Master's Thesis of Education

Determinants of bilateral aid to higher education

-Focusing on the sociopolitical, economic & educational dimensions of recipients-

고등교육 양자원조의 결정요인 연구

-수원국의 사회 정치적, 경제적, 교육적 관점을 중심으로-

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Abstract

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The importance of promoting higher education through global development efforts and foreign aid is growing. Bolstered by efforts of higher education institutions to internationalize, the volume of foreign aid for the purpose of developing the world's higher education institutions is increasing. Such phenomenon especially gives importance to aid modalities of international scholarships and subsistence support to international students. Even when commitments are made to aid types that are not scholarships, the frequency of institution–level involvement by both donor and

recipient institutions in bilateral aid programs for higher education is increasing (Varghese, 2010). However, not many studies have been conducted about the determinants and effectiveness of bilateral aid to higher education. Therefore, this study aims to contribute to the literature of higher education aid by analyzing the determinants of bilateral higher education aid of DAC donors based on empirical bilateral ODA data provided by OECD from 2000 to 2017.

For the analysis of collective and individual determinants, this study has utilized explanatory variables that have been selected based on the donor-interest and recipient-needs (DI-RN model) to examine the impact of a recipient's economic, humanitarian and educational needs, as well as a donor's political and economic needs on the amount of higher education aid a country receives. In addition, explanatory variables that represent the ease of cross-border information flows have also been used in order to estimate the impact of a recipient's conditions that facilitate international information flows on higher education aid.

A key finding is that even with the regional development cooperation priorities of donors considered, the amount of higher education aid that a country may receive in general is determined

by various factors. The empirical analysis result of DAC donors as a group indicated that several factors of recipient needs, donor interest, and the recipient's social knowledge infrastructure were all considered in the allocation of higher education aid. While aid to higher education followed the basic principle of aid, wherein it is conceptualized by many that aid should be given to larger countries with low GDP, it was also revealed in the results that insufficiencies in a country's labor force as well as gross tertiary enrolment rate were relevant to the amount of higher education aid. At the same time, it was estimated that countries with high levels of information infrastructure and more global ties were more likely to receive larger amounts of higher education development support.

Second, in addition to an assessment of the composition of aid types committed for the purpose of higher education, it was revealed that different variables were significant to different donors as determinants for providing higher education aid. For instance, France, Germany and Austria would both allocate more higher education aid to encourage international student mobility through scholarships and student benefits to politically global yet poorer countries. However, ceteris paribus, it was estimated that France will most likely be preferential to francophone countries with good

information infrastructure and higher needs in secondary education whereas Germany would more likely be open to accepting international students from countries with a reasonably capable higher education institution. Similar to France, it can be assumed that Austria will also provide more aid to countries with better information infrastructure. However, Austria showed a tendency to provide such aid to countries with higher youth unemployment and lower primary education capacity. Furthermore, it was estimated that the U.S will commit more aid to countries lacking in social infrastructure and a weaker labor market, while Japan's will most likely support higher education development in countries with low upper-secondary education achievement.

In summary, the empirical analysis conducted in this study revealed that different needs and interests were considered by donors in allocating higher education aid. The allocation of aid to the subsector on a collective level was examined to be affected by normative determinants that include humanitarian, economic, and educational needs as well as political interests and the recipient's infrastructural readiness to support the development of institutional development of higher education. However, individual donors showed differences in the type of specific need or interest that

impacts the allocation of aid to higher education. Regardless, normative needs such as low GDP and different educational needs were identified to be key considerations for donors in allocating aid to higher education.

The significance of this study lies in the identification of such differences in the determinants existent within and across different needs and interests as well as infrastructural conditions extraneous to the DI-RN model. However, such findings further require us to conduct studies that are more contingent to individual donors in order to provide a comprehensive understanding of the political and strategic drive of DAC donors within the higher education subsector. Additionally, studies about higher education aid allocation based on the recipient's perspective, such as the evaluation of specific outcomes of the different types of aid provided by different donors, is also expected to significantly contribute to the literature of higher education aid effectiveness.

Keyword : higher education, higher education aid, ODA, aid determinants, bilateral aid, higher education internationalization, scholarship
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Chapter 1. Introduction

1.1. Determinants of aid

The importance of promoting higher education through global development efforts and foreign aid is growing. Bolstered by efforts of higher education institutions to internationalize, aid to develop higher education are increasing, especially through modalities of international scholarships and subsistence support to international students. Even when commitments are made to aid types that are not scholarships, the frequency of institution-level involvement by both donor and recipient institutions in bilateral aid programs for higher education is increasing (Varghese, 2010). However, not many studies have been conducted about the determinants and effectiveness of bilateral aid to higher education, which is representative of strategic interests of donors' higher education institutions.

Furthermore, the practice of overall foreign aid has been under scrutiny for some time now. Voluminous literature about two main aspects of foreign aid – aid effectiveness and the allocation of aid – exist contending conflicting views about foreign aid. When it comes to the allocation of bilateral aid, many argue that most of the advanced industrialized donors show distinct yet consistent patterns

of bilateral foreign aid allocation wherein disbursements are made to recipients prioritized by strategic and politico-economic interests of donor economies rather than by specific needs of recipients (Alesina & Dollar, 2000; Kim, 2014). While it is difficult to adjudicate the display of such patterns in overall foreign bilateral aid as "good" or "bad" behavior, careful approach to what may motivate donors to provide aid to certain countries is needed in order to contribute to enhancing the effectiveness of aid.

Analyzing the determinants of aid holds particular importance when it is applied to the education sector since education is as much of a human right as it is an essential means of human and economic development stipulated by the Declaration of Universal Human Rights in 1948. Consequently, supporting the right to education by means of foreign aid has continued to be formally recognized as well as emphasized by international actors of development throughout the past decades with special advocacy on increasing the volume of aid to education as well as enhancing the quality of education with special attention to primary and secondary education. As a result, the volume of aid to education has shown continuous increase. In 1990, only 0.59 percent of total bilateral and multilateral foreign aid was disbursed to the education sector

whereas aid to education as part of total aid was increased to 5.95 percent in 2017[1], leading to increased school enrollment rates worldwide.[2]

From this perspective, identifying the determinants of aid to the education sector using a set of explanatory variables linked to various aspects of donor and recipient interest pertinent to higher education as well as humanitarian needs can enable us to evaluate whether aid to education, and more specifically higher education, has been (and is being) allocated in a manner that reflects considerations of promoting sound development of recipient countries.

1.2. Development through higher education

Unfortunately, much advocacy on promoting the quality and access to primary and secondary education has left studies about aid to higher education relatively scarce. It is needless to say, however, that this does not mean promoting higher education is less important to a country's development.

In fact, it should be noted that the institutional characteristics

[1] OECD statistics (2020)
[2] According to World Bank statistics, school enrollment rates rose from 81.97% in 1990 to 89.41% in 2017.

of higher education that are idiosyncratic to those of basic and secondary education should warrant more attention to studying what may make aid to higher education more effective. As Marginson (2010) describes, the role of higher education is not limited to fostering the economic development of nations and providing opportunities for individuals, it extends also to promotion of cultural diversity, political democracy and trade (Marginson, 2010). Development of a country's tertiary education sector which includes higher education and advanced technical and managerial training, is also shown to have a strong positive impact on graduates' capabilities covering a wide range of freedoms such as health, nutrition, political participation and women's empowerment (Oketch et al., 2014).

Additionally, in the light of globalization, it is viewed by many that international cooperation for the development of higher education is considered an unavoidable course of action for many higher education institutions in such a way that is not bound by traditional boundaries such as nationality (see, e.g., Cremonini & Antonowicz, 2009; Ng, 2012; Tight, 2019). In essence, the impact of globalization on higher education and the challenges proposed to universities in the process of higher education internationalization is

significant to say the least. New challenges have been given to universities with regard to global development, which is to evolve from traditional cultural institutions that narrowly contribute to the social underpinnings of a country's economy (Werner, 2008) to institutions responsible of developing a collaborative ethos that can dialogue through difference to create a better world amid global challenges of development and equality (Tadaki & Tremewan, 2013).

Therefore, it is the main assumption of this study that bilateral aid provided for the purpose of higher education reflects the strategic motives of not only the donor's government based on strategic development (Bermeo, 2017), but also the vision of higher education institutions to enhance competitiveness through internationalization.

With the given importance of the role of higher education in development, this research aims to observe and explain the behavior of bilateral aid allocation by DAC donors to higher education subsector on the basis of explanatory variables that reflect donor interest and recipient needs through empirical analysis. Based on data gathered on the OECD Creditor Reporting System (CRS) about bilateral aid commitments made for the purpose of

higher education by OECD DAC countries from 2000 to 2017, a series of regressions have been conducted in order to capture the collective pattern of aid allocation well as patterns shown by major individual donors.

Although it is not expected through this study to gain a thorough understanding of the effectiveness of aid to higher education, it is expected that this study will allow us to better understand what factors may potentially be crucial for a country to receive bilateral aid for the development of higher education. At the same time, it is expected that the findings will provide us a better understanding of the motives that construct the underpinnings of the ongoing internationalization of higher education, therefore contributing to the literature of empirical studies of aid allocation to the higher education sector.

Chapter 2. Literature Review

2.1. Distribution of foreign aid

Bilateral aid is the government-sanctioned development assistance provided by major western democracies to governments, NGOs, and other organizations in the developing world (Swiss, 2016). So far, the prevailing literature on the allocation of aid has conventionally provided two distinct interpretations for why donors provide aid which are (1) to promote development based on international humanitarianism (Lumsdaine, D.H., 1993; Opeskin, 1996), and (2) to serve as instruments for donors to achieve national political and strategic interests (Alesina & Dollar, 2000; Dreher et al., 2011; Woods, 2008), which is often referred to as the *realist approach* to aid.

The international humanitarianism approach to foreign aid, or the altruistic approach to aid, suggests that donors provide aid to recipients most in need of humanitarian assistance, of which needs are often proxied by GDP per capita and population. From this perspective, aid is given by donors based on their 'moral vision' (Lumsdaine & Halloran, 1993) to combat humanitarian crises and overcome poverty. However, recent studies have revealed that

such altruistic views of donors are not sufficient to account for the motives of donors to provide aid. This is supported by the finding of Gates & Hoeffler (2004) wherein even the supposedly more *humanitarian donors* – Nordic countries – differ in patterns of aid allocation based on their national interest.

Contrary to the assumption of humanitarian approach, literature on realist approaches to aid purport that donor–interests dictate the distribution aid to recipients. Based on this assumption, Alesina & Dollar (2000) argue that focus on strategic interests of donors cause distortions in the allocation of aid, criticizing that this leads to bilateral aid having weak association with poverty, democracy, and good policy. Most empirical studies on the realist motives of aid allocation suggest the importance of past colonial ties, existing trade relationships, politico–economic importance, as well as geographical importance of recipient countries as determining factors of aid (Bermeo, 2007; Bermeo, 2011; Carment et al., 2008; Feeny & Mcgillivray, 2009). The realist approach, therefore, is criticized as it causes aid to be ineffective by not prioritizing the need of recipients, and donors disregarding merit by not taking the level of corruption in recipient countries into account (Dreher et al., 2011).

2.2. Donor-interest and recipient-needs

According to Nielsen (2010), a large literature on foreign aid allocation exists (some 160 published papers) attempting to uncover the determinants of aid. Most research about aid allocation, be they focused on altruistic motives or realist approaches to aid, are based on what is broadly known as empirical analysis of donor-interest and recipient-needs (DI-RN model).

The DI-RN model which posits variables that potentially reflect various donor interests and recipient needs has been used in the bulk of literature about aid flows. For instance, the seminal research on foreign aid allocation of Japan, France, Sweden and the U.S by Schraeder et al. (1998) used groups of variables that proximate interests of donors and recipient needs such as humanitarian need, strategic importance, cultural similarity, and economic potential in order to examine why such advanced industrialized countries give aid to the African region. Later, Alesina & Dollar (2000) performed a set of regressions using empirical aid data with sets of variables that capture donor interests such as trade openness, colonial history, cultural affinity, and regional strategic interest to address the patterns as well as determinants of aggregate aid allocation.

Swiss (2016), in addition to conventional variables that proximate donor interest and recipient needs, conducted a network analysis of aggregate foreign aid based on the degree to which recipients are plugged into networks of international organizations, introducing the impact of institutionalist motives of donors to bilateral aid flows.

In the empirical analysis conducted by In'airat (2014), the quality of governance of recipient countries was analyzed as a determinant of aggregate aid, wherein strong evidence was found that countries with good governance are given preferential treatment by donors.

Based on evidence provided by such analyses we can reasonably expect the practice of bilateral aid to result from a complex lattice of transnational relationships, one that is shaped with a combination of various donor interests and recipient needs and conditions. However, criticism about such literature exist on the grounds that recipient countries are challenged in varying degrees by different types of setbacks that GDP per capita may not be able to aptly represent (Nielsen, 2010).

