FOREIGN AID IN THE SUSTAINABLE DEVELOPMENT GOALS ERA: ANALYSING DONOR AID ALLOCATION STRATEGIES BASED ON RECIPIENT COUNTRIES' STRIDES TOWARDS SDG ACHIEVEMENT

by

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Summary

In 2015, the United Nations implemented the Sustainable Development Goals (SDGs) aimed at eradicating poverty, protecting the planet, and ensuring global peace and prosperity by 2030. Despite these ambitious targets, developing countries have lagged in progress primarily due to insufficient financial resources. Foreign aid, while not completely bridging the financial gap, plays a crucial role in supporting these countries. However, it became evident that foreign aid is not always sent to countries in greatest need of financial assistance but that other factors such as historical and economic ties are major determinants too. This thesis investigated whether donors adjusted their aid allocation strategy after the 2015-implementation. Specifically, it studied whether recipients who have yet to make substantial strides towards the SDGs and recipients who have shown significant progress received more aid. The study aimed to answer the question: To what extent do the Sustainable Development Goals influence aid allocation strategies by donor countries?

Using quantitative panel data analysis and data from international organisations the question was answered. Two SDG-metrics were developed: the SDG need metric (reflecting the strides recipients have yet to make) and the SDG merit metric (reflecting the progress recipients made between years). Both metrics are based on the SDG index, which represents the percentage of SDG achievement. The study focused on the G7 countries, and all DAC donors collectively and specifically studied bilateral aid.

From the results it became evident that while not all donors reacted to changes in SDG attainment in recipient countries, some did change their aid allocation accordingly. Canada and Germany are donor countries which tend to allocate more funds to countries with the greatest need in terms of the SDGs. Conversely, Japan and France tend to reward recipient countries that have made significant progress in terms of the SDGs instead of allocating aid to the neediest countries. For Italy, the United Kingdom, the United States, and France, other economic and historical factors had greater explanatory power than the SDG-metrics.

In conclusion, the study reveals a discrepancy between donor countries on aid allocation strategies. While some donors consider the SDGs, others do not. Consequently, the approach to taking the SDGs into account when distributing aid differs, some prioritise need while others reward merit. Which approach is best to effectively achieve the SDGs is the important follow-up question which cannot be answered by this thesis. Both need and merit-based approaches have their merits, but the high proportion of aid still being distributed according to donor self-interest is undesirable for achieving the global development goals.

Acknowledgements

When I began this Master's program last year, I was entirely new to the field of public management and policy. Over the past year, I have become deeply fascinated by the complexities of the international society. The turning point came during the International Organisations and Development course, where I discovered my thesis topic: foreign aid. This area of study allowed me to merge my passion for quantitative research with my interest in international affairs. Throughout this writing process, I have eagerly delved into the realms of aid and politics, two subjects I hadn't anticipated finding so interesting at the start of the year. I have dedicated a lot of effort to this thesis, and had the deadline not been in June, I would have gladly continued to refine it further and further explore the world of foreign aid.

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List of abbreviations

Abbreviation	Definition
BRICS	Brazil, Russia, India, China, and South Africa
c.p.	Ceteris paribus (“other things equal”)
DAC	Development Assistance Committee
FE	Fixed Effects
G7	The Group of Seven (Canada, France, Germany, Italy, Japan, United States, and United Kingdom)
GDP	Gross Domestic Product
Ln	Natural Logarithm
MDGs	Millenium Development Goals
n.d.	No date
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
POLS	Pooled Ordinary Least Squares
RE	Random Effects
SDGs	Sustainable Development Goals
SDSN	Sustainable Development Solutions Network
UK	The United Kingdom (of Great Brittain and Northern Ireland)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
US	The United States (of America)
USD	United States Dollar
vif	Variance inflation factor
WB	The World Bank
WITS	World Integrated Trade Solution

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Chapter 1. Introduction

In 2015, the United Nations (UN) introduced the most recent and major development goals, called the Sustainable Development Goals (SDGs). A comprehensive framework composed of 17 ambitious objectives aimed at eradicating poverty, protecting the planet, and ensuring global peace and prosperity by 2030 (UN, n.d.). Since the implementation in 2015, the world has made some progress, but the COVID-19 pandemic has stalled global efforts (UN, 2023). From the Sustainable Development Report, a global assessment of countries' progress towards achieving the SDGs, it became evident that mainly developing countries are lagging (SDSN, 2023). Many of these developing countries cannot invest in the SDGs because they have insufficient financial resources. Although still not bridging the financial gap, foreign aid provides developing countries with the necessary funds (UN, 2023).

Foreign aid, defined as the transfer of money, goods, and services from one country to another, has historically played a crucial role in global development (Markovits et al., 2019). A well-known example is the Marshall plan, which provided Europe with capital to reconstruct after the Second World War (Morgenthau, 1962; Markovits et al., 2019). After this capital injection, the focus of aid shifted to developing countries under the name of Official Development Assistance (ODA). The Organisation for Economic Co-operation and Development (OECD) defines it as "government aid that promotes and specifically targets the economic development and welfare of developing countries" (OECD, n.d.). The Development Assistance Committee (DAC) is the international forum consisting of the largest ODA providers. It consists of 32 members and its objective is to promote development co-operation to contribute to the implementation of the SDG agenda, recognising its pivotal role in advancing the 2030 agenda of the SDGs. (OECD, n.d.).

Academic literature has long examined this provision of resources to developing countries, especially studying where aid is sent to and for what reasons. It is known as the field of aid allocation. Various scholars in this field have found that bilateral aid often fails to prioritise the neediest countries. Historical (e.g., colonial history) and economic (e.g., trade relations) factors often influence donor decisions and thereby overshadow efforts to address poverty and inequality (Alesina & Dollar, 2000; Hoeffler & Outram, 2011, Kim & Oh, 2012; Nunnenkamp & Öhler, 2011). This discrepancy in donors' aid allocation decisions sparks the question: have donor countries adjusted their aid allocation strategies to prioritise nations that

are most in need in terms of SDG achievement? As the global community committed to the 2030 SDG agenda, one would expect donor countries to realign their aid efforts to support lagging countries' progress towards SDG achievement with the resource they lack most of, money.

Therefore, this thesis will answer the pivotal research question: *To what extent do the Sustainable Development Goals influence aid allocation strategies by donor countries?* By studying this relationship, the aim is to shed light on the evolving dynamics of foreign aid distribution and its alignment with global development priorities.

The academic relevance of this question lies in expanding current insights of aid allocation. It is known that aid allocation is influenced by the donor's self-interest, the merits of the recipient country, and the needs of the recipient. However, these concepts have not been applied in the context of the SDGs. By analysing aid allocation using SDG-specific metrics, this thesis aims to determine whether donors' decisions are influenced by the strides recipient countries make towards achieving the SDGs. This research fills a significant gap in the literature by integrating SDG considerations into the study of aid allocation, providing a new perspective on the motivations behind donor behaviour.

The societal relevance of this question is that it offers valuable insights for decision-makers on how aid is allocated in relation to the SDGs. If this research finds a strong relation between aid and the SDGs in recipient countries, it can guide policymakers in determining whether the allocation is equitable and effective. Conversely, if no significant relation is found, it can empower decision-makers, NGOs, and civil society organisations to advocate for a more strategic and fair distribution of aid, by using this research to call for necessary changes. Ultimately, since the global community aims to achieve the SDGs, understanding whether ODA distribution is aligned with this goal is crucial. This research thus evaluates whether current aid allocation supports the collective will to meet the SDGs by 2030, making it highly relevant for shaping future development policies.

This thesis is structured as follows. Chapter 2 provides an overview of the existing literature, identifying what is already known and highlighting the gaps that this thesis aims to fill. Chapter 3 elaborates on the key theoretical concepts used in the analysis and formulates the hypotheses. Chapter 4 presents the data, defines the variables, and describes the statistical

analyses used to answer the research question. Chapter 5 presents the results of the analyses. In Chapter 6, the results are interpreted and discussed, and the connection with the existing literature is made. Chapter 7 draws conclusions from the study, discusses the implications of the results, outlines the limitations of the research, and provides recommendations for future studies. The references can be found in Chapter 8, and additional information and supplementary materials are included in the appendices.

Chapter 2. Literature Review

The provision of foreign aid started in the 19th century when rich countries began aiding their colonies to facilitate economics growth (Morgenthau, 1962). After the Second World War, it was Europe who was lacking capital and received a massive influx of foreign aid through the Marshall plan initiated by the United States. In the decolonised world, attention shifted to the now independent developing countries. With increasing aid flows, the central motive shifted away from purely economic development to including political considerations, particularly during the Cold War, which split the world into three worlds (Hattori, 2001; Morgenthau, 1962; Tarp & Hjertholm, 2000). According to Bindra (2018), aid is rarely unconditional and can be used to project power or serve political and economic interests, sometimes to the detriment of recipients.

With the growing importance of foreign aid, an academic field dedicated to studying foreign aid emerged. The field divides into two parts: the effects of aid on recipient countries and the determinants of aid allocation (Hoeffler & Outram, 2011). This thesis focuses on the second part, the allocation of foreign aid. This field is especially relevant since aid allocation often diverges from economic theories due to the world of political decision-making and political institutions (Wright & Winters, 2010).

Major works in the field of foreign aid allocation have shown that donors adopt different aid allocation strategies for various reasons (Alesina & Dollar, 2000; Bermeo, 2008; Dreher et al., 2011; Hoeffler & Outram, 2011). The focus has been mainly on bilateral aid, as its determinants differ significantly from those of multilateral aid. Multilateral agencies are often viewed as less influenced by self-interest behaviours (Berthélemy, 2006; Fleck & Kilby, 2006). Dowling and Hiemenz (1985) were one of the first to identify a country-size bias and a middle-income bias in aid allocation. The country-size bias refers to the inverse relation between per capita aid and population, as smaller countries received more aid per capita due to higher marginal political and economic benefits. The middle-income bias indicates that donors allocated relatively more aid to countries with higher incomes because these countries tend to be of greater political and economic importance. With these aid allocation motives, donors seek to fulfil their own interest by supporting countries of greater political and economic significance, those with good trade relations, strong voting allegiance in the UN, former-

colonies, high oil production, etcetera (Alesina & Dollar, 2000; Bermeo, 2008; Hoeffler & Outram, 2011).

Donors also consider factors like reducing poverty and quality of institutions and policies in recipient countries, which are categorised as ‘recipient need’ and ‘recipient merit’. Despite these considerations, Alesina and Dollar (2000) found that political and strategic interests often prevail. For instance, an economically closed, mismanaged, inefficient, non-democratic former colony, being politically friendly to its former coloniser, received more foreign aid than another country with similar levels of poverty, a superior policy stance, but without a past as colony (Alesina & Dollar, 2000). However, there are major differences between donors. Some donors, such as the Nordic countries, respond to more ‘correct’ incentives like income levels and good institutions, whereas countries like France prioritise former colonies tied by political alliances, regardless of other factors (Alesina & Dollar, 2000).

Donor countries, thus, allocate their aid according to varying strategies, such as sending more aid to poor countries (recipient need), to countries with good policies (recipient merit), or to countries of greater self-interest (donor self-interest) (Hoeffler & Outram, 2011; Kim & Oh, 2012). It shows that aid can be highly politicised and can be used for various reasons, making it important to understand these motivations. Promoting national interests via foreign aid can lead to inefficient allocation. Allocating aid to poor countries with development-friendly economic policies would be much more effective than allocating aid to countries which have weak policies and no severe poverty problems (Nilsson, 2018; Stone, 2010). Better insight into where aid is sent and why can, thus, help improve aid effectiveness.

Since aid allocation plays a crucial role in development, one can expect that it impacts the major SDGs too (Hailu & Tsukada, 2012). Given the varied motivations behind foreign aid, it is beneficial to study whether these patterns have changed following the implementation of the SDGs. For instance, donors might reward SDG progress or allocate more aid to countries which have yet to make the largest progress in terms of the SDGs. While no studies have yet assessed this question, Hailu and Tsukada (2012) examined the predecessor of the SDGs, the Millennium Development Goals (MDGs). Their work found that aid was given to countries that need most help to achieve the MDGs, reflecting recipient need motives.

While it is evident from the literature that countries allocate their foreign aid according to different aid allocation motives, a study assessing the effect of the globally implemented SDGs on aid allocation is missing. Since aid is crucial for developing countries to achieve the SDGs, it is beneficial to study whether donors allocate aid to these development goals or if self-interest still dominates.

Chapter 3. Theoretical Framework

The literature review provided an overview of existing knowledge, highlighted key learnings, and identified gaps in the literature. This chapter will explain the theoretical concepts that guide the approach to answering the research question. This thesis focuses on aid allocation by bilateral donors, not multilateral donors. Therefore, the theoretical concepts elicited in this chapter are solely focused on bilateral donors.

According to the literature review, three concepts are crucial in understanding donor aid allocation patterns: recipient need, recipient merit, and donor self-interest (Alesina & Dollar, 2000; Berthélemy, 2006; Hoeffler & Outram, 2011; Kim & Oh, 2012).

3.1 Recipient need

Possibly the most straightforward explanation of foreign aid is the recipient need motive. McKinlay and Little (1977) conceptualised a model on aid motivation based on recipient need and donor self-interest which, since then, has been used in various studies (Gounder, 1999). The humanitarian view, how they called recipient need, emphasised the economic-assistance utility, suggesting that the provision of aid is designed to promote economic development in low-income countries. The model created by McKinlay and Little (1977) hypothesises that the amount of aid received by each low-income country is proportional to its economic and welfare needs. It is based on the rationale that many development economists have concluded that capital shortages are the major obstacle to growth in low-income countries. Investment in these countries would thus, according to economic growth models, provide the catalyst for growth.

A second rationale for their hypothesis is that changes in the international system have obliged high-income countries to provide aid. After the decolonisation by European countries, it became apparent that many decolonised countries suffered from major problems of development and had poor prospects for achieving self-sustaining growth. The lack of growth in the decolonised countries was in major contrast to the economic successes of their former colonisers, accentuating an economic divide. From the humanitarian, or recipient need, view, high-income countries find this divide morally unacceptable and acknowledge the obligation to provide economic assistance (McKinlay & Little, 1977).

However, according to the literature, this view has faced criticism. Recipient need is not the only motivation for donor countries to allocate aid. Criticism on the model of McKinlay and Little (1977) was that the variations in aid received by low-income countries do not correspond with the level of their needs. Secondly, providing aid gives donors an element of control and leverage over their recipient. Finally, the Cold War is an excellent example of using aid for other interests than the economic well-being of the low-income countries. Despite the critique on the humanitarian view, the model has been used extensively in studies on aid allocation and it provides a foundation for the usage of recipient needs and its variables in the analysis of this thesis (McGillivray, 2003).

Now, the recipient need extends beyond the humanitarian aspect. Authors define recipient need as the concern to promote development, alleviate poverty, and lessen income inequalities between countries (Gounder, 1999). As development, with the appearance of the SDGs, is a wide concept, the world is not only focussing on improving humanitarian aspects, but also aspects such as climate, education, and health (UN, 2023).

