, Malwanda & Suliman, 1999). For the independent variable, we need specifically an indicator of ODA that targets institution-building.

The indicator that is selected as an independent variable is ODA spending on health policy and administrative management, which includes "health sector policy, planning, and programs; aid to health ministries, public health administration; institution capacity building and advice; medical insurance programs; including health system strengthening and health governance; unspecified health activities" (OECD, 2022). For the analysis, the average value of this ODA is taken from 2012 to 2017. The indicator is derived from the Creditor Reporting System (CRS) Aid Activity Database. The objective of this dataset is to analyze where aid goes, what purposes it serves, and what policies it aims to implement. The data is collected on individual projects from DAC members. This indicator does not only capture institution-building, but also capacity strengthening. However, overall, the indicator is very well connected to institutions, because it includes for example policies, health to ministries and system strengthening. Furthermore, institutions and capacities are related (Lansang & Dennis, 2004). Because of the lack of other available data for health institutional aid, this is the best indicator for our variable.

The dependent variable is 'public health outcomes'. That is conceptualized as the health performance of every person in society (Ho et al., 2022). The indicators that are used for public health outcomes are life expectancy, infant mortality rate, and three immunization rates.

Life expectancy is selected as an indicator because it says something about the overall strength of public health. The rate is affected by every cause of death in society. Life expectancy could be affected by infant deaths and by maternal deaths. The indicator is specifically described as: "life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life" (World Bank, 2022).

Furthermore, the infant mortality rate is a strong indicator of public health, because the survival of a newborn is an important sign of the structural strength of the health in a country, especially of the poor (Boone, 1996). The definition of the indicator includes: "infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births in a given year" (World Bank, 2022).

Life expectancy and infant mortality are strong indicators of public health. However, life expectancy does not respond to institutional change quickly. Infant mortality rates will

respond much faster, because a simple set of health interventions can radically reduce infant deaths (Mishra & Newhouse, 2009). There are, nonetheless, indicators that expectedly respond even quicker to institutional change in the health sector, namely immunization rates. The effect of the ODA between 2012 and 2017 is measured over the effect of health outcomes in 2020, so indicators are needed that might respond quickly to this ODA on institutions in the health sector.

For that reason, three indicators of immunization rates are included: the immunization rate of hepatitis B, measles, and DPT. The rates are the percentage of children ages 12-23 months who received the vaccinations and are fully immunized. Immunization rates are expected to respond quickly to institution-building because vaccination coverage is often hindered due to weak institutions such as corruption and lack of accountability. In the seven years of ODA that targets institutions in the health sector, it is possible that weak institutions are resolved, and maybe even exchanged for more effective institutions. For instance, in that period of institution-building, it is feasible that trust in government is increased, so that more people are willing to give their children a vaccination (Arriola & Grossman, 2021). The indicators of immunization rates are also included because they are crucial to preventive health, and can thus make an impact quickly. All five indicators for public health outcomes are derived from the World Bank (2022).

To increase the precision of the estimated effect of ODA on institution-building on health outcomes, four relevant control variables are included in the analysis. These control variables are expected to increase the internal validity of this research by accounting for their effect on public health. If we would only look at the relationship between health institution-ODA and health outcomes, the results can say something about the coefficient of the relationship. However, it cannot say anything about the actual causal relationship, because there are more possible factors that contribute to public health, for example, conflict, geography, GDP, history, et cetera. The most crucial control variables are selected to mitigate the problem of a possible bias in the results. Therefore, GDP per capita, population size, other health-ODA, and education level are included. All the control variables are selected from the same year as the dependent variables, 2020.

First, GDP per capita is added, because GDP per capita is a wide-known significant indicator of development (Pritchett & Summers, 1996). GDP per capita is the gross domestic product divided by the midyear population (World Bank, 2022). The higher the GDP of a country, the more money is generally spent on development and the better the associated

public health (Pritchett & Summers, 1996). Moreover, GDP could influence the amount of ODA that a country receives, as poorer countries might receive more.

Second, the population size is added, because in general, countries with a larger population receive more aid. A country as Nigeria has around 215 million citizens, whereas for example Djibouti and Togo do not even have one million citizens. It makes sense that Nigeria receives more aid in absolute numbers than Djibouti and Togo, although they could receive the same amount of aid in proportion.

