Norwegian University
of Life Sciences

Determinants of Aid Allocations on UNDP 16 Projects in Countries with Armed Conflict or Political Instability
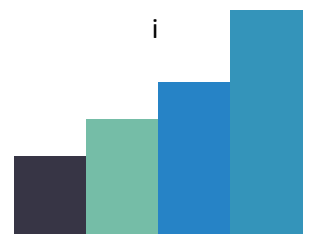
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Acknowledgement

Ås, 15 May 2022

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Polina Novikova

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Abstract

The United Nations (UN) is a multilateral organization that addresses issues that transcend national boundaries. The UN Membership approved in 2015 "The 2030 Agenda for Sustainable Development", which is built on 17 Sustainable Development Goals (SDGs) that serve as the guidelines to all countries - developed and developing - in a global partnership towards achieving a better world (UN, 2022).

The UN Development Program (UNDP) is one of the 15 UN agencies that focus on international development to achieve the SDGs. The thesis studies factors determining UNDP SDG 16 (Peace, Justice and Strong Institutions) aid allocations for projects in countries with armed conflict or political instability (UNDP, 2019b). The topic's relevance lies in the UNDP`s mission statement: "to eradicate poverty and reduce inequality. We help countries to develop policies, leadership skills, partnering abilities, institutional capabilities, and to build resilience to achieve the Sustainable Development Goals." Thus, the multilateral organization's transparency and criteria affecting the decision-making process behind the allocation of project funds is an important topic to research.

The objective is to determine the factors that affect aid allocations under SDG 16 related to projects in countries with armed conflict or political instability during 2016-20. The research targets aid allocations for projects for peaceful resolution in countries with armed conflict or political instability as a dependent variable relying on the indicators of the recipient country`s requirements based on GDP per capita, number of victims during the years of conflict, and democracy indexes, etc. A panel data set of 150 observations covering 2016-2020 on 30 recipient countries and ten donor countries was collected to build an econometric model (fixed-effects and random-effects models), together with partial qualitative analysis on the data-generating stage to define the factors affecting the UNDP project aid allocations to recipient countries under SDG 16.

The key findings of the thesis suggest, as expected, that there is insufficient understanding of the decision-making process in the UNDP allocation system. According

to findings, the poorer countries with the larger territory and smaller populations tend to be chosen to receive aid for SDG 16 projects from the UNDP. The results suggest that conflict-specific variables, such as civilian casualties and the size of the country affected by conflict or political instability are considered during the aid allocation decision-making process, which was to be expected based on the specifics of the projects analyzed. Moreover, there is evidence, through both qualitative and quantitative methods to suggest that US interest levels in the country in conflict (e.g., Afghanistan) have a major influence on aid allocation within UNDP SDG 16 projects. Nevertheless, there is no evidence in the data that suggest there is an influence of the amount of monetary contribution by the top 10 donor countries on the aid allocation process for SDG 16 projects.

Key words: UNDP, SDG 16, aid allocations, transparency, non-discrimination, recipient countries.
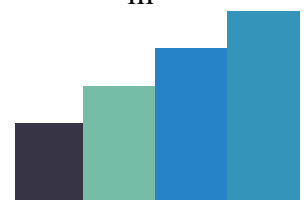
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Determinants of Aid Allocations on UNDP 16 Projects in Countries with Armed Conflict or Political Instability

Chapter 1. Introduction

In 2015, at the United Nations (UN) Sustainable Development Summit, member states adopted "The 2030 Agenda for Sustainable Development", representing a common path that the world should take to achieve peace and prosperity. This consists of the 17 Sustainable Development Goals (SDGs) that serve as the multilateral framework to pursue global cooperation to address poverty, inequality, and economic growth through strategies that promote social, economic, and environmental well-being. The SDGs were developed over decades through the efforts of various UN agencies and country representatives. In 2022, the 17 global goals covered 169 separate targets, or specific outcomes. To help meet these targets, there have been 3120 events arranged as conferences or forum and 5503 actions, i.e., initiatives that accelerate the SDG implementation by governments and non-state actors. To help disseminate information and findings, there have been 1318 UN publications (UN, 2022).

UN SDG 16 relates to Peace, Justice and Strong Institution. Its goal is to "promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels" (UNDP, 2015). This goal alone has 12 targets, among them is to fight corruption and bribery and foster peace by reducing violence, strengthening national institutions through capacity building, and reducing illicit financial and arms flows. There have been 19 events and 645 actions for SDG. The total amount of donor contribution to the SDG 16-related project since 2016 has amounted to $80 million (USD) and covers the projects on urban risk management, stabilization facilities, active labor market, anti-corruption for trust, dialogue facilitation, community, security, and access to justice for peace, country program transitions, covid response projects and many others, annually, in countries with armed conflict or political instability. Under this goal, the UN Development Program (UNDP) has allocated donations
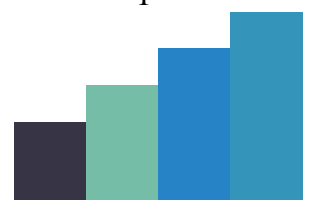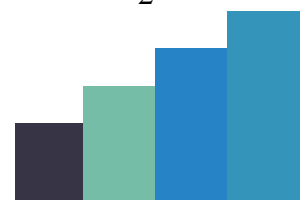
under the category of Governance, Peacebuilding, Crisis and Resilience category yearly since 2016.

In 2021, the global challenge from the Covid-19 pandemic made it imperative for the global community to focus on the SDGs. Additionally, the pandemic intensified the risk of children`s exploitation, human trafficking, and child labor due to economic distress and isolation, along with rising levels of bribery in low-income countries. Even though the UN reports progress with regards to reduction of the annual number of civilian deaths globally by 61% during 2015-2020, there were at least 176,095 civilian deaths recorded in 12 of the world's deadliest armed conflicts (UNSTATS, 2022).

Thus, it is crucial to avoid any biased treatment in the conflict-resolution project allocations to the affected counties and to follow the UNDP-established policy to not allow discrimination in aid allocation. The importance of impartiality and objective decision-making process cannot be overstated. Non-discrimination is a fundamental principle of international human rights law, as stated in Article 1 of the Universal Declaration of Human Rights. [1] It is rooted in the very core of the UN organization that all people are treated without discrimination based on nationality, religion, race, class, or political opinion. The aid must be allocated based on countries' needs under the SDG 16 rather than any self-interest of the donor countries. Inconsistency with non-discrimination in aid allocation or subjectivity towards recipient-country would be an unacceptable violation of the principles upon which the UN was founded.

The allocation of aid for projects within countries with armed conflict or political instability raises potential questions. For instance, both Ukraine and Afghanistan were entitled to the SDG 16-related projects aid allocations between 2016 and 2020. Ukraine is the biggest country in Europe by land, covering 603500 km^2 with a population of 45 million. Afghanistan, similarly, is a big country in Central Asia, and has a land area that covers 652230 km^2 with a population of 38 million. However, Ukraine received an average of 3.25% of total funds under SDG 16 UNDP projects, while Afghanistan received an average of 31.41% of funds during 2016-2020. The result might be explained by GNI levels,

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[1] https://web.archive.org/web/20210725220444/https://www.un.org/sites/un2.un.org/files/udhr.pdf

population, number of civilian casualties, political or democratic indicators as well as size of the country.

The Target for Resource Assignments from the Core (TRAC) system (i.e., the UNDP aid allocation system) covers three levels of aid allocation and seems to be overly complex but is based on the countries` income levels. The average GDP of Afghanistan in the 2016-2020 study period amounted to $18.77 billion, while Ukraine`s averaged $129.14 billion, almost seven times higher. Based entirely on the income logic, Ukraine should have received seven times less in SDG 16 funds for related projects. That was not the case. This raises the question on which criteria the budget is allocated. Are there political considerations behind the allocation of funds? Do donors earmark funds for countries under this SDG? How does the level of regional instability matter? Was what happened in Afghanistan more regionally destabilizing than in Ukraine? Where does the discrepancy in aid allocation come from?

This is a reason the topic of aid allocation within international organizations is a widely researched question. The effectiveness of aid is addressed by Clemens and Radelet (2004), Eichenauer (2016), Greene and Licht (2017), Reinsberg (2018). However, the question of the effectiveness of aid allocation is not brand new. Alesina and Dollar (2000), Burnside and Dollar (2000), Wood (2006), Hoeffler and Outram (2011), Kilby (2013), Carter (2014) attempt to outline the criteria for the beneficiary country's project being awarded monetary aid, by attempting to the model the distribution of aid among those countries. McGillivray (2003), Toyasaki and Wakolbinger (2014), Sun and Zhao (2020) aim to evaluate or explain the monetary allocation between countries in need and establish the proper amount that had to be allocated. Those studies provide evidence on how well donor countries have allocated monetary support. The results of those studies show that aid allocations and aid effectiveness are related, as aid flows affect the socio-economic indicators of recipient countries, as well as how aid allocation is affected by the socio-economic indicators of recipient countries. The field of aid allocation to the countries with armed conflict or political instability was also discussed by Panić (2008) and Berman et al. (2013), contributing to the debate on UN transparency and the risks of encouraging corruption.

1.1 Objectives and research hypotheses

The main objective in this thesis is to determine whether aid allocations for UNDP SDG 16 projects in countries with armed conflict or political instability are made in accordance with the UNDP funding policy and consistent with the principle of non-discrimination considering recipient countries` needs. For example, in recent years national security interests have changed allocations to some recipient countries. Another factor affecting allocations is the focus on results of the projects and effectiveness. Donors take the performance of multilateral agencies into account and are reducing or discontinuing official development aid (ODA) to some agencies. In some cases, government-to-government programs in countries with a poor record of respecting human rights and democracy have also been reduced or phased out. Donors also try to maximize the use of ODA for development by reducing the costs of administering projects and programs, but this is still a challenge for ensuring aid funds are allocated according to the need without discrimination (OECD, 2009).

This thesis attempts to build an econometric model of UNDP aid allocations under SDG 16 to analyze the main factors affecting the aid allocation. A panel data set is used for econometric analysis using OLS regression, Tobit, random-effects, and fixed-effects regression models of annual SDG 16 aid project allocations between 2016-20. Project allocation is the dependent variable and independent variables include economic, social, and political factors that determine UN project aid allocations. The methodology is aimed to answer two research questions:

1. How is aid under SDG 16 allocated across recipient countries? What are the main determinants affecting the amount of aid that is allocated?

2. Is there any evidence of discrimination or political interests influencing the allocation of aid under UNDP SDG 16 projects between 2016 and 2020?

The work contributes to the literature by assessing the described UNDP`s aid allocation system to verify non-discrimination based on UNDP funding system (TRAC),

identifying the income of the recipient country and the social parameters describing political situation in countries with armed conflict or political instability.

The hypothesis of this thesis are that there are specific selection criteria for the monetary aid allocations to beneficiary countries receiving UNDP projects fundings under SDG 16; the project allocation for each country is or is not affected by the territorial size and the population, including percentage of civilian casualties in total number of population; the project allocations for each country are or are not affected by the level of US political interest; and, there are no effects caused by the top ten donor countries being the top investors of the UNDP projects. All allocations for the UNDP projects under SDG 16 are analyzed. The projects include fighting violence, homicides, human trafficking, bribery and building justice institutions in the affected countries. For these purposes annual data on monetary contributions are collected by country for the 2016-20 period from the UNDP website. A panel data set is created for the top 10 donor countries to 30 recipients with ongoing conflicts or political instabilities. The main indicators of the recipient countries` needs for financial support are assessed by the economic, social-economic, and political variables.

1.2 Organization of the thesis

Chapter 2 provides background on the SDG 16 financing and allocation of donor contributions and the transparency of the peace projects. The theory and review the existing literature on the aid allocation is discussed in chapter 3. In chapter 4, the data panel set is constructed, and the model is specified. The variables selection process and econometric analyses (Tobit, fixed effects, and random effects models on panel data to define existing relationships) is also explained. Chapter 5 reports the results from the model developed and discusses the insights learned from the analysis. The conclusions drawn are presented in the chapter 6, as well as pointing out the limitations of the analyses and offers suggestions for future research.

Chapter 2. UNDP peace projects under SDG 16

2.1 Sustainable Development Goals from the UN 2030 Agenda

2.1.1 17 Sustainable Development Goals

The UN SDGs, also referred to as the Global Goals, were established in 2015 as a list of targets and actions that should be implemented to end poverty, save the planet, and ensure the sustainable peaceful development for all by 2030. There are in total 17 SDG which state that one action in a specific area will influence the developments in all other areas, so that the implementation of project activities must balance all spheres of human life such as social, economic, and environmental development (UNDP, 2015). In table 1, the 17 SDGs are listed and specified by goal.

Table 1 – The 17 UN SDGs

Goal 1 – End poverty in all its forms everywhere.	Goal 2 – End hunger, achieve good security and improved nutrition and promote sustainable agriculture.
Goal 3 – Ensure healthy lives and promote well-being for all at all ages.	Goal 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
Goal 5 – Achieve gender equality and empower all women and girls.	Goal 6 – Ensure availability and sustainable management of water and sanitation for all.
Goal 7 – Ensure access to affordable, reliable, sustainable, and modern energy for all.	Goal 8 – Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
Goal 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	Goal 10 – Reduce inequality within and among countries.
Goal 11 – Make cities and human settlements inclusive, safe, resilient, and sustainable.	Goal 12 – Ensure sustainable consumption and production patterns.
Goal 13 – Take urgent action to combat climate change and its impacts.	Goal 14 – Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.
Goal 15 – Protect restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.	Goal 16 – Promote peaceful and inclusive societies for sustainable development, provide access to justice and inclusive institutions at all levels.
Goal 17 – Strengthen the means of implementation and revitalize the global partnership for sustainable development.	

Source: UNDP, 2015.
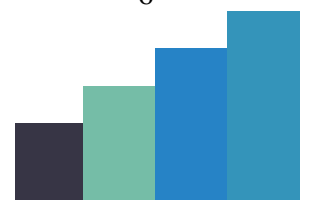
Each of the SDGs aim to address various aspects of human rights ensuring that no one is left behind. Thus, it is important to keep the allocation of aid between the projects transparent and clear for any country that wants to either contribute through donations or receive assistance through allocations from the UNDP agency.

2.1.2 Sustainable Development Goal 16 (SDG 16)

The Secretary-General, Antonio Guterres, in his statement to the UN Security Council in January 2017 stressed that the UN must increase the preventive measures against war and focus on peace sustainment, as prevention is the top priority of the agenda. The number of wars more than tripled since 2010 (according to the definition of the Heidelberg Institute for International Conflict Research or HIIK) and it resulted in 65 million people being forcibly displaced, the highest it has been since World War 2 (Coning, 2018). The number of people in need of humanitarian assistance reached almost 100 million by 2020 due to the significant level of violence around the world, in addition to the Covid-19 crisis.

During the 1990s, the UNDP became more active in assisting people in war-torn nations. "Clearing arable lands from mines, re-creating employment and other income-generating opportunities, and enhancing the capacity of governments and communities to plan, coordinate, and implement resettlement and rehabilitation schemes" are just some of the ways this aid has been provided (UNDP, 2000).

In 2022 UNDP reported that there were 12 global targets and 23 associated indicators of SDG 16. UNDP is the responsible UN agency for five sub-headings under the SDG 16. These include:

SDG 16.6.2: Proportion of the population satisfied with their last experience of public services, specifically a) healthcare services, b) education services and c) government services.

SDG 16.3.3: Proportion of the population who have experienced a dispute in the past two years and who accessed a formal or informal dispute resolution mechanism, by type of mechanism.
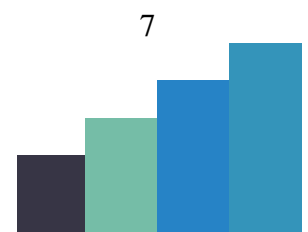
SDG 16.7.1 (b): Proportions of positions (by sex, age, persons with disabilities and population groups) in the public service (national and local), compared to national distributions.

SDG 16.7.1 (c): Proportions of positions (by sex, age, persons with disabilities and population groups) in the judiciary (national and local), compared to national distributions.

SDG 16.7.2: Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group.[2]

The UNDP identifies SDG 16 implementation by the individual targets concerning legal identity, homicides, violence against children, trafficking in persons, prisoners held in detention, freedom of information, human rights defenders, journalists and trade unionists, national institutions (UNDP, 2019b). The countries affected by conflict or the countries with political instability have issues in several or all above-mentioned areas. Thus, SDG 16-related projects target countries in the most vulnerable state wherever they may be.

Graph 1 reports the total UNDP donor contributions to the regular sources reported for all SDGs related projects since 2015. "Regular, or core, resources are funds provided to UNDP that are not earmarked for a specific project or theme. They enable UNDP to have the flexibility to eradicate poverty and inequality. Core resources also mean we can respond to crises and disasters as they happen".[3] The total number of UN-member contributions fluctuates since the SDGs were implemented. As stated in the UNDP Funding Compendium 2020: "In 2020, UNDP received $696 million in core contributions, a 13% increase from 2019, of which, 50% came from multi-year commitments. This included a record 126% increase from Germany, with increases also from Denmark, Japan, US, Finland, Czech Republic, and Israel, Antigua and Barbuda, Cuba, Iran, and Latvia returned as contributors or began contributing to UNDP's core resources".[4]

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[2] https://www1.undp.org/content/oslo-governance-centre/en/home/our-focus/SDG 16/undp-support-to-reporting-on-the-global-SDG 16-indicators.html

[3] .https://feature.undp.org/working-together-for-a-new-future/

[4] UNDP Funding Compendium 2020 .pdf
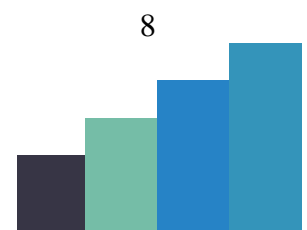
Graph 1 – Total amount of contributions from donor countries to regular resources, all UNDP projects
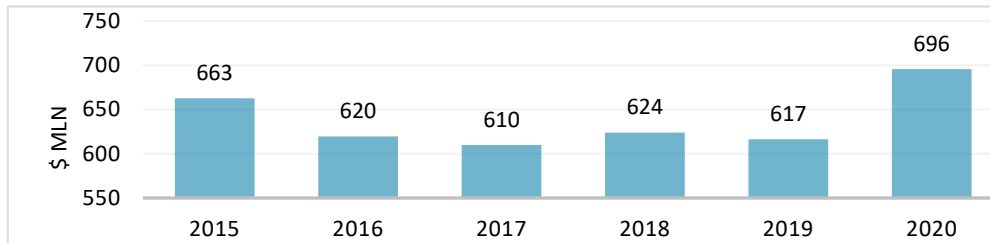
Source: own calculations constructed from data and information on UNDP websites.