3.2 Donor self-interest

Donor self-interest is the counterpart of the previously mentioned recipient need motive and is of great significance in foreign aid. “It would be naïve to assume that the major objective of foreign assistance is economic development, that either directly or indirectly through political and social change the purpose of foreign aid is to raise the level of material well-being in the receiving country. If it were, then it would certainly have to be judged ineffectual” (Griffin & Enos, 1970, p. 314). This study confirmed the predominance of donors’ self-interest. McKinlay and Little (1977) converted this idea into a model, named the foreign policy view. They established two propositions. First, by establishing dependency and commitment, a nation can realise certain foreign policy utilities. Second, aid can be used to establish dependency and commitment. The utilities from these propositions provide theoretical reasoning of why donor countries include self-interest in their decision-making. All states have external interests and are concerned to promote and protect them, commitment and dependency provide the utilities for this promotion and protection (McKinlay & Little, 1977).

Dependency exists when one party relies on another without a reliance reciprocity (McKinlay & Little, 1977). It suggests that one party can end the relationship with little or no

cost, while the other can do so only at considerable costs. Such dependency relationship is beneficial for the dominant state if it wants to generate a degree of control and influence. For example, the distribution of aid provides the donor with an advantageous bargaining position since it gives them the ability to dictate several conditions in return for the supply of aid. This position can only be strengthened more when recipient countries are, for example, struggling with repayment problems (McKinlay & Little, 1977).

Commitment is about the attempt by one state to show its support for another state (McKinlay & Little, 1977). Commitment is generated by the fact that the demand of aid exceeds its supply, suggesting that the selective allocation of the donor shows a special commitment to the recipient. It may be used to discourage intervention by a hostile state or to discourage a developing state to move away from the developed state's sphere of influence (McKinlay & Little, 1977).

More recent research has clarified the abovementioned concepts. For example, donor self-interest is explained by the pursuit of their interests in terms of trade, security, and investment objects or motivated by geopolitical or commercial interests (Berthélemy, 2006; Gounder, 1999).

3.3 Recipient merit

Burnside and Dollar (2000) were the first ones to study whether aid was allocated in favour of good policies, while recipient need, and donor self-interest were already known to affect aid allocation. The idea of recipient merit is based on the neoclassical growth model by Burnside and Dollar (2000). In this model, aid is perceived as an income transfer which can have an important impact on poor countries. This income transfer can either produce growth or produce no growth, depending on how the aid is used. The productivity of aid as capital is, however, affected by various policy distortions. These distortions can lower the return to the investment and make aid less effective than optimal. For policy distortions one can think about closed economies, large black-market share, pervasive government control of key tradables, high inflation, and large government consumption. The impact of aid will be greater when there are fewer distortions. So, the growth rates in developing countries will depend on their initial income, their policy distortions, and aid. The empirical work of Burnside and Dollar (2000) has

confirmed the theory, given that their results show a positive effect of foreign aid on growth in environments where there are good policies.

Recipient merit is seen by many scholars as the vaguest concept in terms of aid allocation. It knows several purposes. One is the abovementioned purpose by Burnside and Dollar (2000) to allocate aid to countries with the environments that facilitate growth. This transcends macroeconomic variables, for example, Berthélemy (2006) and Nunnenkamp and Öhler (2011) add 'good governance' and quality of governance criteria as merit and Hoeffler and Outram (2011) view merit as both economic policies and democratic regimes. Two other purposes for allocating aid according to recipient merit might be to incentivise and reward (Hoeffler & Outram, 2011). Donor countries could incentivise lagging countries to improve their merits by allocating aid according to the recipient merit motive (Hoeffler & Outram, 2011). If it is proven that recipient merit is an explanator of aid allocation, it could form an incentive for others. Aid allocation according to recipient merit might also be a reward for recipients making good progress in terms of merit.

It is important to mention that the trade-off between recipient need, recipient merit, and donor self-interest is made per individual donor country. Thus, there is not one model that explains all aid allocation (Alesina & Dollar, 2000; Berthélemy, 2006; Hoeffler & Outram, 2011; Kim & Oh, 2012; Nunnenkamp & Öhler, 2011).

3.4 Sustainable development goals

The assessment where the SDGs belong in these aid motivations is complex. The SDGs consist of 17 goals encompassing a great variety of topics, for a full list see Appendix H. (UN, n.d.). The SDGs can be viewed as addressing both recipient need, by promoting development, or recipient merit, by promoting and rewarding good policies. The SDGs transcend the idea of the classic donor allocation strategies. However, since the SDGs in this thesis are assessed in one universal score for each recipient country and translated into an SDG need score (how much progress recipients have yet to make) and an SDG progress score (how much progress recipients have made between years), one can study how donor countries react to these metrics (Sachs et al., 2023). If donors adjust their aid, either giving more or less aid, according to these metrics, it suggests SDG-sensitivity, since changes in the metrics of the SDGs would lead to changes in aid allocation. From these results, one can predict whether these changes are more according to

the recipient need or recipient merit motives. Donor self-interest is not captured in the two metrics but is measured by using more traditional variables.

There is a possibility that the changes of aid allocation significantly cause changes in SDG achievement. ODA, namely, is of major importance for mobilising the necessary resources of achieving the SDGs (Hickmann et al., 2023; UNCTAD, 2014; Rahman et al., 2020). Governments of countries that receive substantial amounts of external financial assistance are generally in a better position to implement measures according to the SDGs (Hickmann et al., 2023). Thus, there might be a possibility of reverse causality, which should be taken into consideration when choosing the appropriate statistical techniques.

3.5 Hypotheses

Hypothesis 1: SDG-senstivity

SDG need scores and SDG progress (merit) scores in recipient countries significantly affect foreign aid allocation by donor countries, making aid SDG-sensitive.

Hypothesis 2: SDG as need

Lower levels of SDG achievement in a recipient country lead to significant increases in the amount of ODA allocated to that country.

Hypothesis 3: SDG as merit

Positive changes in the SDG progress (merit) score of a recipient country lead to significant increases in the amounts of ODA allocated to that country.

Chapter 4. Methods

The aim of this study is to assess whether foreign aid is reactive to SDG achievement levels and progress in recipient countries and whether this is perceived as either need or merit by donor countries. The first SDG-metric is called 'SDG need' and reflects how much progress the countries have yet to make according to the SDG index by Sachs et al. (2023). The second SDG-metric is called 'SDG merit' and reflects the progress that countries have made between each year according to the SDG index. From here on, SDG need, and SDG merit will be referred to as 'SDG-metrics'. The analysis is performed using quantitative panel data techniques. The study is a non-experimental, observational study using data from online available databanks. The data is in panel format, meaning that data is gathered over a longer time-period for the same entities (Wooldridge, 2006). The data consists of eight datasets, one for each included donor, and covers the timeframe 2013-2022. This chapter will discuss the chosen statistical techniques, regression equations, the used variables, data and its limitations, and validity and reliability.

4.1 Statistical analyses

This thesis will execute two analyses, the Pooled Ordinary Least Squares (POLS) method and the Fixed Effects method (FE). Prior to these analyses, checks for normality, heteroscedasticity, and multicollinearity were performed. Regarding normality, all continuous variables were transformed into their natural logarithm to make their distributions more normal. SDG merit is an exception since it is already normally distributed, and it can take negative values. For the histograms of all variables, see Appendix B. Regarding heteroscedasticity, robust standard errors were used since this controls for the violence of the homoscedasticity assumption (Mansournia et al., 2020). Regarding multicollinearity, the variance inflation factor (vif) is used to measure the extent of multicollinearity. Generally, a vif greater than 5 is seen as problematic (Daoud, 2017). The vifs and correlation matrixes can be viewed in Appendix I. No signs of multicollinearity are found in all the eight datasets. Prior to the main analyses, Pearson correlation tests are run to assess the correlation between both SDG-metrics and ODA.

4.1.1 Pooled Ordinary Least Squares

A POLS model makes use of the panel data format and pools together all the years in the dataset while running an OLS model (Wooldridge, 2006). A POLS model is beneficial since it exploits all data variation, thus both between and within variation, or over both time and

cross-sectional units (Cameron & Trivedi, 2005). Therefore, it allows to use both time-variant and time-invariant variables and allows to make comparisons between countries. However, one major drawback of the POLS model is the possibility of violating its major assumption, the zero conditional mean assumption. This occurs when the unobserved heterogeneity is correlated with the independent variable, in this case the POLS model will produce biased estimates (Wooldridge, 2006). In such situation, a coefficient may appear to reflect the hypothesised relationship, while it will be inconsistent and not represent the true population parameters (Antonakis et al., 2014). In observational data, this strong assumption is rarely met (Leszczensky & Wolbring, 2022; Wooldridge, 2006).

Regarding the regression, there are two issues which should be considered. First, the problem is that the allocation of aid is subject to informational time lags. Since allocations for any given year are determined by donors towards the end of the preceding year, decision-makers can only base their decision on available information at that moment. This information will be, at best, available for the year prior to that for which the aid is allocated (Feeny & McGillivray, 2008). As a result, the amount of aid sent might not be affected by changes in explanatory variables in the same year. To solve this problem, lagged versions of the independent variables are included. Now, aid commitments of year t are explained by independent variables of year $t-1$. It is a method also used by Lundsgaarde et al. (2010).

Secondly, there is a possibility of the occurrence of reverse causality. Foreign aid plays a role in the progress towards achieving the SDGs. Thus, it might be possible that the independent variable is affected by the dependent variable (Besser et al., 2021). While this is in itself not undesirable, the primary focus here is to isolate the effect of the SDG-metrics on foreign aid. The lagged variables help to solve this problem, since aid commitments of year t cannot affect the independent variables of year $t-1$.

The regression equations are as follows and are performed in two subsequent steps. The first step assesses the relationship between the dependent and independent variables of interest, and its results are represented by ‘Model 1’ in the Results chapter. The second step assesses the relationship while controlling for additional variables, with these results represented by ‘Model 2’ in the Results chapter.

$$\ln(aid)_{it} = \beta_0 + \beta_1 \ln\left(SDG_{need_{i,t-1}}\right) + \beta_n \ln\left(controls_{i,t-1}\right) + \alpha_i + \epsilon_{it} \quad (1)$$

And,

$$\ln(aid)_{it} = \beta_0 + \beta_1 SDG_{merit_{i,t-1}} + \beta_n \ln(controls_{i,t-1}) + \alpha_i + \epsilon_{it} \quad (2)$$

Where aid_{it} is the aid sent from a specific donor to recipient i in year t. a_i represents the unobserved heterogeneity and ϵ_{it} represents the idiosyncratic shock. While the method is called a Pooled OLS, it should be clear that each model is run eight times, namely for each of the eight included donors and subsequently for each of the eight datasets. Thus, in total it results in sixteen regressions.

Two separate models are run for SDG need and SDG merit for three reasons. First, since both are derived from the same SDG index, there might be a possibility of multicollinearity, although not proven. By preventively addressing this potential issue, the integrity of the coefficients are ensured. Second, due to the distinct character of SDG merit, different time periods were used for both models. This will be explained further in the 'data' part. Third, it allows for separate hypothesis testing.

4.1.2 Fixed Effects

As mentioned in the POLS part, if the unobserved heterogeneity is correlated with the independent variables, it produces biased estimates. It is highly likely that factors such as geographic locations or historical contexts create differences between countries that can affect both the dependent and the independent variables, leading to biased estimates. These geographic and historical differences might be of great interest when studying aid allocation, think of colonial history. However, for the question whether the SDG-metrics affect aid allocation, it might be more appropriate to remove these between-country differences.

A Fixed Effects (FE) model is a within-estimation model. It only uses within-unit variation and eliminates between-unit variation from the equation, hereby removing the unobserved heterogeneity which endangers the POLS estimates. By removing all variation between countries, the FE model controls for any variables that are constant over time but do affect both dependent and independent variables. As a result, the analysis focuses on changes within countries over time rather than comparing different countries. It examines whether as the SDG-metrics change within countries over time, ODA from donors sent to the recipients

changes too (Mummolo & Peterson, 2018). A downside of the FE model is that it cannot estimate the coefficients for time-invariant variables, as they are controlled for by the FE (Wooldridge, 2006). Additionally, it cannot make between-country comparisons (Bilan et al., 2019; Huntington-Klein, 2021; Wooldridge, 2006).

As one does not have to worry about the correlation between the unobserved heterogeneity and the independent variables, a new assumption arises for unbiased estimates. The time-variant error term, or idiosyncratic shock, must be uncorrelated with the independent variables across all time periods (Wooldridge, 2006). Even though it is unlikely that all time-variant factors influencing both dependent and independent variables are included in the analysis, the ability to examine within countries can be of great interest. To account for both entity-specific and time-specific (but the same for all entities thus entity-invariant) unobserved factors, time fixed effects are added, making it a two-way fixed effects (Imai & Kim, 2021). The time fixed effects controls for changes in the particular environments in the world that have the same effect to all countries, think of economic crises (Wooldridge, 2021).

4.1.2.1 Hausman test

To test whether an FE model is an appropriate model for the data, the Hausman test was performed. A Hausman test looks at whether a Random Effects (RE) or a Fixed Effects is more appropriate. The difference between these models is the question whether one can assume that the unobserved heterogeneity is correlated with the independent variables. If this is the case, one should opt for the FE model, if not, the RE model is more efficient as it uses both between and within variation (Wooldridge, 2006). The Hausman test compares the coefficients of both the RE and FE model, and if they systematically differ, it implies that accounting for unobserved heterogeneity influences the results, making the FE more appropriate (Wooldridge, 2006).

This test is performed and results in only significant results, except for the United Kingdom dataset. Significant results indicate that the FE is preferred over the RE. For the results see Appendix D. Even though the RE model might be statistically justified for the United Kingdom due to insignificant Hausman results, the FE model is more appropriate when assuming the presence of unobserved heterogeneity. This approach ensures robustness and maintains consistency and comparability across all studied countries. Thus, the FE model is executed for all countries to provide valid and reliable results.

One of the limitations of an FE is that it is less effective in handling serial correlation, which the RE model does better. This is important since aid at time t may be correlated with aid at time $t+1$. Serial correlation can affect the standard errors, significance, and confidence intervals, possibly leading to false rejections of null hypotheses (Wooldridge, 2006). Despite this limitation, the test indicates the necessity of using an FE model to avoid biased coefficients if the RE model is used. To still address the issue of serial correlation in the FE model, robust standard errors are employed (Born & Breitung, 2016). Thus, the choice not to use an RE and control for serial correlation is based on the Hausman test results, where unbiasedness is preferred over inefficiency.

4.1.2.2 FE regression equations

$$\ln(aid)_{it} = \beta_0 + \beta_1 \ln\left(SDG_{need_{i,t-1}}\right) + \beta_n \ln\left(controls_{i,t-1}\right) + \mathrm{A}_i + \gamma_t + \epsilon_{it} \quad (3)$$

And,

$$\ln(aid)_{it} = \beta_0 + \beta_1 SDG_{merit_{i,t-1}} + \beta_n \ln\left(controls_{i,t-1}\right) + \mathrm{A}_i + \gamma_t + \epsilon_{it} \quad (4)$$

Where A_i is the unit fixed effects, γ_t is the time fixed effects, and ϵ_{it} is again the idiosyncratic shock. As one can see, α_i, or the unobserved heterogeneity, is removed from the equation by the inclusion of the unit fixed effects A_i. Again, both models are run for each of the eight donor countries, resulting in sixteen regressions in total.