Third, the other spending of ODA on the health sector is included. It is important to see the possible effect of other spending, for example on the health interventions in basic health infrastructure, health education, infectious disease control, and basic health care. We need to control for the rest of this spending to see what the actual effect was of ODA that specifically targeted institutions, as aid on health interventions and institutions might well be related. The data for this variable was derived from the OECD.

Fourth, education is a crucial control variable, as there is a strong relationship between education and health (Zhuni, Vishwasrao & Chiang, 2012). People that are more educated about diseases and general health, are expected to give better and more appropriate care to themselves and their children and that would influence the life expectancy and infant mortality rate. Moreover, people with a higher education level are more expected to give their children a vaccination. Education level could thus also have an effect on the dependent variables of immunization rates. The variable is specifically the duration of compulsory education in the number of years that children are legally obliged to attend school (World Bank, 2022).

A cross-sectional comparison will be conducted, as it is desired to measure the effect of the ODA that targets institution-building on health outcomes at a country level. The country is selected as a unit of analysis because there are differences between countries, for example, the starting point of institutional strength. Institutions often vary at the national level. Furthermore, countries have different geography and history and some may be involved in a conflict, while others are not. It would be desired to measure the effect of change between health institutional ODA and health outcomes over time, but that is not feasible because of data availability. The first data on institutional ODA was from 2012 and in the six years of ODA, it is not expected that much has changed.

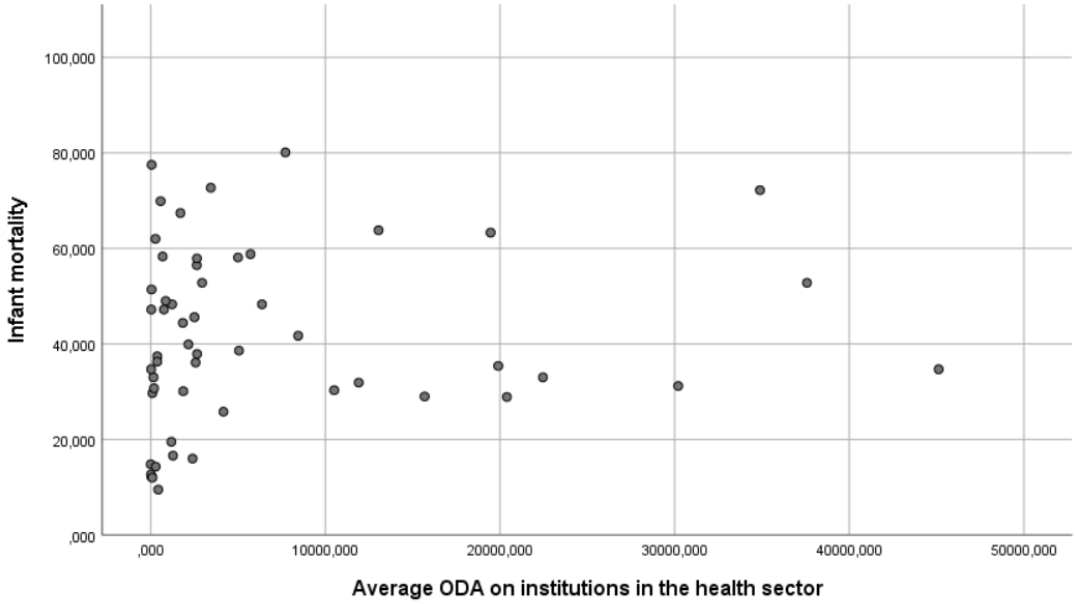
The average amount of ODA on institution-building that a country received between 2012 and 2017 was calculated. A time period of six years is taken, because the amount that

DAC countries spend on ODA is volatile. A country could have received a high amount of dollars on institution-building in the health sector in one year, but a low amount in the other year. To measure the effect on infant mortality, life expectancy, and immunization rates, some time is taken into account for the institution to come into effect. The average of ODA on institution-building between 2012 and 2017 is therefore compared to the health outcomes in 2020. The last money that was spent on institution and capacity building thus had at least three years to have an impact.

Looking at the graph in Figure 1, you can see that the data on ODA and infant mortality varies between countries. There is no linear relationship between the independent and dependent variable. Countries that receive a relatively low amount of ODA have very different infant mortality rates. That implies that the correlation between health institutional ODA and infant mortality is very weak. There are a couple of outliers, which received a very high amount of ODA. One outlier is the case of Nigeria, which received on average 34 million US dollars for institution-building in the health sector per year between 2012 and 2017, but has a high infant mortality of 72 per 1000 live births. The high rate is probably the cause of conflict and natural disasters. However, the outliers are not significant, and therefore all the cases are included in the analysis.