The variation is explained by its dependence on the individual decisions of the donor-countries and yearly needs to respond to emergency situations, such as political crisis and humanitarian disasters. The numbers from 2015 and 2020 vary from the average over 2016 - 2019 due to the global refugee crisis in 2015 and the emergency response to Covid-19 pandemic in 2020.

The SDG 16 has been the top UNDP priority since the establishment of the SDGs. Graph 2 depicts the average share of allocations under the SDGs between 2016 and 2020. SDG 16 accounts for 28% of the total, while SDG 1 (No poverty) took 26% of the allocated funds.

Graph 2 – Average share UNDP allocations by SDGs during 2016 -2020
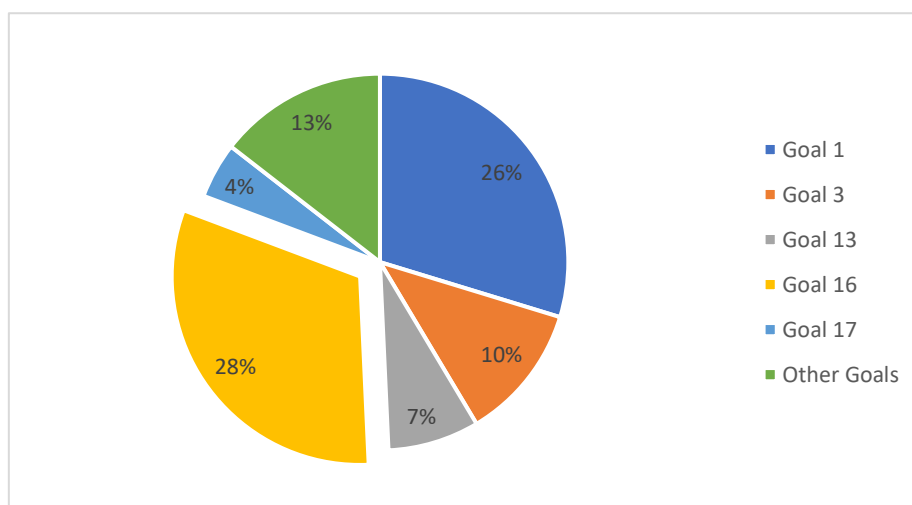
Source: Constructed from data and information on UNDP Transparency portal (UNDP, 2022).

Graph 3 shows the annual fundings allocated to SDG 16-related projects during 2016 -2020, the standard deviation is 5%, suggesting that there are fluctuations in the approach to allocating funds under SDG projects. These could be explained by the increasing political instability around the world and raise in number of ongoing conflicts.

Graph 3 - Total UNDP contributions under SDG 16 projects
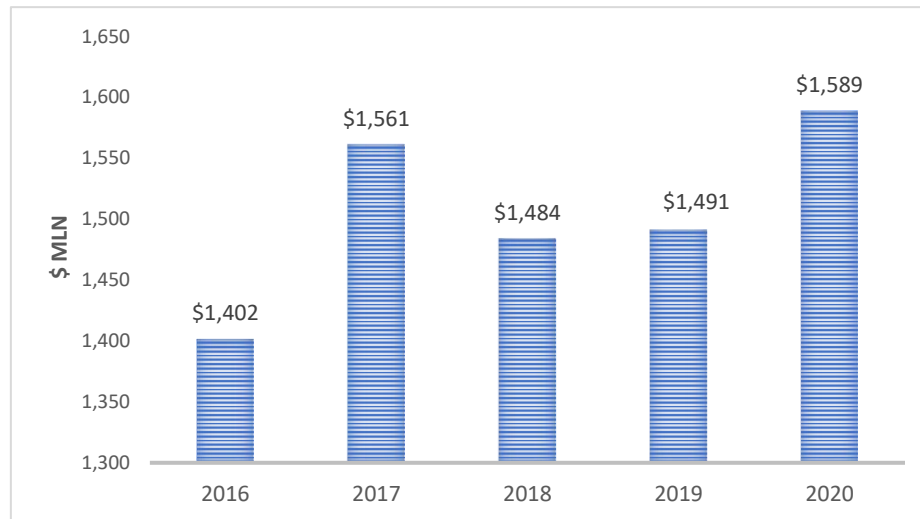
Source: own calculations constructed from data and information on UNDP websites.

The overview of allocations is presented in the table 2. There can be major differences in the annual amounts of funds allocated under SDG 16-related projects among the recipient countries. For instance, Bangladesh received in 2019 and 2020 seven times the amount it received in 2016, while Central African Republic`s allocations fluctuated throughout 2016-2019, scoring record amount of $60,2 million in 2020. The amount of funds allocated was not based on economic needs in this particular SDG 16, as fluctuation in numbers does not correspond to fluctuations in GDP. The fluctuations of political stability index also do not fully explain the discrepancies in allocations, thus, we cannot suggest that the allocations completely rely on the conflict-based criteria. So, finding factors affecting the allocation of aid under UNDP SDG 16 is the goal of this thesis.

Table 2 – UNDP funds allocated under SDG 16, selected countries

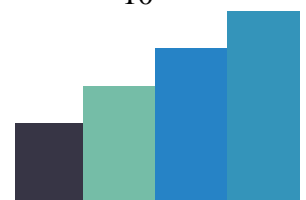| Country /$ mln	2016	2017	2018	2019	2020
Afghanistan	503.7	505.5	488.6	457.3	400.2
Argentina	24.6	29.7	53.0	39.4	22.2
Bangladesh	2.7	4.4	12.3	15.2	15.5
Brazil	6.1	6.4	6.8	13.3	15.8
Cameroon, Republic of	1.4	3.1	3.5	4.7	9.8
Central African Republic	46.2	34.0	16.9	17.9	60.2
Chad	4.2	3.2	3.1	3.4	5.5
Colombia	29.4	42.9	54.9	44.9	41.1
Congo, Dem. Rep.	25.6	51.2	11.3	12.6	16.2
Egypt	1.5	2.0	8.2	12.2	10.1
Ethiopia	1.4	3.0	9.0	22.2	29.3
Georgia	9.5	12.7	10.3	8.6	6.2
Guinea	8.7	4.1	6.0	6.2	6.1
Haiti	23.5	13.4	4.6	7.5	7.4
Iraq	95.8	189.9	14.9	10.4	9.6
Lebanon	49.3	43.4	22.0	23.7	26.0
Libya	13.2	20.2	13.3	7.2	10.9
Mexico	1.0	1.3	3.2	1.4	1.6
Myanmar	8.7	10.2	23.3	22.6	24.6
Nigeria	9.2	9.8	27.7	22.2	19.2
Pakistan	8.0	8.7	18.0	15.6	12.5
Philippines	2.7	4.1	9.9	12.3	10.4
Palestine	26.9	27.5	5.2	9.8	12.5
Peru	21.1	8.0	5.4	15.1	21.7
Somalia	39.4	26.6	39.9	45.5	45.2
South Sudan	14.5	14.0	14.6	16.3	17.4
Sudan	56.5	46.5	51.8	54.4	72.4
Turkey	3.6	5.3	11.2	11.7	4.3
Ukraine	19.4	22.8	72.7	65.1	65.6
Yemen	2.1	1.3	4.2	8.0	14.2
Total	**1401.7**	**1561.4**	**1484.3**	**1491.2**	**1589.1**

Source: Constructed from data and information on UNDP Transparency portal (UNDP, 2022).
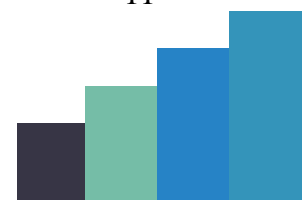
2.2 UNDP methodology of aid allocation

UNDP is the third most transparent organization in the world according to the aid transparency index in 2020, maintaining stable transparency levels since 2013. However, the analysis for this index is done by organizational planning and commitments (including allocation policy), where Publish What You Fund (the global campaign for aid transparency) focuses on the accessibility of information published (PublishWhatYouFund, 2020). The aid transparency index is the independent measure of transparency of aid among the biggest development agencies in the world. The criteria measured by this index include assessment of five areas in organization: 1 - organizational planning and commitments; 2 - finance and budgets; 3 - projects attributes; 4 - joining-up development data; and 5 - performance. Each of the five areas consist of the specific criteria measured by the amount of information the organization openly shares with the public (PublishWhatYouFund, 2020).

The Organization for Economic Co-operation and Development (OECD) also evaluates aid allocations. The OECD monitors data on official development assistance (ODA) defined by the OECD Development Assistance Committee (DAC) as governmental aid that targets economic development and welfare of developing countries.[5] A report on aid allocation and OECD Aid Allocation Criteria Study in 2005 shows the mechanisms behind the aid allocation. The OECD studied aid allocations targeting the reduction of poverty goal. The report describes the numerous factors affecting donors` decisions when determining their aid allocations to countries: 1 – allocations based on demonstrated performance, governance criteria and commitment to economic policies; and 2 – allocations based on an intergovernmental agreement between the European Union and the ACP countries, based on a formula and subject to explicit eligibility criteria. The second method of aid allocation described by OECD is based on the formula with a focus on poverty through GNI per capita, population number, debt levels, political governance, economic vulnerability, and prospects of reaching the millennial development goals. The

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[5] Official Development Assistance (ODA) - OECD
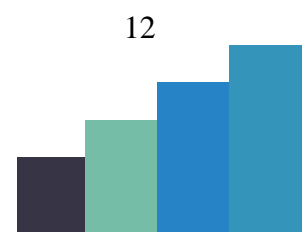
report is based on a literature review, analyses of the policies and practices of the main bilateral agencies and analyses of data in trends of aid allocations, (OECD, 2005).

UNDP (2014, 2019a) provide a glimpse into the financing system of UNDP projects; however, they do not explain in detail the decision-making process on aid allocations. According to the UNDP`s methodology documentation, there is a "Target for Resource Assignments from the Core (TRAC) system" for aid allocation (UNDP, 2013). The UNDP defines the methodology of aid allocation based on the TRAC system, which is a three-tiered system, where TRAC-1 and TRAC-2 funds are distributed from a combined pool and TRAC-3 funds are shared from a separate pool. The annual level of regular available resources targeted for allocating of an individual program region during the programming term is referred to as 'TRAC-1.' These funds are distributed centrally based on TRAC-1 eligibility and other Executive Board-approved criteria. TRAC-2 was created to give the Administrator more freedom in allocating regular program resources to high-impact, high-leverage, and high-quality program activities, as well as to assist UNDP in responding effectively to varying national requirements. TRAC-3 was created to allow UNDP to respond swiftly and effectively to the development requirements of countries affected by conflicts and natural catastrophes (UNDP, 2013).

The focus of the thesis is assessment of TRAC-1 distribution criteria, as it covers the donor contributions distribution based on criteria. The UNDP guidelines define that TRAC-1 distribution methodology is guided by three basic principles:

1. A focus on low-income and least developed countries;
2. Progressivity in favor of lower-income countries within the categories of low-income and middle-income countries;
3. The gradual transition to net contributor country (NCC) status for countries with higher GNI levels (UNDP, 2013).

In addition, the following factors are considered while deciding on a fair allocation of aid:

   o The consistent use of GNI per capita and population data as the main criteria on which the methodology is based has been influenced by the transparency, general acceptability, reliability,

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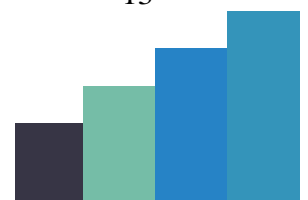
consistency, and availability of the data used in the distribution model.

- o The universal nature of UNDP activities is reflected in special arrangements for higher-income countries. They can continue to participate in UNDP programs as net contributor countries once they reach a certain graduating level.

- o The floor/predictability principle recognizes that a country's development is a continuous process, making it desirable to avoid abrupt reductions in UNDP cooperation from one program period to the next. The current methodology ensures that a country's earmarking will be at least a certain percentage of its previous period's TRAC-1 earmarking, subject to certain conditions.

- o The need for at least a minimum amount of working capital to provide effective, timely support to program countries in their development efforts in UNDP areas of focus and to leverage additional resources in support of the Millennium Development Goals. This is reflected in the minimum TRAC-1 allocation clause, which guarantees a minimum TRAC 1 allocation to each non-NCC programming nation (UNDP, 2013).

2.3. SDGs donor allocations

2.3.1 Top donors under SDG 16

The aid allocation to the UNDP SDG 16 projects comes from the UN-participating states and varies yearly. Alesina & Dollar (2000) investigates the principles of the aid distribution. The study established that most donors do not pay attention to the well-being of the recipient countries, while the decision-making process is more driven by other political factors such as the relationship between colonies and trade volumes (Alesina & Dollar, 2000).

The funding of UNDP is complex and consists of regular "core" resources and other resources (governmental financing, thematic funds, third party cost sharing, UN pooled funds, vertical funds, reimbursable support services). Resources of UNDP by funding channel during 2016-2020 are presented in Graph 4. The graph presents seven types of UNDP funds, showing that regular resources are on average 12,6 % of the total funds of UNDP, thus the numbers used in this study have limitations of reflecting the full picture. The biggest share of resources is provided by the third-party cost sharing,
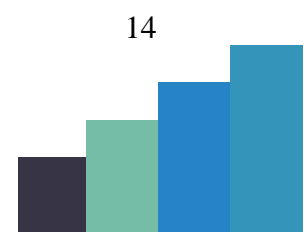
followed by government financing and vertical funds. UNDP regular resources represent the 4th largest category of UNDP funding resources.

Graph 4 – UNDP resources by funding channel, 2016 -2020

Source: From data of UNDP Funding Compendium 2020 [4]

"UNDP relies entirely on voluntary contributions from UN Member States, multilateral organizations, private sector, and other sources, in the form of unrestricted

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regular resources (core), and contributions earmarked for a specific theme, program or project".[6] In Graph 5 the value of the contributions of the 10 top donor countries to the regular "core" resources are presented. This study only focuses on the UNDP contributions to the regular resources due to the data availab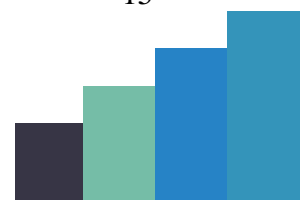ility. The UK, Norway, USA, Japan, and Sweden are the top-5 contributors to the regular resources based on UNDP Funding Reports. Total average percentage of contributions share by these ten countries in the UNDP regular resources budget for all SDGs amounts to 83%, thus makes this subset of countries appropriate to analyze. The donations by country are stable. However, Germany decided to double its funding to the UNDP in 2020 due to the Covid-19 response and to support Palestinian communities.[7] The minor fluctuations on donations by the country can be explained by the socio-political and economic situation within the donor country.

Graph 5 – Top 10 donor country contributions to the regular resources in $ mln (2016-2020)
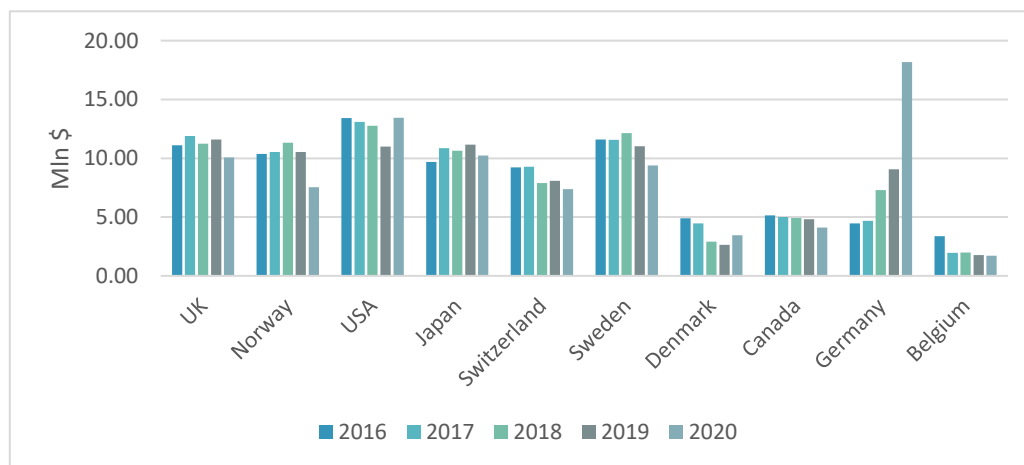
Source: Constructed from data and information from UNDP Funding windows (UNDP, 2020).

Graph 6 represents the share of each donor country in the total amount of contributions between 2016-2020. UK contributions, on average, amount to 10% of the total donations, while Belgium's` amount only to 2%. USA donations amount to 12% of

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[6] https://www.undp.org/funding

[7] Germany allocates EUR17 mln through UNDP to respond to COVID-19 and support Palestinian communities - PNN
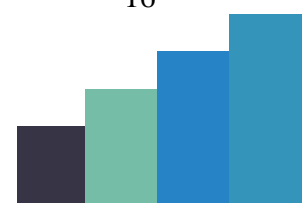
the total, while Sweden and UK contribute on average 11% of the total, followed by Norway and Japan at 10% and Germany at 8%. Among the 10 donor countries listed in the Graph 6 Ireland, Australia and Finland are the smallest contributors with 1% of the share.