2.3. Broadening scope of higher education

The importance of higher education in the global development context has been bolstered in the 21st century by the growing role that knowledge plays in the new "knowledge economy", which is a phenomenon that has been explored by Drucker (1969) and Bell (1974) as early as the 1970s.

And as higher education institutions are diversifying alongside their student bodies and growing numbers of public, private, and open distance education institutions are broadening accessibility to higher education (UNESCO, 2017), increasing aid is being allocated to higher education institutions among DAC donors. Representative of the growing centrality of higher education institutions around the world as actors of international development and cooperation, concentrated aid to higher education is in part a reflection of the ongoing process of internationalization of higher education. Therefore, understanding of the discourse of higher education internationalization is needed to better understand the context in which aid is given to the higher education sector.

The term higher education internationalization has been interpreted in many different ways over the past 20 years or so. One interpretation of higher education internationalization is that it

is a process of introducing new policies and practices, undertaken by academic systems for motives such as commercial advantage, knowledge transfer and acquisition, and curriculum enhancement among many others (Altbach & Knight, 2007). In a similar vein, Werner (2008) contends that higher education internationalization is a holistic process of strategic institutional reforms to enhance convergence of higher education institutions among targeted countries or regions. Although the element of internationality has always been embedded in higher education, the current discourse about higher education internationalization is highly correlated with the phenomenon of globalization as implied by De Wit (2020):

> In the last decade of the previous century, the increasing globalization and regionalization of economies and societies, combined with the requirements of the knowledge economy and the end of the Cold War, created a context for a more strategic approach to internationalization in higher education. International organizations, national governments, and higher education organizations such as the International Association of Universities placed internationalization at the top of the reform agenda. (De Wit, H., 2020, p.1)

Overall, the general consensus about the impact of

globalization on higher education seems to be the need to make higher education systems more globally competitive, therefore highlighting the nature of competitiveness of higher education institutions. One of the main modalities related to foreign aid and financial support of enhancing competitiveness of higher education systems is contended to be promoting mass mobility of international students and faculty (Abimola et al., 2016; Cremonini & Antonowicz, 2009; Ng, 2012; Tadaki & Tremewan, 2013; Kim, 2009; Knight, 2008). As it will be examined in more detail in the following chapter of this study, the majority of bilateral aid to higher education given by DAC donors is comprised of scholarships and imputed student costs.

Another important role of higher education in developmental science is one that it plays as part of public diplomacy towards middle powers. In a broad sense, commitments to higher education aid are made for the purpose of developing the beneficiary's higher education institution. Nevertheless, motives for planning and implementing such interventions may differ from one donor to the other. Within the frame of political rationale, higher education aid can be categorized into two types: (1) aid as part of public diplomacy and (2) aid to facilitate regional consolidation. Many

countries have started to pursue larger international or regional influence through the soft-power promoting track of public diplomacy. Australia, well known for launching the Colombo Plan, has been continuing to award generous international scholarships to foreign students within the Asia-Pacific region based on its public diplomacy strategy. This means that much like many other donors, Australia has set forth the specific expectation of foreign students who have benefitted from Australian scholarships to become 'pro-Australian personnel' who will later play critical roles in reinforcing bilateral diplomatic and economic ties between their country of origin and Australia (Moon, 2014). Similarly, Korea has begun to strategically consider the expansion of education ODA based on public diplomacy and cultural exchange in light of successful public diplomacy strategies displayed by Australia and Canada (Lee, 2014).

Therefore, based on the foregone literature regarding the motives and modalities of internationalizing higher education, the main assumption of this study is that the selection of partners for bilateral aid to the higher education sector reflects the strategic interest of higher education institutions of donor countries to formulate knowledge networks and promote academic exchange

among targeted countries, in addition to enhancing the institutional capacities of recipients.

2.4. Considerations for aid to higher education

While studies about disaggregated aid allocation or in-sector aid allocation are relatively scarce, few studies have attempted to examine the patterns and characteristics of aid allocation to higher education and/or tertiary education. Kim (2014), in her systematic research about characteristics of higher education aid allocation of France and Germany, has concluded that while France and Germany show different shares of education aid by subsector and that both countries were driven by political-economic motivations for providing aid to their recipients that include colonial ties, trade agreements, and regional interest. A different study about the trend and effectiveness of higher education aid conducted by Varghese (2010) suggests potential issues of favoritism of recipients by donors and fragmentation of aid interventions for higher education. In Verghese's study, a select few countries accounted for approximately half of direct aid to higher education in 2006, and that "most of the aid was spread too thinly across institutions or areas of intervention" (Varghese, 2010, p.182) for recipient

countries to realize an institutional level of development.

Beyond the issues of favoritism and fragmentation in higher education aid, a rigorous literature review about the effectiveness of aid to tertiary education conducted by Oketch et al. (2014) concluded that although aid to tertiary education has been shown to contribute to development in low and lower middle income countries (LLMIC), none of the studies that they have reviewed attempted to capture the impact of such interventions on broader development outcomes. Instead, all present evidence regarding the effectiveness of the interventions under consideration in terms of the proximate outcomes of the interventions such as research output and institutional quality. Although the research scope of Oketch et al. (2014) has two categorical differences to this study of which are that it (1) discusses tertiary education, which is a broader field of discussion than higher education, and (2) it focused on the impact of aid to tertiary education rather than the determinants of such aid, it still provided an important categorical organization of intervention models and outcomes that is relevant to aid to higher education and the selection of explanatory variables for this study.

As shown in table 1, the various types of interventions to the tertiary education sector, either bilateral or multilateral, are

delivered in two main aid types as categorized by DAC: project-type interventions (C01), technical assistance (D01) and scholarships for inbound and outgoing students (E01). Although Oketch et al. (2014) did not categorize the types of interventions in accordance to DAC's categorization of aid types and there are certain limitations to categorizing interventions without examining individual programs, the inference was made based on the general information given by the descriptions of each intervention. The specific composition of aid types according to our CRS data will be examined in further detail in the following chapter of this study. Nevertheless, it is notable that the majority of aid to higher education consists of three distinct types of aid. The purpose, or intended outcomes, of these interventions are more varied according to the findings of Oketch et al. (2014).

The eleven intended outcomes of tertiary education interventions organized in Oketch's study provide us with a general set of purposes relevant to each outcome when providing aid to tertiary education. All five sets of purposes are considered to adequately reflect the needs relevant to various levels of a recipient's tertiary education institution such as educational, economic, and social needs as organized in the following:

Table 1. Tertiary education intervention models identified by Oketch et al. (2014) categorized by DAC aid type

Aid type	Intervention
Project-type intervention / technical assistance	1. Provision of short-term training or workshops for faculty and/or administrators
	2. Institutional capacity building (comprising infrastructural reforms, initiatives aimed at increased faculty teaching or research capacity, and measures aimed at improving governance and/or managerial capacity)
	3. Creation of a network of TEIs Introduction or expansion of online or distance education (project-type intervention)
	4. Introduction or expansion of online or distance education
	5. Provision of blended-mode trainings, combining short-term in- person workshops with distance supervision of longer-term projects (typically focused on faculty members)
	6 System-wide capacity building (typically focused on system- wide efficiency measures and/or infrastructural reforms)
Scholarship	7. Provision of complete degree courses by a foreign institution (either online or in person)
	8. Provision of foreign undergraduate or postgraduate scholarships to students or faculty members

Source: Oketch et al. (2014)

i. Educational needs: institutional capacity, quality of education, accessibility
ii. Economic needs: industry development
iii. Social needs: community development

Table 2. Intended outcomes of tertiary education interventions classified by Oketch et al. (2014)

Purpose	Intended outcome
Institutional capacity	1. Improved institutional efficiency
	2. Improved institutional governance
Quality of education	3. Improved teaching capacity of faculty members
	4. Increased research output (quality of education)
	5. Modification of the range of available academic subjects (comprising both interventions intended to increase the diversity of subjects and those intended to focus on particular fields of study, such as science and technology)
	6. Expanded access to postgraduate programmes
	7. Expanded or revised curriculum (quality of education)
	8. Improved student-learning outcomes
Industry development	9. Improved and/or expanded links with industry
Accessibility	10. Increased access to TE (either in terms of absolute numbers or increased diversity of the student population)
Community development	11. Expanded links with surrounding community

Source: Oketch et al. (2014)

In addition to the foregone literature about aid allocation in both aggregate levels and sectoral levels in previous sections, this categorization provides us with an in indication of how important it

is to consider a wide range of variables beyond simple educational needs when examining the determinants of aid to higher education. At the least, evaluating the impact and determinants of aid to higher education calls for capacities of the institution and governance as well as socioeconomic needs to be considered in order to ensure good functioning of higher education institutions of recipients.

Chapter 3. Patterns of aid to higher education

3.1. Characteristics of aid to higher education

This chapter presents sets of descriptive statistics about the general trend of bilateral commitments to higher education such as share of aid to higher education and aid types to provide an overview of how DAC donors have portioned their education aid to the higher education subsector from 2000 to 2017. Data about 2018 have been omitted since reports of commitments as well as disbursements for the fiscal year of 2018 are incomplete on the CRS database as of the time of this research. In addition, brief overviews of individual donors' higher education ODA policies have been summarized to provide a more comprehensive context for analysis.

First, examination of the share of overall DAC bilateral commitments made to the education sector show that on average, donors have allocated 6.69 percent of their bilateral aid funds for the overall education sector for the past 18 years (table 3).

In terms of subsectors of education, donors have allocated more funds to post-secondary education among other subsectors; (1) education, level unspecified, (2) basic education, and (3)

secondary education as shown in table 3. In terms of both aggregate shares and average shares from 2000 to 2017, the post-secondary education subsector has been allocated the most commitments out of all other education subsectors with of 2.70 percent and 2.37 percent respectively.

Table 3. Share of commitments to education sector

Year	Share
2000	6.29%
2001	6.48%
2002	7.59%
2003	7.77%
2004	8.98%
2005	5.55%
2006	7.97%
2007	8.73%
2008	5.21%
2009	6.32%
2010	6.89%
2011	4.99%
2012	5.20%
2013	4.65%
2014	8.02%
2015	6.08%
2016	6.41%
2017	7.29%
Average	6.69%

Source: OECD CRS (2000-2017), organized by author.

Figures of the amount of bilateral education ODA committed to all developing countries by DAC donors from 2000 to 2017

naturally also indicate that post-secondary education, which includes purposes of (1) advanced technical and managerial training (purpose code: 11430) and (2) higher education[3] (purpose code: 11420), has generally been the largest subsector of education in terms of commitments made by donors as shown in figure 1. From 2000 to 2017, the total amount of aid to the post-secondary sector was greater than all other subsectors of education (28,916.73 million $US), which was followed by basic education (21,994.32 million $US), general education support (education, level unspecified; 15,831.63 million $US) and secondary education (8,250.95 million $US)[4].

It should be noted, however, that the significant reduction of aid to the overall education sector between the years of 2008 to 2015 is not endogenous to the education sector. Instead, the drastic reductions of commitments as well as the pattern of fluctuation are consistent with those of overall aid commitments made by donors

[3] OECD distinguishes two distinct categorizes for post-secondary education when receiving ODA reports from creditors. Aid to higher education is defined as degree and diploma programs at universities, colleges and polytechnics and scholarships; advanced technical and managerial training aids are professional-level vocational training programs and in-service training. It should be noted, however, that in practice aid to higher education is not limited to degree programs and scholarships. Donors often report funding for university collaborations and joint research projects undertaken between recipient institutions.

[4] See appendix A for detailed aid amount to the education sector.

during the same time period[5] (see appendix A).