Because all the variables in the analysis are continuous, and this research paper aims to analyze the relationship between the amount of ODA on institution-building and public health outcomes, five simple linear regressions will be performed. The analysis requires several regressions, because it includes different dependent variables. The regressions have a model with and without the control variables.

Figure 1. ***Scatterplot on the average ODA for institutions and infant mortality***



4. Results

To answer the research question, five linear regressions are performed to measure the effect of ODA that targets health institution-building on public health outcomes. Before the regressions are performed, the assumptions for the statistical test are checked. All the variables are continuous, there is a linear relationship between the independent variable and the dependent variables, there are no significant outliers and the residuals are independent. Consequently, all assumptions for the linear regression are met, except for one. The residuals of the model were not normally distributed. To solve that problem, the variable was transformed into its natural logarithm.

The first regression that was run was between the independent variable 'ODA on institution-building in the health sector' and the dependent variable infant mortality. The regression was performed with and without the control variables. Looking at the results in table 1, there is no significant association between ODA spending on institution building and infant mortality, neither in the first model nor the model with the covariates. The coefficient is -0,08, which means that there are around 80 fewer infant deaths per 1000 live births when ODA on institution-building increases. The model with the control variables is significant ($F < 0,05$) and explains 27% of the variance in infant mortality. The only significant variable in this regression is the GDP per capita, indicating that GDP is an influential factor in explaining infant mortality.

Table 1.
Results regression analysis with infant mortality as dependent variable

	Model 1		Model 2	
	β	se	β	se
ODA on institution-building in millions $US	1,366	1.153	-0,078	1,405
GDP per capita $US			-0,004*	0,001
Population size			4,309E-8	0,000
Other health ODA			-1,687E-5	0,000
Years of education			-0,1200	1,427
R^2	0,030		0,269	
ΔR^2			0,239	
F	1,404		3,021*	

*$p < 0,05$

The second regression includes another dependent variable, life expectancy. This regression also includes a model with and without the control variables. Table 2 shows the results. There is no significant association between ODA spending on institution building and life expectancy, neither in the first model nor the second model. The coefficient of model 2 is 0.217, which means that the life expectancy increases by approximately 2.5 months when the health-institutional ODA increases. The direction of the coefficient is positive, as was expected. The model containing the covariates explains 27% of the variation in life expectancy, which is significant (F < 0,05). The control variable of GDP per capita is significant, meaning that GDP is an important factor in explaining life expectancy.

Table 2.
Results regression analysis with life expectancy as dependent variable

	Model 1		Model 2	
	β	se	β	se
ODA on institution-building in millions $US	-0,348	0,383	0,217	0,464
GDP per capita $US			0,001*	0,000
Population size			-4,741E-9	0,000
Other health ODA			-4,435E-6	0,000
Years of education			0,293	0,472
R^2	0,018		0,267	
ΔR^2			0,249	
F	0,825		2,989*	

*p< 0,05

The last three regressions were the three immunization rates of measles, DPT, and hepatitis B. The results for the immunization rates of the three diseases are similar. Looking at the results in tables 3, 4 & 5, there is no significant association between ODA spending on institution building and immunization rates, neither in the first model nor the model with the covariates. The coefficients of the institutional ODA are positive, which indicates that the immunization rates increase when ODA on institutions increases. The models with the control variables explain almost 10-12% of the variance in immunization rates.

Table 3.
Results regression analysis with measles immunization as dependent variable

	Model 1		Model 2	
	β	se	β	se
ODA on institution-building in millions $US	0,275	1,039	1,154	1,387
GDP per capita $US			0,001	0,001
Population size			-1,084E-7	0,000
Other health ODA			2,928E-5	0,000
Years of education			1,880	1,409
R^2	0,002		0,098	
ΔR^2			0,096	
F	0,070		0,888	

*p< 0,05

Table 4.
Results regression analysis with DPT immunization as dependent variable

	Model 1		Model 2	
	β	se	β	se
ODA on institution-building in millions $US	0,358	0,936	1,311	1,236
GDP per capita $US			0,001	0,001
Population size			1,099E-7	0,000
Other health ODA			2,005E-5	0,000
Years of education			1,920	1,255
R^2	0,003		0,117	
ΔR^2			0,114	
F	0,146		1,089	