Graph 6 – Average share of donor contribution of total core resources, 2016-2020
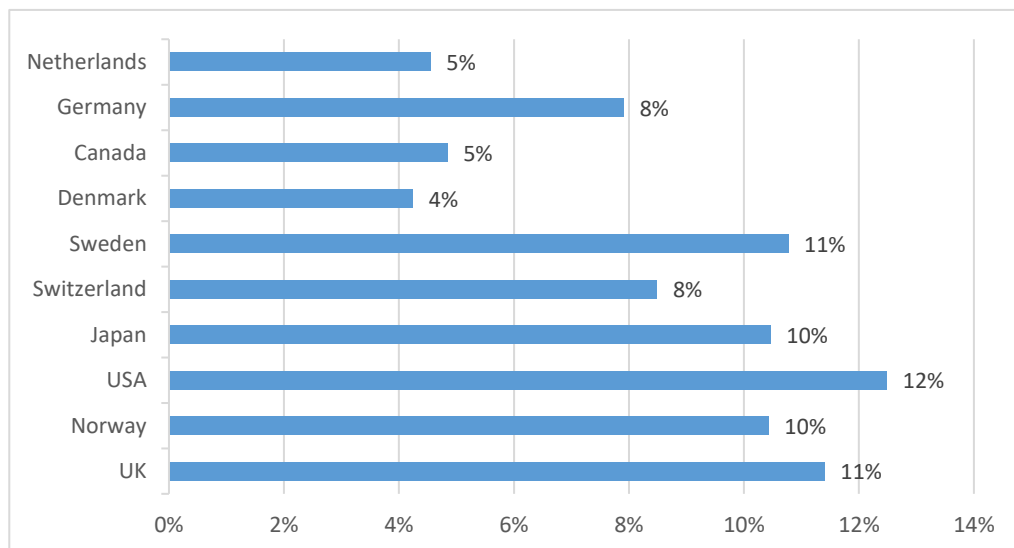
Source: Constructed from data and information from UNDP Funding windows (UNDP, 2020).

2.3.2 Recipients of allocations under SDG 16 projects

In 2021, Wikipedia reports that there were about 40 active wars and conflicts with over 100 combat casualties. This thesis focuses on 30 countries, which fall under the category of countries with armed conflict or political instability and have projects under SDG 16 funded by UNDP. These 30 countries comprise 70% of the allocated funds in the analyzed period. Graph 7 presents the fluctuation in the average share of SDG 16 UNDP funds allocated during 2016 – 2020 for the top 30 recipient countries. Afghanistan is the biggest recipient accounting for 31%, while Mexico, by contrast, was provided the least, averaging about one tenth of 1%.

Graph 7 – Share of UNDP SDG 16 allocations during 2016-2020
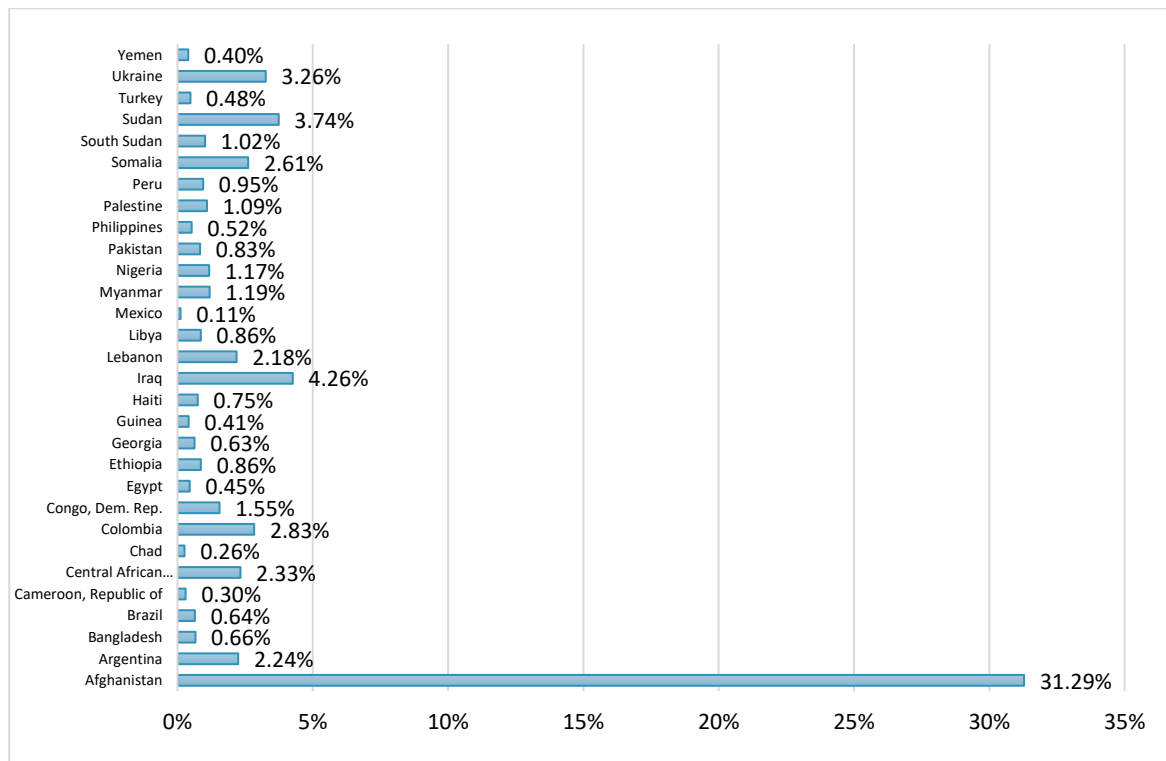
To illustrate how allocations can vary by country, Graph 8 shows the standard deviations of the percentage of fund allocations on SDG 16 projects. The highest deviation in allocations was recorded during 2016 - 2020 in Iraq at 5.14%, followed by Afghanistan and Ukraine, 3.97% and 1.69% respectively. It raises the questions on why there is such a fluctuation within the countries, while Afghanistan receives the biggest aid allocation for peace resolution throughout the years, but the average amount donated to Chad or Cameroon does not exceed 0.30%. While most of the countries affected by the peace resolution projects, on average, get between 0.5-1% of the total funding. There could be various reasons why the deviation occurred. For instance, the changes in geo-political situation, the GDP variations, or the intensity of the conflict. This study is an attempt to answer why the discrepancy happens and what factors affect the allocation of funds of UNDP under SDG 16 projects.
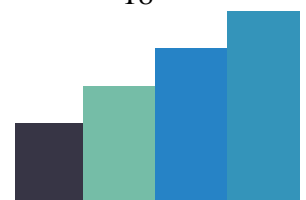
Graph 8 – Standard deviation in UNDP SDG 16 allocations (2016 -2020)
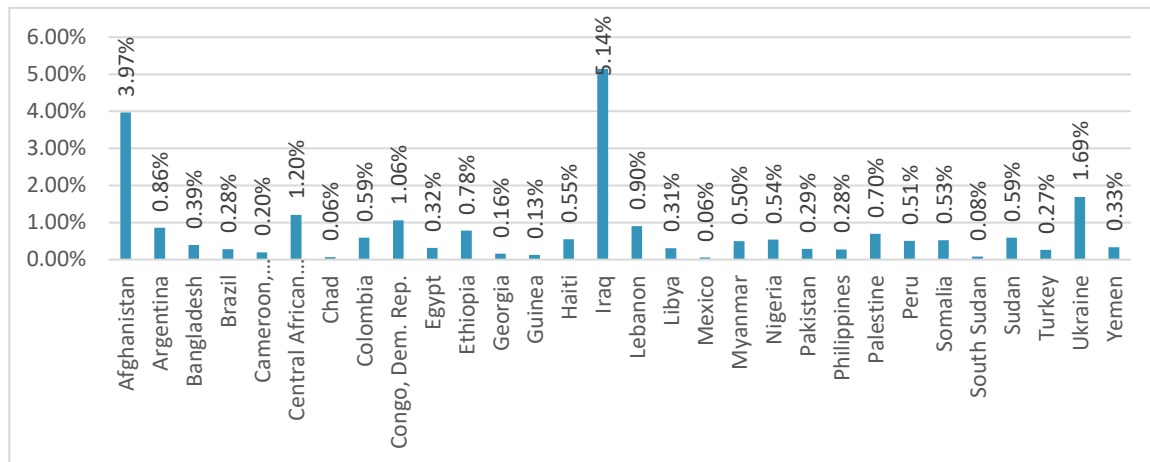
Source: Constructed from data and information on UNDP Transparency portal (UNDP, 2022).

The number of countries that are in a vulnerable state of conflict or political instability differs according to the source of information one uses to define armed conflict. The discrepancy appears due to the difference in defining the armed conflict or political instability. This study uses the UNDP armed conflict definition as a reference: "An armed conflict is a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year."[8] The UNDP has funded, on average,140 different regional projects per year under SDG 16 targets. This number does not mean that there are 140 countries in the state of war, however, it covers the projects in the countries with political instability and injustice.

The recipient countries are classified by two categories: those involved into armed conflict and those in which there is political instability. Armed conflict describes all countries affected by the most hostile conflict (including weapons and civilian casualties). Political instability covers uprising, recovering after the armed conflict and countries in the state of ceasefire without active armed clashes, countries with cases of religious/national/social/racial/political persecution. There are 30 recipient countries classified according to their case related to SDG projects as presented in the table 3.

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[8] https://www.undp.org/content/dam/norway/img/SDG 16-oslo-2016/Erik%20Melander.pdf

Table 3 – Classification of selected countries by the type of conflict

Type of conflict	Number of conflicts	Countries
Armed Conflict	18	Afghanistan; Central African Republic; Chad; Colombia; Egypt; Ethiopia; Georgia; Iraq; Lebanon; Myanmar; Nigeria; Pakistan; Palestine; Somalia; South Sudan; Sudan; Ukraine; Yemen
Political Instability	12	Argentina; Bangladesh; Brazil; Cameroon; Congo, Dem. Rep.; Guinea; Haiti; Libya; Mexico; Philippines; Peru; Turkey

Source: Constructed from data and information from Global Conflict Tracker and Google.

The fluctuation of the yearly share of the total UNDP SDG 16 projects funding is presented in the graph 8. The share has decreased from 2016 to 2020, which might be an indication that hostilities within the selected countries decreased, or that the socio-economic situations improved.

Graph 8 – Share of funds allocated to 30 selected countries under SDG 16 projects
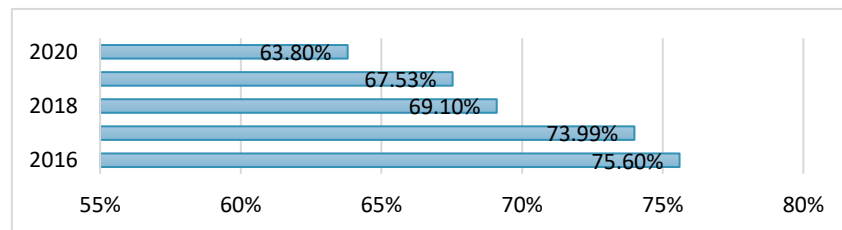
Source: Constructed from data and information on UNDP Transparency portal (UNDP, 2022).

The selected countries differ by the selected social, economic, and geo-political criteria identified for analysis, thus, represent the unbiased selection of the dependent variables for the panel data regression analysis. Table 4 presents some indicators for socio-economic criteria among the top 30 recipient countries. Brazil and Mexico have the highest GDP, while Central African Republic and Somalia have the lowest GDP. The highest density of the population is reported in Pakistan, Brazil and Nigeria, while the countries with the smallest population within the selection are Philippines, Central African Republic and Georgia. The highest life expectancy among the selection is represented by Lebanon and Colombia, while the shortest life expectancy is in Chad and Central African Republic. This indicator shows mortality and quality of life, thus, is a crucial indicator in the peace projects aid allocation. With regards to the size of the country, the biggest among the selected is Brazil, which is four times bigger than the second largest county in
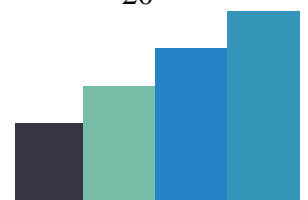
selection – Democratic Republic of Congo. The smallest countries in the group are

Palestine and Lebanon.

Table 4 – Selected socio-economic indicators of countries (2016 -2020)

Country	GNI ($bln)	Population (mln)	Life expectancy (years)	Land mass, sq. km	GNI Per Capita ($)
Afghanistan	18.77	37.16	64.30	652230	507.1
Argentina	513.44	44.49	76.59	2780400	6146.8
Bangladesh	274.16	161.35	72.18	147570	1651.0
Brazil	1819.74	209.42	75.66	8515767	8696.9
Cameroon	38.07	25.23	58.71	475442	1272.1
Central African R.	2.14	4.68	52.86	622984	472.0
Chad	10.70	15.49	53.83	1284000	544.6
Colombia	304.76	49.59	77.18	1141748	6202.0
Congo, Dem. Rep.	44.28	84.12	60.19	2344858	461.2
Egypt	297.24	98.41	71.74	1002450	2747.0
Ethiopia	88.78	109.25	66.03	1104300	717.0
Georgia	16.46	3.72	73.65	69700	4308.0
Guinea	11.99	12.42	61.26	245857	886.0
Haiti	14.95	11.12	63.77	27750	1364.0
Iraq	196.61	38.43	70.37	438317	4213.7
Lebanon	48.74	6.81	78.85	10452	5578.2
Libya	38.84	6.68	72.63	1759540	5051.2
Mexico	1160.63	126.16	74.98	1964375	7576.1
Myanmar	67.49	53.72	66.70	676578	1280.3
Nigeria	411.60	195.96	54.14	923768	1771.9
Pakistan	287.89	212.24	67.02	881912	1287.3
Philippines	16.10	4.58	73.82	6220	4000.0
Palestine	346.45	106.64	71.02	342353	3227.8
Peru	211.19	31.97	76.60	1285216	6292.0
Somalia	4.67	15.02	56.89	637657	310.0
South Sudan	0.00	11.00	57.47	619745	296.3
Sudan	32.47	41.82	64.98	1886068	823.3
Turkey	797.62	82.21	77.29	783562	8416.0
Ukraine	129.14	44.60	71.70	603500	2805.8
Yemen	15.95	28.50	66.08	527968	829.9

Source: Constructed from data and information from World Bank Database, Wikipedia, World meter, Global

Conflict Tracker, and Google.

The example of Afghanistan being an outlier based on qualitative analyses of aid

allocation is not fully explained by GDP, income per capita, population, life expectancy or
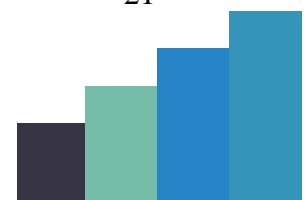
size of the country. The number of casualties reported in the period analyzed partially explains it, as it was among the most hostile conflicts during 2016-2020 according to Peace Research Institute in Oslo (PRIO).[9] But, another parameter that must be taken into consideration is the level of US interest reported by the Global Conflict Tracker (GCT). The Center for Preventive Action (CPA) maintains the GCT to assist policymakers in developing timely and effective policies to avoid and minimize armed conflict across the world, particularly in areas where U.S. interests are at risk. CPA achieves this through procuring in-depth research, hosting expert meetings, and engaging with government officials, international organizations, civil society organizations, companies, and the media. The variable represents the US government`s level of interest in the conflict of country: 0 – none; 1– limited; 2 – significant; and 3 – critical. The overall distribution of the US interest variable among selected countries is presented in Graph 9.

Graph 9 - Map of levels of US interest among selected recipient countries
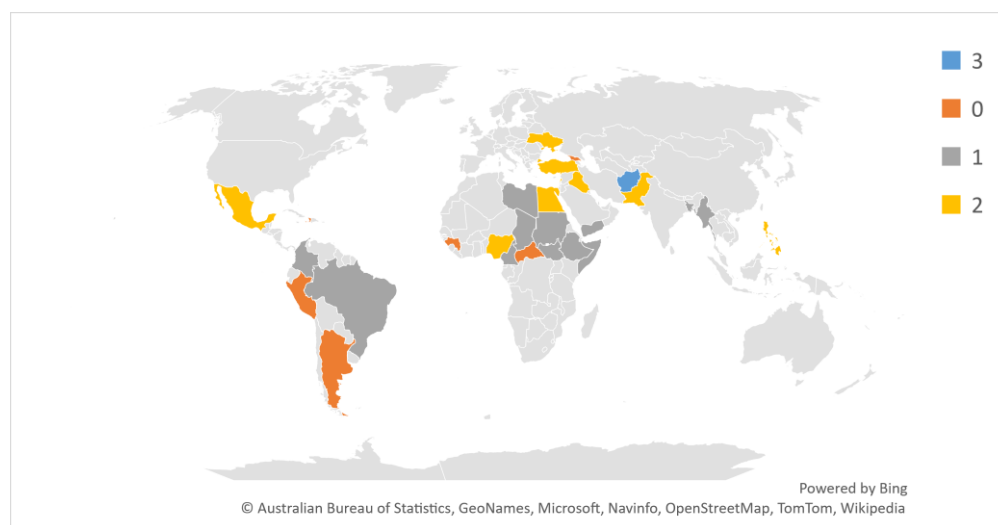
The only country with a critical level of US interest in Afghanistan, while other countries have a lesser level of interest and receive less aid from UNDP. Thus, further quantitative analysis is required to identify determinants of aid allocations on UNDP 16 projects in countries with armed conflict or political instability.

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[9]https://reliefweb.int/sites/reliefweb.int/files/resources/Palik%2C%20Rustad%2C%20Methi%20-%20Conflict%20Trends%20A%20Global%20Overview%201946-2019%2C%20PRIO%20Paper%202020.pdf
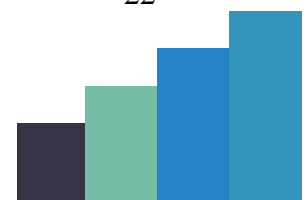
Chapter 3. Theory and literature review

This chapter identifies the impacts of UNDP peace projects and recent evaluation reports. The reports identify the crucial importance of the projects and the need of change in the UN system to sustain peace due to the over-whelming impacts on the international system caused by the human and economic costs of conflict-prevention projects, (Coning, 2018).

3.1 Effectiveness of aid and importance of transparency

3.1.1 Definition and types of foreign aid

Foreign aid is defined as "the international transfer of capital, goods, or services from a country or international organization for the benefit of the recipient country or its population. Aid can be economic, military, or emergency humanitarian".[10] There are two main types of foreign aid: Official Development Finance (ODF) and Official Development Assistance (ODA). ODA is sometimes used as Official Aid (OA). ODA and OA cover grants and concessional loans that have at least a 25% grant component (World Bank, 1998, p. 6). Both ODA and OA are allocated from the official sources and are distributed principally for promoting economic development and welfare of developing countries (OECD, 2009, p. 50).