In conclusion, using a combination of both models provides the best approach to account for statistical issues and to study different relationships between aid and the SDG-metrics, both within and between countries. This ensures a comprehensive understanding of the relationship. A key assumption made for all models is the following. Donor countries have timely access to rich information on SDG statistics of recipient countries and use this information to base their aid decisions on for the next year. For a full list of used variables and timeframes in each analysis, see Appendix F.

4.1.3 Robustness checks

As robustness checks, the analyses are repeated for the period 2013-2015. The objective is to assess whether the allocation patterns observed during this timeframe align with those identified post-2015 implementation of the SDGs. If the results from the checks are consistent

with those obtained from the main analysis, it implies that there were no significant deviations in aid allocation patterns following the introduction of the SDGs. If divergent outcomes emerge, it suggests that there may have been notable changes in aid allocation behaviour post-2015. For the SDG merit variable, no lag was introduced this time because otherwise there would not be enough data available.

4.2 Variables

4.2.1 Dependent variable

For aid, or ODA, commitments were used rather than disbursement. The commitments measure better reflects donors' decision-making. Donors have total control over their commitments, while disbursements depend partly on recipients' willingness and administrative capacity to utilise the funds (Berthélemy & Tichit, 2004; Feeny & McGillivray, 2008). This is standard practice in the literature. Data was gathered from the OECD creditor reporting system and is in constant 2022 million USD (OECD, 2024).

4.2.2 Independent variables

The SDG need and SDG merit variables proposed in the analysis section are based on the SDG index by Sachs et al. (2023). The SDG index is a yearly constructed index for the sustainable development report, a report which assesses countries' progress towards achieving the SDGs. The SDG index quantifies this progress, and ranges from 0 to 100 which can be interpreted as the percentage of achievement. The index is derived from many indicators which each represent one of the seventeen SDGs. The same indicators are used for all countries to ensure that the scores are comparable between countries (Lafortune et al., 2018). In 2023, the report released time series data, with retrospectively calculated indices using the 2023 indicators and methods (Sachs et al., 2023). Thus, index scores can be compared both between and within countries. The index, however, knowns some limitations due to the lack of comprehensive data from especially developing countries (Rahman et al., 2020).

Sachs et al. (2023) use metrics from both official and unofficial providers according to five criteria: global relevancy of the indicator and applicability to a broad range of country settings, statistical adequacy, timeliness, data quality, and data must be available for at least 80% of the 149 UN member states with populations greater than one million. Most data on

these indicators (two-thirds) were drawn from databanks or international organisations. Other data sources include household surveys, civil society organisation and networks, peer-reviewed journals, and geographic information systems (Sachs et al., 2023).

The SDG index is split into two variables to capture both recipient need and recipient merit for the hypothesis testing. For recipient need, named SDG need, the absolute value of the index is reversed using the following formula:

$$\mathrm{SDG}_{\mathrm{need}} = 100 - \mathrm{SDG}_{\mathrm{index}} \tag{5}$$

This transformation makes the recipient need variable reflect how much progress the countries have yet to make. High SDG need scores now suggest a greater need for aid. For recipient merit, named SDG merit, a progress score is calculated using the following formula:

$$\mathrm{SDG}_{\mathrm{merit}} = \mathrm{SDG}_{\mathrm{index}_{\mathrm{t}}} - \mathrm{SDG}_{\mathrm{index}_{\mathrm{t-1}}} \tag{6}$$

This way, a progress score is calculated for each year. It indicates that countries performing better and having higher merit scores could be rewarded with more aid, according to the recipient merit motivation. From the three purposes of recipient merit, invest, incentivise, and reward, this created index focuses on incentivising and rewarding.

4.2.3 Control variables

The control variables included in the analysis are variables that co-explain aid allocation based on the theoretical framework. These variables are again categorised using the recipient need, merit, and donor self-interest allocation motivations and are included as control variables since the literature has proved that they affect aid allocation. The control variables consist of operationalisations of the three allocation motives which the literature generally uses. So, with the greatest emphasis, note that the control variables are completely different than the SDG need and SDG merit independent variables, despite sharing their name.

4.2.3.1 Recipient need

The recipient need motive is generally operationalised as GDP per capita and population (Berthélemy, 2006; Gounder, 1994; Hoeffler & Outram, 2011; Kim & Oh, 2012; McKinlay &

Little, 1977). The relationship between aid and GDP per capita is expected to be negative: if aid is allocated based on recipient need, higher levels of GDP should receive lower levels of aid. For population, more populous countries tend to need higher amounts of aid (Furuoka, 2008). Data on GDP per capita is in current USD and was gathered from the World Bank (2022a). Data on population is in millions and was gathered from the SDG index dataset (Sachs et al., 2023).

4.2.3.2 Recipient merit

In the literature, recipient merit is generally operationalised using governance variables (Alesina & Dollar, 2000; Hoeffler & Outram, 2011; Nunnenkamp & Öhler, 2011). These variables are expected to have a positive relation with ODA: higher levels of governance and freedom-oriented indices lead to higher levels of ODA, from the recipient merit motive. The freedom in the world index by Freedom House (2024) is used and scores from 1 (worst) to 100 (best) reflecting electoral processes, political participation, functioning of government, freedom of expression, rule of law, and individual rights.

4.2.3.3 Donor self-interest

In the literature, self-interest is generally operationalised by trade, exports, distance between capital cities, and colonial history (Alesina & Dollar, 2000; Berthélemy, 2006; Hoeffler & Outram, 2011; Nunnenkamp & Öhler, 2011; Kim & Oh, 2012). Trade is measured as the sum of imports and exports of both goods and services as a share of GDP, with data gathered from the World Bank (2022b). A positive sign would indicate greater commercial ties and therefore greater self-interest. Exports are measured as the export partner share, indicating how much of a donor country's exports go to a recipient country, with data gathered from WITS (2021). The relationship is expected to be positive, similar to the trade variable. Distance between capital cities is measured in kilometres, representing the distance from the donor's capital to the recipient's capital, with data from Gleditsch and Ward (2001). The hypothesised relation is negative: greater distance should correspond to less aid. Finally, colonial history is a binary variable indicating one (1) if the recipient country was a colony of the donor after 1900. The hypothesised relationship is positive: if the recipient country was a former-colony, they should receive more aid compared to non-former-colonies. Data was gathered from various historical sources (Archives National d'Outre-Mer, n.d.; British Empire, n.d.; Federal Foreign Office, 2020; Wilson & Cribb, 2017; Stafford, 1949).

Table 1 - *List of variables*

Variable	Description	Timeframe	Source
Dependent			
Aid	ODA commitments, constant 2022 USD	2013-2022	OECD (2024a)
Independent			
SDG need	$100 - \mathrm{SDG}_{\mathrm{index}}$	2013-2022	Sachs et al. (2023)
SDG merit	$\mathrm{SDG}_{\mathrm{index}_t} - \mathrm{SDG}_{\mathrm{index}_{t-1}}$	2014-2022	Sachs et al. (2023)
Control			
Recipient need			
GDP per capita	Current USD	2013-2022	World Bank (2022a)
Population	In millions	2013-2022	Sachs et al. (2023)
Recipient merit			
Freedom in the world index	Scale 1-100	2013-2022	Freedom House (2024)
Donor self-interest			
Trade	Imports and exports of goods and services as a share of GDP	2013-2022	World Bank (2022b)
Export	Export partner share	2013-2021	WITS (2021)
Distance	Distance between donor and recipient capital cities, kilometres	Time-invariant	Gleditsch and Ward (2020)
Colonial history	Binary variable = 1 if country was a colony after 1900	Time-invariant	Archives National d'Outre-Mer (n.d.), the British Empire (n.d.), Federal Foreign Office (2020), Wilson & Cribb (2017), and Stafford (1949)

After reviewing all the used indicators of the SDG index, it can be concluded that none of the used control variables in this thesis were captured inside the SDG index.

4.3 Data and limitations

The data is in panel format covering the timeframe 2013-2022. For the donor countries, the Group of Seven (G7) countries were selected, given that they contributed 75% of total ODA in 2022 (OECD, 2023c). The datasets consist of 148 recipient countries, for a full list see Appendix E. As mentioned in the analysis section, in total there are eight datasets. The first dataset covers data on the total amount of ODA provided by all DAC donors together, and the seven subsequent datasets cover data for each G7 country separately.

Since the SDGs were only implemented in 2015, data from 2013-2015 is not used for the main analyses (see robustness checks). Considering the issue of informational lag, the analyses for SDG need were conducted over the period 2016-2022. This decision is based on the assumption that countries had access to information on the SDGs by 2015 and subsequently incorporated it into their decision-making for 2016. The regressions for SDG merit were from 2017-2022, as data on SDG merit for 2015 may not have been available (i.e., $\mathrm{SDG}_{\mathrm{index}_{2015}} - \mathrm{SDG}_{\mathrm{index}_{2014}}$).

The data used in this thesis knows two important limitations. First, many scholars in the field employ tobit regressions, which is an estimation technique that accounts for the usually many zeroes in foreign aid data. This occurs since not every donor country provides aid to all eligible recipient countries. A normal OLS estimation tends to be biased in this situation (Nunnenkamp & Öhler, 2011). Zeroes are also present in the dataset of this thesis. However, for most of these zeroes, data on the SDG-metrics is missing. As a result, these zero observations cannot be included in the analysis as there is no data to explain them. Unfortunately, with the current data availability, this is inevitable.

Second, the existing literature has shown that aid can be rather volatile between years and between recipients. Scholars see this as a danger for their explanators since it might be difficult to attribute these volatile changes to the explanatory variables. This is a reason why preceding scholars have tended to rather use averages of variables instead of absolute values (Doucouliagos & Paldam, 2013; Dreher et al., 2011; Gupta et al., 2006). Dreher et al. (2011) expect that, due to this volatility, they can explain whether a donor is present in particular countries and the average amount of aid committed but not the absolute changes of aid per year by their explanatory variables. The data used in this thesis covers an insufficient timeframe to justify multiple average cross-sectional analyses, making panel data methods more appropriate.

4.4 Validity and reliability

For construct validity, it is crucial to acknowledge that the SDG index is constructed based on the principle of data availability. Consequently, there may exist a disparity between the measured SDG index and the true SDG index. Moreover, the limited availability of data on the index may have led to its absence for countries that have not received aid. This issue is not

solely attributed to the SDG index; the absence of data on other control variables also undermines the analyses.

For internal validity, to ensure unbiased estimates, some assumptions must be satisfied. The strict exogeneity assumption should be met for the FE model. The time lags are based on the assumption that decisions regarding aid allocation are informed by information from the preceding year. Most importantly, the assumption that donor countries have timely access to rich information regarding the SDGs and use this information for their decision-making should be met. Although reverse causality has been taken into account, the methods used do not rule it out completely; more advanced methods could handle this better. Finally, due to the absence of data key variables, the analyses did not control for the zero observations, such like a tobit regression does.

For external validity, this thesis provides an analysis focused solely on bilateral aid flows. Consequently, it does not offer a comprehensive overview of how donor countries factor in SDG information in their aid allocation, as aid can also be allocated via multilateral organisations.

For reliability, all data utilised in this study has been sourced from publicly available online repositories, which have been utilised by numerous scholars in the field. Well-known international organisations such as the OECD and the World Bank ensure the availability of valid and reliable data. Adherence to the methodological outlines in this thesis should yield consistent results.

Chapter 5. Results

5.1 Descriptive statistics

Table 2 - *Descriptive statistics ODA (in constant 2022 million USD); 2016-2022*

Country	Variation	Mean	Std. Dev.	Min.	Max.	Obs.
All DAC donors	Overall	619.617	1029.713	0.44	18820.19	N[c] = 1003
	Between[a]		843.568	2.31	5357.839	n[d] = 148
	Within[b]		587.962	-2068.56	15899.35	
Canada	Overall	18.796	78.009	0	2205.69	N = 981
	Between		39.465	0	351.573	n = 147
	Within		66.907	-314.077	1872.913	
France	Overall	68.839	127.318	0	1074.38	N = 973
	Between		99.783	0	562.576	n = 147
	Within		77.953	-231.111	812.629	
Germany	Overall	113.005	232.014	0	2097.45	N = 969
	Between		203.89	0	1561.136	n = 148
	Within		101.996	-422.491	1663.128	
Italy	Overall	7.847	26.069	0	506.08	N = 882
	Between		14.257	0	86.539	n = 144
	Within		21.353	-65.071	427.389	
Japan	Overall	95.349	384.995	0	5612.15	N = 1007
	Between		330.136	0	3127.297	n = 147
	Within		194.116	-2518.888	2580.202	
United Kingdom	Overall	25.982	66.948	0	973.190	N = 927
	Between		48.137	0	280.300	n = 146
	Within		44.731	-151.238	718.872	
United States	Overall	196.665	449.156	0	10336.92	N = 980
	Between		317.451	0	1752.46	n = 146
	Within		314.382	-1316.785	8781.125	

[a] Variation across countries (time-invariant)
[b] Variation over time within a country (time-variant)
[c] Total number of observations
[d] Number of recipient countries

The descriptive statistics in Table 2 provide insight into the yearly average amounts of aid, measured in constant 2022 million USD, that donor countries allocated to their recipient countries from 2016 to 2022. The number of recipient countries remain relatively constant across donors. However, the presence of minimum values at zero indicates instances where some recipient countries received no aid from the respective donors. All included recipient countries received at least some ODA from at least one included DAC donor country, since the minimum ODA for the total DAC dataset is greater than zero (0.44).

The between variation reflects differences in aid received between the recipient countries, while the within variation captures differences in aid received over time within the same recipient country. This data reveals considerable volatility in aid, as highlighted by the large range between negative minimum values and positive maximum values of the within variation. Furthermore, the data reveals that the United States is the biggest ODA supplier, by providing recipient countries on average with 196.67 million 2022 USD in aid each year. Italy appears to be the smallest donor from the G7, with an average annual aid to recipient countries of 7.85 million 2022 USD.

Table 3 - *Descriptive statistics SDG need; 2016-2022*

Variable	Variation	Mean	Std. Dev.	Min.	Max.	Obs.
SDG need	Overall	37.166	9.328	20.935	63.559	N = 812
	Between		9.315	21.975	63.016	n = 116
	Within		0.940	34.178	41.147	

Note. Statistics are the same for each donor country's dataset

Table 4 - *Descriptive statistics SDG merit; 2017-2022*

Variable	Variation	Mean	Std. Dev.	Min.	Max.	Obs.
SDG merit	Overall	0.343	0.632	-2.670	3.582	N = 696
	Between		0.262	-0.273	0.992	n = 116
	Within		0.576	-2.538	3.085	

Note. Statistics are the same for each donor country's dataset

The descriptive statistics from Table 3 provide insight into the SDG need scores from 2016-2022. The average SDG need score during this period was 37.17, with the lowest observed need score being 20.94 and the highest being 63.56. The descriptive statistics from Table 4 show the SDG merit scores from 2017-2022. The largest annual progress made was 3.58 points and the largest annual regression was -2.67 points. On average, countries showed a modest annual progress of 0.35 points.

A noteworthy point in these statistics is the difference in the number of observations and countries between the ODA data and the SDG index data. While the ODA data covers approximately 146 countries with around 980 observations, the SDG index data includes only 116 countries with 812 observations over the same timeframe. These differences result in datapoints that cannot be included in the analyses.