Table 4. Share of bilateral commitments to education subsector among total commitments

	Education, level unspecified	Basic education	Secondary education	Post-secondary education
2000	1.57%	2.10%	0.57%	2.05%
2001	1.97%	1.82%	0.63%	2.06%
2002	1.29%	1.88%	0.65%	3.77%
2003	1.39%	2.06%	0.54%	3.79%
2004	1.16%	2.98%	0.56%	4.28%
2005	1.13%	1.81%	0.36%	2.25%
2006	1.49%	2.65%	0.63%	3.21%
2007	2.09%	1.84%	0.85%	3.96%
2008	2.06%	1.30%	0.77%	1.08%
2009	1.63%	2.05%	0.88%	1.76%
2010	1.91%	2.65%	0.84%	1.50%
2011	0.56%	2.86%	0.55%	1.02%
2012	0.58%	2.70%	0.41%	1.51%
2013	1.23%	1.15%	0.97%	1.30%
2014	0.94%	2.32%	1.29%	3.47%
2015	1.11%	1.96%	1.80%	1.22%
2016	1.33%	1.87%	0.84%	2.37%
2017	1.72%	2.20%	1.35%	2.02%
Total	1.48%	2.06%	0.76%	2.70%
Avg.	1.40%	2.12%	0.80%	2.37%

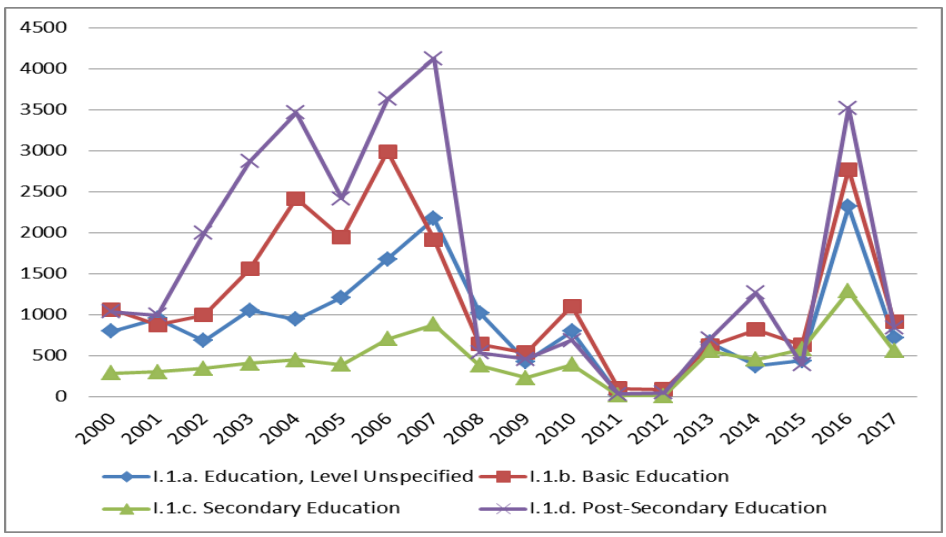
Source: OECD CRS (2000-2017), organized by author.

Therefore it can be reasonably assumed that the fluctuations shown in the sub-sectors of education is not reflective of particular changes in donors' education aid policies, but instead reflects the

[5] According to the CRS data, bilateral commitments to all sectors were drastically reduced from 2007 (USD 104,168 million) to 2008 (USD 49,561 million). Commitments were also very low between 2011 and 2012 with only USD 3,618 million and USD 3,348 million respectively.

fluctuations in overall bilateral ODA commitments.

Figure 1. Bilateral commitment amount to education by subsector, all DAC donors

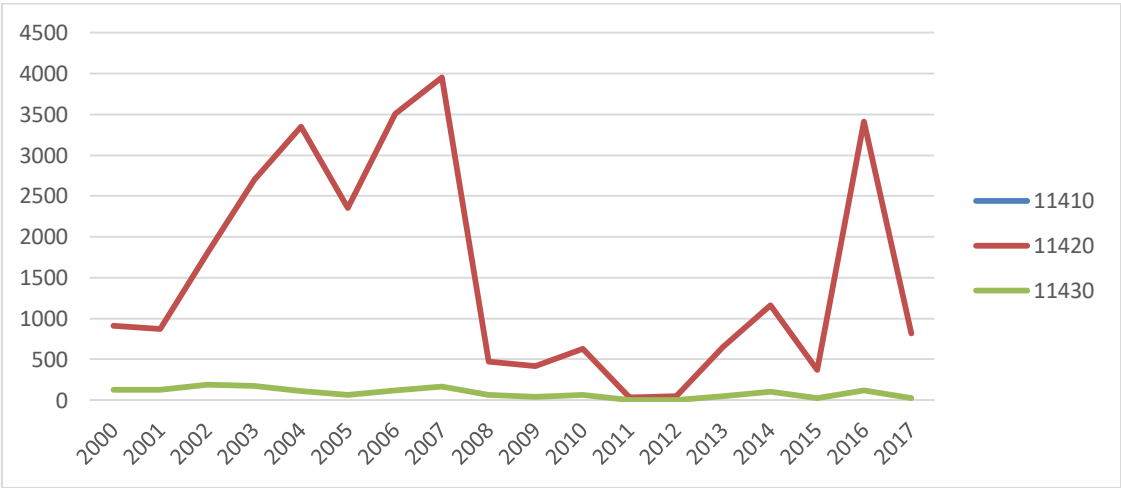


Note: all figures are in million US$ (constant 2010 value).
Source: OECD CRS (2000–2017), organized by author.

Within the subsector of post-secondary education, commitments to higher education were significantly larger than advanced technical and managerial training. Figure 2 illustrates that from 2000 to 2017 donors in general have consistently committed more than 85 percent of their post-secondary education funds to higher education. It is reasonable to estimate, therefore, that higher education has continued to be a large focus of DAC donors across all education sectors despite their focus on development goals for

basic education as purported by EFA.

Figure 2. Commitments to post-secondary education



Source: OECD CRS (2000-2017), organized by author.

When examined by each donor, however, noticeable differences of bilateral aid allocation patterns can be seen within the education sector among 30 different DAC members. For instance, it is shown that Hungary[6], which is the newest DAC member, has allocated a staggering 44.28 percent of its total bilateral aid to post-secondary education, whereas conventionally strong advocates of aid to education such as Japan, the Netherlands, and U.S have allocated much less of their bilateral commitments to post-secondary education. Additionally, out of the 7 new DAC members which have gained accession since 2010 (Czech Republic,

[6] Hungary was granted accession into OECD DAC as of December 2016, becoming the 30th member of the committee.

Hungary, Iceland, Korea, Poland, Slovak Republic and Slovenia), 5 members (71%) have allocated their bilateral commitments to post-secondary education above the average percentage which is 6.05%. On the other hand, only 38% (6 out of 22 members) of the conventional donors have allocated more commitments to post-secondary education.

Based on this statistic, it can be assumed that newer donors tend to put more emphasis on post-secondary education as a means of promoting development among developing countries, or seeking national development, in comparison to conventional donors. Evidenced by the fact that more than half of the new donors are devoting more focus on aid to higher education and vocational education than their conventional counterparts, it can also be assumed that their education aid strategy may possibly be developed around promoting the development of higher education institutions.

Although the share of disaggregated bilateral commitments to post-secondary education indeed indicate that newer DAC donors tend to be more generous with aid to higher education, it is still true that *traditional* DAC members provide much more aid to higher education in terms of absolute volume of aid. As in both aggregate

volume and average volume of commitments made for the purpose of higher education from 2000 to 2017, western advanced economies such as France, Germany, U.S, Austria – and Japan, although not a western country – have provided significantly more aid to higher education as shown in table 5, continuing to be major providers of aid to higher education.

How do these donors allocate their bilateral higher education aid to their recipients? The following provides a brief overview of the allocation of each major donor and Hungary's top recipients throughout 2000 to 2017 in order to identify country-specific and regional foci of individual donors.

Table 5. Share of bilateral commitments within education sector, all DAC donors

Donor	111	112	113	114
Hungary	0.59%	0.00%	0.00%	44.28%
Poland	3.20%	0.67%	0.22%	18.85%
Greece	3.19%	2.42%	2.22%	13.28%
Slovenia	1.82%	0.23%	1.12%	11.69%
Austria	0.86%	0.30%	0.75%	11.17%
France	2.83%	1.24%	1.47%	9.85%
New Zealand	1.78%	7.21%	1.10%	9.71%
Portugal	3.01%	1.13%	1.86%	9.64%
Slovak Republic	4.64%	1.44%	1.41%	7.02%
Czech Republic	1.88%	0.10%	1.48%	6.61%
Germany	1.03%	1.48%	1.83%	6.48%
Korea	2.17%	1.21%	3.72%	5.31%

Belgium	2.11%	1.08%	1.67%	4.63%
Japan	1.01%	0.65%	0.41%	2.35%
Netherlands	1.16%	5.42%	0.51%	2.14%
Norway	2.27%	4.34%	0.38%	2.10%
Australia	4.44%	3.43%	1.39%	2.05%
Spain	3.24%	2.12%	1.48%	1.95%
Canada	2.99%	4.06%	0.60%	1.40%
Italy	2.00%	0.63%	0.48%	1.04%
Ireland	5.70%	3.72%	0.62%	0.84%
Finland	4.67%	2.12%	0.37%	0.63%
Sweden	1.28%	2.08%	0.17%	0.55%
Switzerland	0.74%	1.32%	1.61%	0.54%
United Kingdom	2.27%	4.28%	0.39%	0.47%
United States	0.34%	2.29%	0.05%	0.43%
Luxembourg	2.71%	3.32%	7.41%	0.22%
Denmark	2.39%	1.81%	0.41%	0.21%
Iceland	0.38%	1.99%	0.10%	0.00%

Source: OECD CRS (2000–2017), organized by author.

Table 6. Top donors of bilateral aid to higher education by volume

Donor	Annual commitment (average)
France	438.67
Germany	403.14
Japan	202.78
EU Institutions	135.46
U.S	65.44
Austria	52.85

Source: OECD CRS (2000–2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

First, it can be seen in table 7 that France has provided more than 50 percent of its aid to higher education to countries in Africa. More specifically, France has the majority of its focus on North

African countries such as Morocco, Algeria and Tunisia as major higher education aid recipients. This is in line with France's geographical ODA strategy in which its priorities lean towards Africa, more specifically the Sahel region. Among France's focus action around the implementation of SDGs and the Paris Agreement, France puts emphasis on strengthening its partnership with the whole of Africa to support the young people of Africa under the implementation of the commitments made in Ouagadougou7 in 2017 (CICID, 2018).

Table 7. Top higher education aid recipients and regions, France

Recipient	$ million	in %	Region	in %
Morocco	1278.17	17.12%	North of Sahara	36.11%
Algeria	890.46	11.93%	South of Sahara	29.43%
China	643.14	8.61%	Far East Asia	13.61%
Tunisia	453.71	6.08%	Middle East	6.25%
Senegal	378.93	5.08%	South America	5.04%

Source: OECD CRS (2000-2017), organized by author.

7 On November 28, 2017, France has committed to a set of initiatives to build a new relationship between France and Africa. Major commitments set out by France in four fields that are particularly relevant for the future of young people in Africa include: education and academic cooperation, innovation and economic partnerships, climate and sustainable cities, and culture (Ministry for Europe and Foreign Affairs, 2017). In keeping with this commitment, France has laid out ODA policies to mobilize its efforts in the Sahel to promote sustainable development and reduce vulnerability (CICID, 2018).

Germany's higher education aid distribution indicates that unlike France, it has a larger focus on Far East Asia, especially China, in providing higher education aid (table 8). It is shown that while Far East Asia received the most commitments of 28.62 percent among all other regions, China has received a surprising 21.47 percent of commitments out of all individual recipients, meaning that China alone has received approximately 75 percent of all higher education aid committed to East Asia. Considering, however, that most of Germany's higher education aid is committed in scholarships and support for international students (further examined in the following section), it can be assumed that Germany prioritizes hosting undergraduate and graduate students from China in its approach to higher education development. Such behavior can be attributed to the increasing status of China as a critical economic partner of Germany over the past decade.

Table 8. Top higher education aid recipients and regions, Germany

Recipient	$ million	in %	Region	in %
China	1558.33	21.47%	Far East Asia	28.62%
Bilateral, unspecified	437.38	6.03%	South & Central Asia	12.77%
India	387.94	5.35%	Middle East	11.72%
Cameroon	364.97	5.03%	Europe	11.06%
Turkey	350.34	4.83%	South of Sahara	10.97%

Source: OECD CRS (2000–2017), organized by author.

While France and Germany respectively place specific regional focus on higher education aid to North Africa and China, Austria prioritizes its higher education development efforts to European countries as shown in table 9 by committing more than 59 percent of its total higher education aid to European countries. Additionally, the allocation of higher education aid by individual recipient reveals that Austria has been prioritizing Turkey, Bosnia and Herzegovina, and Serbia, which have all undergone conflict throughout the 20th century. Based on this statistic, it can be considered that in light of the ongoing higher education institution reforms within Europe, Austria's higher education development strategy is to promote regional cooperation among various European countries in support of national reconstruction and educational capacity building.

The U.S, on the other hand, has been examined to have allocated most of its higher education aid (22.46 percent) to South & Central Asia from 2000 to 2017. However, allocation by individual recipients reveal that sizeable amounts of higher education aid have been committed to Afghanistan and Wes Bank and Gaza Strip, which have been significant areas of U.S military involvement throughout the 21st century.

Table 9. Top higher education aid recipients and regions, Austria

Recipient	$ million	in %	Region	in %
Turkey	205.08	21.56%	Europe	59.01%
Bosnia and Herzegovina	132.42	13.92%	Far East Asia	8.27%
Serbia	94.21	9.90%	Middle East	6.78%
Bilateral, unspecified	79.73	8.38%	North & Central America	2.96%
China	50.21	5.28%	North of Sahara	2.10%

Source: OECD CRS (2000-2017), organized by author.