Foreign aid can be divided into two groups, the two-sided (bilateral) aid and many-sided (multilateral) aid. Bilateral aid is given directly from the donor government to a recipient one. The multilateral aid is distributed by the international organization receiving contributions from the donor countries. International organizations that utilize multilateral aid include the World Bank (WB) and UNDP.[11]

Most countries around the world are engaged in the development of foreign aid either as beneficiary, or donor, or often both. States use foreign resources as tools to drive foreign policy. Aid can be granted to create economic activity or to strengthen the regime

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[10] https://www.academia.edu/38093888/FOREIGN_AID_Definition_Source_Arguments_of_Foreign_Aid
[11] https://www.tandfonline.com/doi/pdf/10.1080/23311886.2019.1625741
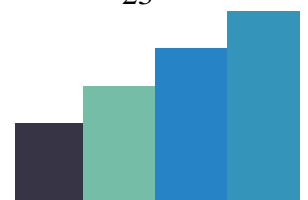
against hostile or ideological barriers. Alternatively, they may offer support to encourage and reward friendly or courteous guidance.[12] However, the purposes of foreign aid are diverse and not only targeting recipient needs, but also taking into consideration donor country`s incentives.

Donor countries strategic commercial interests are the driving force behind many aid programs. Many countries use bilateral and multilateral aid as incentives as well as effective deterrents against the threat of aid cuts. Both granting or denying foreign aid can be effective engineering tools to correct the behavior of a recipient country.[13] Thus, it is an important consideration to monitor the fairness of bilateral aid allocation.

The OECD is one of the agencies that monitor, evaluates, and provides guidelines for foreign aid management. According to the OECD, member countries contributed a record $161.2 billion in international aid in 2020.[14] The United States is the most generous, providing $35.5 billion in foreign aid in 2020. The UN calls for developed countries with high GNI to spend at least 0,7% of their GNI on international aid.[15]

3.1.2 The theoretical debate on aid

Many researchers as Alesina and Dollar (2000), Burnside and Dollar (2000), Carter (2014), Clemens and Radelet (2004), Eichenauer (2016), Greene and Licht (2017), Hoeffler and Outram (2011), Kilby (2013), McGillivray (2003), Reinsberg (2018), Sun and Zhao (2020), Toyasaki and Wakolbinger (2014), Wood (2006) have studied aid allocation and its effectiveness, arguing that aid should target the countries that meet certain criteria. For instance, it is established that "the quality of aid is endogenous to the incentive system that prevails in the aid agency and the capacity and accountability of the recipient country" (Wane, 2004). Alesina & Dollar (2000) found that the aid is more effective in good political environments, with stable economic situations and favorable democracy indicators.

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[12] https://wwnorton.com/college/polisci/american-government12/brief/ch/14/ebook.aspx
[13] Foreign Aid as Foreign Policy Tool | Oxford Research Encyclopedia of Politics
[14] https://www.oecd.org/dac/financing-sustainable-development/development-finance-data/ODA-2020-detailed-summary.pdf
[15] ODA-2019-detailed-summary.pdf (oecd.org)
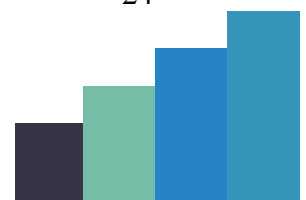
The level to which foreign aid can be a contributing factor in the economic development of low-income countries remains controversial. OECD (2003) discusses the differences in patterns of allocations on aid effectiveness. For instance, the Dutch allocation guidelines prioritize smaller countries more than does the World Bank`s allocation system.

The number of criteria used for the quantitative approach of aid allocation is also a debatable issue. Some consider that meeting some minimal number of quantitative criteria would become an incentive for political leaders to ignore those criteria overall, as that does not represent the sufficient measure of need. Others argue that exclusion of important variables would lead to more arbitrary decisions. But both sides agree on the importance of transparency on the choice and weighting criteria. Another area discussed by OECD representatives considers the extent to which allocations by a given donor should take account of allocations by other donors (OECD, 2003). This question is in the focus of the additional hypothesis the thesis attempts to test.

The normative criteria used for assessing aid allocation vary between multilateral organizations. The World Bank uses a Performance Based Allocation (PBA) formula including indicators such as GNI per capita, population size and a measure of the country performance. UNICEF uses a formula that includes the size of the child population and the under-five mortality rate. The European Commission (EC) uses several different formulae combined with various normative criteria to allocate social funds within the EU or aid funds outside the EU with criteria being different according to different groups of countries such as the Africa Caribbean and Pacific (ACP) countries, Mediterranean countries or new accession countries (candidate countries). These are examples of attempts to operationalize normative criteria but, in the overall panorama of aid, these criteria remain few and organization specific" (Ceriani, 2013, p. 6).

The inconsistency of approaches to aid allocation has created a need for the constant verification of transparency in aid allocation. Thus, the OECD monitors and holds conferences on the topic of aid allocation regularly. OECD (2003) notes that there is evidence of donor intent to aid. Aid to poor countries is increasing as donors consciously
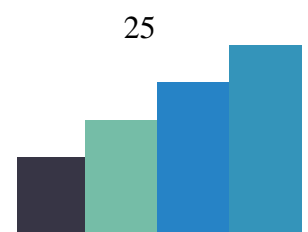
aim to help poor countries. Experimental studies of the motives of identified donors by McGillivray (2002) provide insights into this issue. In fact, many studies such as Tarp et al. (1999), Alesina and Dollar (2000) and Berthélemy and Tichet (2002) show that experimental research methods in the late 1970s and early 1980s produced consistent results based on donor interest models and indirect suspicions about donors` bias. Political interests determine the delivery of aid. These findings have been confirmed in almost all studies including studies of the analytical economics of many small-scale donors as well as large-scale donors. From these studies there are various arguments as to whether donors receive donations from countries for respecting civil and political freedom or whether donors assess low levels of corruption (OECD, 2003).

The UNDP has its own accountability system which is comprised of an accountability framework and an oversight policy.[16] The UNDP Accountability and Transparency (ACT) Project is a part of the accountability framework and is developed to assess the likelihood of the project being successful and reaching target goals, and provides suggestions for measures that improve performance and factors to be considered for future support and anticorruption.[17] The UNDP is also a member of the International Aid Transparency Initiative, a global initiative to improve the transparency of development and humanitarian resources and their results to address poverty and crises.[18]

A member of the International Aid Transparency Initiative (IATI) since its establishment in 2008, the UNDP has led outreach efforts with partner countries and UN institutions to lead in the newly created aid transparency standard and make it relevant for national development planning, public financial management, joint accountability, and other processes at nation level. Over 100 UN agencies, multilateral banks, bilateral donors and NGOs, providing 76 percent of aid, release press information in accordance with IATI guidelines.

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[16] https://www.undp.org/sites/g/files/zskgke326/files/undp/library/corporate/Transparency/UNDP%20Accountability%20framework.pdf

[17] https://erc.undp.org/evaluation/documents/download/5651

[18] International Aid Transparency Initiative - iatistandard.org
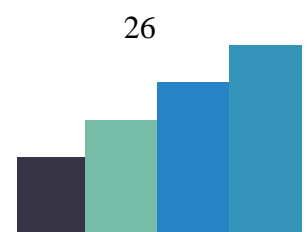
3.2. Literature review

The literature has sought to answer the question whether the aid is effective. Econometric modelling first was used as a method to explain aid allocation by McKinlay and Little (1977). They used individual equations including variables on recipient needs and donor interests of annual US aid allocations using data from 1960 to 1970. Variables such as GDP per capita, growth of GDP per capita and gross domestic capital formations were used to represent recipient needs. The part of donor interest consisted of five models with separate category of donor interests. These donor interests' categories were: US economic interest overseas, US interests on security, political power interests, interests on development and performance, and democracy and political stability interests. Their results indicated that security and power-political concerns which includes army assets had been the key determinants of US aid allocation choices and the model which is primarily based on recipient needs does not explain US ais allocation. The objectives of donor countries and aid agencies differ. Even though UNDP claims to motivate aid allocation by the recipient needs, the biggest contributors to UNDP funds can include their own incentives to the aid allocation.

Balla and Reinhardt (2008) suggest that a multiple linear regression is inadequate in their econometric research of how conflicts impact donor decisions on aid allocation. The authors were examining 20 bilateral donors and 122 recipients from 1960 to 1997. The authors claim that aid distribution is unlikely to be random. They claim that if there is a link between a donor's decision to send aid or not, then the amount of aid received will be biased. Instead, they use a Probit model to sort their panel data in two steps: first, they convert the dependent variable to a binary one, with 1 indicating a positive assistance flow that year and 0 indicating no help received. They then used Heckman's selection model to fit the donor's gross aid per capita (in the receiving country) as the dependent variable. Heckman's lambda is added as an explanatory variable in the second regression based on the Probit estimate to prevent potential difficulties with dependent error terms. Tarp et al. (1999) utilized this approach in their analysis of Danish bilateral aid for the period 1970-1993, while Fariss (2010) investigated the relationship between US foreign food aid and the level of human rights in a recipient country over the period 1990-2004. Tarp et al.
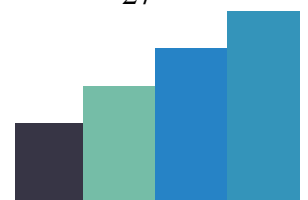
(1999) by qualitative analyses finds that even in nations with unfavorable policy environments, there is a strong correlation between aid and growth. Fariss (2010) concludes that even after controlling for other economic aid, the conditioning effect of strategic interests, and humanitarian need, the empirical results from a multinomial logit and Heckman model show that countries with high levels of human rights abuse are more likely to receive food aid and receive more food aid. These findings do not correspond to the UNDP statement that the aid is distributed based on solemnly income considerations.

Collier (2002) focused on data during 1980-2000 targeting aid to prevent conflict and using aid as example to leverage successful programs. His theoretical study discusses the effectiveness of aid and provides recommendations on making aid smarter outlining seven ways with examples of how targeting aid to specific country needs can radically change the effectiveness of allocations. His study is based on the discussions of the historical examples of the aid allocation and effectiveness and focusing on the qualitative analyses. The author also concludes based on historical events analyses that the aid agencies in the studied period faced a "a crisis of confidence" and that the current state of the institutional economics is not encouraging the change in aid allocation.

Berman et al. (2013) present research from 1976 to 2010 of studies of aid allocations. The authors suggest that providing substantial amount of monetary aid for the conflict zones may encourage more violence and corruption. The literature covering economic growth and conflict, includes findings of Easterly (2001), Rajan and Subramanian (2008), which suggested that aid spending is not related to growth. The authors conclude that there is an urgent need of small-scale improvements in the quality of governance in the recipient countries with increased transparency, higher levels of representation, increased tax collection, service provision and a reduction in corruption levels. These changes would lead to an increase in the effectiveness of aid.

Sohn and Yoo (2015) use a Tobit model to analyze their data during 1988 – 2012. The dependent variable is net ODA disbursements of Korea, and control variables include region and population of the partner countries, trade, foreign direct investment (FDI), US military assistance in log form, log number of visitors, and the log of population. They
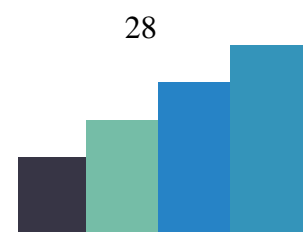
find no differences in aid policies between conservative and progressive governments in South Korea.

Berthélemy and Tichit (2003) also applied a Tobit model to examine donor behavior on a panel of 22 donors and 137 recipients from 1980 to 1999. Their findings suggest that donors favor commercial partners, and that political governance has an impact on aid flows. The authors also compare a Tobit model to a Probit and OLS with a data truncation, which provide slightly different findings in statistical significance and coefficients.

The Economist (2022) describes a Human Development Index and a UN ranking of the quality of life that is based on life expectancy, health, education, and other social parameters as the basis of the aid allocation. Graph 9 presents the chart on the aid per person in the countries in comparison to percentage of GDP change, providing evidence to suggest that the effectiveness of aid deteriorates in the least developed countries.

Graph 9 – The aid per person in USD for the least developed countries (2010 – 2019)
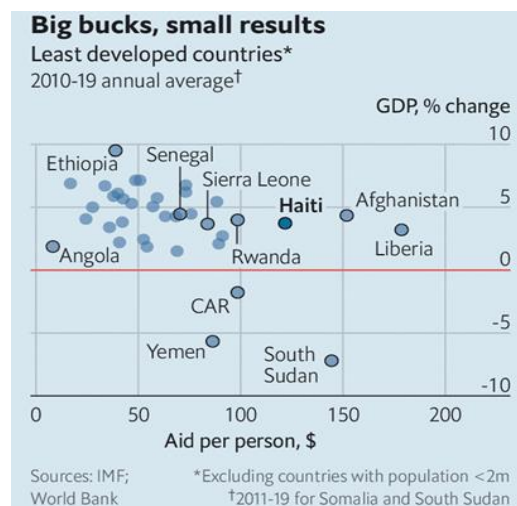
Source: Economist, 2022.

This raises an issue on the importance of the internal transparency in aid allocations based on the income levels and socio-political indicators of the country in need. The discrepancies between the amount of aid per person in the low-income countries

between 2010-2019 suggest that there are other parameters that are being taken into consideration rather than only the UN ranking in the quality of life.

The discrepancies in the amounts of aid allocated might be economic or socio-political. For instance, Kilby (2013) identified that the WB and WTO (1994 -2010) showed a non-economic selectivity bias as the projects preparations periods for WB credits was much shorter for the countries that are strategically important for US. The author builds an econometric model based on the various WB projects since 1994 to 2010 and includes socio-economic indicators (e.g., loans, International Development Association funds (IDA), Structural Adjustment Loan (SAL), war, population, GDP per capita, democracy, a Freedom House Index) and US-specific indicators (US important votes, US other votes, US military aid, US economic aid, US trade) and other world-relationship parameters (e.g., G7-1 economic aid).

There are numerous studies on the aid effectiveness conducted by UN agencies and third parties, the most recent Multilateral Aid Review (UNDP, 2011a). This review also includes consideration of the UNDP Bureau for Crisis Prevention and Recovery (BCPR). The Multilateral Aid Review consists of contribution to development objectives by selected parameters (e.g., fragile contexts, gender equality, etc.) and score from 1-4 with UNDP comments. However, aid efficiency is not the primary target of our thesis, while it supports the objective of the fair aid allocation.

The UNDP Accountability and Transparency (ACT) Project Multi-Donor Evaluation (UNDP, 2011b) outlines the limitations of the UN`s methodology in "absence of baseline data, lack of consistent attempts to identify and collect data on outcome indicators by ACT, lack of sufficient breakdown information in budget expenditures provided by UNDP and lack of sufficient details in project staffing documents". These limitations highlight the reason it is relevant to attempt to identify the baseline indicators of aid distribution monitoring within the specific areas such as countries with political instability or ongoing armed conflicts.

The existing studies on aid allocation provide inconclusive and differentiated results. Trumbull and Wall (1994) estimated aid-allocation criteria with panel data (1984-
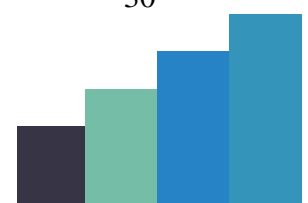
1989) using recipient`s needs of income per capita and infant mortality as the criteria for fixed effects regression estimation. The conclusion of their study was that foreign aid levels respond inconsistently to changes in both physical need (infant mortality) and economic need (deviation in per capita income). Additionally, the study established that improvements in political and civil rights normally led to increase in aid. Also, the study outlined that ODA is allocated not by the requirements of the beneficiary country, but by the varying good intentions of the rich donor countries and their governments. Thus, the aid allocation is circumstantial and unpredictable.

The question of the potential bias of the aid allocation is widely discussed in the studies and overviews for the last 70 years. McGillivray`s (2003) compared the allocations of aid based on normative criteria from different perspective approaches, not only relying on recipient`s needs. The author revealed that there is a "possible excessive reliance on growth as a determinant of poverty reduction, ambiguities over the relevance of recipient policy regimes for aid effectiveness, and possible disincentive effects of allocating aid based on need alone" (McGillivray, 2003).

Carment et al. (2008) state fragility and implications for aid allocation. They have conducted an empirical analysis using CIFP's fragility index based on concepts of authority, legitimacy, and capacity (ALC) and by analyzing data collected for the period 1999-2005 to identify the empirical determinants of fragility. They have included variables on ethnic diversity, risk of rebellion, fragility index, economic growth, HDI, human rights by empowerment, level of democracy, GDP per capita and trade openness as percentage of GDP. The results of the statistical and qualitative analyses shows that aid allocation targets states on the basis of their capacity and authority scores rather than their legitimacy scores.

Alesina and Dollar (2000) take different approach to modelling in their study. They use separate equations for each donor and include the variables of measurement of strategic interests of donor countries along with the criteria of recipient needs throughout 1970-1994. They used such criteria as GDP per capita, Sachs-Warner trade openness index, democracy index (Freedom House), and FDI as the policy variables. They collected
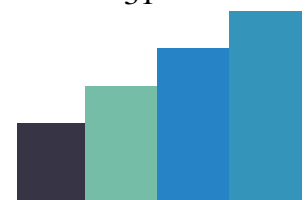
data on the main donors (e.g., Australia, Belgium, France, Germany, Italy, Japan, UK, etc.). They also include an index of UN vote counts as a proxy for political interest and a colony dummy. The authors concluded that aid was dependent on colonial past, political and strategic considerations as well as economic requirements and policy adherence of the recipient. The research, however, was met by the criticism of the role of recipient economic requirements being inappropriately modelled since the data used for the modelling included the end of the Cold War.

Hoeffler and Outram (2011) estimated the aid allocation of aid with a dataset covering 22 Development Assistance Committee (DAC) donors and 168 recipient countries during 1980-2004. Their dataset consists of donor-recipient pairs for each year, amounting to 92400 potential observations. The authors specify a model as aid as a function of explanatory variables plus dummy variables introduced for the donors. Explanatory variables include recipient need covered by income per capita and life expectancy; recipient merit covering the lagged growth of GDP per capita, democracy and human rights estimations; donor self-interest measured by trade and voting allegiance in the UN; controls estimated by population. The results of the OLS regression show that all the biggest donors allocate more aid to poor countries and to countries that already receive a lot of aid.