5.2 Correlation analyses

Table 5 - *Pairwise correlation analysis between Ln(ODA) and Ln(SDG need); 2016-2022*

Country	Variable	Ln(ODA)	Ln(SDG need)
All DAC donors	Ln(ODA)	1.000	
	Ln(SDG need)	0.259*	1.000
	p-value	0.000	

Note. * p < 0.05

Table 6 - *Pairwise correlation analysis between Ln(ODA) and SDG merit; 2017-2022*

Country	Variable	Ln(ODA)	SDG merit
All DAC donors	Ln(ODA)	1.000	
	SDG merit	0.122*	1.000
	p-value	0.001	

Note. * p < 0.05

Figure 1 - *Scatterplot Ln(ODA) and Ln(SDG need); All DAC donors; 2016-2022*

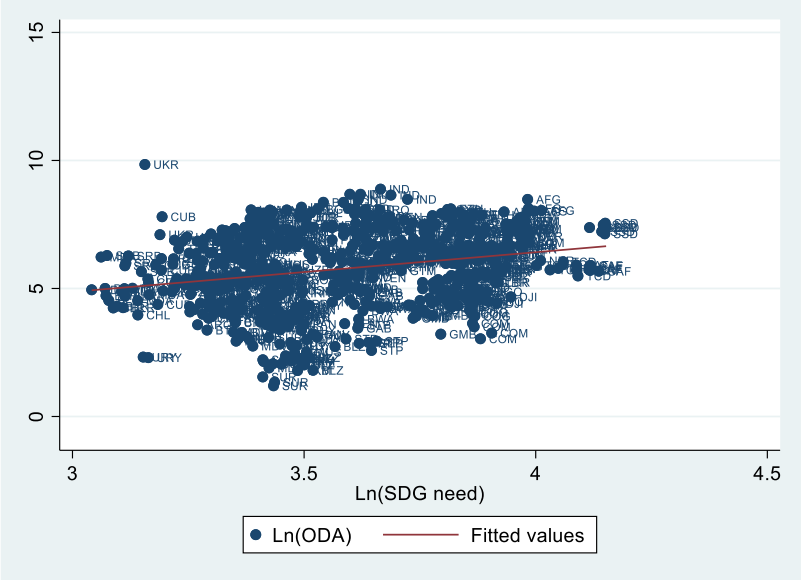

Figure 2 - *Scatterplot Ln(ODA) and SDG merit; All DAC donors; 2017-2022*

The Pearson correlation analyses presented in Tables 5 and 6, along with the scatterplots in Figures 1 and 2, provide a first insight into the relationship between the SDGs and ODA from 2016/7 to 2022. The pairwise correlation of SDG need on ODA reveals a minor but statistically significant positive correlation ($r = 0.259$, $p < 0.05$). The pairwise correlation of SDG merit on ODA reveals a similarly minor yet significant positive correlation ($r = 0.114$, $p < 0.05$). Graphs 1 and 2 illustrate these relationships through scatterplots which visually suggest a minor positive relation for both independent variables. These results are only for the dataset including all DAC donors together. For detailed results of the correlation analyses and scatterplots specific to the other donor countries, see Appendix C. The appendix shows that for most donor countries, the correlations are consistent with the results presented here.

5.3 Pooled ordinary least squares analyses

When interpreting the results from the table, it is important to consider the nature of the variables. Both ODA and SDG need are presented in their natural logarithms, while SDG merit is presented in its original level values. To interpret the coefficients of SDG merit, a transformation is necessary[1]. Eight regressions are run, one for each country/dataset. In each of the dataset, data is pooled according to years.

Table 7 - *Pooled OLS regression of Ln(SDG need) on Ln(ODA); 2016-2022*

Country	Variable	Ln(ODA) Model 1	Ln(ODA) Model 2
All DAC donors	$\ln(\text{SDG need})_{t-1}$	-0.304	-0.724
	p-value	0.512	0.118
	N	802	688
Canada	$\ln(\text{SDG need})_{t-1}$	1.844***	1.342**
	p-value	0.006	0.047
	N	787	658
France	$\ln(\text{SDG need})_{t-1}$	-2.031***	-1.288
	p-value	0.009	0.181
	N	798	676
Germany	$\ln(\text{SDG need})_{t-1}$	-0.841	-0.979
	p-value	0.243	0.116
	N	794	678
Italy	$\ln(\text{SDG need})_{t-1}$	0.017	-0.241
	p-value	0.978	0.790
	N	729	635
Japan	$\ln(\text{SDG need})_{t-1}$	0.861	-0.298
	p-value	0.120	0.729
	N	802	680

[1] Log-level transformation: $100 \times (e^{\beta} - 1)$

United Kingdom	$\ln(\text{SDG need})_{t-1}$	1.835**	0.624
	p-value	0.011	0.463
	N	752	637
United States	$\ln(\text{SDG need})_{t-1}$	1.164*	0.559
	p-value	0.080	0.363
	N	793	674

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 8 - *Pooled OLS regression of SDG merit on Ln(ODA); 2017-2022*

Country	Variable	Ln(ODA) Model 1	Ln(ODA) Model 2
All DAC donors	SDG merit_{t-1}	0.051*	0.044
	p-value	0.094	0.161
	N	686	585
Canada	SDG merit_{t-1}	-0.144**	-0.127*
	p-value	0.023	0.083
	N	675	561
France	SDG merit_{t-1}	0.055	0.013
	p-value	0.471	0.888
	N	682	575
Germany	SDG merit_{t-1}	-0.101**	-0.122**
	p-value	0.039	0.013
	N	680	578
Italy	SDG merit_{t-1}	0.049	0.044
	p-value	0.419	0.557
	N	628	545
Japan	SDG merit_{t-1}	0.154**	0.129*
	p-value	0.022	0.061
	N	686	579
United Kingdom	SDG merit_{t-1}	0.057	0.038
	p-value	0.392	0.622
	N	643	542
United States	SDG merit_{t-1}	-0.038	0.000
	p-value	0.353	0.996
	N	677	573

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 7 presents the results of the POLS model of SDG need on ODA. The results for the different donor countries are mixed. Canada is the only country where SDG need significantly affects ODA in Model 2, with a positive relationship. A one-percent increase in the SDG need score results in a 1.34 percent increase in ODA, ceteris paribus (c.p.). The other countries do not show a significant relationship.

Table 8 shows the results of the POLS model of SDG merit on ODA. Again, there are mixed results. Canada and Germany show significant negative relationships in Model 2, indicating that these countries tend to allocate more aid to recipients with lower SDG merit scores. A one-unit increase in SDG merit, for Germany, results in a 11.49 percent decrease in

ODA, c.p.. Conversely, Japan shows a significant positive relationship, where a one-unit increase in SDG merit results in a 13.77 percent increase in ODA, c.p.. All DAC donors together, France, Italy, the United Kingdom, and the United States do not show significant effects of both SDG need and SDG merit on ODA.

The results from the POLS model provide evidence to support the three set hypotheses. SDG-sensitivity of aid (hypothesis 1) is supported by the results of Canada, Germany, and Japan. The support for hypothesis 2 and 3 is mixed. Canada, Germany, and Japan, show that the SDG metrics can be both interpreted as merit as well as need and not necessarily result in positive coefficients only.

Although not displayed in these tables, results for France, Italy, the United Kingdom, and the United States, indicate that donor self-interest variables (such as colonial history, GDP per capita, distance between capitals, and trade relationships) are significant in their aid allocation decisions, see Appendix A. France, Italy, and the United Kingdom, still allocate more according to colonial history, where a former French colony receives 767 percent more aid in comparison to a non-former French colony, statistically significant at the 1 percent level, c.p.. These results show that aid is not SDG-sensitive for every donor country, making hypothesis 1 not acceptable for each donor country.

A noteworthy point is the significant drop in observations after adding the control variables in Model 2. This could affect the validity of the results.

5.4 Fixed effects analyses

Table 9 - *Fixed effects of Ln(SDG need) on Ln(ODA); 2016-2022*

Country	Variable	Ln(ODA) Model 1	Ln(ODA) Model 2
All DAC donors	$\ln(\text{SDG need})_{t-1}$	-2.411***	-4.028***
	p-value	0.003	0.000
	N	802	688
Canada	$\ln(\text{SDG need})_{t-1}$	1.764	0.866
	p-value	0.330	0.698
	N	787	666
France	$\ln(\text{SDG need})_{t-1}$	-3.567*	-5.679**
	p-value	0.070	0.020
	N	798	684
Germany	$\ln(\text{SDG need})_{t-1}$	-1.863	-2.005
	p-value	0.132	0.186

	N	794	686
Italy	$\ln(\text{SDG need})_{t-1}$	-1.309	-1.169
	p-value	0.480	0.601
	N	729	643
Japan	$\ln(\text{SDG need})_{t-1}$	-3.760**	-5.426**
	p-value	0.034	0.011
	N	802	688
United Kingdom	$\ln(\text{SDG need})_{t-1}$	-2.625	-1.190
	p-value	0.102	0.552
	N	752	645
United States	$\ln(\text{SDG need})_{t-1}$	1.067	0.399
	p-value	0.298	0.735
	N	793	682

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 10 - *Fixed effects of SDG merit on Ln(ODA); 2017-2022*

Country	Variable	Ln(ODA) Model 1	Ln(ODA) Model 2
All DAC donors	SDG merit_{t-1}	0.071***	0.051
	p-value	0.018	0.137
	N	686	585
Canada	SDG merit_{t-1}	-0.031	-0.044
	p-value	0.667	0.601
	N	675	567
France	SDG merit_{t-1}	0.118	0.078
	p-value	0.145	0.419
	N	682	581
Germany	SDG merit_{t-1}	-0.113**	-0.152***
	p-value	0.024	0.010
	N	680	584
Italy	SDG merit_{t-1}	-0.000	-0.035
	p-value	1.000	0.672
	N	628	551
Japan	SDG merit_{t-1}	0.172**	0.136*
	p-value	0.018	0.096
	N	686	585
United Kingdom	SDG merit_{t-1}	-0.021	-0.008
	p-value	0.737	0.912
	N	643	548
United States	SDG merit_{t-1}	-0.024	0.009
	p-value	0.553	0.842
	N	677	579

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

The fixed effects model, depicted in Tables 9 and 10, presents contrasting results compared to the POLS model. This is due to the distinct character of the FE. For SDG need, significant negative relationships are observed in Model 2 for all DAC donors collectively, as well as for France and Japan. These results indicate that as SDG need scores increase within a

recipient country over time, the amount of ODA it receives decreases. This does not mean that countries with higher SDG needs receive less ODA compared to other countries, as the model can only predict within-country effects. A one-percent increase in the SDG need score within a country over time, for France, results in a 5.70 percent decrease in ODA, c.p.. It suggests that these countries rather send aid to recipient countries which are decreasing in SDG need scores.

For SDG merit, significant relationships are found in Model 2 for Germany and Japan. The significant positive relationship of Japan indicates that as SDG merit increases within the country over time, the amount of Japanese aid tends to increase too. A one-unit increase in SDG merit within a country over time, for Japan, results in a 14.57 percent increase in ODA, c.p.. For Germany, a significant negative relationship is found. This suggests that Germany tends to allocate more aid to countries that are regressing in terms of SDG merit compared to their past versions.

The fixed effects results provide evidence for the support of the hypotheses, although, again, not universally. Aid is proven to be SDG-sensitive, now, for all DAC donors collectively, France, Germany, and Japan. The different signs of the coefficients indicate that the SDG-metrics can be either perceived as need and merit. It does not immediately support both hypotheses 2 and 3 but shows that there are differencing aid allocation motives.

5.5 Robustness checks

The robustness checks, presented in Appendix G, provide insight into the stability of the main analyses. In these results, it is revealed that most coefficients are highly insignificant, suggesting a notable shift in donor aid allocation strategies following the implementation of the SDGs in 2015. However, three coefficients turned out to be significant. Since information on the SDGs was not available before 2015, these findings raise questions. One plausible explanation could be the influence of the MDGs, which precede the SDGs and share some similarities. It is possible that elements of the MDGs, which may also be incorporated into the SDG index, affected the results. Despite these exceptions, the overall robustness of the main analyses is supported by the lack of significance in the majority of coefficients.

Chapter 6. Discussion

6.1 Interpretation of results

Upon initial examination of the raw data, a mildly positive association between both SDG-metrics and ODA was found in Tables 5 and 6. This suggests that donors might allocate more resources to recipient countries with either higher levels of need or those making significant strides towards achieving the SDGs. However, when employing more advanced statistical models, particularly utilising panel data analysis, new relations were uncovered. After controlling for various variables known to influence aid allocation, many of these initial associations either diminished or changed direction. The employed Pooled OLS and Fixed Effects models provided deeper insights into the relation.

Canada's aid allocation findings suggest a preference for allocating aid to countries with higher SDG needs compared to countries with lower SDG needs. It clearly shows a recipient need oriented allocation strategy where they rather support countries with financial aid which have yet to make significant strides towards achieving the SDGs. This aid motivation is also reflected when assessing the SDG merit variable, where its coefficient in Table 8 reflects a preference for sending resources to countries with lower progress scores compared to countries who are making greater improvements. These effects disappear when assessing the within-country effects of Tables 9 and 10. It suggests that Canada does not significantly adjusts its aid allocation based on changes in SDG needs or merit within individual countries over time, while it does by differences in SDG needs and merits across various countries.

Germany's aid allocation findings are similar to those of Canada. While the SDG need coefficient stays insignificant (Table 7), the SDG merit variable (Table 8) suggests that Germany also prefers to send more aid to countries with lower progress scores compared to countries which already make positive yearly strides towards SDG achievement. The negative SDG merit coefficient of Germany in the Fixed Effects (Table 10) suggests a preference for allocating resources to recipient countries which are regressing in SDG progress over time. Both results reflect a recipient need motivated strategy which helps countries that are lagging on SDG achievement. Canada and Germany are the clear recipient need oriented countries when it comes to SDG achievement.

Japan's aid allocation findings are the opposite of Canada's and Germany's. Their SDG merit coefficients (Table 8 and 10) show that it sends more aid to countries with higher progress scores compared to countries showing fewer progress between years. The within-country effect shows that if the SDG merit score increases within a country over time, the recipient will be granted greater amounts of aid. The SDG need score (Table 9) reflects that if the need in terms of SDG achievement increases within a recipient country over time, the country receives fewer amounts of aid. Japan clearly uses a recipient merit-oriented strategy when concerning the SDGs by rather sending more aid to countries that are making substantial progress than supporting countries which have yet to make this progress. This motivation can be either seen as rewarding, and thereby incentivising, or investing in the right environment.

France's aid allocation findings show only one significant result in Table 9 for the SDG need variable. The result means that as SDG need levels increase within a country over time, the levels of aid tend to decrease. It reflects that France rather sends their aid to countries where SDG need levels are decreasing within a country over time, thus suggesting a more recipient merit strategy than a recipient need strategy. While this coefficient shows that France's aid allocation is somewhat affected by the strides that countries make towards achieving the SDGs, the analyses mainly showed that France still highly values historical and economic ties. For the countries where significant results regarding the SDG-metrics are missing, so Italy, the United Kingdom, and United States, this is the same. Variables such as colonial history, trade, export, and geographic distance were revealed to significantly explain their aid allocation. These factors had greater explanatory powers than SDG need and merit. These countries show that they value historical and economic ties more than the SDG-metrics and that they do not take these significantly in consideration.