Such patterns shown in the aid allocation of U.S may signify that although U.S higher education aid is allocated relatively evenly across various parts of the world, strategic ties relevant to national security and its military campaigns indeed place priority on individual recipients. It may, therefore, be reasonably assumed that not unlike Austria, reconstruction of recipients' higher education

institutions and national educational capacity building impact the allocation of U.S higher education aid.

Table 10. Top higher education aid recipients and regions, U.S

Recipient	$ million	in %	Region	in %
Bilateral, unspecified	189.29	21.25%	South & Central Asia	22.46%
Egypt	158.42	17.78%	Regional and Unspecified	21.25%
Afghanistan	89.85	10.09%	North of Sahara	18.36%
Pakistan	56.01	6.29%	South of Sahara	11.78%
West Bank and Gaza Strip	50.89	5.71%	Middle East	9.17%

Source: OECD CRS (2000-2017), organized by author.

Higher education commitments made by Japan suggest that regional proximity, among other factors, is most relevant to the allocation of Japanese aid. This is clearly shown in table 11 wherein it is revealed that over 70 percent of all aid to higher education has been allocated to East Asian countries.

Table 11. Top higher education aid recipients and regions, Japan

Recipient	$ million	in %	Region	in %
China	1888.03	54.77%	Far East Asia	73.85%
Bilateral, unspecified	301.1077	8.73%	Regional and Unspecified	8.73%
Viet Nam	145.5851	4.22%	South & Central Asia	7.80%
Malaysia	115.1462	3.34%	North of Sahara	3.50%
Indonesia	104.9396	3.04%	South of Sahara	2.51%

Source: OECD CRS (2000-2017), organized by author.

3.2. Types of aid to higher education

Although the current typology of aid does not track the end uses of the funds which is addressed in the sector classification, the typology has been aligned with the concepts and definitions used in the Paris Declaration for the improvement of aid effectiveness. The type of aid classification contains the following broad categories of which include several sub-categories as shown in table 12: budget support, core contributions and pooled programs and funds, project-type interventions, experts and other technical assistance, scholarships and student costs in donor countries, debt relief, administrative costs, and other in-donor expenditures.

Budget support, which consists of general budget support and sector budget support, are transfers of a donor's funds to the

recipient government in support of the implementation of macroeconomic reforms (structural adjustment programs, poverty reduction strategies, etc.) or sector-specific policy concerns.

Core contributions and pooled programs and funds include aid given to various stakeholders such as other donors, NGOs, multilateral institutions, and PPPs. Specific aid types under this category include core contributions to multilateral institutions, contributions to specific-purpose programs and funds managed by implementing partners, and basket funds or pooled funding programs.

A project is a set of inputs, activities, and outputs, agreed with the partner country, to reach specific objectives and outcomes within a defined time frame, with a defined budget and a defined geographical area. While project-type interventions include expenditures made for project related activities such as feasibility studies, appraisals and evaluations, academic studies, research and development, trainings, scholarships, and other technical assistance activities not directly linked to development projects and programs are recorded under other technical assistance.

Scholarships and student costs in donor countries consist of financial aid awards for individual students and contributions to

trainees as well as indirect costs of tuition or living costs for foreign students in donor countries. It is important to note that coupled with the global trend of internationalizing higher education institutions, international scholarships are found to be the most frequent and robust type of aid pertaining to higher education.

Table 12. Typology of aid used by OECD

A		Budget support
	A01	General budget support
	A02	Sector budget support
B		Core contributions and pooled programs and funds
	B01	Core support to NGOs, other private bodies, PPPs and research institutes
	B02	Core contributions to multilateral institutions
	B03	Contributions to specific-purpose programs and funds managed by implementing partners
	B04	Basket funds/pooled funding
C		Project-type interventions
	C01	Project-type interventions
D		Experts and other technical assistance
	D01	Donor country personnel
	D02	Other technical assistance
E		Scholarships and student costs in donor countries
	E01	Scholarships/training in donor country
	E02	Imputed student costs
F		Debt relief
	F01	Debt relief
G		Administrative costs not included elsewhere
	G01	Administrative costs not included elsewhere

Source: oecd.org

3.2.1. Aid types of all donors

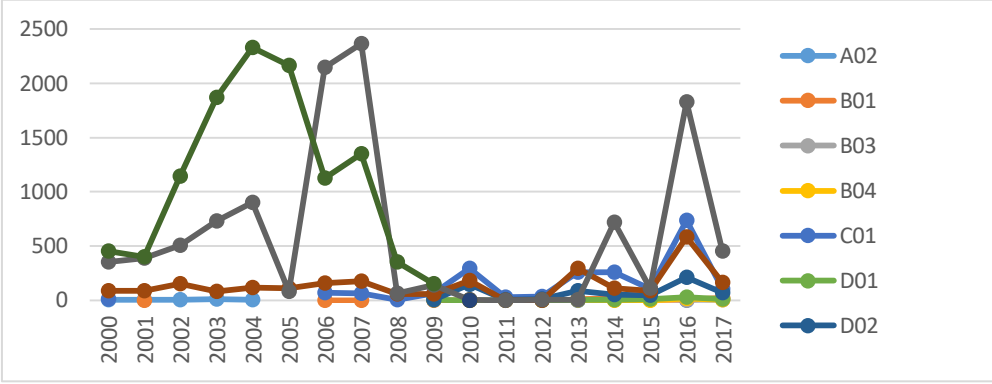
We first examine the composition of aid types of bilateral commitments for the purpose of higher education made by all donors in order to draw a general picture of the types of interventions made to the subsector based on CRS data. One limitation is that since the construction of CRS database is predominantly dependent on donors' reports of individual ODA programs and interventions, incomplete or missing data are often found causing potential distortions in statistics or issues in interpreting the data. While this was also the case for aid types, a process to refine the data about aid types was conducted in order to minimize the amount of missing data regarding aid type by matching the project descriptions provided by donors to a specific aid type that fits the typology of aid that is presented in the previous section of this study. For example, commitments that were missing the aid type classification but had short descriptions such as "scholarship program in Belgium", or "Bourses d'etudes (student scholarship)" were classified as scholarship (E01) interventions; programs with specific outcomes defined such as "building and reflecting on interdisciplinary PhD students for higher education in Uganda" or "improving weather information management in east Asia" were

classified as project-type interventions (C01). As a result, figure 3 illustrates how the composition of aid types have changed from 2000 to 2017. Despite the amount of missing data coming from unspecified aid types is so great even after adjustment, unspecified aid types have been considered as missing data, and will be excluded from the determinants analysis by aid type in the following section.

Not including unspecified commitments to the higher education sector, the most robust type of aid provided to recipients was E02 ($7,837.14 million), followed by C01 (project-type interventions, $2,007.95 million), E01 (scholarships, $1,806.25 million) and D02 (other technical assistance, $625.02 million). All other types of aid were each committed less than $US 55 million in total from 2000 to 2017, which is significantly smaller than other major aid types. At first glance, the aggregate aid to higher education rather clearly shows a greater focus on scholarships and student costs in donor countries. Borrowing from the literature review about higher education internationalization, we can reasonably assume that such popularity of scholarships and imputed student costs as modalities of aid, coupled with ongoing institutional reforms to enhance convergence of higher education institutions

(Werner, 2008), is the result of strategic approaches by institutions to targeted countries and regions.

Figure 3. Annual aid type commitments to higher education, all DAC donors



Cumulative volume (2000–2017)

Aid type	$ million	in %
Unspecified	15041.37	54.74
E02	7837.145	28.52
C01	2007.958	7.31
E01	1806.25	6.57
D02	625.0294	2.27
D01	53.91089	0.20
B01	52.28228	0.19
B03	32.55246	0.12
B04	18.98814	0.07
H01	0.040125	0.00
G01	0.008272	0.00
A02	0.00002	0.00

Source: OECD CRS (2000–2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

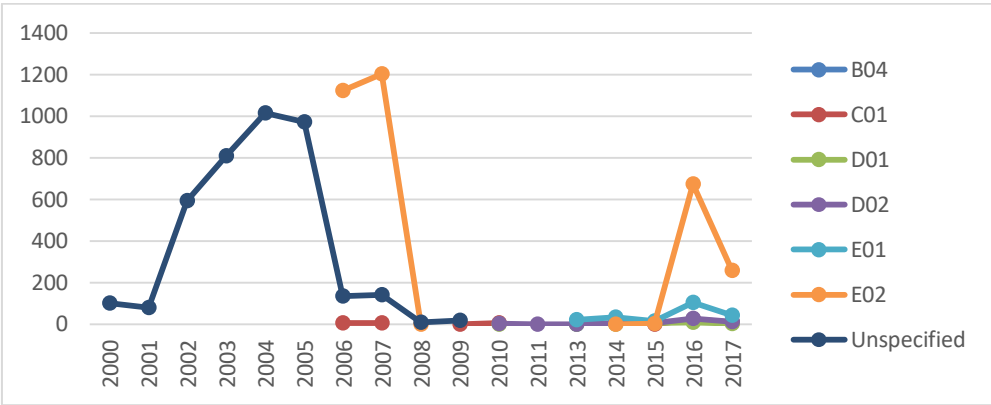
3.2.2. Aid types of individual donors

How are individual donors different in terms of the type of aid they allocate to their recipients? France, which is the largest donor to higher education in terms of volume of aid, has most of its aid to higher education committed in the form of imputed student costs which accounts for 43.66% ($3,259.59 million) of all of its aid to the subsector from 2000 to 2017 excluding the unspecified commitments (figure 4), followed by scholarships of $212.74 million. Although other types of aid did exist in France's commitments to higher education, they were lacking in volume compared to imputed student costs and scholarships by a significant margin. Based on the given data, the focus on imputed student costs indicates that retaining foreign incoming students has been a major emphasis of France's higher education development strategy.

However, France's policy of steering higher education ODA based on broadening inclusiveness and equal access to higher education by promoting international student mobility has been met with concerns about the way in which imputed student costs are reported to DAC as ODA. The DAC Peer Review of France (2009) claims that there is a possibility that imputed student cost commitments may distort the overall ODA allocation pattern since

they are all reported as “technical assistance” regardless of whether the international students who have been benefitted return to their country of origin, which contradicts DAC directives on this subject. Overall, the types of aid to higher education of France adequately reflect France’s policy to boost international student mobility through strengthening cooperation with strategically selected regional institutions.

Figure 4. Annual aid type commitments to higher education, France



Cumulative volume (2000−2017)

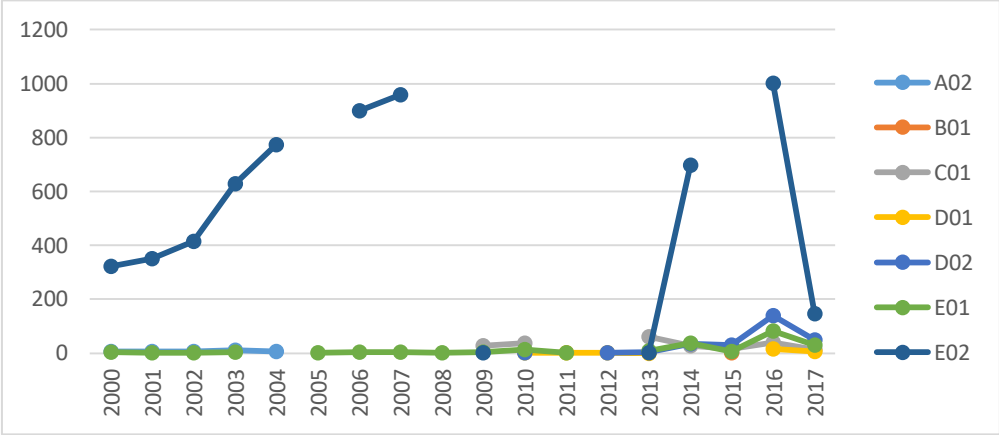
Aid type	$ million	in %
Unspecified	3875.618	51.91
E02	3259.592	43.66
E01	212.7432	2.85
C01	53.73733	0.72
D02	49.99929	0.67
D01	14.47089	0.19
B04	0.036179	0.00

Source: OECD CRS (2000−2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

The second largest donor to higher education, Germany, also bears similarity to France in its composition of aid types by investing heavily on imputed student costs. As shown in figure 5, Germany's imputed student costs accounts for 51.04% ($3,703.56 million) of all commitments to higher education. As imputed student costs are fundamentally related with international scholarships, the significant focus on imputed student costs can be considered to be in keeping with the country's higher education ODA policy; Germany's commitment to scholarships was reaffirmed in 2015 by BMZ, wherein it was planned to significantly increase the number of scholarships awarded to young Africans on development-related programs of study in Germany in partnership with the German Academic Exchange Service (BMZ, 2015).