Toyasaki and Wakolbinger (2014) researched citizens participation in decision-making process of financing NGOs (non-governmental organizations) between 2000 and 2014. The authors have constructed the model including the abovementioned factors, finding that optimal fundraising modes for donors, aid agencies, and policy makers should be different based on levels of multiple parameters, such as utility of a dollar raised by an aid agency, the cost factor of fundraising, and donors' unit utility of donations. However, the overall model suggests an exogenous character of aid allocation.

Hernandez (2013) studies a dataset of annual data from 1970 to 2007 on variables including IDB loan commitments (log), US exports (log), US UNGA votes, US bilateral aid (log), UNSC membership (dummy), major shareholders parameters (e.g., average of export, votes, coefficient of variation), population (log), GDP per capita log, democracy
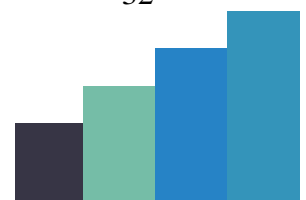
index, investment rate, various GDP estimations (e.g., growth, current account) and elections (dummy). The author claims that heterogeneity of the biggest donors might consequence into distributional conflict or on the other hand to support the autonomy of the institutions. In further chapters we study the existing models based on the papers discussed above and try to define the new model specifications to test the hypothesis raised in this paper.

Graham (2017) discusses how the financing trends of intergovernmental organizations change their governance. He reviews the existing literature on the aid allocation topic to conduct his analyses. The article outlined that the number of funds and their diversity across the funding lines makes the management of the funds` allocation a challenging task. Additionally, Graham notes that the executive boards of World Bank or UNDP are relevant at the significant levels when considering distributions of pooled funds. So, the complexity of this issue makes it important to ensure transparency on the authority of funds distribution. The article does not make the quantitative assessment, rather qualitative analysis of intergovernmental institutions funding analyzing the reports provided by organizations.

Jenks et al. (2018) provides insights into funding of the UNDP and distribution of this funding under the SDGs since the adoption of the 2030 Agenda for Sustainable Development. The authors describe the system of grants and donor contributions over 2016-2018. Through qualitative analyses of the data on UNDP contributions during 2016 - 2018 by activities, by UN development system, and by sources of ODA within the 12 largest OECD-DAC countries, by recipient countries the authors suggest that the UNDP financing is not ideal. The study concludes the two key areas of improvement needed for UNDP SDGs financing: strong commitment to fact-based policymaking and development of new approach to defining, monitoring, and measuring the impact of SDG investments. The research is focused on the financing the 2030 Agenda, while this thesis is looking into the aid allocation.

There is a consensus on including economic indicators of recipient country such as GDP per capita, while many authors consider that not to be the only relevant factor. There
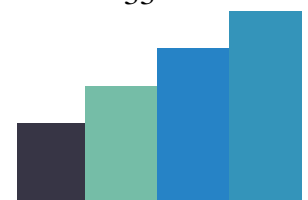
are numerous factors and indexes included in the studies that attempt to complement the economic criteria of the aid allocations. The socio-political indicators and qualitative analyses of policies differ from study to study. Results of the evaluation significantly varies depending on the specific aid, donors, recipient, or the periods of data included into the study. This study also uses fixed effects model among other panel regressions to identify the normative economic and socio-political criteria of UNDP allocations and to test whether there is an absence of discrimination in the allocation system. It combines economic, social, and geo-political indicators as well as the influence of the biggest donor`s share of UNDP regular resources into the regression models to identify determine the factors affecting aid allocations under SDG 16 UNDP projects.

Chapter 4. Data collected and methodology

4.1 Selected data

A panel dataset was collected on 30 countries affected by conflict, political instability or the post-conflict developments that have received UNDP SDG 16 project aid funds during 2016 - 2020. Thus, the initial dataset covers 10 donor countries, 30 recipient countries, 5 years and consists of 4050 observations. The comprehensive dataset was gathered to identify the factors explaining aid allocations on UNDP SDG 16 projects.

Aid allocations to UNDP projects under SDG 16 comes from the UNDP funding webpage which provides statistical data on UNDP donor aid flows.[19] Real aid allocations by recipient country are reported in constant US dollars to account for inflation over the period. The data were converted into each country`s share of the total value of the total UNDP SDG 16 project allocation, thus the percent of what is allocated is used in regression analyses. In the data set the dependent variable is a percentage with a range 0 to 100. It can be interpreted both as probability and proportion. The reason for dependent variable being presented in as a percentage of all UNDP SDG 16 aid is that it would show how the change in how the model factors influence the percentage of allocation to the country.

The dataset includes the recipient countries socio-economic and political indicators during 2016 - 2020 gathered from the World Bank database.[20] The GNI in billion USD, GNI per capita in USD, population in million persons, life expectancy, political stability and absence of violence/terrorism index, rule of law and control of corruption indicators were collected. The data on GNI was transformed into logarithmic representation and lagged by 1 year to represent the stacked capital. A longer number of lags is not required, as the sample period is 5 years. Only the influence of previous year GNI is taken into consideration for potential aid allocation.

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[19] https://www.undp.org/funding
[20] https://data.worldbank.org/
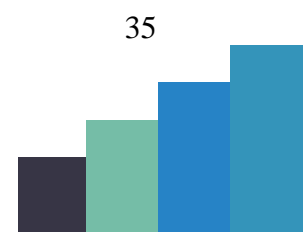
The political stability and absence of violence/terrorism index represents a perception of the likelihood of political instability and/or politically motivated violence, including terrorism. The World Justice Project Rule of Law Index is a quantitative assessment tool designed to offer a detailed and comprehensive picture of the extent to which countries adhere to the rule of law in practice. The control of corruption index is constructed by the World Bank as one of the six composite World Governance Indicators to capture corruption on a scale of -2.5 to +2.5, where the higher the index the less the corruption indicated. These political indicators might be highly correlated and could be excluded from the model on the analyses stage.

Additional control variables were gathered due to the nature of the SDG 16 projects. The dataset includes the size of the country as a constant variable in square kilometers collected from the World meter`s database.[21] The Global Conflict Tracker was used to collect US political interest in the conflict as a dummy variable, where a value of zero implied an unidentified level of interest, a value of one presents limited interest level, two is significant level of interest and three is critical interest level.[22] Also the variable of civilian casualties from the beginning of the conflict in the area in number of persons divided by the population represents the severity of the conflict. The value of civil casualties since the beginning of the conflict was generated and transformed it into millions. That allowed to calculate share of civilian casualties in population.

The International Institute`s for Democracy and Electoral Assistance (IDEA) database provided data on democracy dummy variables:

- dem1- Democracy access in the countries assessed as 0 for no and 1 for yes;
- dem2 - Legal provisions for mandatory referendums at national level;
- dem3 - Legal provisions for optional referendums at national level;
- dem4 - legal provisions for citizens' initiatives at national level;
- dem5 - Legal provisions for recall at national level;

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[21] https://www.worldometers.info/geography/largest-countries-in-the-world/
[22] https://www.cfr.org/global-conflict-tracker/?category=us
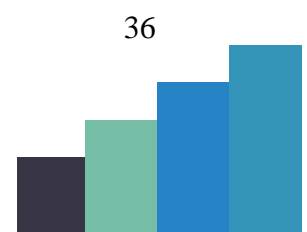
- dem6 - Legal basis for direct democracy at the national level with 1 for
  constitutional and 0 for no data specified. [23]

This approach of dummy variables was used to create the straightforward division
between the specific democracy attributes influencing aid allocations. This research
prefers using dummies instead of Freedom House or the EIU democracy index, which is
calculated by 60 indicators grouped in five different categories, measuring pluralism, civil
liberties, and political culture due to the considerable number of missing values for many
countries used in the analyses. The EIU democracy index would be a preferred measure
for the analyses due to the complexity of the assessment approach.

The variables on the top-10 donor countries` contributions to the UNDP regular
resources during 2016 – 2020 per year in million USD was gathered from the UNDP
funding compendiums available at the UNDP website.[24] These variables were transformed
into the share of UNDP SDG 16 allocated funds. Also, the data were lagged to represent
donations in the previous year, to verify that the share of contributions of the regular
resource of UNDP does not affect aid allocations to recipient countries. The lag of one
year is being used for the same reason as GNI, to represent the previous year
contributions` effect on aid allocation. Furthermore, the data on Belgium`s, Germany`s,
Canada`s, Norway`s, Switzerland`s, Denmark`s, Sweden`s contributions was merged into
the variable lagothers due to these 7 countries representing 48% of all shares into the
regular resources of UNDP, however, Japan, UK, and USA account for 35% of
contributions. Also. The summary statistics show a lack of variation between the lagged
variables of the contributions to the regular resources of UNDP.

The data are selected within the four groups of explanatory variables used aid
allocation studies: recipient need, recipient country environment, interest of the donor
country and control variables. The variables are selected to test whether the UNDP TRAC
principles of prioritizing the low-income countries with gradual switch of focus to the
countries with higher GNI levels are followed.

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[23] https://www.idea.int/data-tools/tools/global-state-democracy-indices
[24] https://www.undp.org/publications
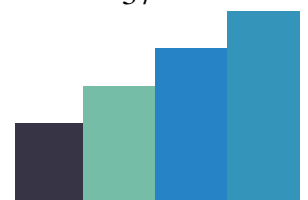
Recipient need is captured by the model using variables of the income per capita and life expectancy. The income per capita is a straightforward measure used by all the authors mentioned in the literature review. In the dataset income is real GNI divided by population. Aid and GNI per capita is expected to have a negative relationship, as more aid is allocated to the low-income countries. A negative relationship is expected with regards to the life expectancy as well.

Burnside and Dollar (2000) stated that the aid is more efficient when provided to the countries with better social and economic environments, such as a good democratic levels and better policies. *The recipient country environment* is measured in the model by selection of democratic dummy variables based on IDEA database and the political stability index. The level of political openness index was measured with democratic and human rights indicators and used by Alesina and Dollar (2000), Cornett, Gibney and Wood (2006) and Hoeffler and Outram (2011).

Additionally, the model includes the lagged GNI logarithmic form, as Clemens et al. (2004) finds that aid on growth is significant in the short term. According to growth theory, lagged GDP represents a stock of physical capital, thus, it is the most applicable for testing whether allocations to the recipient countries varies with the growth in capital. The lag for one year is being used, as annual values of GNI represents the growth over the previous year as the decision-making process parameter. If donors take into consideration the environment of the recipient country, then a positive relationship is expected between aid and growth of the GNI.

The interest of the donor country is measured as the percentage of donor country`s contributions to the UNDP regular resources. The lagged share variable of contributions of the top 10 donor counties is included as an indicator of how the amount of funds were provided in the previous year to the UNPD regular resources funds, which influences the decision-making process of aid allocation. There is a potential reversed causality between the share of the donor country and aid, as an increased share may cause the increase aid to the specific countries. Thus, a lagged share is used to avoid this potential issue and represent donor interests. The expectation is not to find these variables statistically
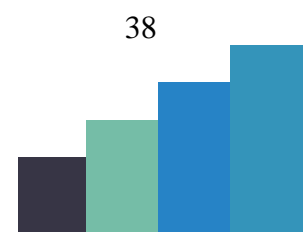
significant due to the non-discrimination principle, as the UNDP top donors should not affect the percentage of the UNDP aid allocation under SDG 16.

The US political interest variable is used as a replacement for a "UN friend" variable that has been used as an indicator of donor interest in political science studies, e.g., Thiele et al. (2007), Kegley and Hook (1991), Rai (1980), Alesina and Dollar (2000), while Berthelemy (2006b) argues that it is unclear whether aid rewards voting allegiance within the UN. Based on the controversy surrounding the debate on this variable, the model in this thesis is based on the US interest variable explaining whether the US interest in the conflict affects the UNDP aid allocation. If non-discrimination in aid allocation is to hold, then this variable should not be statistically significant.

Finally, the study uses *control variables* for the conflict-specific characteristics of the country such as the size of the country, or the percentage of casualties per population since the beginning of the conflict. These variables intend to control for scale effects. The period over which the data is gathered also allows us to investigate how aid allocation has developed since the establishment of the UN Sustainability Development Goals in 2015.

4.2 The methodology of the analyses and research matrix

The differences in the estimation results across studies occur due to the nature of the data. First, all authors studying aid allocation face a potential threat of potential selection problem that can lead to a bias. McGillivray and White (1993), Alesina and Dollar (2000), McGillivray (2002), and Thiele et al. (2007) apply a Tobit estimator to account for the censored nature of the data. Alesina and Dollar (2000) and Thiele et al. (2007) find that estimations of Tobit vary from OLS. The authors argue that a Tobit model recognizes truncation of the variable, thus in cases when the number of zeros included into the dependent variable, OLS and Tobit results would be significantly different.

The approach of using the share as dependent variable was used by Berg (2015) in his econometric study of donor motives in aid with the use of fixed effects model. The author used the share of total aid (ODA). He argues that the variable is stated as aid commitment rather than aid distribution, as Berthelemy (2006a), Van Dijk (2011), and
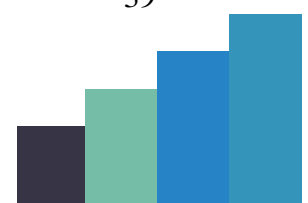
Neumayer (2003) have used. According to Van Dijk (2011), donors have more control over commitment than distributions since actual levels of distributions might change because of recipient nations' capacity to employ allocated money. As a result, when analyzing factors that might explain decision-making process of aid allocation, commitments better represent the donor's voluntary judgments.

The dependent variable has been generated in several ways in earlier statistical research on donor incentives in the aid allocation process. Sun Min (2011) looks at aid funds expressed at the per capita level in recipient countries to see how sickness frequency in donor nations affects aid distributions to disease control, whereas Van Dijk (2011) logs overall aid commitments to agricultural development in his study. Berthelemy (2006a) logs his dependent variable as well but employs a two-step method to account for any donor self-selection bias in recipient country selection. Berthelemy (2006a), additionally finds a weak correlation between the error term of the selection (first step) and allocation (second step) equations across 137 recipient countries. As a result, he concludes that the characteristics of the selection equation are unimportant for the second phase, the allocations equation, which is the subject of this research.

Berthelemy (2006 a, b) and Fleck and Kilby (2007) used two-stage estimators to avoid selection bias by estimating the decision on selection first, followed by the decision on allocation. However, the Heckman two-stage model is based on the ability to specify a variable determining the selection rather than the allocation. As it is hard to distinguish which variables define allocation and which selection, the authors use an identical set of variables to explain both. In this case the identification only relies on the inverse Mills ratio and nothing else. Kennedy (2003) states that the Heckman model does not work under these assumptions. The reason for this argument is that all the studies using this method have found little or no correlation between the residuals of allocation and selection equations. This serves as an indication that those equations are independent from each other. Thus, the thesis chooses to estimate the allocation without correcting for selection, as the bias of using such methodology was not established.
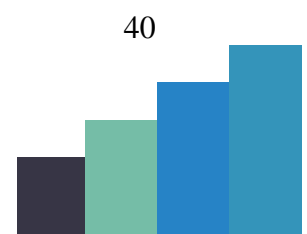
Table 5 - The research matrix

	Research question	Hypotheses	Data needed	Methods of data analysis
1.	How is the monetary aid under SDG 16 distributed? What are the main variables affecting the amount of aid?	1.1 There are specific selection criteria for the monetary aid allocations to beneficiary countries receiving UNDP projects fundings under SDG 16. 1.2 The project allocation for each country is affected by the territorial size and the population, including civilian casualties. 1.3 The project allocations for each country are affected by the level of US political interest.	GNI, GNI per capita, population, democratic level variables, US interest levels, civilian casualties during the start of conflict, life expectancy levels between 2016-2020, size of the country, democracy levels, political stability index, rule of law index and control of corruption index.	Summary statistics, OLS and Tobit regressions, panel data random-effects and fixed-effects regression models
2.	Is there any bias of monetary allocation based on the top-10 donor countries?	The share of monetary contribution by the donor country to the UNDP regular resources is not a statistically significant factor defining the budget of the project.	As above, plus monetary contributions of the top-10 donor countries between 2016-2020.	

This thesis seeks to determine whether there is evidence that supports that UNDP SDG 16 allocation adhere to UNDP guidelines. The UNDP guidelines (TRAC-1) include three principles: focus on low-income countries, progressivity in favor of low-income countries, a gradual transition to net contributor country (NCC) status for countries with higher GNI levels (UNDP, 2013). The models are based on variables as determinants of aid allocations under UNDP SDG 16 projects in countries with armed conflict or political instability.

As stated in the research matrix presented in the Table 5 there are 4 main hypotheses this thesis is based on. First, there are specific selection criteria for the monetary aid allocations to beneficiary countries receiving UNDP projects fundings under SDG 16. Second, tests whether the project allocation for each country is affected by the territorial size and the population, including percentage of civilian casualties in total number of population. Third, the model verifies whether the project allocations for each

country are affected by the level of US political interest. Finally, the model estimates whether there are any effects caused by the top ten donor countries being the top investors of the UNDP projects.

Among the 66 countries listed as contributors to the UNDP SDGs projects the model includes the ten main donors which provide aid to the 30 recipient-countries affected by conflicts or political instabilities. The top ten donor countries account for 70% of the total contributions to the UNDP regular resources.

The data are analyzed using Stata 16 application by constructing OLS, Tobit, fixed effects, and random effects regression models. The regression analyses use the share of project aid allocation per year to the total UNDP SDG 16 allocations in million USD as a dependent variable collected from the UNDP funding webpage. All the monetary values in the dataset are represented in USD equivalent.