For all DAC donors collectively, the analyses did not find a straightforward conclusion about their aid allocation motivation. Only when assessing the within-country variation, it was found that as SDG need increases within a country over time, the amount of aid tends to decrease. However, this variation in results is expected, as 'all DAC donors' is an aggregate category, containing multiple countries with each their own aid strategy. It confirms that donor countries, particularly in bilateral aid, use different allocation strategies.

Overall, the findings suggest that while some donors are influenced by SDG-related need and merit scores, the motivations behind aid allocation vary. It highlights the presence of

individual aid allocation strategies by different donor countries. The robustness checks verified that donor behaviour in terms of the SDGs did change post-2015 implementation of the SDGs.

Regarding the hypotheses, the findings allow the acceptance of Hypothesis 1 that aid is SDG-sensitive, although not for every donor country. The rejection or acceptance of hypothesis 2 and 3 is more complex, as the results not necessarily show that both metrics are positive in every instance. SDG need and SDG merit can be both interpreted as recipient need and recipient merit strategies for donor aid allocation. Donors can either allocate more money to recipients with higher/lower needs as the same with higher/lower progress scores.

6.2 Connection with the literature

When assessing whether the positions of the studied countries regarding the SDG-metrics align with their positions found in the literature, several patterns emerge. Alesina and Dollar (2000) concluded that Japan, France, and the United States strongly promote strategic interests in their aid allocation. Their aid would be primarily directed towards former colonies, historical ties, and investment and trade relations. This motivation for self-interest is, for example, also clear in the United States' foreign assistance mission (Hoeffler & Outram, 2011). Japan prioritises self-reliant development and beliefs in the mutual benefits that can be gained from development co-operation for Japan and its recipient countries (OECD, 2023a). France has shown to steer its development co-operation by results (OECD, 2023a). These findings in the literature align with the results. Japan's and France's efforts to support or reward countries making substantial progress towards the SDGs can be seen as efforts which do not support the recipient need motivation. However, their recipient merit motivations can also be viewed as incentives for countries to make greater strides towards SDG attainment. As shown in the results, these donors allocate significantly according to recipient merit which means that lagging countries will receive greater returns if they improve their SDG-metrics.

Germany, on the other hand, has guiding principles in their mission centred around poverty reduction, environmental protection, peacebuilding, democracy promotion, and equitable globalisation (Hoeffler & Outram, 2011; OECD, 2023a). The results of this thesis clearly reflect this, with Germany emerging as a supporter of the recipient need motivations in relation to the SDGs. Canada displayed, like Germany, clear recipient need behaviour in its aid allocation towards the SDGs. This behaviour is also reflected in Canada's ODA accountability

act, which requires that Canada's ODA must support poverty eradication efforts, suggesting a strong focus on the countries that need it most (OECD, 2023a). Additionally, Canada views promoting sustainable development as the central idea of its international assistance efforts (Ignatov et al., 2019). The United Kingdom, according to Hoeffler and Outram (2011), tends to allocate more aid to countries with higher growth and democracy scores, reflecting recipient merit motivations. However, this behaviour was not reflected in this study concerning the SDGs. It suggests that while the United Kingdom may prioritise economic and democratic metrics, these do not translate into SDG-related aid allocation strategies. Italy, the smallest donor among the G7, displayed no significant results. This could be attributed to its relatively limited aid budget, which might make it more difficult to see clear patterns in aid allocation. It could also have something to do with the focus on traditional ties for the recipient country selection, or because their strategy regarding the SDGs is more reflected through their funds allocated to the European Union than their bilateral aid provision (Carbone, 2008; OECD, 2023b). The second reason might be a crucial reason for the absence of an effect for other donors too, and it is an important limitation elicited in the conclusion. The overall consistency of the results with the existing literature suggests that there are no abnormal deviations, indicating the robustness of the findings.

Chapter 7. Conclusion

This research aimed to identify the relationship between the SDGs and foreign aid allocation by answering the following question: *To what extent do the Sustainable Development Goals influence aid allocation strategies by donor countries?* Using quantitative panel data analyses, it can be concluded that SDG-metrics, indicating the achievement recipients have yet to make and the progress they have made between years, do affect foreign aid allocation. This relation, however, is different for each donor country. The SDG-metrics have shown to be interpreted as both recipient need and recipient merit motives. The results do not indicate a universal relation between the SDGs and foreign aid allocation, suggesting that not all donors take SDG achievement into consideration. This corresponds with the propositions from the literature about the specific donor's aid allocation behaviour. Germany and Canada are countries which clearly allocate aid according to recipient need when it comes to the SDGs. Japan clearly allocates aid according to recipient merit, and France joins them when looking within recipient countries. For Italy, the United Kingdom, the United States, and France, it is shown that these countries find other factors more important, such as historical and economic ties with the recipient countries, explaining the absence of an effect. This thesis is the first research which shed light on the interaction between the SDGs in its entirety, captured by the SDG index, and foreign aid allocation, making it a valuable addition to the wide literature body on aid allocation.

7.1 Implications

The findings of this thesis help to understand the diverse aid allocation strategies adopted by donor countries. While it is evident that the SDGs play a role in shaping aid allocation, the study reveals that not all donor countries prioritise recipient need motivations. Moreover, the results induce a discussion on the merits of allocating aid based on recipient need versus recipient merit. Prioritising aid distribution according to recipient need demonstrates donors' commitments to assisting countries facing challenges in achieving the SDGs. However, rewarding countries that demonstrate significant progress towards SDG attainment may incentivise others and facilitate an environment for accelerated progress in the future. Allocating according to recipient merit could imply that donors may prioritise other factors over immediate need, for example, due to concerns about aid effectiveness in the recipient country. This question is the crossroad between the two aid literature bodies, aid effectiveness and aid allocation.

Radelet (2004) states that an appropriate interpretation is that aid works best in countries with stronger governance, if the level of income is the same. He suggests that donors should allocate aid to poorer countries with strong and moderate governance. One can see this as a combination of both recipient need and merit, where aid is sent to countries which need it most but with a (relatively) strong governance to use the aid effectively. Money should not go to middle-income countries with low poverty and to countries with poor governance, since here, much of the aid is wasted (Radelet, 2004). A crucial societal implication, and at the same time a recommendation, is thus that while there are different strategies of aid allocation to the SDGs, without the knowledge on what makes aid effective and where aid is most effective, one cannot inform decision-makers about the best possible way to allocate aid. So, while this thesis provides insight into how foreign aid allocation reacts to the SDGs in recipient countries, one cannot make a judgement about which approach is best to ensure the achievement of the SDGs.

7.2 Limitations

As elicited in the methods chapter, this study is subject to certain limitations that require consideration. Firstly, the reliance on the SDG index as an aggregate measure of progress across all 17 SDGs introduces challenges, potentially leading to biases in the analysis. Additionally, the unavailability of the SDG index for most countries that received no aid introduces bias in the sample, limiting the generalisability of the findings. Furthermore, the transition from Model 1 to Model 2 in the analyses resulted in significant reductions in the number of observations, which may impact the robustness of the findings. Since this study was dependent on using online available data, due to time and resource constraints, these data limitations were outside the control of the researcher.

The focus solely on bilateral aid allocation neglects a significant portion of aid distributed through multilateral channels. OECD (2023a) shows that the included donor countries allocate significant amounts of aid via multilateral channels. It potentially overlooks situations where countries do demonstrate sensitivity to the SDGs, but in their multilateral aid commitments instead of their bilateral aid commitments. Finally, the COVID-19 pandemic happened, which stalled SDG progress massively, this could have also affected the results (SDSN, 2023).

7.3 Recommendations

Recommendations for future research are to include multilateral aid flows in the analysis. Although the connection between individual donor and multilateral aid commitments might be more difficult to make, it could provide a more comprehensive overview of donors' aid allocation behaviour. Moreover, it should be further assessed which way of aid allocation is more effective. One could also go to work with the data limitations and improve the results using a greater time frame, in a few years, or use more advanced techniques. The most important recommendation is to search for ways to incentivise donor countries to send their aid to countries where aid is proven to be most effective and make them diverge from classic self-interest motives. For this, one should first figure out which allocation strategy is most effective in attaining the SDGs. One thing is certain from this thesis and from other scholars, allocating significantly more aid to former colonies, greater trade relations or any other self-interest is not beneficial. For both recipient need and merit, one can see positives. However, still allocating according to self-interest will not help in maximising the SDG attainment for the developing world. This is the most important recommendation to decision-makers, critically assess whether your country's aid allocation is in line with the global goal of achieving the SDGs in 2030. This is optimistic but it is the start of allocating aid more equitable and effective according to the global SDG target.

Chapter 8. References

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Appendices

Appendix A. Full regression output

Pooled OLS regression of Ln(SDG need) on Ln(ODA) in period 2016-2022

Variable	Total DAC	Canada	France	Germany	Italy	Japan	UK	USA
$SDG_{need_{t-1}}$	-.724	1.34**	-1.29	-.979	-.241	-.298	.624	.559
$population_{t-1}$	.636***	.663***	.644***	1.16***	.904***	.197	.697***	.564***
$GDP_{percapita_{t-1}}$	-.395***	-.545***	-.203	-.238	-.086	-.887***	-.099	-.470***
$freedom_{t-1}$	.203*	.229	.180	.303**	.216	.286**	-.145	.210
$trade_{t-1}$	.090	-.576**	-.238	.038	-.429	-.040	.161	.043
$export_{t-1}$		.031	.304***	-.055	-.242*	.330***	.163	.086
distance		-1.04***	-.286	-1.29***	-1.18***	-.672	-.745***	-.061
colony		.	2.16***	.890*	2.50***	.	1.44***	.

Note. * p < 0.10, ** p < 0.05, *** p < 0.01
All independent variables are in their Natural Logarithms, except for 'colony'

Pooled OLS regression of SDG merit on Ln(ODA) in period 2017-2022

Variable	Total DAC	Canada	France	Germany	Italy	Japan	UK	USA
$SDG_{merit_{t-1}}$	.044	-.127*	.013	-.122**	.044	.129*	.038	-.000
$population_{t-1}$	.625***	.623***	.628***	.932***	.793***	.206	.597***	.566***
$GDP_{percapita_{t-1}}$	-.297***	-.772***	-.009	-.342**	-.289	-.837***	-.320	-.624***
$freedom_{t-1}$	.238*	.204	.217	.206	.286	.346**	-.204	.197
$trade_{t-1}$	.031	-.624**	-.266	.056	-.388	-.140	.247	.086
$export_{t-1}$		.030	.317***	.146	-.092	.300***	.239	.069
distance		-.942***	-.399*	-1.18***	-1.11***	-.739*	-.579**	-.114
colony		.	1.94***	.788	2.38***	.	1.43***	.

Note. * p < 0.10, ** p < 0.05, *** p < 0.01
All independent variables are in their Natural Logarithms, except for 'SDG merit' and 'colony'

Fixed Effects regression of Ln(SDG need) on Ln(ODA) in period 2016-2022

Variable	Total DAC	Canada	France	Germany	Italy	Japan	UK	USA
$SDG_{need_{t-1}}$	-4.03***	.866	-5.68**	-2.00	-1.17	-5.43**	-1.19	.400
$population_{t-1}$	-.015	-.178	1.02	1.61	-.021	-2.27	-2.26	-1.03
$GDP_{percapita_{t-1}}$	-.167	.486	-.170	-.012	.125	-.477	.064	-.031
$freedom_{t-1}$	.372***	.544*	.533*	.383**	.040	.300	-.137	.496***
$trade_{t-1}$	.059	-.368	.066	-.144	-.060	.412	-.361	-.016
$export_{t-1}$		-.059	.147	-.130	-.297**	.257**	.079	.152**

Note. * p < 0.10, ** p < 0.05, *** p < 0.01
All independent variables are in their Natural Logarithms, except for 'colony'

Fixed Effects regression of SDG merit on Ln(ODA) in period 2017-2022

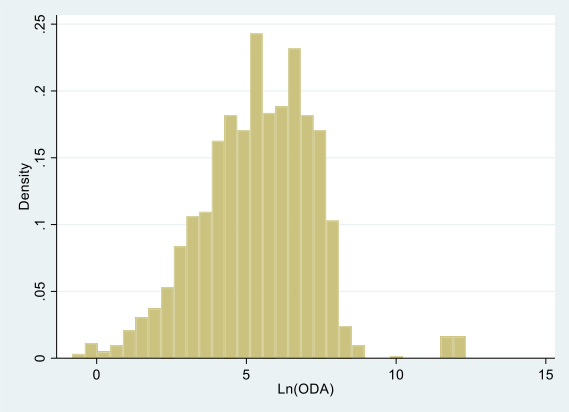
Variable	**Total DAC**	**Canada**	**France**	**Germany**	**Italy**	**Japan**	**UK**	**USA**
$SDG_{merit_{t-1}}$	.051	-.044	.078	-.152***	-.035	.136*	-.008	-.009
$population_{t-1}$	-1.02	.632	.195	2.09	-2.15	-4.49**	-1.25	-.620
$GDP_{percapita_{t-1}}$	.029	.547	.229	-.047	.260	-.175	-.010	.039
$freedom_{t-1}$	.464***	.580*	.668*	.172	.469	.469	-.308	.539***
$trade_{t-1}$	-.025	-.502	.127	-.213	.238	.374	-.357	.002
$export_{t-1}$		-.089	.098	.019	-.148	.278**	.153	.123*

Note. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

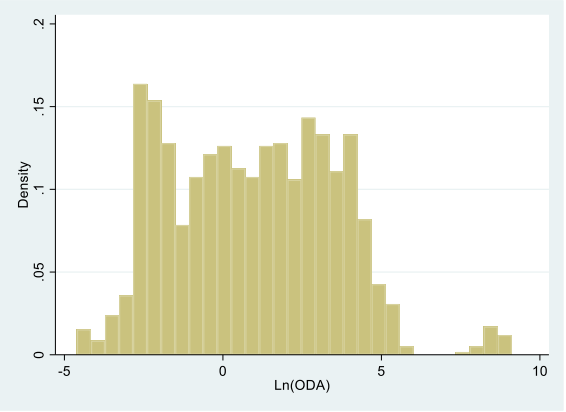
All independent variables are in their Natural Logarithms, except for ‘SDG merit’ and ‘colony’