Disregarding unspecified aid types, Germany has shown relatively even distribution of commitments across three different aid types albeit in significantly smaller amounts than imputed student costs: technical assistance, project-type interventions and scholarships.

Figure 5. Annual aid type commitments to higher education, Germany



Cumulative volume (2000–2017)

Aid type	$ million	in %
E02	3703.566	51.04
Unspecified	2859.159	39.40
D02	257.477	3.55
C01	221.3566	3.05
E01	189.8266	2.62
D01	23.59498	0.33
B01	1.666111	0.02

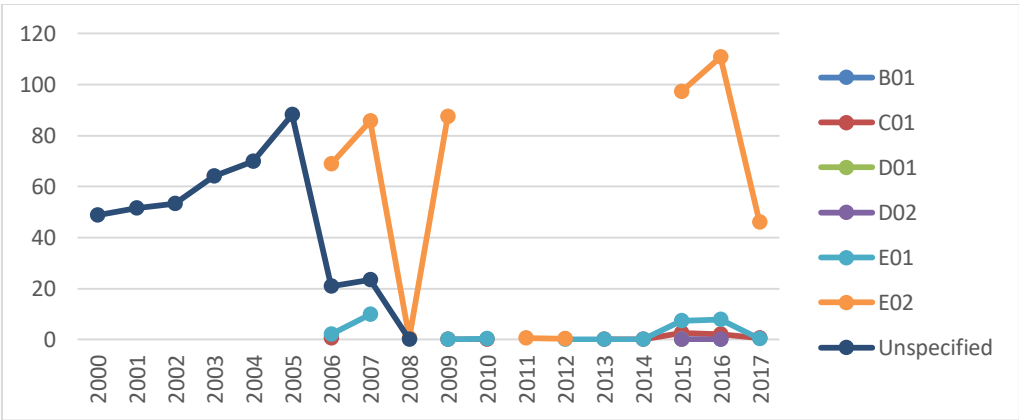
Source: OECD CRS (2000–2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

Austria, which is the third European donor selected for analysis in this study, yet again shows a similar composition of aid to those of France and Germany in that imputed student costs make up for the majority of higher education ODA at 52.27% ($497.26). Unlike the case of Germany, however, where it reaffirmed its commitment to scholarships, the Austrian Development Agency (ADA) set forth an initiative to reduce its commitment to scholarships. This was because of ADA's view that scholarship programs alone cannot improve the quality and efficiency of

educational and research institutions (ADA, 2009), and therefore strengthened the approval criteria of scholarships to ensure that scholarships were given to programs that are related to comprehensive institutional capacity development programs.

The annual statistics seems to indicate, however, that the proposed cutback to scholarships (and implicitly, imputed student costs) did not have much impact to Austria's investment to scholarships after all – since imputed student costs remain as the most voluminous aid type cumulatively.

Figure 6. Annual aid type commitments to higher education, Austria



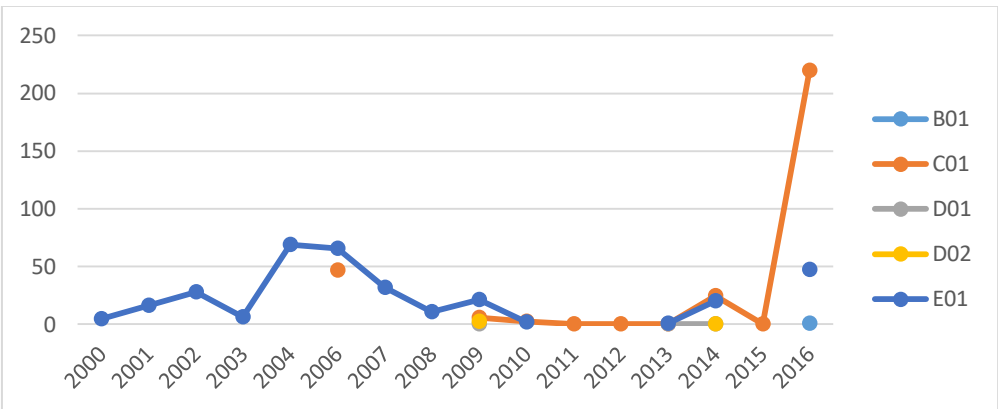
Cumulative volume (2000–2017)

Aid type	$ million	in %
E02	497.2604	52.27
Unspecified	420.1339	44.16
E01	27.97955	2.94
C01	5.898802	0.62
D02	0.065739	0.01
D01	0.023131	0.00
B01	0.011075	0.00

Source: OECD CRS (2000–2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

Japan's aid type presents a composition that is drastically different to those of major European donors. First, since 2000, Japan has reported no commitments of imputed student costs in its bilateral aid to higher education while scholarships have been committed. Instead, Japan has largest aid type, not including unspecified aid types, was project-type interventions which made up for 8.7% ($299.93 million) of its cumulative aid to higher education.

Figure 7. Annual aid type commitments to higher education, Japan



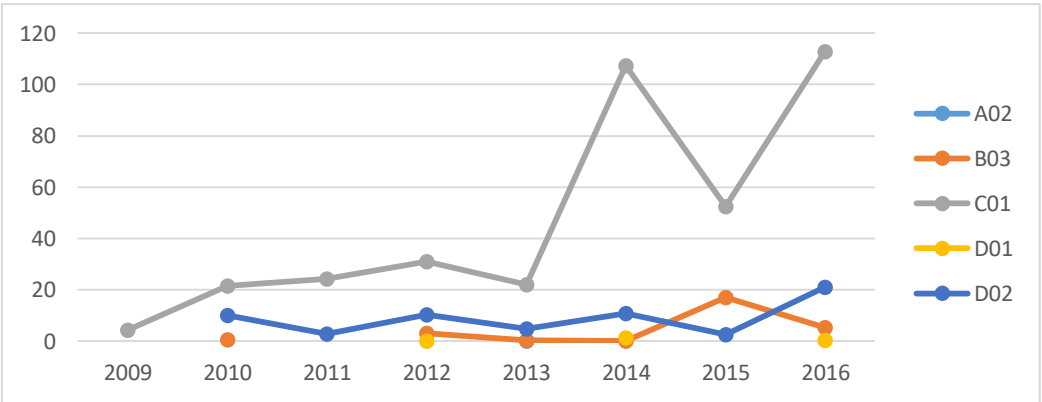
Cumulative volume (2000-2017)

Aid type	$ million	in %
Unspecified	2944.801	85.42
C01	299.9364	8.70
E01	199.249	5.78
D02	2.228223	0.06
B01	1.017171	0.03
D01	0.06568	0.00

Source: OECD CRS (2000-2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

Figures about U.S. bilateral aid to higher education also shows that project-type intervention is the most voluminous aid type committed by the U.S., similar to Japan. However, one notable difference is that there is no commitment to scholarship aid reported by U.S within the period of analysis. Such findings are not very intuitive since U.S is not only well known for its number of internationally competitive higher education institutions, but also for being host to hundreds of thousands of international students.[8] Therefore, missing it can be reasonably assumed that U.S does not include scholarships and imputed student costs to their CRS report, meaning that they do not consider such financing as ODA.

Figure 8. Annual aid type commitments to higher education, U.S.



Cumulative volume (2000-2017)

Aid type	$ million	in %
Unspecified	424.968	47.70
C01	376.0391	42.20
D02	62.12783	6.97

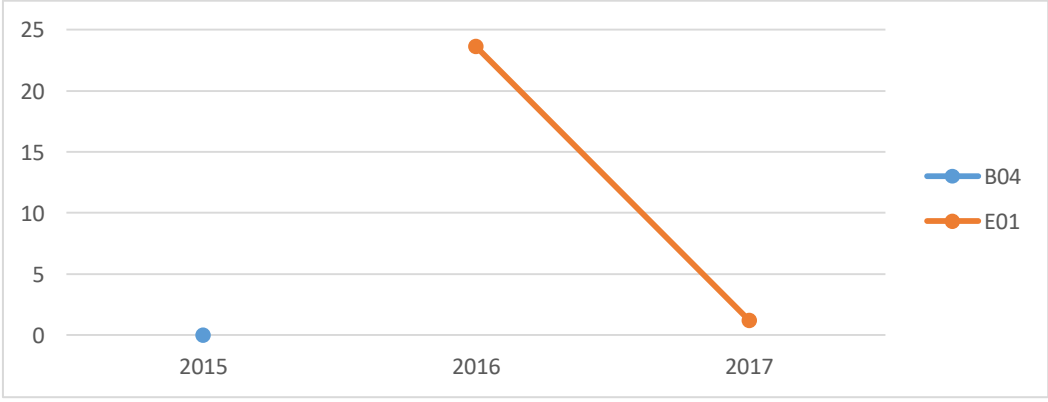
[8] In 2019, the total number of international students enrolled in U.S. colleges was 1,095,299, which includes different types of post-secondary education levels such as undergraduate, graduate, non-degree and optional practical training (OPT) students (educationdata.org).

B03	26.21928	2.94
D01	1.635885	0.18
A02	0.00002	0.00

Source: OECD CRS (2000–2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

Lastly, Hungary shows a very interesting composition of aid to higher education. With its accession to DAC in 2016, Hungary has a short history of providing ODA. However, as examined earlier, it stands out among other DAC donors for committing an impressively large share of aid for the specific purpose of higher education. As shown in figure 9, more than 99.9% of Hungary's aid to higher education consists of scholarships. This means that more than 44% of Hungary's total ODA is committed as scholarships for international students of higher education.

Figure 9. Annual aid type commitments to higher education, Hungary



Cumulative amount (2015–2017)

Aid type	$ million	in %
E01	24.86397	99.93
B04	0.016362	0.07

Source: OECD CRS (2000–2017), organized by author.
Note: all figures are in $US million (constant 2010 value).

Chapter 4. Research Method

4.1. Hypothesis

Most empirical research about the allocation of aid have suggested that among many explanatory variables, there are some distinct variables that affect aid allocation to a more significant degree than others. For example, an empirical study about aggregate aid conducted by In'airat (2014) concluded that a strong linkage exists between the quality of governance and aid, whereas others argue that more complex interactions of donor-interest weigh heavily on the allocation of aid than recipient needs. Based on the multi-dimensional characteristics and considerations required for effective aid to higher education, this study posits that both the alignment of quality of governance and educational needs is required for the development of higher education institutions. Despite the limited literature about aid allocation to the education subsector and especially for the purpose of higher education, it is still hypothesized that the interest of donors play a more crucial role in determining aid to higher education than various recipient needs based on previous studies about aggregate aid allocation.

Therefore, the two main hypotheses of this study are presented as follows:

H1. Donors, both collectively and individually, will provide more higher education aid to recipient countries with higher economic needs.

H2. Recipient countries with higher demand for educational development will receive more higher education aid by donors, both collectively and individually.

H3. Recipient countries with higher levels of global ties and better social infrastructure will receive more aid to higher education by donors, both collectively and individually.

4.2. Subject and scope of analysis

In order to estimate the two main hypotheses, this research used the ODA statistics data available on the Creditor Reporting System (CRS) of OECD DAC as the main subject of analysis. DAC is a committee established by major OECD donors with the overarching objective of promoting development cooperation and other relevant policies so as to contribute to shared prosperity.

CRS, which operates within the OECD statistics platform, provides a set of readily available basic data that enables analysis of where aid goes, what purposes it serves and what policies it aims to implement, on a comparable basis for all DAC members (OECD.org). Data for CRS is compiled and reported by individual DAC members based on bi-annual reports of the previous year's commitments and disbursements of ODA. Data reported to CRS include basic information such as recipient, amount of commitment and disbursement, and sector identification as well as more refined information that allow detailed understanding of the disposition of aid such as type of aid, purpose code, recipient income groups and region, and both short and long project descriptions.

For this research, bilateral aid data for all sectors by all 30 DAC donors from 2000 to 2017 have been gathered to conduct a set of regressions to analyze the collective and individual determinants of bilateral aid to the higher education subsector (purpose code 11420). Additionally, general statistics about bilateral aid to all sectors by all donors have been reviewed in order to identify individual major donors to higher education by volume and share of aid to the subsector. As a result, 5 donor countries have been selected in terms of top average volume of aid

to higher education, which are France, Germany, Japan, U.S., and Austria. Hungary has also been selected for individual donor determinant analysis due to its high share of aid to higher education out of all bilateral commitments (44.28%). While the initial set of data for bilateral aid commitments to all sectors presented 175 recipients, the number of recipients that was used to conduct this study was reduced to 110 due to missing data or some of them not having received any aid to the higher education subsector.