4.3 Preliminary data analysis and model specifications

This section is devoted to the summary statistics, data transformations and variables selection process, assessment of distributions, homoscedasticity and endogeneity tests on the panel data collected for the research. To verify the results received from the graphical estimation of the data on donor and recipient countries, the summary statistics of the variables is compiled and presented in the table 6. The average share of the project allocation per country throughout the analyzed period amounts to 2.4% out of the total amount of SDG 16 UNDP allocated aid. The average GNI per capita in the recipient countries is 2987 USD, meaning that the countries analyzed range from poor countries to the developing ones. The results of the size of the country and GNI per capita deviate the most from the mean value, telling us that the results are more spread out in the selection panel. The size of the countries differs a lot in the sample of the selected countries and the standard deviation is far from the mean. The mean of the sample of lagged representation of the share of the donor countries in the total amount of the UNDP regular resources correspondent with the graphical representation done in the chapter 2.
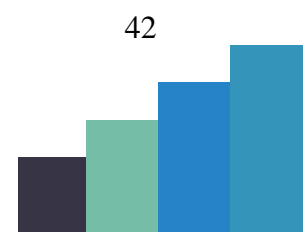
Table 6 – Summary statistic of the panel data set

Variable	Obs	Mean	Std. Dev	Min	Max
project	150	0.0235	0.0567	0	0.36
GNI pc	150	2987.24	2654.89	0	9928.68
life_exp	150	67.62	7.75	51.59	78.93
GNI-lag1	143	4.37	1.6969	0.5878	7.4811
dem1	150	0.5	0.5017	0	1
dem2	150	0.6	0.4915	0	1
dem3	150	0.1667	0.3739	0	1
dem4	150	0.2333	0.4237	0	1
dem5	150	0.0667	0.2503	0	1
dem6	150	0.8667	0.3411	0	1
rolaw	150	-0.9687	0.6293	-2.35	0.38
corrup	150	-0.9148	0.5702	-1.91	0.74
politstab	150	-1.4997	0.7798	-3.01	0.2
us_inter	150	1.2	0.7943	0	3
laguk	149	0.1121	0.0075	0.1	0.12
lagusa	149	0.1259	0.0081	0.11	0.13
lagjap	149	0.1060	0.0049	0.1	0.11
lagbel	149	0.0220	0.0040	0.0.021	0.03
lagger	149	0.0854	0.0498	0.04	0.18
lagnorway	149	0.1022	0.0116	0.08	0.11
lagcan	149	0.0481	0.0039	0.04	0.05
lagswiss	149	0.0821	0.074	0.07	0.09
lagden	149	0.3604	0.008	0.03	0.05
lagswed	149	0.1122	0.116	0.09	0.12
population	150	62.43	62.5873	3.71	220.89
size	150	1.1254	1.5399	0.0062	8.5158
civpop	150	0.022	0.0064	0	0.03537

The summary statistics confirms the results of the visual representation and qualitative analyses performed. The average percentage of aid allocation of the total amount of UNDP SDG 16 projects amounts to 2,35% among the 30 selected recipient countries, with standard deviation of 5.67% among the countries. Nevertheless, the maximum share in the UNDP SDG 16 projects is 36%, while the minimal share is 0%, showing that some of the countries did not receive aid for SDG 16 UNDP projects during 2016-1020. The number of the zero value dependent variables is minimal and does not represent the skewed dataset, rather a semicontinuous variable as it represents the actual allocation to the recipient country and not missing data. Thus, the variable was transformed into the share and is appropriate for linear analyses in such a form presenting regular shape of distribution.
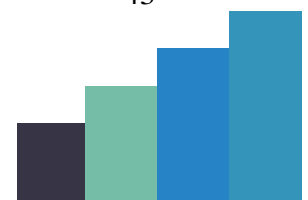
GNI per capita within selection starts at the minimum of 0, due to the missing values for South Sudan and ends with a maximum of $9928.68 for Brazil. Average GNI per capita among the 30 recipient countries is $2987.24, with a standard deviation of $2655, representing 89 % of the mean, showing that economic situation in the analyzed is not equal by far.

There are also missing values in the lagged logarithmic representation of GNI. Missing values occur due to the instability of data collection in countries with the high level of hostilities. However, the standard deviation of lagged GNI is 1.6969, which shows that logarithmic representation provides normal distribution to the variable.

Life expectancy between the selected countries varies by 7.75 years on average with the mean life expectancy equal to 67.62 years. This provides us an understanding that life quality in 30 countries analyzed varies from minimal life expectancy of 51.59 years to the maximum of 78.93 years.

The democratic variables collected from IDEA have standard deviations from 0.25 to 0.5, as they are represented by the dummies from 0 to 1. Multicollinearity analysis is required to identify the variables that can be potentially omitted. Similar potential correlation is shown by the rule of law, corruption, and political stability indices. The correlation is to be expected and, thus, only one variable is selected for the model.

The US political interest variable has a mean of 1.2, showing that on average among 30 countries selected, the majority represent at least some interest for the USA. The standard deviation of 0.79 suggests that level of interest among selected countries varies between low and high.

The mean of laguk (UK share) almost equals mean of lagswed (Sweden share). The suspicion of insignificant difference was verified with the T-test confirming that the means are not statistically different from each other. While mean of lagnorway (Norway share) seem to be equal to mean of lagjap (Japan share) according to summary statistic. However, T-test confirms that the means are statistically different from each other at any level greater than 0%. Canada, Switzerland, Denmark, Germany, and Belgium have less

than 10% share in the total contributions to the UNDP regular resources. Variables of the lagged contributions share are missing one observation, as the dataset was moved by one observation.

The size variable distribution starts at the minimum of 6200 sq. km for Philippines to maximum for Brazil of 8.5158 million sq.km, with standard deviation between 30 countries equal to 1.54 million sq. km. Such a spread suggests that country size is a significant variable.

4.4 Regression models

The types of regressions used for the analyses are Panel pooled OLS, Tobit, random effects (RE) and fixed effects (FE) models. The research questions are analyzed by the quantitative econometric analyses of the panel data, using two models – the general pooled OLS/Tobit regression using the model equation that will neglect the possible random or fixed effects not specified in the model estimators; fixed/random effects panel OLS regression model using different equation – due to the limitations of both options of OLS analyses, the Hausman`s test will be performed to select the most accurate approach to data analyses.

4.4.1 Pooled OLS and Tobit models

The pooled OLS and Tobit regressions compare models that explain the aid allocations utilized by the majority of aid allocation studies (Alesina and Dollar, 2000; McGillivray, 2002; and Thiele et al., 2007). The models use an approach that ignores the difference of effects between the decision-making process and the endogenous recipient's selection. Maximum likelihood estimation is used in the Tobit model, meaning it maximizes a likelihood function of two equations, first, the regular OLS regression and second, the probability of the observation being cut.
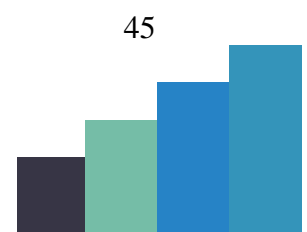
The final model specification used in Stata for the models presented in equation (1):

(1) $AA_{it} = a_i + \beta_1(GNIpc)_{it} + \beta_2(life_{exp})_{it} + \beta_3(laggni)_{it} + \beta_4(dem1)_{it} + \beta_5(dem2)_{it} + \beta_6(dem3)_{it} + \beta_7(dem5)_{it} + \beta_8(politstab)_{it} + \beta_9(us_{inter})_{it} + \beta_{10}(laguk)_{it} + \beta_{11}(lagusa)_{it} + \beta_{12}(lagjap)_{it} + \beta_{13}(lagothers)_{it} + \beta_{14}(population)_{it} + \beta_{15}(size)_{it} + \beta_{16}(civpop)_{it} + u_{it}$

where AA_{ijt} is the share of aid allocation in total UNDP SDG 16 allocations to recipient country, with the subscript i denoting the ith the recipient country, subscript t denotes recipient and the year; $GNIpc$ is GNI per capita (USD); $life_{exp}$ is life expectancy (years); $laggni$ is lagged logarithmic representation of GNI, representing growth (million USD); $dem1$ is democracy access in the countries assessed as 0 for no and 1 for yes; $dem2$ is legal provisions for mandatory referendums at national level; $dem3$ is legal provisions for optional referendums at national level; $dem5$ is legal provisions for recall at national level; $politstab$ is political stability index; us_{inter} is level of US interest in the conflict; $laguk$ is lagged share of UK contributions into the regular resources of the UNDP (%); $lagusa$ is lagged share of USA contributions into the regular resources of the UNDP (%); $lagjap$ is lagged share of Japan contributions into the regular resources of the UNDP(%); $lagothers$ is lagged sum of shares of the other top-10 donors into the UNDP regular resources (%); $population$ is population of the country (annually million persons); $size$ is size of the country (million square kilometers); $civpop$ is the share of civilian casualties divided by the population since the beginning of the conflict (%). The β_i are coefficients to be estimated, a_i is the constant and u_{it} is the error term.

In comparison to the fixed/random models, pooled OLS and Tobit estimators are consistent if the errors are homoscedastic and normally distributed. The pooled OLS model assumes that all variables selected have a causal effect on project allocations, as they are treated as exogenous. The Tobit model is built on assumptions to produce consistent estimations: 1) the population is linear in estimates; 2) the data are gathered by random sampling; 3) there are no exact linear relationships between selected variables and 4) there is strict exogeneity, meaning the expected value of the error terms obtained should be zero conditioned to both independent variables and unobserved effects. In comparison
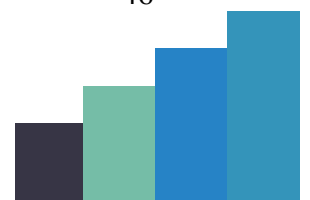
to fixed or random effects model, the Tobit model provides consistent estimates if the error terms are homoscedastic and normally distributed. However, both OLS and Tobit models ignore controls for individual effects. As a result, the models can provide under- or overestimated estimates for the effects that one variable has on another (Wooldridge, 2012).

The panel Tobit is used when the random effects method is preferred to control for unobserved heterogeneity, so we expect it to show comparable results to the random effects model in this case. The random effects Tobit model can take the two-step nature of project aid allocation in consideration, the same as the random effects panel model. The assumptions that are being tested by the Tobit model are the same as assumptions required for the random-effects model, so taking into consideration that the same variables are being used for all four models, the results should not vary. In a later step, some variables that could capture some of the fixed effects were added to a random effects panel model and the four linear models were compared. Four different models are being used in this research to identify those factors selected for the models are correct, as if different models come to the same conclusions, the results would be verified.

4.3.1 Fixed/Random Effects Models and Hausman test

The model created for the panel data Fixed/Random effects regression estimation is presented by the equation with additional specifications for fixed effects and random effects models:

(2) $AA_{it} = a_i + \beta_1(GNIpc)_{it} + \beta_2(life_{\exp})_{it} + \beta_3(laggni)_{it} + \beta_4(dem1)_{it} + \beta_5(dem2)_{it} + \beta_6(dem3)_{it} + \beta_7(dem5)_{it} + \beta_8(politstab)_{it} + \beta_9(us_{inter})_{it} + \beta_{10}(laguk)_{it} + \beta_{11}(lagusa)_{it} + \beta_{12}(lagjap)_{it} + \beta_{13}(lagothers)_{it} + \beta_{14}(population)_{it} + \beta_{15}(size)_{it} + \beta_{16}(civpop)_{it} + \mu_i + u_{it};$

The model components are the same as for the pooled OLS and Tobit, but include μ_i, that is coefficient capturing random/fixed effects bias of the model. When using the fixed effects model, the equation is transformed by subtracting the means of variables

through time from the variable itself, allowing the time-independent variable not to be the part of equation.

While FE and RE models account for the country-specific effects at various levels. The FE includes unobserved and time-constant factors that affect the aid allocations. Additionally, it requires the same four assumptions, as the Tobit model, to produce consistent estimations: 1) the population of the model is linear in estimates; 2) the data was gathered by random sampling; 3) there are no exact linear relationships between selected variables; 4) the strict exogeneity, meaning the expected value of the error terms obtained should be zero conditioned to both independent variables and unobserved effects. In case these assumptions do not hold, the model will be unreliable, and the model might have a problem of omitted variables. Consequently, the independent variables are correlated with the error term if the fixed effects and independent variables are correlated. The endogeneity of the model causes over- or underestimated results while interpreting effects of one variable on another (Wooldridge, 2012). The FE accounts for the country-specific effects by including deviations from the group means - μ_i in equation (2).

Meanwhile, the RE model treats the country-specific observations as random variables, uncorrelated with the explanatory variables. This model depends on the same unobserved effects model assumption as fixed effects one and changes the variables by subtracting the portion of the means of variables. The RE models rely on an additional assumption that unobserved effects need to be uncorrelated with observed explanatory variables to be consistent.

The FE model is an unobserved effects panel data model, where the unobserved effects are allowed to be correlated with the explanatory variables in each time period, while RE is the same, but the effects are assumed to be uncorrelated. To choose the best fit, the Hausman test is used. The Durbin-Wu-Hausman test (referred as Hausman specification test) is an econometric test developed to evaluate the hypothesis of the consistency of the estimator when compared to an alternative estimator, which is established to be consistent. [25]

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[25] https://www.stata.com/manuals/rhausman.pdf
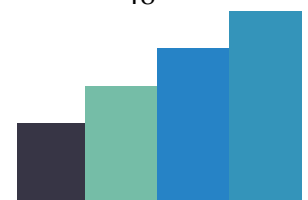
Chapter 5. Results of the regression estimations and conclusions

Chapter 5 provides in detail the description of the regression model findings, establishing statistically significant variables and excluding data based on endogeneity, multicollinearity and heteroskedasticity analysis, as well as, selecting the most fitting model for the research hypothesis testing.

5.1 Model development and data evaluation

The multicollinearity issue is tested by the variance inflation factor (VIF) value for each of the explanatory variables in the preliminary model verifying the assumption. The VIF is used to detect multicollinearity since it represents factors that influence the uncertainty of coefficient estimations (Wooldridge, 2012). The VIF score of an independent variable indicates how well other independent variables explain it. The greater the value of VIF and the higher the multicollinearity with the given independent variable. The results of the multicollinearity test are presented in table 7.

Table 7 – Test for multicollinearity

Variable	VIF	1/VIF
rolaw	21.62	0.046251
corrup	12.32	0.081177
life_exp	7.18	0.139313
dem2	5.59	0.179043
politstab	5.25	0.190462
dem6	5.23	0.191276
lagger	5.05	0.197825
laguk	4.69	0.213146
ipc	4.53	0.220883
dem5	3.62	0.276318
siz	3.54	0.282510
population	3.00	0.332982
us_inter	2.99	0.333915
dem4	2.97	0.336674
lagusa	2.42	0.413042
dem1	2.39	0.418732
lagden	2.37	0.421145
dem3	1.94	0.514964
civpop	1.74	0.575198
laggni	1.49	0.670448
Mean VIF	5.00	

The results of the VIF test confirm the assumption, that lag representation of the countries` share of contributions will be omitted due to collinearity issue. Severe correlation was presented by rolaw and corrup, as well as democracy variables 2 and 6. To avoid multicollinearity issue and variables being omitted, as in the test model, including

all the variables, the lagothers variable was created that consists of the sum shares of the lagswiss, lagcanada, lagden. lagger, lagbel, lagnorway, lagswed.

The democratic estimations based on the data from IDEA database have the low levels of correlation between each other shown in Table 7, meaning that they all cannot be used in the regression analyses. So, to avoid overloading the regression analyses with the similar variables causing potential multicollinearity shown in the VIF test, dem 4 - legal provisions for citizens' initiatives at national level was not included, as it is covered by the dem 1-3 and dem 6 - legal basis for direct democracy at the national level was excluded as well, as the majority (86, 67%) of the countries selected have a constitutional state according to the mean of the dummy variable. We use both dem 2 and dem 3 are used as they explain different levels of constitutional rights, while mandatory referendums are specified by law, the optional referendums represent the higher level of access to democracy and freedom of speech. The political stability index is used in the model as the control variable, as it is the most important to control for the UNDP SDG 16 aid allocation made in the conflict areas or areas with political instability.

The model uses laggni - lagged for one-year logarithmic representation of GNI, based on the results of density distribution. Kernel density estimates for GNI presented on graph 10 had a leftward skewed distributions and its logarithm distribution was closer to normal, thus we are using the previous year logarithmic estimates of GNI in thesis regression. It allows to obtain residuals that are more symmetrically distributed.

Graph 10 - Kernel density estimates of GNI and lagged logarithmic GNI
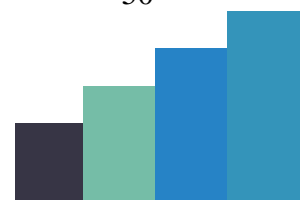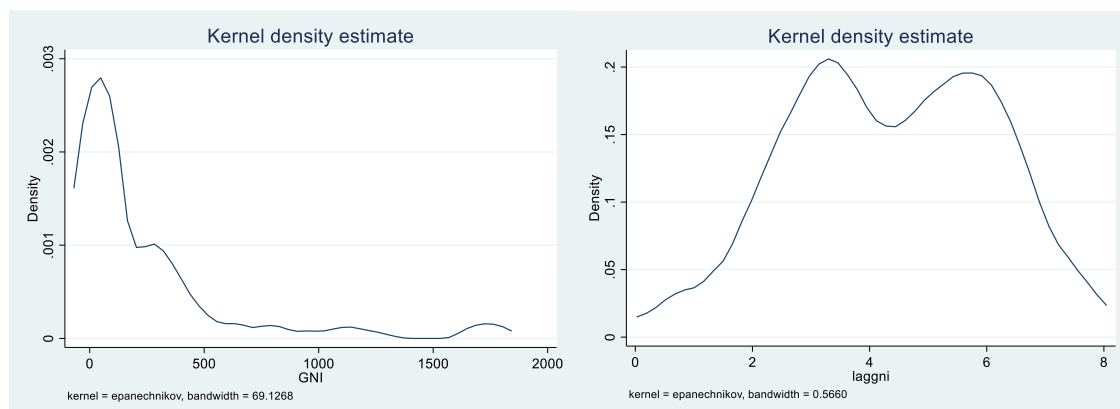
The model includes 150 observations of 1 dependent variable and 16 explanatory variables, compiling the panel dataset of 2550 observations (including 4 zero observations) over 5 years. We declare our dataset as panel data by using parameter of country_id and year.

The selected variables included into the pooled OLS, Tobit and Random/Fixed effects models are:

Recipient needs: GNIpc – GNI per capita (USD), as real GNI divided by population; life_exp – life expectancy (years).

The recipient environment: laggni – lagged logarithmic representation of GNI, representing growth; dem 1 - democracy access in the countries assessed as 0 for no and 1 for yes, dem 2 - legal provisions for mandatory referendums at national level, dem 3- legal provisions for optional referendums at national level, dem 5- legal provisions for recall at national level; politalstab – political stability index.