Appendix B. Histograms of Variables

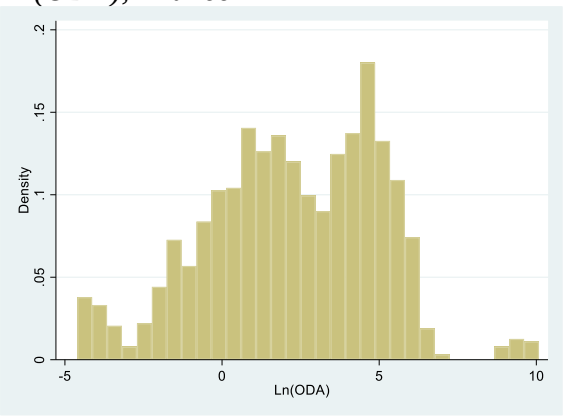
Ln(ODA); all DAC Donors



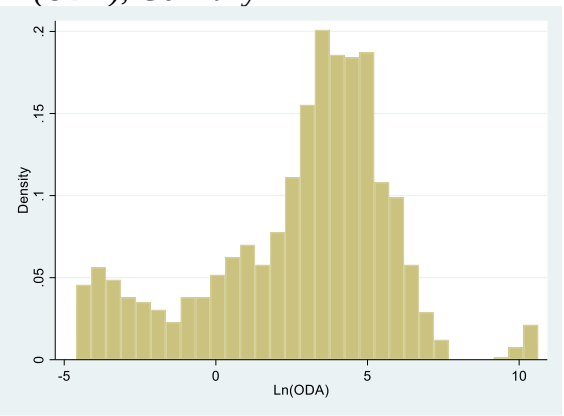
Ln(ODA); Canada



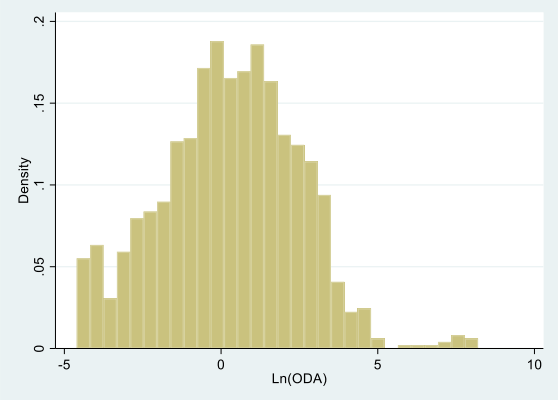
Ln(ODA); France



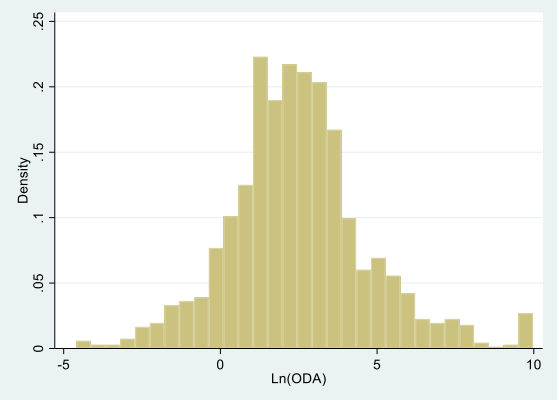
Ln(ODA); Germany



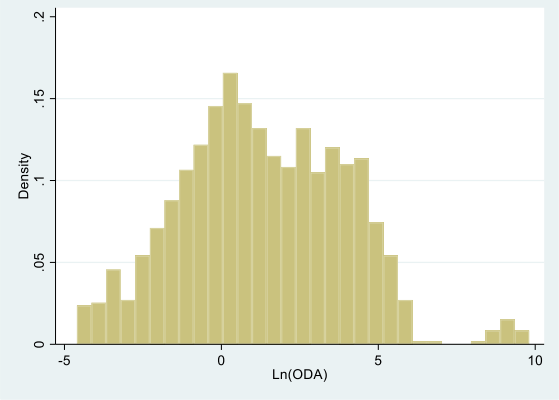
Ln(ODA); Italy



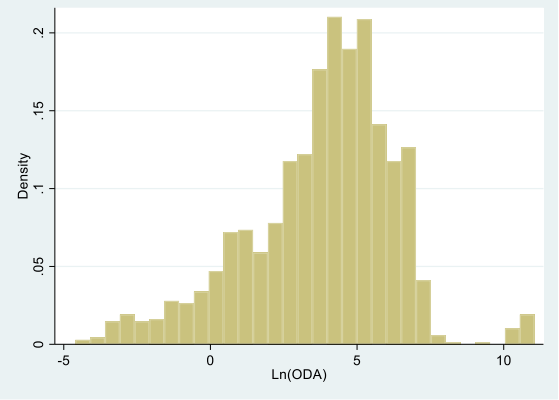
Ln(ODA); Japan



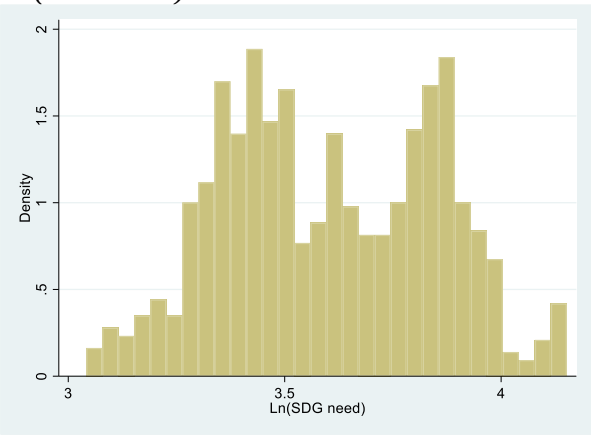
Ln(ODA); United Kingdom



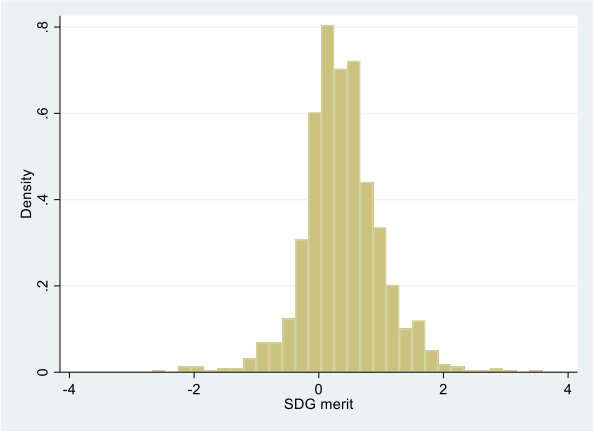
Ln(ODA); United States



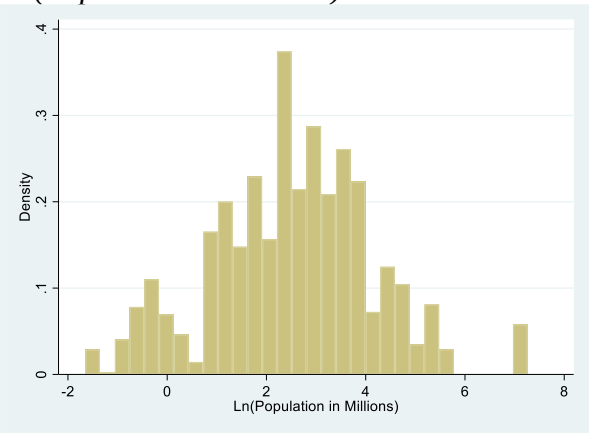
Ln(SDG need)



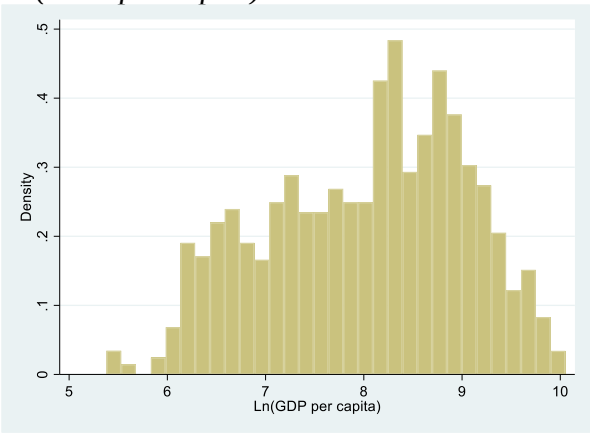
SDG merit



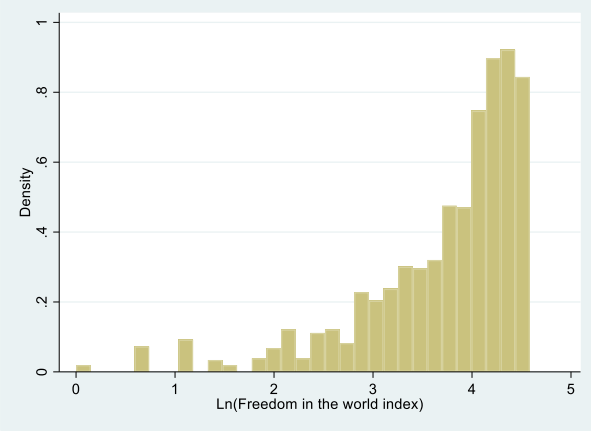
Ln(Population in millions)



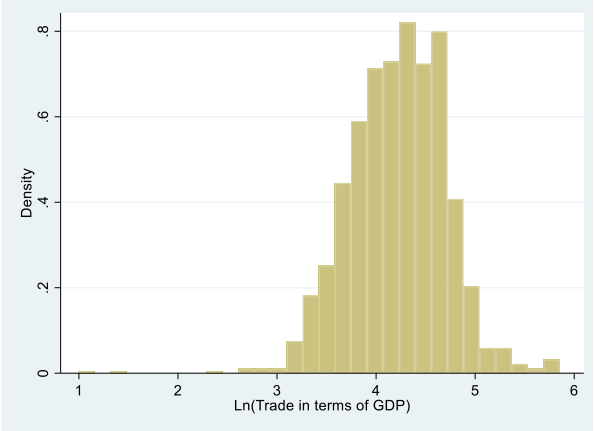
Ln(GDP per capita)



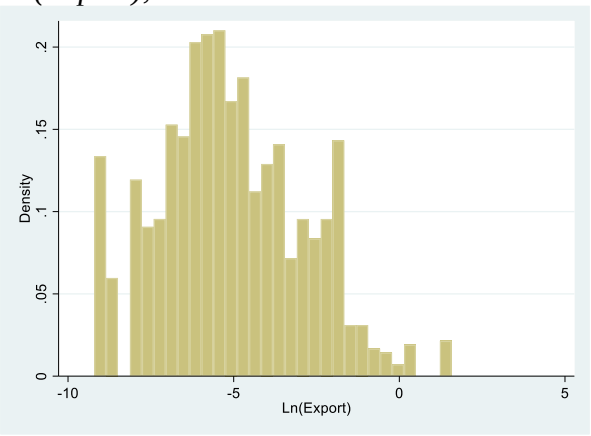
Ln(Freedom in the world index)



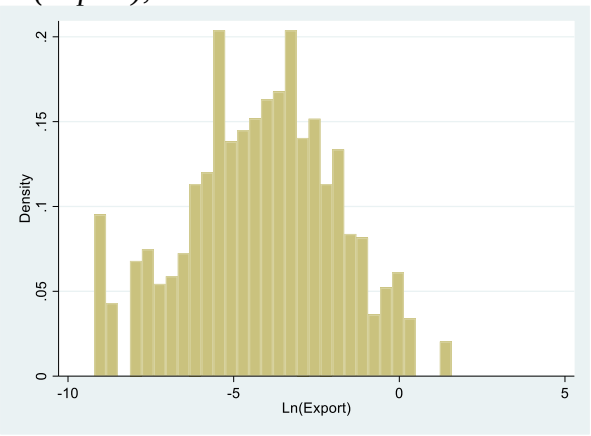
Ln(Trade in terms of GDP)