4.3. Limitations

There are a few limitations relevant to the scope of this study. First, since this study does not analyze data about multilateral commitments and commitments made by international organizations, it will be difficult to gain an inclusive level of comprehension about all of the aid committed to higher education. However, this focus on bilateral aid is due to the result of many empirical studies contending that the behaviors of bilateral and multilateral aid are different in many aspects, therefore it will be inefficient to analyze both aid channels of aid using the same

explanatory variables.[9]

Second, this study does not distinguish flow types of grants and loans, or individual donor agency in its data analysis. The issue of not distinguishing flow types, however, is considered to be mitigated by the volume of grants in higher education aid that significantly overweighs loans.[10]

Third, the lack of distinction of aid agencies such as government aid agencies, individual universities and NGOs within each donor country may raise concerns about ignoring potentially significant differences in the determinants of aid by type of agency. Nevertheless, it was deemed that conducting analysis based on collective national data without the differentiation of individual agencies would yield a more conclusive set of results without the risk of resulting in overly-exhaustive outcomes.

Lastly, a potential point of contention is that this study includes China as a recipient in the data for the analysis of higher education aid determinants of DAC donors. Although China is not a member of DAC, China has continued to provide development aid

[9] An ODI report (2017) points a few key differences between the characteristics of bilateral and multilateral channels such as degree of politicization, issues of selectivity and fragmentation.

[10] 95 percent of all higher education aid committed to all recipients from 2000 to 2017 were grants, whereas loans only comprised 5% of the total volume (OECD.org).

to its neighboring communist block members including North Korea as early as the 1950s, playing a pivotal role in shaping the development of the communist state (Kim & Park, 2016). Furthermore, Japan has concluded its aid commitments to China in 2018 in response to China's economic growth in the 21st century. And while commitments made by DAC members still make up a considerable sum of all international development assistance, the volume of aid given by non-DAC members to include China and India is continuously on the rise. In such a light, the transitional state that China has recently assumed is indeed controversial within the development academia, especially among ODA researchers. Nonetheless, with the paradigm shift of early ODA which focused on building allies of the West during the Cold War to the current paradigm of shared prosperity and public diplomacy oriented ODA, data about commitments to China by DAC donors was included in this study considering China's wide economic and political ties with donors.

4.4. Analytical framework

In order to analyze whether educational, economic needs and other dimensions such as governance or social needs are reflected

in the allocation of aid to higher education, data analysis of this study has been conducted with variables selected based on the DI-RN model, which has been reviewed in the previous chapter. Additionally, an underlying assumption is that conditions other than donor interest or recipient needs such as factors that facilitate international information flow may also impact the allocation of aid to higher education, of which will be further explained in section 4.4 of this chapter.

When it comes to studies about the allocation of aid, many analytical tools have been used by different researchers. Although some representative regression models consist of Pooled Ordinary Least Squares (OLS) models, Tobit model, and dynamic panel data analysis models, this study has utilized the Least Square Dummy Variable (LSDV) model with years set as fixed-effects. The LSDV model was selected for this study mainly for two reasons: (1) to mitigate potential distortions in analysis results caused by missing data, and (2) the dataset used for this study did not formulate a panel data due to the differences in the number of recipients that have been committed aid each year.

4.5. Variable selection

4.5.1. Dependent variable

Commitments made for the purpose of higher education have been selected as dependent variables to identify what explanatory variables may affect the volume of aid given for the purpose of higher education development. As the allocation of ODA is first initiated through policy planning of donors of which include designing ODA programs based on mid to long-term strategies, commitments to each program are considered to better reflect the intention of donors than actual disbursements made.

4.5.2. Explanatory variables

The explanatory variables used are representative of the five categories of donor-interest and recipient needs, in addition to a proximate variable for cultural proximity between donors and recipients. First, the categories of explanatory variables that were selected based on the DI-RN specific to the purpose of higher education are as follows:

i. Economic interest: selected to measure the impact of donor's economic interest in recipient when allocating aid to higher education.

ii. Political interest: measures the impact of the recipient's

political and social openness when allocating aid to higher education.

iii. Educational needs: selected to measure the impact of recipient's educational needs when receiving aid for higher education.

iv. Economic needs: measures the impact of the economic needs and conditions of recipients when receiving aid for higher education.

v. Human rights needs: measures the impact of humanitarian conditions of recipients when receiving aid for higher education.

vi. Information facilitation: measures the impact of the degree of factors that can facilitate cross-border information flows between donors and recipients on the allocation of aid to higher education.

Each category of variables is composed of individual explanatory variables that are selected to further the detail of analysis.

First, the economic interest of donors is approximated by the level of a recipient's trade openness. This variable was selected primarily because it represents the investment potential of a recipient from a donor's perspective idiosyncratic to the allocation

of aid.

Second, political interest of donors was represented by (1) the level of a recipient's political globalization, and (2) the level of a recipient's social globalization. Political globalization, determined by the number of embassies and high commissions in a country as well as a country' participation status in international affairs, is considered to be a contributing factor to the internationalization of higher education institutions of a country. Similarly, social globalization which is determined by personal contacts, information flows, and cultural proximity was selected for this study primarily due to its relevance to domestic dissemination of knowledge and social cohesion required for higher education development.

Third, the educational needs of recipients consists of five explanatory variables wherein four of which are the enrolment rates of different levels of education of a recipient: (1) net primary enrolment rate, (2) net lower secondary enrolment rate, (3) net upper secondary enrolment rate, and (4) gross tertiary enrolment rate. The four enrolment rates were primarily selected because they directly represent the educational needs of different levels of education, and that they are currently being used by the

international donor community to monitor progress towards education Sustainable Development Goals (SDGs). In addition to the four enrolment rates which represent the immediate needs of different education sectors, (5) the recipient government's public spending on the education sector has been selected as a fifth explanatory variables for educational needs. This is because the level of government expenditure on the education sector is considered to reflect the recipient government's commitment to educational development. Additionally, generous public funding, among other factors, has been revealed to have a stronger association with good teaching performance of universities (Capano & Pritoni, 2019). The assumption of the government expenditure on education therefore is that doors will be inclined to provide more aid to countries that invest more to their higher education sector since they are more likely to yield better outcomes.

For economic needs of recipients, (1) labor force participation rate, (2) youth unemployment rate, and (3) GDP per capita of recipients were selected. Although changes in economic demographics such as youth unemployment rates and labor force participation rates have been more closely related to empirical studies about the effectiveness of primary education (Boccanfuso et

al., 2015), more studies are attempting to identify the feedback from the labor market to higher education. Though some skepticism about the relationship between higher education and better skilled and paid work have been raised (see, e.g. Lauder & Mayhew, 2020; Brink, 2018; Autor et al., 2017; Lauder et al., 2018), the linkage between universities and the labor market still holds considerable value to many university reforms, as policy makers "are still guided by orthodox interpretations of human capital and skill biased technical change theories" (Lauder & Mayhew, 2020, p.1). The assumption for these variables is that countries with lower labor force participation and higher unemployment will receive more aid for higher education in order to foster more skilled workers to integrate into the labor market.

For the measurement of the impact of needs relevant to human rights, the total population of the recipient country has been selected. This selection is based on the notion that larger countries will require more aid to induce effective development.

Lastly, two explanatory variables that represent the ease of information flows between donors and recipients have been selected to measure the impact of information facilitation on higher education aid. First, a dummy variable of language similarity has

been selected based on the functioning of language as a facilitator of cross-border information flow (Sakurai, 2017). Additionally, similarity in languages has been concluded to have a positive relation to the amount of information – including international news flows– between different countries (Kariel & Rosenvall, 1983). Considering that encouraging international student mobility facilitated by scholarships and student benefits takes up a significant proportion of aid to higher education, it is assumed that recipients with the same official language as donors will receive more aid to higher education than those with different languages. Table 13 provides detailed definitions of all variables that have been selected for this study.

Table 13. Definitions of categorized variables

Category		Code	Definition	Source
Dependent variable		USD_Comm	Commitments for the purpose of higher education (11420), constant $US million.	CRS (OECD)
Recipient needs	Educational needs	PRER	Net primary enrolment rate: total number of students of the official primary school age group who are enrolled at primary or secondary education (% of corresponding population).	UIS Stat (UNESCO)
		LSER	Net lower-secondary enrolment rate: total number of students of the official lower secondary school age group who are enrolled in lower secondary education or higher (% of corresponding population).	
		USER	Net upper-secondary enrolment rate: total number of students of the official upper secondary school age group who are enrolled in upper secondary education or higher (% of corresponding population).	
		GrTER	Gross tertiary enrolment rate: total number of students of the official tertiary education age group who are enrolled in tertiary or higher education (% of corresponding population).	World Bank
		ExED	Percentage of direct expenditure in public educational institutions	UNESCO
	Economic needs	LFPR	Labor force participation rate: proportion of the population ages 15 and older that is economically active: all people who supply labor for the production of goods and services during a specified period.	The global economy
		GDPLog	Log of GDP as of mid-year estimate.	World Bank
		YuUnemp	Youth unemployment rate (15+ years old).	

Table 13. Continued

Recipient needs	Human rights needs	PopLog	Log of total population as of mid-year estimate.	World Bank
Donor interest	Economic interest	TrOp	Trade openness: exports plus imports as percent of GDP.	The global economy
	Political interest	PolGl	Political globalization index: the degree of political globalization is determined by the number of embassies and high commissions in a country, the number of international organizations to which the country is a member, the number of UN peace missions a country participated in, and the number of treaties signed between two or more states.	World development index (World Bank)
		SocGl	Social globalization index: social globalization has three dimensions: personal contacts, information flows, and cultural proximity. The sub-index on personal contacts includes international telecom traffic, degree of tourism, transfers, foreign population, and number of international letters. The sub-index on information flows includes number of internet users, share of households with a television set, and trade in newspapers.	
Information facilitation		Lang (dummy)	Language: Difference of official language between donor & recipient (0-1).	CEPII
		IntC	Percentage of individuals using the internet (out of total population).	International Telecommunication Union (ITU)

Chapter 5. Findings

5.1. Determinants analysis of collective DAC donors

This chapter provides the results of the empirical analysis of determinants to bilateral higher education commitments made by DAC donors collectively and individually. First, when all 30 donors were included in the estimate, all dimensions of donor interest and recipient needs, with the exception of economic interest of donors, were shown to be statistically significant to the volume of aid to higher education. Table 14 shows independent variables that are statistically significant to the dependent variable based on an LSDV estimate using all independent variables. As a result, several variables were indicated to impact the amount of higher education aid that a country receives such as population (PopLog = $t(8.53)$, $p < 0.001$), language similarity (Lang[1] = $t(2.74)$, $p < 0.01$), labor force participation (LFPR = $t(-2.17)$, $p < 0.05$), political globalization (PolGl = $t(1.65)$, $p < 0.1$), lower-secondary enrolment rate ((LSER = $t(-1.74)$, $p < 0.1$) and public education expenditure (EdEx = $t(-2.76)$, $p < 0.01$). Therefore, it can initially be assumed that in general, recipients' humanitarian, economic and educational needs, as well as donors' political needs and the ease of information

flow impacts the amount of commitments a recipient receives. While such set of results is not sufficient to account for all possible determinants of aid to higher education, it does hint to what factors might potentially be significant to the amount of higher education aid a country receives.

Table 14. LSDV result of collective donors (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
PopLog	.000	.000	8.54	.000***
GDPLog	.000	.000	-1.54	.124
Lang[1]	1.770	.647	2.74	.006***
IntC	.014	.018	.77	.441
LFPR	-.052	.024	-2.17	.030**
YuUnemp	-.013	.017	-.74	.459
TrOp	.001	.005	.31	.756
PolGl	.023	.014	1.65	.099*
SocGl	-.002	.028	-.07	.947
PRER	.026	.022	1.20	.230
LSER	-.038	.022	-1.74	.083*
USER	.019	.018	1.08	.279
GrTER	.001	.013	.10	.919
EdEx	-.110	.040	-2.76	.006***
n=2497				

*,**,*** Significant at 10%, 5%, 1% level respectively.

However, such analysis is inconclusive as the use of all explanatory variables significantly reduces the total number of observations which is caused by the model utilizing observations that do not contain any missing data across all variables. Therefore an additional fixed-effect LSDV estimate was conducted with variables that were selected by R with minimized Akaike's An Information Criterion (AIC) values, increasing the total number of observations to compensate for missing data (table 15).