Donor interests: us_inter – level of US interest in the conflict; laguk – lagged share of UK contributions into the regular resources of the UNDP, lagusa – lagged share of USA contributions into the regular resources of the UNDP, lagjap – lagged share of Japan contributions into the regular resources of the UNDP; lagothers – lagged sum of shares of the other top-10 donors into the UNDP regular resources. The US interest represents a conflict-specific variable as it is collected by the CPA, while UNDP contributions to the regular resources are not directed to SDG 16 only, but to all SDGs that are targeted by the UNDP, including climate and equality, showing essentially different motivation rather than political interest in the military activities.

Control variables: population – population of the country (annually persons); size – size of the country in square kilometers; civpop – the share of civilian casualties over the population since the beginning of the conflict.
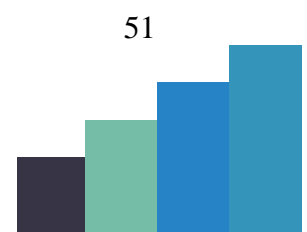
5.2 Pooled OLS and Tobit regressions of panel data

Before conducting OLS and Tobit regressions, we have conducted multiple tests were conducted to verify the accuracy of the model. Such tests of normality and heteroskedasticity are based on OLS residual estimations in Stata. Therefore, the tests for Tobit and FE/RE models were not conducted. The possibility of untested models failing the heteroscedasticity and normality assumptions must be mentioned. To assess the heteroskedasticity of the dataset a Breusch-Pagan / Cook-Weisberg test is conducted. The test confirmed that there is heteroskedasticity in the residuals of the model, as we reject the null hypothesis due to the test value 0,000 is being less than 0,05, with chi2 equal to 234.02 and prob>chi2 equal to 0.0000.

Also, the residuals of the model were regressed with the lag of the residuals to test for serial correlation. The lagged residuals were significant with p-values of 0.001 only for OLS model. This showed compelling evidence of serial correlation in model, confirmed by the plot of residuals.

Additionally, we ran the variance inflation factors (VIFs) test for the variables in the model. The results do not suggest that there is multicollinearity among most of the variables, showing that VIFs range is normal, with no rules violated. Multicollinearity appears for the lag share of the UK and consolidated share, life expectancy, political stability, and income per capita. This can be explained since lagged shares are not significantly different from each other, while GNIPC logically correlates with population and political stability correlates with democratic dummies. The overall range of variation from the norm is not significant, thus, we can conclude that the model is appropriate.

To identify whether the model`s functional form is correct, a Ramsey-RESET test is conducted, results of which show F (3,123) equal to 183.07 and prob>F equal to 0.0000. The test showed no evidence of a mis-specified functional form of the model.

The pooled OLS and Tobit analysis shows that the number of observations is reduced to 143 due to the 6 missing values in the GNI resulting in 7 missing values in lagged logarithmic GNI estimations included in the model. There is a possibility of biased
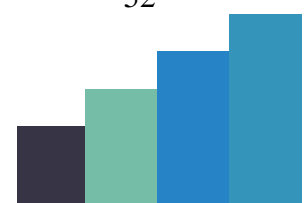
coefficient estimations due to missing values. The results of the OLS pooled regression are presented in the table 8.

Table 8 – OLS and Tobit regression results

Independent variables	OLS	Tobit
GNI (income per capita)	-0.00000915***	-0.00000915***
	(-3.64)	(-3.88)
life_exp (Life expectancy)	0.00291**	0.00291***
	(3.27)	(3.48)
GNI -lag 1 (Logarithmic lagged GNI)	-0.00706**	-0.00706***
	(-3.21)	(-3.42)
dem1 (democracy access in the countries)	-0.0354***	-0.0354***
	(-4.30)	(-4.58)
dem2 (legal provisions for mandatory referendums at national level)	0.0464***	0.0464***
	(4.92)	(5.24)
dem3 (legal provisions for optional referendums at national level)	-0.0228*	-0.0228*
	(-2.14)	(-2.28)
dem5 (legal provisions for recall at national level)	0.0444*	0.0444**
	(2.55)	(2.72)
PolitStab (Political Stability and absence of violence/terrorism)	-0.0262**	-0.0262***
	(-3.33)	(-3.54)
US_inter (level of US interest in the conflict)	0.0263***	0.0263***
	(4.09)	(-0.16)
laguk (lagged share of UK contributions into the regular resources of the UNDP)	-0.148	-0.148
	(-0.15)	(-0.27)
lagusa (lagged share of USA contributions into the regular resources of the UNDP)	-0.166	-0.166
	(-0.26)	(-0.28)
lagjap (lagged share of Japan contributions into the regular resources of the UNDP)	0.370	0.370
	(0.36)	(0.39)
lagothers (lagged sum of shares of the other top-10 donors into the UNDP regular resources)	0.0376	0.0376
	(0.08)	(0.08)
Population (population of the country)	-0.000315***	-0.000315***
	(-3.52)	(-3.75)
Size (size in million sq.km)	0.00706*	0.00706*
	(2.21)	(2.36)
civpop (share of civilian casualties over the population since the beginning of the conflict)	-1.867**	-1.867**
	(-2.98)	(-3.18)
Constant	-0.199	-0.199
	(-0.52)	(-0.55)
R-squared	0.4874	
Wald chi2(16)		135.97

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001
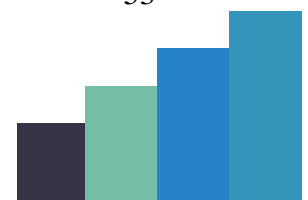
The R-squared suggests that 48.74 % of the project allocations are explained by the variables selected by the regression. All the variables except the lagged shares of the contributions to the UNDP regular resources are statistically significant at 95% level of confidence. The comparison of OLS and Tobit shows that there is no evidence of individual effects affecting the signs of the coefficients, as signs stay the same between these two models.

As predicted, the GNIpc is statistically significant at 1% level and has a negative sign, meaning that if GNIpc increases by 100 USD, the project aid allocation is expected to decrease by 0.000915%. The life expectancy is statistically significant at the 10% level and has a positive relationship according to the results of regression, meaning that a decrease by 1 year would lead ta o decrease in project aid allocation by 0.003%. This is an unexpected result.

As the dependent variable of the GNI is in the log form the β coefficient shows the effect of the original millions USD measurements on the log of the project allocation variable. This variable is statistically significant at the 10 % level and has negative sign. To interpret the effect of original variable on log dependent one, the effect of β coefficient can be calculated as $\beta = \ln (V_2/V_1)$ transformed back to $e^{\beta} = 1 + (V_2 - V_1)/V_1$, where $\ln(V_1) = \beta X$ and $\ln(V_2) = \beta(X+1)$. V is variable in original form. Thus, one must take an exponential interpretation of the coefficient. The growth of GNI represented by lagged logarithmic GNI has a negative relationship with the aid allocation, implying that a decrease in GNI of previous year by 1 million, would lead to 2.16% (exponential interpretation of -0.007) increase of the project aid allocation. This finding goes against the assumption that the UNDP provides more aid to the countries with the GNI growth, however, supports the TRAC 1 UNDP allocation system logic. As TRAC 1 UNDP system adheres to the principles of focusing on low-income countries, progressivity in favor of lower-income countries and a gradual move to the net contributor country status, thus making the country donor itself for the countries that achieve higher GNI levels.

The democratic variables are statistically significant at the 10% level for dem 1, dem 2 and at level of 5% for dem3 and dem5. The results suggest that dem1 (democracy
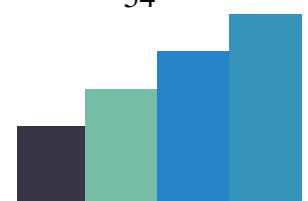
access in the countries) and dem 3 (legal provisions for optional referendums at national level) have a negative relationship with aid allocation, while dem 2 (legal provisions for mandatory referendums at national level) and dem 5 (legal provisions for recall at national level) have a positive relationship. This means that a decrease in democracy access and legal provisions for optional referendums at national level would lead to an increased amount of aid allocated. While an increase in legal provisions for mandatory referendums at national level and legal provisions for recall at national level would lead to increase of the aid allocation. This provides a controversial result meaning that some democratic rights are the reason to increase aid, while some to decrease. As suggested, the political stability index has a negative relationship with aid allocation, as decrease in the index by 1 would consequence into 0.026 % increase of the aid allocation per country. This is an expected finding as reduction of countries political instability is the main goal of the UNDP SDG 16 projects.

The donor political interest variable of US interest is statistically significant at the1% level, proving that an increase of US interest in the conflict by 1 would lead to an increase in project allocation by 0.03%. While the lagged shares of the UNDP contributions to the regular resources are not statistically significant for all 10 countries, does not provide evidence for the hypothesis that the share of donor contribution to the UNDP regular resources influences the decision-making process or aid allocations to the recipient countries.

The control variables are statistically significant with population having negative relationship with aid with statistical significance at the 1% level, suggesting that aid is increased to the countries with reduction in population numbers. A reduction in population by 1 million people would lead to increase in aid allocation by 0.000315%. The size of the country is statistically significant at the 5% level and directly affects aid allocation, meaning that the bigger the country, the bigger amount of aid allocation it receives. So, increase in country size by 1 million sq.km would lead to increase of aid allocation by 0.007%. The share of civilian casualties is statistically significant at the 10% level and has a negative relationship with aid, which can be interpreted as that the less hostilities occur in the country, the bigger the amount of aid can be allocated to restore political stability in
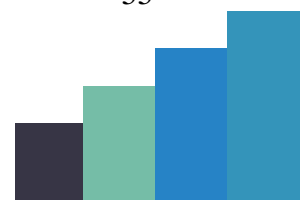
the country. This means that as the share of civilian casualties in population size decreases by 1%, the aid allocation increases by 1.87%. However, this relationship is not, what was expected, as one may assume that increase in casualties would stimulate the provision of more aid, which is also indicated by the population variable. Nevertheless, the UNDP is not a peacekeeping organization. Thus, most projects target the survivors and reestablishment of the political stability and legislation system.

The Tobit regression provides almost identical results for latent variable, first stage and second stage. Tobit suggest the same types of the relationships between the explanatory variables and the dependent variable, while proving that the share of the donor country in the regular resources of the UNDP is not statistically significant for the project aid allocation. The probability of 0.000 and Wald chi2 equal to 135.97 suggests the model is appropriate and the variables selected explain the dependent variable. However, rho in the Tobit model indicates that 90.18% of the variance is due to differences across panels, thus there could be other variables not included into the model that have statistically significant influence on aid allocation.

Overall, the results of the pooled OLS and Tobit are promising, showing that variables selected are statistically significant and suggest the UNDP TRAC-1 principles and non-discrimination principle are not violated.

5.3 Results of the FE and RE models

To control for unobserved effects, we ran the fixed effects models and random effects model to estimate the influence of the independent variables on the dependent one. The results of these regressions are presented in table 9.

Comparing results of fixed effects and random effects model, we can outline the differences in signs that occur for variables (lagged share of UK contributions into the regular resources of the UNDP and lagged share of Japan contributions into the regular resources of the UNDP). Nevertheless, due to statistical insignificance of both variables in both models' specifications, the coefficients will not be interpreted.
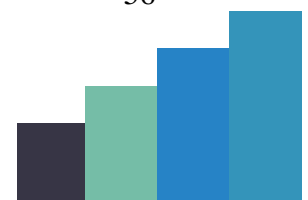
Table 9 – Fixed Effects and random effects models results

Independent variables	Fixed effects	Random Effect
GNIpc (income per capita)	-0.00000972***	-0.00000915***
	(-3.75)	(-3.64)
life_exp (Life expectancy)	0.00310**	0.00291**
	(3.37)	(3.27)
Laggni (Logarithmic lagged GNI)	-0.00740**	-0.00706**
	(-3.28)	(-3.21)
dem1 (democracy access in the countries)	-0.0338***	-0.0354***
	(-3.99)	(-4.30)
dem2 (legal provisions for mandatory referendums at national level)	0.0481***	0.0464***
	(4.97)	(4.92)
dem3 (legal provisions for optional referendums at national level)	-0.0247*	-0.0228*
	(-2.27)	(-2.14)
dem5 (legal provisions for recall at national level)	0.0440*	0.0444*
	(2.49)	(2.55)
PolitStab (Political Stability and absence of violence/terrorism)	-0.0252**	-0.0262**
	(-3.13)	(-3.33)
US_inter (level of US interest in the conflict)	0.0270***	0.0263***
	(4.11)	(4.09)
laguk (lagged share of UK contributions into the regular resources of the UNDP)	0.651	-0.148
	(0.15)	(0.15)
lagusa (lagged share of USA contributions into the regular resources of the UNDP)	-1.248	-0.166
	(-0.47)	(-0.26)
lagjap (lagged share of Japan contributions into the regular resources of the UNDP)	-1.449	0.370
	(-0.21)	(0.36)
lagothers (lagged sum of shares of the other top-10 donors into the UNDP regular resources)	1.572	0.0376
	(0.64)	(0.08)
Population (population of the country)	-0.000312***	-0.000315***
	(-3.44)	(-3.52)
Size (size in million sq.km)	0.00667	0.00706*
	(1.91)	(2.21)
civpop (share of civilian casualties over the population since the beginning of the conflict)	-1.824**	-1.867**
	(-2.88)	(-2.98)
Constant	-0.719	-0.199
	(-0.46)	(-0.52)
R-squared	0.3572	0.4874
Wald chi2(16)		119.81

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

The models provide comparable results to the once presented by OLS and Tobit regressions with regards to statistical significance of the variables. All the dependent variables selected for the analyses are statistically significant at the 5% level, except for
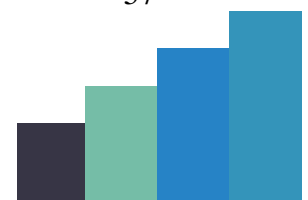
the lagged representations of contribution share of top-10 donor countries. The results of FE/RE models deny any influence of the top-10 donor countries contributions to the regular resources of UNDP having any effect on the project aid allocation for SDG 16 UNDP projects.

The F-test for all the coefficients in FE model being different than zero confirms that the model is correctly specified as F-statistic is less than 0.05. Additionally, 28.19% of the variance is due to differences across panels according to rho obtained from the fixed effects model. The R-squared for fixed effects model suggests that 35.72% of the aid allocations of UNDP within SDG 16 projects is explained by the variables selected by the model.

The results of the random effects model regression will be taken into consideration further, as the results of the Hausman test do not reject the hypothesis of the difference in coefficients being not systematic and suggest that the Random Effects model is more accurate to describe the relationships between variables and the project allocations. The results are $chi2(4) = 1.40$, while $prob > chi2 = 0.8441$.

The Wald $chi2$ equals to 119.81 with a probability equal to 0, less than 0.05 suggests that the random effects model is specified correctly. In addition to these parameters, the R-squared can be interpreted as 48.74% of the project allocation within the selected group can be explained by the variables included in the model specification.

The results of random effects model show all the variables being statistically significant at 90% confidence level, except for variables on top-10 counties contributions to the regular resources of UNDP. All the variables show the same signs as the fixed effects model, OLS, and Tobit for dependent variable, first stage and second stage.

However, based on the R-squared and probability estimations, the RE model is the most suitable model to describe aid allocation between SDG 16 projects of UNDP, while fixed effects might, OLS and other version of Stata Tobit random-effects model can have under or over-estimations for coefficients. The heteroskedasticity of the dataset should be taken into account, as random effects models provide almost identical results to the OLS
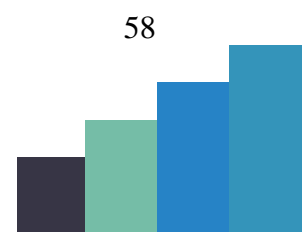
one, which was tested to show no evidence of mis-specified functional form of the model, however, confirmed heteroskedasticity.

5.4 Models comparative analysis

The results received from both OLS, Tobit, FE and RE models show that UNDP aid allocation between SDG 16 projects is not fully explained by the variables suggested in aid allocation literature, together with TRAC-1 UNDP guidelines to aid allocation. In contrast to the findings in the literature on aid allocation, there is no evidence in the selected dataset that donor countries prioritize aid allocation to the countries with economic growth and higher democracy levels. Thus, the findings do not confirm the results of Burnside and Dollar (2000) suggesting that the aid is more provided to the countries with a better social and economic environment, such as good democratic levels and better policies. Clemens et al. (2004) found that aid on growth is significant in the short term, while this study confirms the significance, but the positive relationship between aid and growth is not confirmed. The research suggests that the UNDP prioritizes countries with lower income levels over recipients with higher GNIpc and GNI indicators. Afghanistan, which is the biggest recipient of SDG 16 UNDP project aid allocation, had received more aid in the period studied by this thesis than many countries with lower income per capita.

However, it could be a potential indicator that UNDP is distributing aid based on other criteria based on crises and conflict indicators. The EIU democracy index, the Radnor Conflict Index, which predicts when a government is likely to lose power, the number of refugees, crime levels, Freedom House, and others are among the potential variables for analysis of crisis and conflict influence. However, due to a lack of data on recipient countries, these variables were not examined in this study. That is the reason model included the variable of share of civilian casualties. Yet the share of civilian casualties since the beginning of the conflict in amount of population has negative relationship with aid allocation, meaning that a decrease in casualties and stabilization of hostile situations would lead to an increase in project allocation. Logically thinking, the number of projects that can be conducted on the territory of the country in the process of

recovery from the conflict is larger, thus, the decrease in hostilities means more projects in the area. The assumption that UNDP distributes aid based on the conflict or crisis is supported by the models' findings with regards to political stability index having a negative relationship with aid allocation. Thus, more political instability would imply more aid allocation per country. The primary goal of SDG 16 UNDPO projects is to reduce political instability and level of hostility in the affected countries, thus such a finding would support the UNDP policies.

On the other hand, the population variable has a negative relationship with aid allocation, implying a decrease in population consequences into an increase in aid. Such finding might indicate that the share of civilian casualties variable was collected incorrectly and needs to be verified or population indicator has a higher influence on aid allocation due to the scale of measurement in millions of persons. Additionally, it could be an indicator that in challenging times people leave and the population decreases as aid allocation increases to the region.

Other criteria showing political stability and access to democracy did not present the consistent results, as democratic variables suggest that decrease in democracy access and legal provisions for optional referendums at the national level would lead to the increased amount of aid allocated. While an increase in legal provisions for mandatory referendums at national level and legal provisions for recall at national level would lead to increase of the aid allocation. This provides a controversial result meaning that some democratic rights are the reason to increase aid, while some to decrease. These results do not find support in comparison with similar democratic indicators used by Alesina and Dollar (2000) using democracy index of Freedom House, Cornett, Gibney and Wood (2008), who invented Political Horror Scale as an indicator and Hoeffler and Outram (2011).