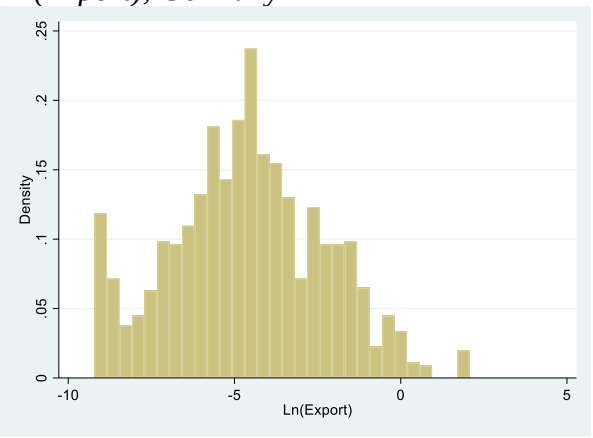
Ln(Export); Canada



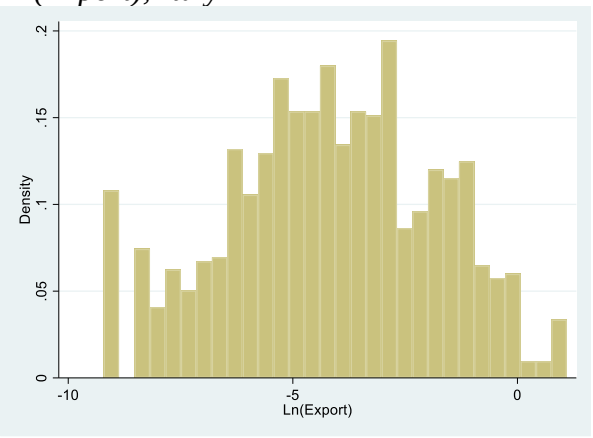
Ln(Export); France



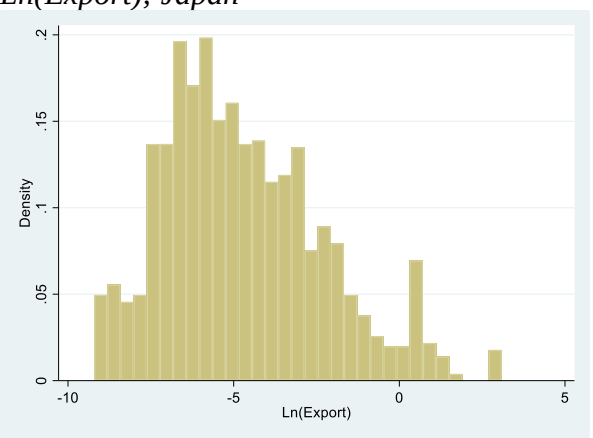
Ln(Export); Germany



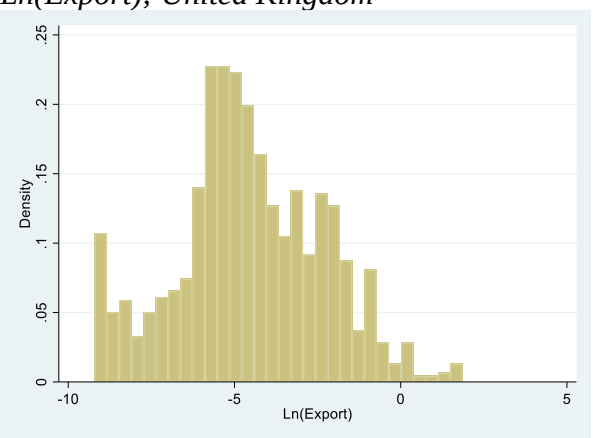
Ln(Export); Italy



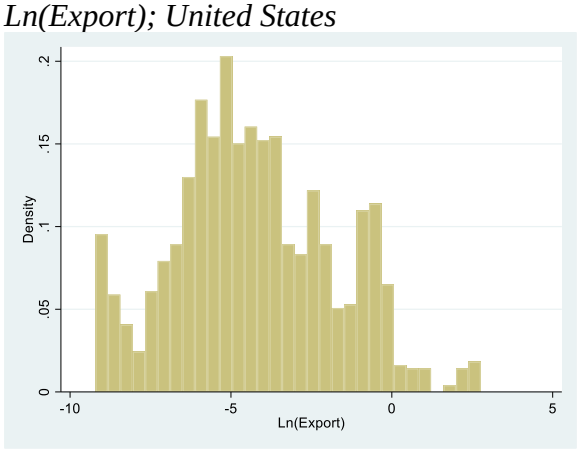
Ln(Export); Japan



Ln(Export); United Kingdom

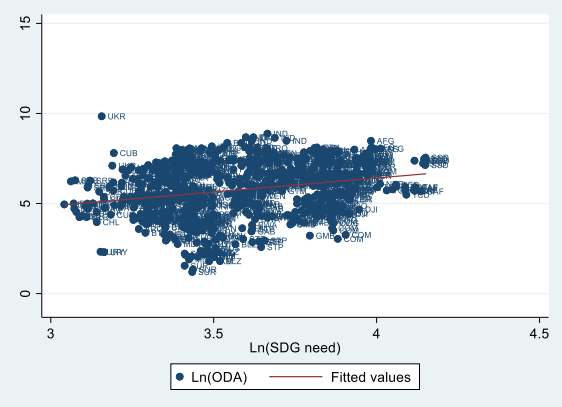


Ln(Export); United States

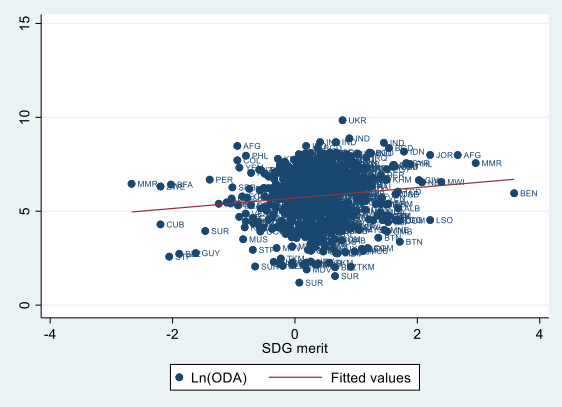


Appendix C. Scatterplots and correlation analyses

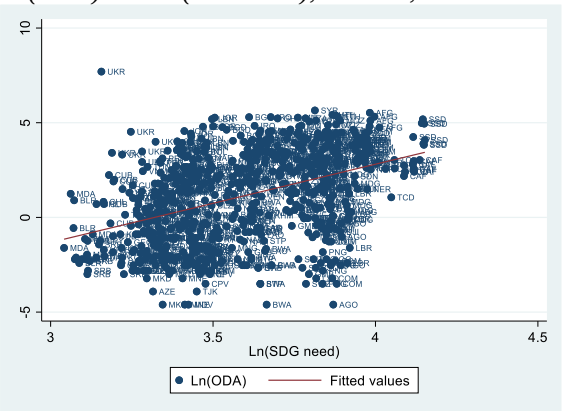
Ln(ODA) and Ln(SDG need); All DAC donors; 2016-2022



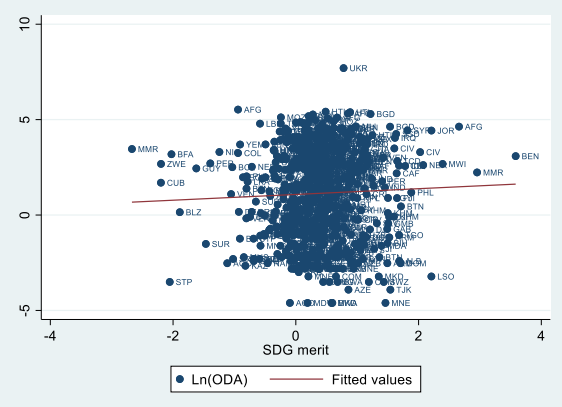
Ln(ODA) and SDG merit; All DAC donors; 2017-2022



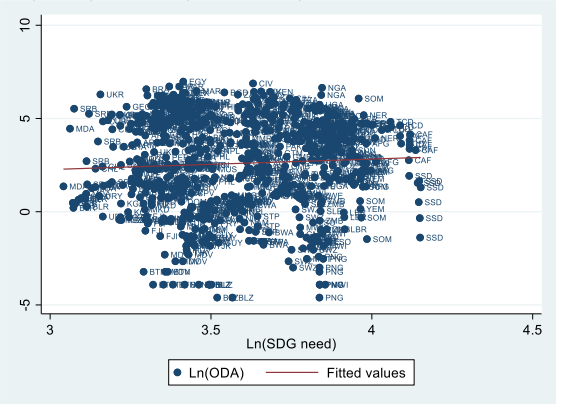
Ln(ODA) and Ln(SDG need); Canada; 2016-2022



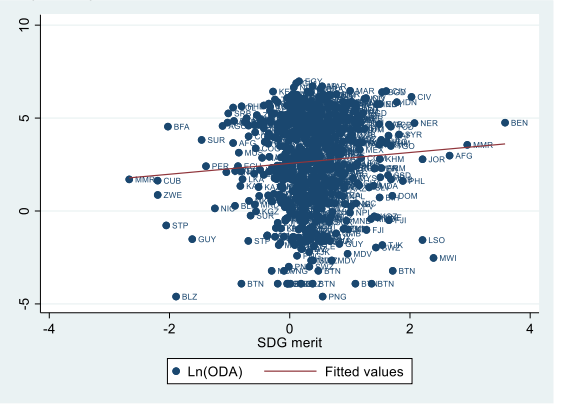
Ln(ODA) and SDG merit; Canada; 2017-2022



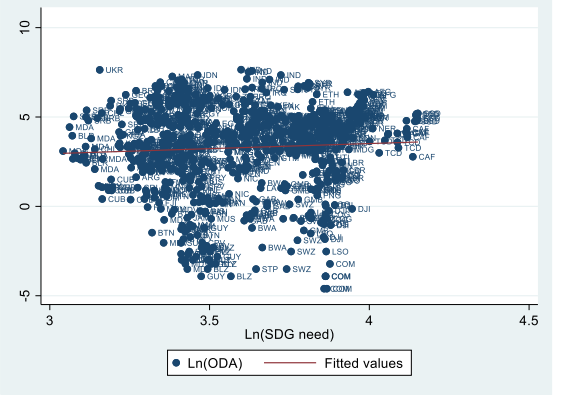
Ln(ODA) and Ln(SDG need); France; 2016-2022



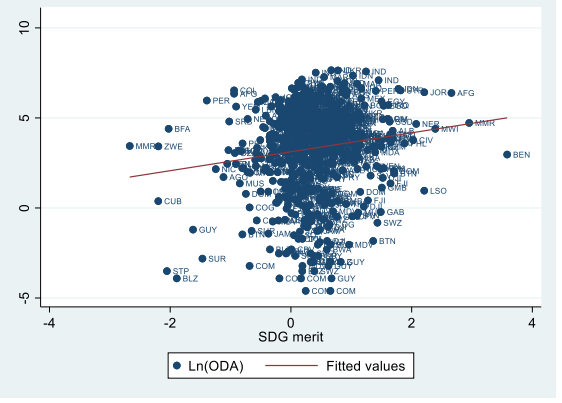
Ln(ODA) and SDG merit; France; 2017-2022



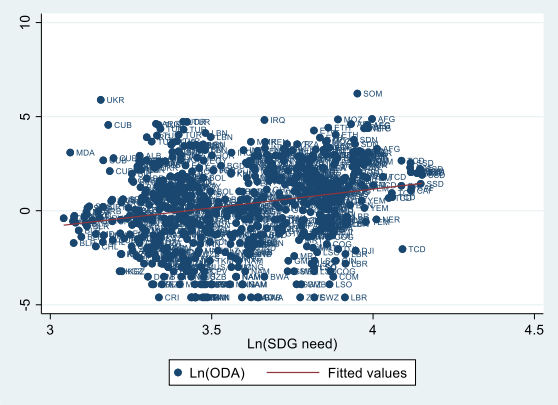
Ln(ODA) and Ln(SDG need); Germany; 2016-2022



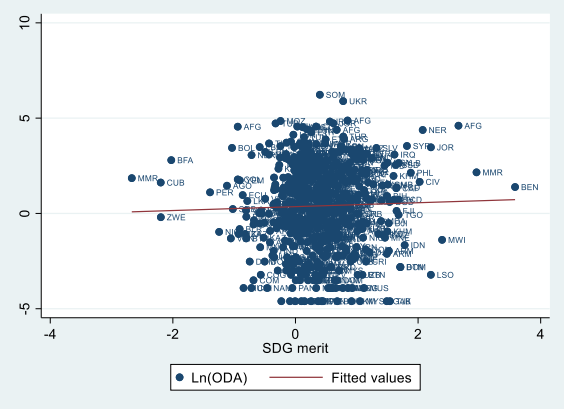
Ln(ODA) and SDG merit; Germany; 2017-2022



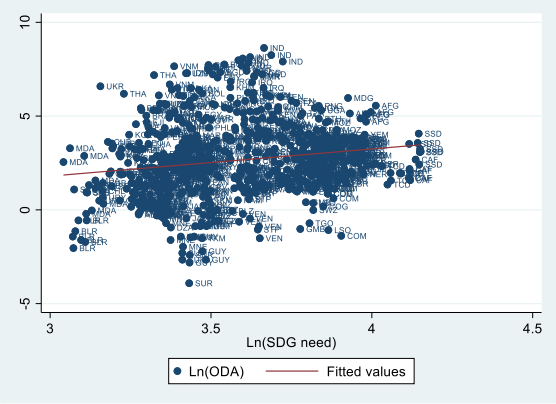
Ln(ODA) and Ln(SDG need); Italy; 2016-2022



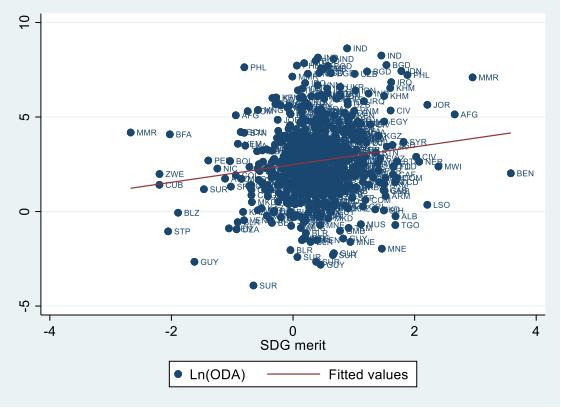
Ln(ODA) and SDG merit; Italy; 2017-2022



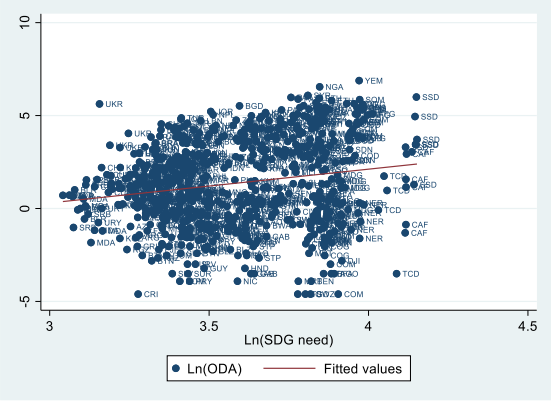
Ln(ODA) and Ln(SDG need); Japan; 2016-2022



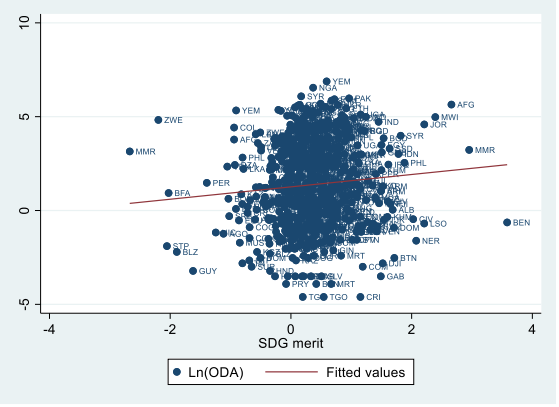
Ln(ODA) and SDG merit; Japan; 2017-2022



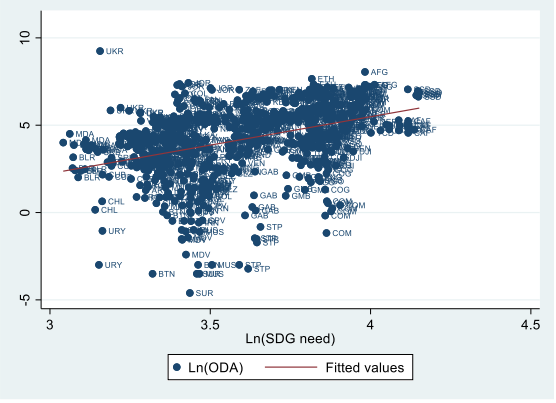
Ln(ODA) and Ln(SDG need); United Kingdom; 2016-2022



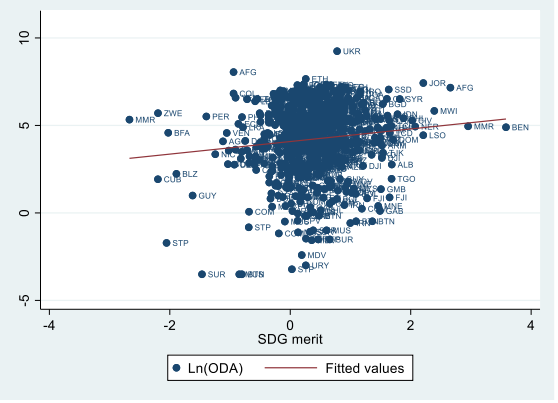
Ln(ODA) and SDG merit; United Kingdom; 2017-2022



Ln(ODA) and Ln(SDG need); United States; 2016-2022



Ln(ODA) and SDG merit; United States; 2017-2022



Pairwise correlation analyses between Ln(ODA) and Ln(SDG need); 2016-2022

Country	Variable	Ln(ODA)	Ln(SDG need)
Canada	Ln(ODA)	1.000	.
	Ln(SDG need)	0.425*	1.000
	p-value	0.000	.
France	Ln(ODA)	1.000	.
	Ln(SDG need)	0.056	1.000
	p-value	0.117	.
Germany	Ln(ODA)	1.000	.
	Ln(SDG need)	0.058	1.000
	p-value	0.101	.
Italy	Ln(ODA)	1.000	.
	Ln(SDG need)	0.233*	1.000
	p-value	0.000	.
Japan	Ln(ODA)	1.000	.
	Ln(SDG need)	0.182*	1.000
	p-value	0.000	.
United Kingdom	Ln(ODA)	1.000	.
	Ln(SDG need)	0.192*	1.000
	p-value	0.000	.
United States	Ln(ODA)	1.000	.
	Ln(SDG need)	0.388*	1.000
	p-value	0.000	.

Note. * $p < 0.05$

Pairwise correlation analyses between Ln(ODA) and SDG merit; 2017-2022

Country	Variable	Ln(ODA)	SDG merit
Canada	Ln(ODA)	1.000	.
	SDG merit	0.041	1.000
	p-value	0.285	.
France	Ln(ODA)	1.000	.
	SDG merit	0.075	1.000
	p-value	0.051	.
Germany	Ln(ODA)	1.000	.
	SDG merit	0.139*	1.000
	p-value	0.000	.
Italy	Ln(ODA)	1.000	.
	SDG merit	0.029	1.000
	p-value	0.461	.
Japan	Ln(ODA)	1.000	.
	SDG merit	0.153*	1.000
	p-value	0.000	.
United Kingdom	Ln(ODA)	1.000	.
	SDG merit	0.091*	1.000
	p-value	0.021	.
United States	Ln(ODA)	1.000	.
	SDG merit	0.113*	1.000
	p-value	0.003	.