Table 15. LSDV result of collective donors (best-fit)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
PopLog	.000	.000	18.19	.000
GDPLog	.000	.000	-3.16	.002
Lang[1]	1.735	.723	2.40	.016
IntC	.055	.016	3.35	.001
LFPR	-.050	.018	-2.79	.005
PolGl	.059	.013	4.39	.000
PRER	.051	.017	2.98	.003
GrTER	-.032	.012	-2.71	.007
n=19978				

Upon selecting the independent variables to find the best-fit model, however, some differences occur. Main differences of note

are: (1) the removal of education expenditure as a significant determinant, (2) replacement of LSER by PRER and (3) the addition of IntC as a significant independent variable. The result indicates that first, donors generally provide more higher education aid to countries with larger populations and lower GDP (PopLog = $t(18.19)$, $p < 0.001$; GDPLog = $t(-3.16)$, $p < 0.01$), which is construed as normative behavior of allocating aid since it is generally accepted that developing countries with lower GDP and more people will need more aid. Second, language and internet connectivity are shown to have a positive correlation with the amount of higher education aid that a country receives (Lang[1] = $t(2.40)$, $p < 0.05$); IntC = $t(3.35)$, $p < 0.05$). This indicates that the facilitation of information flows, through both cultural similarity and infrastructural readiness, can be an important determinant to whether a country receives higher education aid. Third, a country's labor force participation rate is shown to have a negative correlation (LFPR = $t(-2.79)$, $p = 0.05$) with the amount of aid to higher education. This can be interpreted as such that donors are more inclined to provide funds to develop higher education to countries that either have a low pool of high-skilled workers for their domestic labor market, or are struggling to integrate their tertiary

education graduates to the labor market. Fourth, the level of political globalization of a country also is shown to have a positive correlation (PolGl = $t(4.39)$, $p < 0.01$) with the dependent variable. This suggests that when examining determinants of the allocation of higher education aid, the effect of a recipient country's global ties should be taken into consideration. Lastly, the two educational factors that were shown to have an impact on higher education aid were net primary enrolment rate and gross tertiary enrolment rate with opposing correlations (PRER = $t(2.98)$, $p < 0.01$); PrTER = $t(-2.71)$, $p < 0.01$). Countries with higher primary enrolment rates receive more higher education aid since more people who have completed basic education leads to a larger demand for higher education. Similarly, it can be understood that low gross tertiary enrolment rates lead to the recipient government's need to foster more students enrolled in higher education institutes.

In summary, the collective analysis of higher education aid determinants proves that the aggregate aid to higher education from 2000 to 2017 has been allocated in accordance with all of the three hypotheses established for this study. That is, collectively, that (1) recipient's economic needs, (2) educational demand, (3) and the

degree to which recipients are globally connected and have information infrastructure are all proven to be considered in allocating aid for the development of a recipient country's higher education institution.

Though the recipient's population and GDP have the strongest effect, other explanatory variables that represent educational needs, economic needs, political interest and information facilitation were resulted to have similar explanatory powers to the allocation of higher education aid. However, will individual donors provide aid to higher education based on the same determinants or be revealed to have different factors that affect their allocation of aid to recipients? The following section provides the analysis result about the determinants of major DAC donors to higher education.

5.2. Determinants analysis: individual donors

For individual donors, this study presents the findings of the best-fit LSDV models based on minimizing AIC since including all variables in the estimate model has proven to significantly reduce the number of observations for each donor due to limited data availability (see appendix B for individual estimates with all

variables included). The use of the best-fit model also presents a more concise view of explanatory variables that are significant to each donor.

First, the analysis result of France's determinants of higher education aid from 2000 to 2017 indicates that France has allocated its funds based on various interests and recipient needs as shown in table 16. According to the result, seven explanatory variables have been chosen to be strongly correlated with France's higher education aid allocation: GDP (GDPLog = $t(-3.59)$, $p < 0.01$), language similarity (Lang[1] = $t(4.91)$, $p < 0.01$), internet connectivity (IntC = $t(7.45)$, $p < 0.01$), labor force participation rate (LFPR = $t(-5.08)$, $p < 0.01$), political globalization (PolGl = $t(2.44)$, $p < 0.05$), primary enrolment rate (PRER = $t(2,99)$, $p < 0.01$) and lower-secondary enrolment rate (LSER = $t(-5.39)$, $p < 0.01$). In summary, it can initially be understood that France responds to countries with economic and educational needs as well as infrastructural readiness for higher education institutions to develop, while also motivated by its own political interests. However, there are a few noteworthy points of concern regarding France's aid allocation to higher education. First is that for France, language similarity may not only represent ease of information

flows but reflect France's focus on enhancing cooperation between former French colonies and Francophone countries. Compounded by France's inclination to selectively focus on such countries, France's aid type for higher education wherein scholarships and imputed student costs consist of the vast majority may also distort critical determinants of French aid to higher education.

Another interesting result of France is one regarding recipients' educational needs. While it is estimated that higher primary education enrolment rate leads to more aid given for the purpose of higher education, the opposite is estimated to be applicable to secondary education enrolment rates. This may signify that France prioritizes the needs of a recipient's secondary education over primary education in considering the allocation of aid for higher education.

Although the population of a recipient has not been analyzed to be an important determinant for France, one can posit that this is due to France's strong regional education aid partnership specific to the North African region.

Table 16. LSDV result of France (best-fit)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
GDPLog	-.001	.000	-3.59	.000
Lang[1]	12.173	2.478	4.91	.000
IntC	.405	.054	7.45	.000
LFPR	-.289	.057	-5.08	.000
PolGl	.079	.032	2.44	.015
PRER	.184	.062	2.99	.003
LSER	-.187	.035	-5.39	.000
n=863				

Analysis result of Germany's determinants, on the other hand, showed a rather simple set of determinants that were estimated to be statistically significant when the best-fit model was utilized. The key determinants were population, recipient's political globalization and gross tertiary enrolment rate. With population being the highest positive coefficient (PopLog = t(41.28), p <0.01), Germany responded most sensitively to largely populated countries with relatively high political ties with the global community (PolGl = t(2.59), p = 0.01) as well as high gross tertiary enrolment rates (GrTER = t(4.95), p < 0.01). Though not statistically significant, low GDP of recipients (GDPLog = t(-1.25), p = 0.21) was also

shown to have a negative correlation with the dependent variable.

The point of concern for Germany is that these results could potentially be distorted due to Germany's high commitment of higher education aid to China, where more than 20 percent of Germany's total commitments for the purpose of higher education was made to from 2000 to 2017. Additionally, such possibility is further compounded by Germany's composition of higher education aid types similar to France in that over 50 percent of commitments were reported as imputed student costs since it is difficult to gauge specific outcomes of higher education development based on benefits provided to international students. In summary, Germany's allocation of aid to higher education was revealed to be impacted by the humanitarian and economic needs of a recipient while Germany's political interests also played a role in the volume of commitments. However, the result also suggests that recipients' educational needs or the ease of information flows do not impact the allocation of German higher education development funds to developing countries. In fact, it can be assumed that countries are more likely to receive more higher education aid should there exist

a relatively well-established tertiary education system.

Table 17. LSDV result of Germany (best-fit)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
PopLog	.000	.000	41.28	.000
GDPLog	.000	.000	-1.25	.210
PolGl	.080	.031	2.59	.010
GrTER	.141	.028	4.95	.000
n=1273				

Japan also showed an interesting result for its determinant analysis. When the variables were selected for the best-fit, key determinants of Japan's higher education aid that were statistically significant were population, GDP, lower-secondary enrolment rate and upper-secondary enrolment rate. With a very high positive correlation for population (PopLog = $t(22.47)$, $p < 0.01$), Japan showed a tendency to prioritize large countries when committing higher education aid. The negative correlation with the recipient's GDP (GDPLog = $t(-2.41)$, $p < 0.05$) also indicates that the recipient's economic needs are reflected in higher education aid

allocation. However, a perplexing attitude towards the educational needs, specifically regarding lower-secondary enrolment rate and upper-secondary enrolment rate, is witnessed. With a positive correlation of the lower-secondary enrolment rate (LSER = $t(4.70)$, $p < 0.01$) variable to the amount of aid and negative correlation of the upper-secondary enrolment rate (USER = $t(-4.03)$, $p < 0.01$), it is suggested that higher completion rates of recipients' lower-secondary education impacts the amount of higher education aid given to recipients. Perversely, low upper-secondary enrolment rates lead to higher commitments to higher education by Japan.

Table 18. LSDV result of Japan (best-fit)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
PopLog	.000	.000	22.47	.000
GDPLog	-.001	.000	-2.41	.016
LSER	.481	.102	4.70	.000
USER	-.429	.106	-4.03	.000
n=543				

In the case of Austria, several explanatory variables were estimated to be significant determinants of higher education aid.

First, it was estimated that Austria will likely commit more funds to countries with economic needs such as low GDP (GDPLog = t(−6.06), p < 0.01) and high youth unemployment rates (YuUnemp = t(8.36), p < 0.01), while countries with higher information flows were more likely to receive more aid (IntC = t(3.56), p < 0.01). At the same time, developing countries that are more actively involved in global affairs were also estimated to receive more aid for higher education (PolGl = t(3.83), p < 0.01).

Table 19. LSDV result of Austria (best−fit)

*Year set as fixed effect

Independent variable	B	SE	t	p−value
PopLog	.000	.000	1.01	.316
GDPLog	.000	.000	−6.06	.000
IntC	.029	.008	3.56	.000
YuUnemp	.067	.008	8.36	.000
PolGl	.022	.006	3.83	.000
PRER	−.032	.008	−3.85	.000
USER	.027	.005	5.25	.000
n=251				

However, an inconsistent pattern of responding to educational needs of developing countries was witnessed. More higher education aid was given to countries with low primary enrolment

rates (PRER = t(−3.85), p < 0.01) while more commitments were made to countries with high upper−secondary enrolment rates (USER = t(5.25), p < 0.01) as shown in table 19.

When the same estimate was applied to U.S commitments to higher education, three explanatory variables were estimated to be significant determinants. First, it was revealed that U.S provided more aid for higher education to countries with low internet connectivity (IntC = t(−3.79), p < 0.01) and low labor force participation rates (LFPR = t(−4.41), p < 0.01). Conversely, countries with higher lower−secondary education enrolment rates received more higher education aid (LSER = t(2.02), p < 0.05). Although the population and GDP of recipients were not statistically significant in terms of their impact to U.S commitments, their coefficients were both in accordance with DAC donors (PopLog = t(1.24), p = 0.218; GDPLog = t(−1.72), p < 0.1). As examined in chapter 3, considering that a significant amount of U.S aid to higher education is given to middle−eastern region, specifically Afghanistan and West Bank and Gaza Strip, it can be reasonably assumed that U.S aid to higher education has a tendency to be given to countries with weak social infrastructure and with low labor capacities, which corresponds most closely to recipients' economic

needs.

Table 20. LSDV result of U.S (best-fit)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
PopLog	.000	.000	1.24	.218
GDPLog	-.001	.000	-1.72	.087
IntC	-.352	.093	-3.79	.000
LFPR	-.363	.082	-4.41	.000
LSER	.098	.049	2.02	.045
n=192				

Lastly, the LSDV estimate for Hungary (table 21) revealed that Hungary's aid to higher education have been committed according to several recipient needs and donor interest. First, the recipient's humanitarian needs were not a significant determinant in Hungary's aid to higher education. In fact, Hungary provided more aid to smaller countries with lower population (PopLog = $t(-2.17)$, $p < 0.05$). On the other hand, Hungary did take into consideration the recipient's economic needs in that more higher education aid commitments were made to countries with low GDP (GDPLog = $t(-1.90)$, $p < 0.1$) and higher youth unemployment ratios (YuUnemp = $t(2.80)$, $p < 0.01$). Additionally, it was estimated that Hungary's political interest, to a certain degree, determined the

amount of aid to higher education in a positive way in that more politically global countries received more aid (PolGl = t(3.62), $p < 0.01$). Lastly, it was also estimated that recipients with more educational needs more pertinent to tertiary education (GrTER = t(−2.21), $p < 0.05$) lacking in public funding for education (EdEx = t(−3.25), $p < 0.01$) received more higher education aid.

Table 21. LSDV result of Hungary (best−fit)

*Year set as fixed effect

Independent variable	B	SE	t	p−value
PopLog	.000	.000	−2.17	.034
GDPLog	.000	.000	−1.90	.062
YuUnemp	.012	.004	2.80	.007
PolGl	.020	.006	3.62	.001
USER	.008	.002	3.12	.003
GrTER	−.007	.003	−2.21	.031
EdEx	−.031	.010	−3.25	.002
n=71				

Chapter 6. Conclusion

6.1. Analytical findings

The purpose of this study was to examine whether DAC donors have been allocating aid for developing countries' higher education development based on the diverse needs of recipients, or other factors such as donor-interest and infrastructural readiness of recipient countries. Such purpose aims to bridge the gaps existent between literature about determinants of aggregate aid and sectoral aid allocation, and ultimately contribute to the literature of higher education aid effectiveness. In doing so, this study has conducted several sets of regression analysis of empirical higher education ODA data with explanatory variables selected based on the donor-interest and recipient needs model. In order to provide a comprehensive understanding of how higher education aid has been allocated from 2000 to 2017, the determinants of such aid have been analyzed both individually and collectively. The results yielded interesting differences in the determinants of higher education aid among individual donors as well as the collective determinant of all DAC donors.