Rather than using Freedom House, or the EIU democracy index, which is calculated by 60 indicators grouped into five categories the research focused on dummy variables. The abovementioned widely used indexes have a considerable number of missing values for many counties used in the dataset. This approach of dummy variables
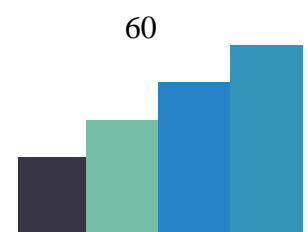
was used to create a clear and concise separation between the specific democracy attributes influencing aid allocations.

The variable of US interest was found to be statistically significant for all model specifications at the 1% significance level, similarly to the "UN friend" variable used by Thiele et al. (2007), Kegley and Hook (1991), Rai (1980), Alesina and Dollar (2000). The results of the model would seem to confirm the hypothesis that project allocations for each country is affected by the level of US political interest. Findings of all models suggest that an increase of US interest in the conflict by 1 level would lead to increase in aid allocation by 0.03% out of UNDP SDG 16 funds. While the lagged share variable on amount of funds provided to the UNPD regular resources by the top-10 donor countries does not influence the decision-making process of aid allocation.

Overall, the results of the models indicate that UNDP SDG 16 projects aid is allocated not entirely based on the countries' socio-economic indicators in accordance with the UNDP standards. The distribution model described in UNDP TRAC states to use population and GNI per capita as the primary criteria, supported by the models. Nevertheless, other factors included in the models were found statistically significant in explaining aid allocations. The RE model built in the research explains the percentage of aid allocation from UNDP SDG 16 funds by 48.7%, indicating that there are other indicators influencing the aid allocation. Models confirm that the project allocation for each country is affected by the territorial size and the population, including civilian casualties. Also, the hypothesis that the project allocations for each country is affected by the level of US political interest is also confirmed by the models, showing that the higher level of US political interest would suggest the higher share of UNDP SDG 16 aid allocations. However, models reject the hypothesis that amount of monetary contribution by the donor country is not a statistically significant factor defining the budget of the project.

The study uses UNDP donor contributions to regular resources to measure the top donors' possible influence on aid allocation. However, as previously stated, UNDP funds are formed up of many different levels and categories. Thus, regular resources alone may

not be appropriate to reflect a particular country's monetary contribution. Due to the complexity of UNDP funding, data on total donor-country contributions to overall UNDP resources are not easily accessible. As a result, UNDP donor contributions to regular resources, which account for just 12.6% of total funds, are used in the model.

The inaccuracy of the model might be also suggested as the model is sensitive to the set of the democratic dummy variables selected for the analyses, which might indicate bias due to the multicollinearity issue. The R squared, coefficients, and significance of variables change depending on the set of variables included in the model. Also, the functional form of double-logarithmic representation was tested in addition to the abovementioned model specification. The results of the models with double-log specifications are presented in Appendix. The double-log model specification of the same variables suggests only GNIpc, population and lag of GNI being statistically significant. This model rejected the assumptions that conflict-specific variables, democratic variables, US political interest or top-10 donor contributions have any influence on aid allocation process. Thus, taking into consideration that the model is sensitive to specific variables, missing values and outliers, additional research on the topic with a fuller dataset and different variables is required.
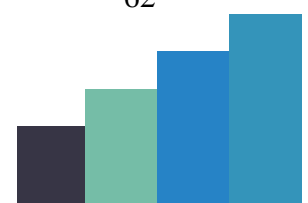
Chapter 6. Conclusion

It has been widely stated in the literature that aid needs to be allocated to the countries with lower income and better policies. The recipient needs, recipient country environment and interest of donor country are proposed as the possible criteria to follow while distributing aid. UNDP is a multilateral organization with high transparency levels in its aid allocation. This thesis analyzed the effects of the variables indicating recipient needs, the country-recipient's socio-political environment, as well as the donor interest and conflict-specific indicators on the allocation of UNDP aid projects under SDG 16. The RE model was developed explaining the possible determinants of aid allocations on UNDP 16 projects in countries with armed conflict or political instability.

6.1 Key Findings

The main objective of this thesis was to see if aid allocations for UNDP SDG 16 projects in countries with armed conflict or political instability follow UNDP funding policy and are aligned with the concept of non-discrimination when evaluating the needs of recipient countries. Similarly, to Hoeffler and Outram (2011), the models of the research identify unobserved country-specific effects to be statistically significant in aid allocation considerations of UNDP, suggesting there is insufficient understanding of the decision-making process in UNDP allocation system.

This thesis attempted to build an econometric model of UNDP aid allocations under SDG 16 to analyze the main factors affecting the aid allocation. The panel data set was used for econometric analysis using OLS regression, Tobit, RE and FE regression models of SDG 16 project allocations between 2016-20. The RE selected managed to answer research questions:

1.   There is no defined formula that explains how UNDP aid under SDG 16 is allocated across recipient countries. GNI per capita, lagged log real GNI, population, life expectancy, democracy access in the countries, legal provisions for mandatory referendums at national level, legal provisions for optional referendums at national level, legal provisions for recall at national level, political stability index, US political interest,
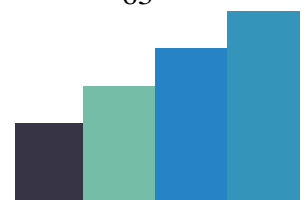
size of the country, share of civilian casualties in population are influencing the decision-making process of aid allocation. However, there are other factors not included into the model that influence UNDP SDG 16 aid allocation.

2.   There is an evidence of US political interest influencing the allocation of aid under UNDP SDG 16 projects between 2016 and 2020. There is no evidence that top-10 donors to UNDP regular resources funds have influence on the aid allocation process.

The indicators identified by most researchers were found to be statistically significant. GNI per capita, real GNI, life expectancy, territory, population affect the aid allocation decision process. Poorer countries with larger territory and lower population are chosen to receive aid for SDG 16 projects from UNDP according to findings, such as the Central African Republic and the Democratic Republic of Congo. Despite that there not being a systematic prioritization of the poorer countries, as there is an outlier of Afghanistan receiving the highest amount of aid during the study period. That could be an indicator that UNDP aid allocation process for SDG 16 projects use another definition of need, environment, interest, and conflict/crisis levels. Among potential variables for analyses there could be FDIs, arms imports, EIU democracy index, Radnor Conflict Index, which predicts when a government is likely to lose its power, number of refugees, asylum seekers, crime levels, Freedom House and others not analyzed in this research due to the lack of available data on recipient countries. This assumption is partially confirmed by the findings that conflict specific variables, such as civilian casualties and size of the country affected by conflict or political instability are taken into consideration during aid allocation decision making process. The model developed had no omitted variables among those selected for analyses.

Afghanistan`s amount of aid could not be explained by being the biggest by the territory, nor being the poorest, nor having the worst indicator of political stability index. It is also not fully explained by the number of civilian casualties reported in the period analyzed, as it was the most hostile conflict during 2016-2020. Also, it has the critical level 3 of US interest during the analyzed period. This is the indicator that makes Afghanistan special in comparison to other 29 countries based on the qualitative analyses
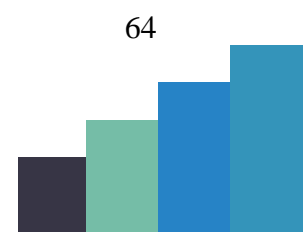
of the data. Could that be an indicator that UNDP aid allocation process for SDG 16 projects prioritizes interests of US as one of the top contributors not only to the regular resources accounted by the model, but all funds received by UNDP on the annual basis? There is evidence through both qualitative and quantitative methods that US interest levels have major influence on aid allocation within UNDP SDG 16 projects. This could potentially mean that there is some bias in UNDP aid allocation that requires further investigation.

Nevertheless, there is no evidence confirmed by the models of the influence of amount of monetary contribution by the top 10 donor countries on aid allocation process. Thus, we reject the hypothesis that UNDP ten top contributors to the regular resources affect the aid allocation between SDG 16 projects of UNDP.

There is a potential consideration of the model not being correctly specified due to the multicollinearity problem, as the model seems to be sensitive to democratic dummy variables. The functional form of double-logarithmic representation was tested in addition to the abovementioned model specification. The double-log model specification suggests that poorer countries with lower population are chosen to receive aid for SDG 16 projects from UNDP according with only GNIpc, population and lag of GNI being statistically significant. This model rejected the assumptions that conflict-specific variables, democratic variables, US political interest or top-10 donor contributions have any influence on aid allocation process. The results of the models with double-log specifications are presented in Appendix. Regardless of the discrepancies, the model described by this this shows interesting results and suggests a potential for future research.

6.2 Study limitations and potential future research

This study has limitations due to the timeframe since SDGs were implemented, limiting research to the data availability from 2016 to 2020. The complexity of the decision-making process on aid allocation and the fact there is no universal mechanism on objective measures of the allocation policies variables adds certain limitations to the research. The data on the recipient countries includes selection of 30 countries out of 140
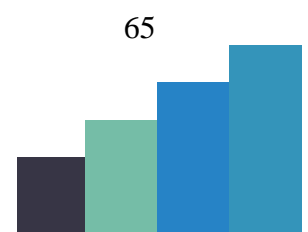
receiving aid from UNDP under SDG 16 projects annually. These countries are selected due to political instability, ongoing conflict or recovering from conflict principles. However, the definition of these categories is not universal. Data from some countries which might hold import additional factors for the analyses is missing due to insufficient information available. Further research on the topic with larger dataset with higher number of years, less missing values could potentially better explain the outliers in UNDP SDG 16 aid allocations to the countries affected by conflict or political instability.

The research uses UNDP donor contributions to the regular resources as the measurement of the potential influence of the biggest contributors on the aid allocation. However, as discussed before the UNDP funds consist of multiple layers and categories of the funds, thus, only regular resources might not be the sufficient representation of the specific country monetary contribution. The data on the complete donor-country contribution to the UNDP total resources in not reported straightforwardly due to complexity of UNDP funds, thus, UNDP donor contributions to the regular resources represent only 12,6 % of the total funds. There is a potential for future research to use all of the UNDP country-specific donations as the measurement of the potential bias or discrimination in UNDP SDG 16 aid allocations.

The usage of dummy variables as democratic measurement poses a potential limitation to the correct model specification, implying multicollinearity issue. In addition to the above-mentioned model specification, a functional form of double-logarithmic functional form was examined. The findings of double-log model suggest only GNIpc, population, and GNI lag to be statistically significant for UNDP SDG 16 aid allocation process. The multicollinearity issue could be solved by accessing the universal democratic index such as Freedom House or the EIU democracy index, which contain too many missing values for the countries covered by this research. Further identification of correct democracy measurement for the conflict-affected countries or countries with political instability could bring the light on the question of correct model specifications.

An additional limitation is that UNDP aid allocation is affected by country specific individual effects rather than the set of the variables that are usually studied in the aid
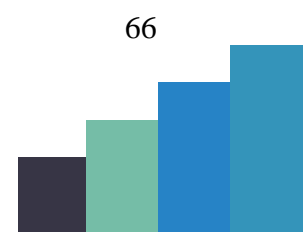
allocation literature. This might be due to two factors. One theory is that UNDP aid allocation is influenced by variables other than common aid allocation, such as crisis or conflict-related variables, which is partially confirmed by this thesis. Further investigation on conflict-specific variables, political stability indexes and crisis estimations could confirm or deny this theory. Another possible reason for such outcome is the project specifications of UNDP SDG 16 programs in the selected countries. There might be an indication that projects are targeting to "end exploitation, abuse, trafficking, torture and violence against children" or "promote adherence to the law at both global and national levels and also ensure equitable access to justice". In those cases, the target-specific indicators for these programs would be more reasonable to consider as determinants of aid allocation. Unfortunately, this thesis focused on the "peace and no violence" projects of UNDP, taking into considerations factors that can potentially affect decisions on this program.

To sum up, these findings show that the motivations presented in the literature to explain aid allocation are insufficient to explain UNDP allocation for SDG 16 projects, more research is needed to gain a better understanding of how the decision process for UNDP aid allocation differs from general aid allocation or include more than the TRAC criteria. Alternatively new and improved indicators for the motivations studied in this thesis should be developed, or additional factors that may explain UNDP allocation to SDG 16 projects explicitly should be investigated.
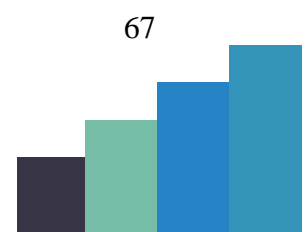
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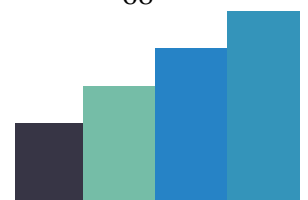
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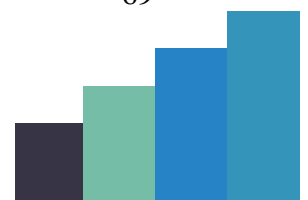
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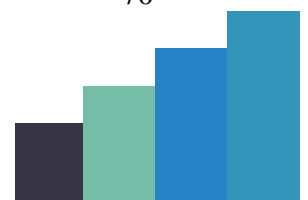
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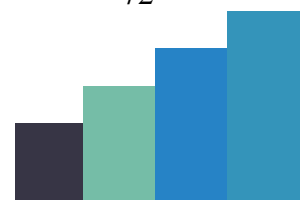
Appendix

Double-log model specification equation:

(1) $\log(AA_{it}) = a_i + \beta_1(\log(GNIpc))_{it} + \beta_2(\log(life_{\exp}))_{it} + \beta_3(laggni)_{it} + \beta_4(dem1)_{it} +$

$\beta_5(dem2)_{it} + \beta_7(dem5)_{it} + \beta_8(politstab)_{it} + \beta_9(us_{inter})_{it} + \beta_{10}(laguk)_{it} + \beta_{11}(lagusa)_{it} +$

$\beta_{12}(lagjap)_{it} + \beta_{13}(lagothers)_{it} + \beta_{14}(\log(population))_{it} + \beta_{15}(\log(size))_{it} +$

$\beta_{16}(civpop)_{it} + \mu_i + u_{it}$

Table 1 – Double-log model specification OLS/Tobit results

Independent variables	OLS	Tobit
GNI (income per capita)	-0.629**	-0.629***
	(-3.31)	(-3.51)
life_exp (Life expectancy)	6.940***	6.940***
	(4.01)	(4.26)
GNI -lag 1 (Logarithmic lagged GNI)	-0.254***	-0.254***
	(-4.06)	(-4.31)
dem1 (democracy access in the countries)	-0.381	-0.381
	(-1.54)	(-1.64)
dem2 (legal provisions for mandatory referendums at national level)	0.431	0.431
	(1.54)	(1.64)
dem5 (legal provisions for recall at national level)	0.778	0.778
	(1.67)	(1.77)
PolitStab (Political Stability and absence of violence/terrorism)	-0.452	-0.452*
	(-1.91)	(-2.03)
US_inter (level of US interest in the conflict)	0.205	0.205
	(1.01)	(1.07)
laguk (lagged share of UK contributions into the regular resources of the UNDP)	-5.959	-5.959
	(-0.57)	(-0.60)
lagusa (lagged share of USA contributions into the regular resources of the UNDP)	-0.453	-0.453
	(-0.21)	(-0.23)
lagjap (lagged share of Japan contributions into the regular resources of the UNDP)	3.685	3.685*
	(1.87)	(1.99)
lagothers (lagged sum of shares of the other top-10 donors into the UNDP regular resources)	-0.0150	-0.0150
	(-0.02)	(-0.02)
Population (population of the country)	-0.361*	-0.361**
	(-2.58)	(-2.75)
Size (size in million sq.km)	0.184	0.184
	(1.78)	(1.89)
civpop (share of civilian casualties over the population since the beginning of the conflict)	-1.616	-1.616
	(-0.08)	(-0.08)
Constant	52.56	52.56
	(0.23)	(0.25)
R-squared	0.2867	
Wald chi2(16)		56.67

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001
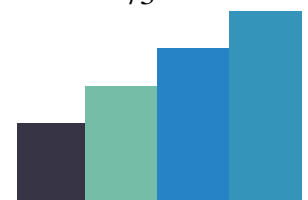
Table 2 – Double-log model specification FE/RE-effects results

Independent variables	Fixed effects	Random Effect
GNIpc (income per capita)	-0.642**	-0.629***
	(-3.26)	(-3.31)
life_exp (Life expectancy)	7.007***	6.940***
	(3.93)	(4.01)
Laggni (Logarithmic lagged GNI)	-0.257***	-0.254***
	(-3.98)	(-4.06)
dem1 (democracy access in the countries)	-0.352	-0.381
	(-1.36)	(-1.54)
dem2 (legal provisions for mandatory referendums at national level)	0.0448	0.431
	(1.56)	(1.54)
dem5 (legal provisions for recall at national level)	0.781	0.778
	(1.64)	(1.67)
PolitStab (Political Stability and absence of violence/terrorism)	-0.450	-0.452
	(-1.86)	(-1.91)
US_inter (level of US interest in the conflict)	0.212	0.205
	(1.02)	(1.01)
laguk (lagged share of UK contributions into the regular resources of the UNDP)	7.877	-5.959
	(0.20)	(-0.57)
lagusa (lagged share of USA contributions into the regular resources of the UNDP)	-3.097	-0.453
	(-0.37)	(-0.21)
lagjap (lagged share of Japan contributions into the regular resources of the UNDP)	-0.000394	3.685
	(-0.00)	(1.87)
lagothers (lagged sum of shares of the other top-10 donors into the UNDP regular resources)	0.893	-0.0150
	(0.29)	(-0.02)
Population (population of the country)	-0.361*	-0.361**
	(-2.54)	(-2.58)
Size (size in million sq.km)	0.175	0.184
	(1.62)	(1.78)
civpop (share of civilian casualties over the population since the beginning of the conflict)	-0.954	-1.616
	(-0.04)	(-0.08)
Constant	-193.9	52.56
	(-0.23)	(0.23)

R-squared   0.2590   0.2867
Wald chi2(16)   50.23
t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$