*p< 0,05

Table 5.
Results regression analysis with Hepatitis-B immunization as dependent variable

	Model 1		Model 2	
	β	se	β	se
ODA on institution-building in millions $US	0,327	0,947	1,266	1,247
GDP per capita $US			0,001	0,001
Population size			-1,102E-7	0,000
Other health ODA			2,092E-5	0,000
Years of education			2,072	1,267
R^2	0,003		0,122	
ΔR^2			0,119	
F	0,119		1,140	

*p< 0,05

The results demonstrate that ODA specifically on health institution-building is not a significant predictor of public health outcomes ($p > 0,05$). Both for infant mortality, life expectancy, and immunization rates, the ODA on institution-building had a really small effect. However, infant mortality declines, and life expectancy and immunization-rates increase when ODA on institutions is increased. The directions of the coefficients are thus as was expected from the theory.

5. Case study: institutional health aid in Zambia

To illustrate why institutional aid might not make a significant difference, a case study of Zambia is conducted. Zambia received between 2012 and 2017 on average 8.5 million dollars per year of ODA for institution-building. With that number, Zambia ranks number 41 of the 54 African countries in receiving the amount of health institutional aid. That means that Zambia received comparatively a lot of aid. However, Zambia ranks 29 of 54 in the number of infant mortality in 2020. This case study aims to show what the institutional aid was spent on, and how the consequent effect might have been low. To analyze the case of Zambia, a report from the World Bank (2019) is reviewed.

Zambia received between 2012 and 2017 ODA for institution-building from different DAC countries, such as Canada, Japan, Norway, Netherlands, and the United States.

One aid program that was for instance labeled as targeting institution-building in the health sector, was a project from Canada that provided funding to researchers to assess children's food consumption patterns in Zambia. The research allows policymakers to address the prevention and control of non-communicable diseases in Zambia through informed programs and policies (OECD, 2022). Another project funded by Canada, is the 'health system strengthening project'. The research project provides evidence to expand the use of rapid response services, which offers strategies to support decision-making. The research aims to inform Zambia to improve health outcomes by building strong and comprehensive health systems that address health inequities and reduce inefficiencies (OECD, 2022).

Another example of the health-institutional ODA that Zambia received, is an aid program from the United Kingdom. The program aimed to strengthen the Zambian health system through the support of training and the deployment and supervision of 3543 health workers, including community health workers, skilled birth attendants, biomedical engineering technicians, and medical specialists (OECD, 2022).

Between 2006 and 2018, a number of institutional reforms have been implemented, in order to improve the quality of the health system (World Bank, 2019). The reforms increased the number of health departments, by implementing a secretary for health services, administrative services, and for health training. The World Bank (2019) states that Zambia made serious progress in health service delivery due to the attribution of donor funding.

Despite the improvements in the health system of Zambia, there are still some weaknesses and challenges in the system that could be the reasons why the institutional aid might have failed (World Bank, 2019).

Firstly, there are weaknesses in budget execution, particularly at the primary healthcare level in Zambia (World Bank, 2019). Budget execution is the phase where resources are used to implement policies incorporated in the budget (Tommasi, 2013). If the budget execution fails, there is a chance that health policies are not being implemented. A reason why the process of budget execution fails, may be that the health system in Zambia is very decentralized. The country knows a Ministry of Health, provincial health offices, and district health offices. The task of running the health system and policy-making and monitoring are diverted between different actors, which makes health governance more difficult (Siddiqi et al., 2009).

Secondly, human resources hours are lost due to absenteeism and idle health workers (World Bank, 2019). A lot of the ODA that was spent on institution-building in the health sector, funded health training for personnel, as was the described aid program from the United Kingdom. A reason why this aid did not have a significant effect is thus that health workers lack absence and participation. That could be for example due to cultural reasons. Another possible explanation for the absenteeism, is that health staff is not always paid on time (World Bank, 2022). Furthermore, the fact that there is so much absenteeism in the health sector, shows that these workers lack accountability.

Thirdly, the World Bank (2019) points out that there is inadequate expenditure in the health sector, wastage, and stock-outs of essential medicines. All these factors contribute to the provision of poor-quality services and health outcomes. The inadequate expenditure and stock-outs could be the result of weak institutions such as corruption.