Note. * $p < 0.05$

Appendix D. Hausman test results

Hausman test results

Country	Score	Coefficient
All DAC donors	Chi^2	31.32
	p-value	0.000
Canada	Chi^2	33.19
	p-value	0.000
France	Chi^2	33.33
	p-value	0.000
Germany	Chi^2	5.67
	p-value	0.0173
Italy	Chi^2	29.59
	p-value	0.000
Japan	Chi^2	4.97
	p-value	0.026
United Kingdom	Chi^2	0.10
	p-value	0.754
United States	Chi^2	25.41
	p-value	0.000

Note. H0: difference in coefficients not systematic. If H0 is rejected, prefer an FE over an RE

Appendix E. List of recipient countries

Afghanistan	Guatemala	Philippines
Angola	Guyana	Palau
Anguilla	Honduras	Papua New Guinea
Albania	Haiti	North Korea
Algeria	Indonesia	Paraguay
Argentina	India	Palestinian Authority or West Bank and Gaza Strip
Armenia	Iran	Rwanda
Antigua and Barbuda	Iraq	Sudan
Azerbaijan	Jamaica	Senegal
Burundi	Jordan	Saint Helena
Benin	Kazakhstan	Solomon Islands
Burkina Faso	Kenya	Sierra Leone
Bangladesh	Kyrgyzstan	El Salvador
Bosnia and Herzegovina	Cambodia	Somalia
Belarus	Kiribati	Serbia
Belize	Saint Kitts and Nevis	South Sudan
Bolivia	Laos	Sao Tome and Principe
Brazil	Lebanon	Suriname
Bhutan	Liberia	Eswatini
Botswana	Libya	Seychelles
Central African Republic	Saint Lucia	Syria
Chile	Sri Lanka	Chad
China	Lesotho	Togo
Ivory Coast	Morocco	Thailand
Cameroon	Moldova	Tajikistan
Democratic Republic of the Congo	Madagascar	Tokelau
Congo	Maldives	Turkmenistan
Cook Islands	Mexico	Timor-Leste
Colombia	Marshall Islands	Tonga
Comoros	North Macedonia	Tunisia
Cape Verde	Mali	Turkey
Costa Rica	Myanmar	Tuvalu
Cuba	Montenegro	Tanzania
Djibouti	Mongolia	Uganda
Dominica	Mozambique	Ukraine
Dominican Republic	Mauritania	Uruguay
Ecuador	Montserrat	Uzbekistan
Egypt	Mauritius	Saint Vincent and the Grenadines
Eritrea	Malawi	Venezuela
Ethiopia	Malaysia	Vietnam
Fiji	Namibia	Vanuatu
Micronesia	Niger	Wallis and Futuna
Gabon	Nigeria	Samoa
Georgia	Nicaragua	Kosovo
Ghana	Niue	Yemen
Guinea	Nepal	South Africa
Gambia	Nauru	Zambia
Guinea-Bissau	Pakistan	Zimbabwe
Equatorial Guinea	Panama	
Grenada	Peru	

Note. There is a total of 148 recipient countries included in each dataset

Appendix F. Overview of included variables

Pooled OLS SDG need Timeframe: 2016-2022	- Ln(ODA) - Ln(SDG need)$_{t-1}$ - Ln(Population in millions)$_{t-1}$ - Ln(GDP per capita)$_{t-1}$ - Ln(Freedom in the world index)$_{t-1}$ - Ln(Trade in terms of GDP)$_{t-1}$ - Ln(Export partner share)$_{t-1}$ - Ln(Distance between capitals) - Colonial history
Pooled OLS SDG merit Timeframe: 2017-2022	- Ln(ODA) - SDG merit$_{t-1}$ - Ln(Population in millions)$_{t-1}$ - Ln(GDP per capita)$_{t-1}$ - Ln(Freedom in the world index)$_{t-1}$ - Ln(Trade in terms of GDP)$_{t-1}$ - Ln(Export partner share)$_{t-1}$ - Ln(Distance between capitals) - Colonial history
Fixed effects SDG need Timeframe: 2016-2022	- Ln(ODA) - Ln(SDG need)$_{t-1}$ - Ln(Population in millions)$_{t-1}$ - Ln(GDP per capita)$_{t-1}$ - Ln(Freedom in the world index)$_{t-1}$ - Ln(Trade in terms of GDP)$_{t-1}$ - Ln(Export partner share)$_{t-1}$ - Year dummies (i.year)
Fixed effects SDG merit Timeframe: 2017-2022	- Ln(ODA) - SDG merit$_{t-1}$ - Ln(Population in millions)$_{t-1}$ - Ln(GDP per capita)$_{t-1}$ - Ln(Freedom in the world index)$_{t-1}$ - Ln(Trade in terms of GDP)$_{t-1}$ - Ln(Export partner share)$_{t-1}$ - Year dummies (i.year)

Appendix G. Robustness checks

Pooled OLS of Ln(SDG need) on Ln(ODA) in period 2014-2015

Country	Variable	Ln(ODA)
All DAC donors	$\ln(\text{SDG need})_{t-1}$	-0.240
	p-value	0.631
	N	208
Canada	$\ln(\text{SDG need})_{t-1}$	1.370
	p-value	0.231
	N	191
France	$\ln(\text{SDG need})_{t-1}$	0.114
	p-value	0.889
	N	202
Germany	$\ln(\text{SDG need})_{t-1}$	-0.918
	p-value	0.247
	N	202
Italy	$\ln(\text{SDG need})_{t-1}$	1.286
	p-value	0.163
	N	189
Japan	$\ln(\text{SDG need})_{t-1}$	-0.080
	p-value	0.932
	N	204
United Kingdom	$\ln(\text{SDG need})_{t-1}$	-2.367**
	p-value	0.020
	N	191
United States	$\ln(\text{SDG need})_{t-1}$	0.639
	p-value	0.417
	N	203

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Pooled OLS of SDG merit on Ln(ODA) in period 2014-2015

Country	Variable	Ln(ODA)
All DAC donors	SDG merit	-0.021
	p-value	0.661
	N	208
Canada	SDG merit	-0.259
	p-value	0.116
	N	191
France	SDG merit	-0.008
	p-value	0.950
	N	202
Germany	SDG merit	0.039
	p-value	0.717
	N	202
Italy	SDG merit	-0.148
	p-value	0.194
	N	189
Japan	SDG merit	0.055
	p-value	0.661

	N	204
United Kingdom	SDG merit	-0.065
	p-value	0.514
	N	191
United States	SDG merit	-0.138*
	p-value	0.064
	N	203

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Fixed effects of Ln(SDG need) on Ln(ODA) in period 2014-2015

Country	Variable	Ln(ODA)
All DAC donors	$\ln(\text{SDG need})_{t-1}$	-0.982
	p-value	0.759
	N	208
Canada	$\ln(\text{SDG need})_{t-1}$	-5.370
	p-value	0.461
	N	194
France	$\ln(\text{SDG need})_{t-1}$	-10.888
	p-value	0.163
	N	206
Germany	$\ln(\text{SDG need})_{t-1}$	12.799**
	p-value	0.025
	N	206
Italy	$\ln(\text{SDG need})_{t-1}$	-4.337
	p-value	0.563
	N	193
Japan	$\ln(\text{SDG need})_{t-1}$	6.899
	p-value	0.352
	N	208
United Kingdom	$\ln(\text{SDG need})_{t-1}$	-4.340
	p-value	0.456
	N	195
United States	$\ln(\text{SDG need})_{t-1}$	-0.619
	p-value	0.869
	N	207

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Fixed effects of SDG merit on Ln(ODA) in period 2014-2015

Country	Variable	Ln(ODA)
All DAC donors	SDG merit	-0.011
	p-value	0.853
	N	208
Canada	SDG merit	-0.199
	p-value	0.173
	N	194
France	SDG merit	-0.020
	p-value	0.891
	N	206
Germany	SDG merit	0.093

	p-value		0.387
	N		206
Italy		SDG merit	-0.024
	p-value		0.865
	N		193
Japan		SDG merit	0.129
	p-value		0.354
	N		208
United Kingdom		SDG merit	0.057
	p-value		0.611
	N		195
United States		SDG merit	-0.069
	p-value		0.325
	N		207

Note. * p < 0.10, ** p < 0.05, *** p < 0.01

Appendix H. SDGs and SDG targets

Goal	Main target
1. No poverty	End poverty in all its forms everywhere
2. Zero hunger	End hunger, achieve good security and improved nutrition and promote sustainable agriculture
3. Good health and well-being	Ensure healthy lives and promote well-being for all at all ages
4. Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Gender equality	Achieve gender equality and empower all women and girls
6. Clean water and sanitation	Ensure availability and sustainable management of water and sanitation for all
7. Affordable and clean energy	Ensure access to affordable, reliable, sustainable, and modern energy for all
8. Decent work and economic growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Industry, innovation and infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduced inequalities	Reduce inequality within and among countries
11. Sustainable cities and communities	Make cities and human settlements inclusive, safe, resilient, and sustainable
12. Responsible consumption and production	Ensure sustainable consumption and production patterns
13. Climate action	Take urgent action to combat climate change and its impacts
14. Life below water	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
15. Life on land	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Peace, justice, and strong institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Partnerships for the goals	Strengthen the means of implementation and revitalize the global partnership for sustainable development

Appendix I. Checks for multicollinearity

Variance Inflation Factor (vif) for each donor country and included variables

Variable	Total DAC	Canada	France	Germany	Italy	Japan	UK	USA
SDG need	1.85	1.92	2.25	1.93	1.99	2.34	2.04	1.91
SDG merit	1.03	1.04	1.05	1.04	1.05	1.04	1.04	1.04
GDP per capita	1.89	2.06	2.17	2.26	2.38	2.17	2.28	2.04
Freedom index	1.18	1.29	1.30	1.35	1.30	1.53	1.36	1.23
Trade	1.07	1.09	1.09	1.09	1.08	1.18	1.10	1.10
Population	1.06	3.04	2.70	2.69	2.10	2.55	3.18	1.37
Export		3.14	2.94	2.90	2.49	2.56	3.37	1.41
Distance		1.18	1.23	1.18	1.28	1.75	1.21	1.23
Colony			1.44	1.08	1.08		1.16	

Correlation matrix Total DAC

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade
SDG need	1.000					
SDG merit	0.069	1.000				
Population	0.032	-0.091	1.000			
GDP per capita	0.611	0.127	-0.078	1.000		
Freedom index	0.141	-0.073	0.073	-0.199	1.000	
Trade	0.111	-0.060	0.202	-0.007	-0.003	1.000

Correlation matrix Canada

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance
SDG need	1.000							
SDG merit	0.093	1.000						
Population	0.081	-0.047	1.000					
GDP per capita	0.585	0.104	0.203	1.000				
Freedom index	0.095	-0.102	-0.158	-0.254	1.000			
Trade	0.127	-0.082	0.178	0.017	-0.033	1.000		
Export	-0.056	-0.004	-0.799	-0.304	0.227	-0.053	1.000	
Distance	-0.192	-0.080	-0.212	-0.028	0.168	-0.136	0.136	1.000

Correlation matrix France

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance	colony
SDG need	1.000								
SDG merit	0.128	1.000							
Population	-0.111	-0.108	1.000						
GDP per capita	0.517	0.106	0.215	1.000					
Freedom index	0.205	-0.053	-0.127	-0.201	1.000				
Trade	0.144	-0.074	0.080	-0.011	0.006	1.000			
Export	0.159	0.062	-0.778	-0.296	0.204	0.049	1.000		
Distance	-0.228	-0.060	-0.141	-0.262	-0.182	0.003	0.119	1.000	
Colony	-0.394	-0.104	0.271	0.047	-0.137	-0.137	-0.296	0.190	1.000

Correlation matrix Germany

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance	Colony
SDG need	1.000								
SDG merit	0.096	1.000							
Population	0.028	-0.078	1.000						
GDP per capita	0.585	0.111	0.232	1.000					
Freedom index	0.175	-0.063	-0.145	-0.209	1.000				
Trade	0.077	-0.093	0.176	0.024	-0.050	1.000			
Export	-0.008	0.025	-0.776	-0.332	0.244	-0.057	1.000		
Distance	-0.215	-0.045	-0.079	-0.250	-0.222	0.046	0.045	1.000	
Colony	-0.065	-0.009	0.087	0.126	-0.086	0.136	-0.061	-0.003	1.000

Correlation matrix Italy

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance	Colony
SDG need	1.000								
SDG merit	0.105	1.000							
Population	-0.021	-0.100	1.000						
GDP per capita	0.561	0.108	0.236	1.000					
Freedom index	0.161	-0.076	-0.034	-0.155	1.000				
Trade	0.094	-0.089	0.100	-0.018	0.002	1.000			
Export	0.068	0.052	-0.701	-0.379	0.131	0.053	1.000		
Distance	-0.136	-0.043	-0.260	-0.332	-0.179	0.091	0.276	1.000	
Colony	-0.122	-0.036	-0.009	-0.027	0.163	0.049	0.023	-0.009	1.000

Correlation matrix Japan

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance
SDG need	1.000							
SDG merit	0.063	1.000						
Population	-0.094	-0.050	1.000					
GDP per capita	0.634	0.105	0.067	1.000				
Freedom index	0.291	-0.090	-0.235	-0.111	1.000			
Trade	-0.038	-0.075	0.288	-0.043	-0.154	1.000		
Export	-0.026	-0.005	-0.712	-0.258	0.217	-0.119	1.000	
Distance	-0.464	0.029	0.220	-0.290	-0.4030	0.269	0.078	1.000

Correlation matrix UK

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance	Colony
SDG need	1.000								
SDG merit	0.089	1.000							
Population	0.076	-0.067	1.000						
GDP per capita	0.587	0.116	0.245	1.000					
Freedom index	0.162	-0.075	-0.137	-0.238	1.000				
Trade	0.160	-0.063	0.173	0.053	-0.058	1.000			
Export	-0.045	0.017	-0.812	-0.338	0.234	-0.062	1.000		
Distance	-0.191	-0.052	-0.095	-0.260	-0.155	0.016	0.069	1.000	
Colony	-0.181	0.037	-0.109	0.041	-0.126	-0.005	0.060	-0.190	1.000

Correlation matrix USA

Variable	SDG need	SDG merit	Population	GDP per capita	Freedom index	Trade	Export	Distance
SDG need	1.000							
SDG merit	0.095	1.000						
Population	0.095	-0.073	1.000					
GDP per capita	0.603	0.117	0.053	1.000				
Freedom index	0.096	-0.093	-0.008	-0.203	1.000			
Trade	0.130	-0.076	0.224	0.010	-0.039	1.000		
Export	-0.110	-0.006	-0.443	-0.276	0.071	-0.046	1.000	
Distance	-0.155	-0.056	-0.260	-0.006	0.192	-0.154	0.209	1.000