This case study demonstrates that ODA projects that Zambia received made some progress in the health sector, but there are still weaknesses in the health institutions in Zambia. It could be that these institutions need more time to develop, to have a better effect on health outcomes. Furthermore, it could be the case that the aid that was provided to Zambia was too much focused on Western ideas and institutions, as is the argument from isomorphic mimicry (Pritchett et al., 2013).

6. Discussion and conclusion

Applying the outcome of the linear regression, the answer to the research question is: '*aid that targets institution-building in the health sector has a small insignificant effect on public health outcomes'*. Accordingly, we fail to reject the null hypothesis of no effect that aid that targets health institution-building has a positive effect on public health outcomes. ODA on institution-building might not have an effect on public health outcomes. Yet, it should be emphasized that there could still be an effect of ODA on institution-building, but this research did not have the statistical power to detect it. This result also depends on the research design and all its assumptions, and the control variables that are included. In the analysis, 'other health aid' was not a significant control variable, so it could be the case that other health aid does also not have a positive effect on health outcomes. Institutional aid could thus still be relatively more effective.

The conclusion is nonetheless very important for aid agencies and especially for the DAC, which advises countries that provide the most aid. Donors that have spent their capital on institution-building programs might have to reconsider how and where to allocate their future aid.

The conclusion is not what is expected from the existing literature. The theory established that aid works when certain political problems are solved. It was established that aid would work when it is spent specifically on institution-building, so that a country can produce and comply with new health policies. However, that does not correspond with the outcome of this research.

The outcome of this research for example contradicts Birdsall et al. (2010), who argue that fostering institutions is central to the development and if donors allocate aid through the recipient country's institutions, the aid is more likely to have a positive effect. The outcome also contradicts Mishra & Newhouse (2009), who establish that health aid has a significant positive effect on infant mortality. The reason why they found a significant effect between aid and infant mortality might be that they used older data and more cases.

The outcome is on the other hand in line with for example Moyo (2009) who argues that aid is always bad, because it makes countries dependent, and "no country has ever achieved economic success by depending on aid to the degree that many African countries do" (p. 7). The result is also in line with Wenar (2006) who argues that aid gets easily extracted by corrupt officials. That could be a reason for the insignificant effect. Furthermore, it is possible that this research finds that institutional improvements are ineffective, because they are

advanced through aid specifically and not developed through an organic, local process. That is what is implicated by isomorphic mimicry, as western countries might only strive to 'copy' their institutions, despite taking into account the different contexts of developing countries (Pritchett et al., 2013). The research findings thus contribute to the discussion on aid.

The result indicates that aid may not necessarily contribute enough to the process of institution-building in a developing country in Africa. Several explanations exist for why the aid on institution-building might not have been a success.

Firstly, it may be the case that some literature was right about the negative effect of aid. Countries that received more ODA were presumably countries that already had the worst institutions. Because these countries expectedly have more corruption, it may be that even the institutional aid did not fall into the right hands (Ferguson & Moyo, 2010). The aid tried to foster institutions, but it may also be the case that they were not seen as legitimate because of external influence. One theory behind this negative impact of aid, is the 'aid dependency school', which states that "Africa has grown more slowly than other continents in part because it has received much more aid relative to GDP than other developing areas" (Ali et al., 1999, p. 513). This theory argues that local political and administrative processes are bound to the external influence of aid. The processes are therefore inefficient and uncoordinated (Ali et al., 1999, p. 505).

Secondly, it may be a limitation of this research that the time frame that was focused on, was too short, because institutions could need more time to develop. The effect of ODA between 2012 and 2017 was taken and compared to the infant mortality, life expectancy, and immunization rates in 2020. It could be the case that the developing countries did not receive enough aid specifically on institution-building. Maybe they need more to make a real institutional difference. It could also be the case that the three years between the last ODA spending and the measurement of health outcomes were too short to see an effect. The case study of Zambia also showed that institutional aid made some progress in the health sector, but there were still weak institutions, such as the lack of accountability for health staff, failure of budget execution, and poor-quality services. These institutions might need more time to improve. Future research could investigate the effect of aid on institution-building over a longer time, to see a more accurate result.

Thirdly, the research has low statistical power, because the cases were limited to 54 (African) countries. That could have had an impact on the effect. The more cases that are included, the stronger the results. The effect might be different when more cases are included.

On the other hand, it would be feasible that research in other parts of the world would have another effect, because corruption might be less on other continents.

In conclusion, it is recommended for further research to analyze this research question on a bigger scale to measure whether there would be a different effect on public health.

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