First, an initial overview of the recipients of each donor's

higher education aid illustrated different regional foci of individual donors. Such regional focus did not seem to necessarily be correlated with regional proximity between donors and recipients, but seemed to be in line with initiatives to promote higher education development of both donors and recipients based on individual political and economic impetus. For instance, France and Germany, the two largest donors to the foregone education subsector in Europe, showed distinct regional focus in terms of aid to higher education. While France seemed to focus on strengthening higher education cooperation ties with North African countries to enhance its ties with its former colonies and francophone countries, Germany showed a tendency to provide numerous scholarship opportunities to Chinese students, which is reflective of Germany's increasing economic ties with China. A different motive for U.S aid to higher education was witnessed, wherein its commitments seemed to be impacted by the strategic interest and ties with the Middle-Eastern region. Consequently, one point of contention regarding aid to higher education is that the strategic interest of donors, should be taken into consideration when analyzing the allocation of aid to higher education - and aid to education as a whole.

Second, it was found that even with the regional priorities of donors considered, the amount of higher education aid that a country may receive in general is determined by various factors. The empirical analysis result of DAC donors as a group indicated that several factors of recipient needs, donor interest, and the recipient's social knowledge infrastructure were all considered in the allocation of higher education aid. While aid to higher education followed the basic principle of aid, wherein it is conceptualized by many that aid should be given to larger countries with low GDP, it was also revealed in the results that insufficiencies in a country's labor force as well as gross tertiary enrolment rate were relevant to the amount of higher education aid. Ceteris paribus, it was estimated that countries with high levels of information infrastructure and more global ties were more likely to receive larger amounts of higher education development support. This phenomenon reflects the strategic approach to higher education aid by donors that prioritize countries that possess an internationally active government as well as adequate infrastructural capability to effectively disseminate knowledge throughout its society. While such findings are indeed enlightening to recipients in finding their insufficiencies in order to receive more higher education aid, the

modalities of aid should also be taken into consideration by recipients. That is, the respective outcomes of different kinds of higher education aid such as university development projects, scholarships and infrastructural should be carefully evaluated and prioritized by recipients in order to maximize aid effectiveness to higher education.

Third, notable differences among individual donors in terms of aid types and determinants of higher education aid were revealed. One outstanding regional characteristic of aid allocation was that differences in the aid types among donors in Europe, America and Asia was witnessed. With European countries such as France, Germany, Austria and Hungary, a higher focus on promoting higher education development through the awarding of scholarships (E01) and provision of subsistence support to international students (E02) was shown, which is reflective of Europe's various and ongoing higher education reforms mainly represented through the Bologna Process and subsequent programs such as EHEA and Erasmus. Conversely, the U.S seemed to primarily focus on university capacity building programs (C02) as the primary means of higher education development cooperation, whereas Japan showed a balance between institutional capacity building and scholarships.

In terms of the determinants of individual donors, different variables were significant to different donors as determinants for providing higher education aid. For instance, France, Germany and Austria would allocate more higher education aid to encourage international student mobility through scholarships and student benefits to politically global yet poorer countries. However, ceteris paribus, it was estimated that France will most likely be preferential to francophone countries with good information infrastructure and higher needs in secondary education whereas Germany is more likely to be open to accepting international students from countries with a reasonably capable higher education institution. Similar to France, it can be assumed that Austria will also provide more aid to countries with better information infrastructure. However, Austria showed a tendency to provide such aid to countries with higher youth unemployment and lower primary education capacity. Furthermore, it was estimated that the U.S will commit more aid to countries lacking in social infrastructure and a weaker labor market, while Japan will most likely support higher education development in countries with low upper-secondary education achievement.

An attempt to compare a new donor with conventionally strong donors was also made by analyzing Hungary's aid to higher

education, which resulted in the finding that determinants more directly responded to educational needs that are immediate to higher education: out of all individual donors analyzed, Hungary was shown to be most responsive to the recipient's needs of tertiary education and funding for education.

In summary, the empirical analysis conducted in this study revealed that different needs and interests were considered by donors in allocating higher education aid. The allocation of aid to the subsector on a collective level was examined to be affected by normative determinants that include humanitarian, economic, and educational needs as well as political interests and the recipient's infrastructural readiness to support the development of institutional development of higher education. However, individual donors showed differences in the type of specific need or interest that impacts the allocation of aid to higher education. Regardless, normative needs such as low GDP and different educational needs were identified to be key considerations for donors in allocating aid to higher education.

6.2. Implications and considerations

Notwithstanding the differences in the determinants of higher education aid prevalent among individual donors, it should be noted that many donors are now starting to shift their higher education aid strategy to one that is in line with their own national public diplomacy policy with the underlying conception of soft power and cultural diplomacy. In turn, it is expected for the amount of scholarships to continually increase due to its growing importance as an enabler of promoting national ties and cultural affinity. Additionally, the import of scholarships has grown to be specified as one of the targets of SDGs 4[11], wherein it is recommended for developed countries to expand the number of higher education scholarships to developing countries with focus on least developed countries, small island developing states and African countries. As it was witnessed in the case of Hungary, it is not unlikely that new DAC donors, as well as emerging developmental states, will base a significant sum of their higher education development strategy on

[11] Expansion of higher education scholarships is states in UN SDGs 4.B as follows: By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programs, in developed countries and other developing countries.

international scholarships in order to strengthen their international presence and reinforce local and regional ties. However, although an aid-type regression was not conducted in this study, the recipients not only of scholarships but all higher education aid were mostly lower middle income countries or middle income countries with relatively high levels of higher education institutions and global political activity. Donors' proclivity to align their scholarships and other higher education interventions with national diplomacy and general educational needs of the recipient is understandable. However, donors should also expand their scholarships recipients to the aforementioned regions of the world in order to truly realize 'public diplomacy' of scholarship aid.

The significance of this study lies in the identification of such differences in the determinants existent within and across different needs and interests as well as infrastructural conditions extraneous to the DI-RN model. However, such findings further require us to conduct studies that are more contingent to individual donors in order to provide a comprehensive understanding of the political and strategic drive of DAC donors within the higher education subsector. Additionally, studies about higher education aid allocation based on the recipient's perspective, such as the evaluation of specific

outcomes of the different types of aid provided by different donors, is also expected to significantly contribute to the literature of higher education aid effectiveness.

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Data Appendix A. Bilateral commitment of DAC donors

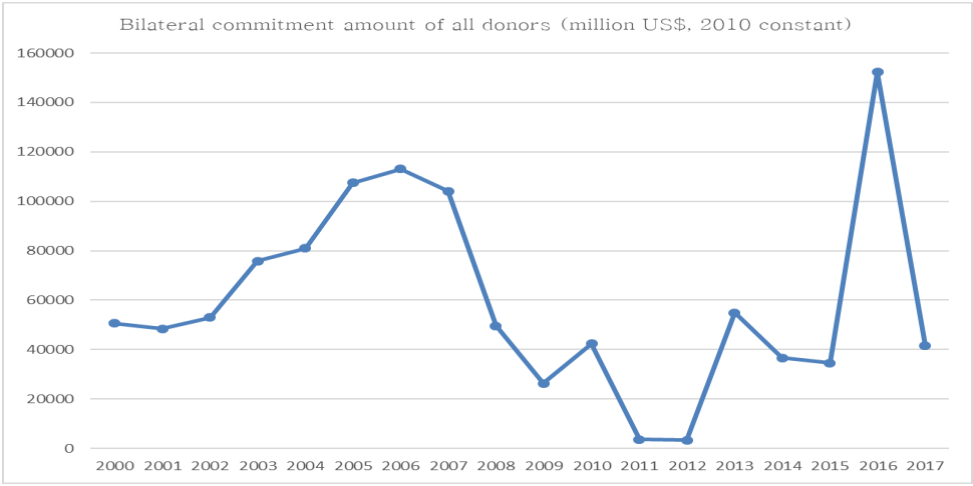

Table 1. Amount of bilateral aid commitments to education subsectors, DAC donors

	Education, level unspecified	Basic education	Secondary education	Post-secondary education
2000	797.9818	1065.726	290.3029	1036.702
2001	960.4316	881.7332	305.5944	999.1808
2002	683.97	996.1943	353.3578	1998.545
2003	1053.279	1561.721	411.1152	2872.768
2004	945.7208	2416.719	450.0867	3465.221
2005	1209.871	1943.98	391.1617	2417.211
2006	1681.766	2992.407	709.6569	3627.463
2007	2175.001	1915.105	892.1928	4125.048
2008	1021.496	642.1083	384.1293	537.3518
2009	442.6702	537.9463	232.4296	461.1006
2010	797.1456	1107.663	350.8853	625.0948
2011	19.75996	101.2752	19.44681	36.07333
2012	19.0184	88.96327	13.55548	49.85105
2013	665.3535	623.5485	524.1152	702.1371
2014	330.0134	820.1193	454.326	1224.235

2015	357.032	629.6561	580.5005	393.1172
2016	1958.807	2756.242	1287.869	3500.031
2017	712.3155	913.2151	600.2277	845.6018
Total	15831.6	21994.3	8250.95	28916.7

Note: all figures are in million $US (constant 2010 value).
Source: OECD CRS (2000-2017), organized by author.

Data Appendix B. LSDV result of individual donors (all variables)

LSDV result of France (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
PopLog	.000	.000	.171	.864
GDPLog	.000	.000	-.929	.354
Lang[1]***	12.919	2.322	5.564	.000
IntC***	.265	.065	4.090	.000
LFPR***	-.259	.077	-3.364	.001
YuUnemp	-.041	.059	-.700	.485
TrOp	.002	.016	.149	.882
PolGl***	.146	.046	3.145	.002
SocGl	-.086	.094	-.911	.363
PRER***	.215	.077	2.811	.005
LSER	-.088	.075	-1.173	.242
USER	-.047	.066	-.706	.481
GrTER	-.066	.047	-1.394	.165
EdEx	-.192	.141	-1.356	.177
n=240				

LSDV result of Germany (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
Population	.000	.000	12.263	.000***
GDP	-.001	.000	-3.252	.001***
IntC	-.062	.064	-.975	.331
LFPR	.022	.084	.259	.796
YuUnemp	-.026	.061	-.421	.674
Trade.Openness	.017	.017	.993	.322
PolGl	.137	.047	2.933	.004***
SocGl	.124	.097	1.285	.200
PRER	.067	.074	.909	.364
LSER	-.148	.077	-1.933	.055*
USER	.171	.065	2.622	.009***
GrTER	.125	.049	2.563	.011***
EdEx	-.245	.145	-1.688	.093*
n=241				

LSDV result of Japan (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p−value
Population	.000	.000	32.539	.000
GDP	−.001	.000	−2.528	.012
IntC	.101	.058	1.753	.082
LFPR	.109	.070	1.547	.124
YuUnemp	.076	.051	1.492	.138
Trade.Openness	.019	.013	1.465	.145
PolGl	−.183	.039	−4.655	.000
SocGl	.122	.076	1.589	.114
PRER	.244	.065	3.770	.000
LSER	−.150	.058	−2.584	.011
USER	.034	.050	.683	.496
GrTER	.081	.037	2.163	.032
EdEx	.047	.115	.414	.679
Population	.000	.000	32.539	.000
n=192				

LSDV result of Austria (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
Population	.000	.000	1.219	.225
GDP	.000	.000	-5.725	.000
IntC	.032	.011	2.935	.004
LFPR	.000	.015	.031	.975
YuUnemp	.069	.011	6.266	.000
Trade.Openness	-.003	.003	-.978	.329
PolGl	.024	.008	2.876	.005
SocGl	.042	.016	2.533	.012
PRER	-.024	.012	-1.948	.053
LSER	-.038	.013	-3.012	.003
USER	.059	.011	5.368	.000
GrTER	-.006	.008	-.742	.459
EdEx	-.156	.025	-6.171	.000
Population	.000	.000	1.219	.225
n=212				

LSDV result of Hungary (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p-value
Population	.000	.000	-.728	.471
GDP	.000	.000	-2.783	.008
IntC	.005	.008	.668	.508
LFPR	.006	.008	.782	.438
YuUnemp	.018	.006	2.964	.005
Trade.Openness	-.001	.001	-.779	.440
PolGl	.017	.006	2.661	.011
SocGl	.015	.011	1.397	.169
PRER	.000	.007	-.025	.980
LSER	-.011	.007	-1.561	.126
USER	.016	.005	3.380	.002
GrTER	-.008	.004	-2.133	.038
EdEx	-.039	.011	-3.653	.001
n=61				

LSDV result of U.S (all variables)

*Year set as fixed effect

Independent variable	B	SE	t	p−value
Population	.000	.000	1.364	.189
GDP	−.003	.004	−.742	.468
Language[1]	−36.517	29.232	1.249	−.228
IntC	−.200	.545	−.368	.717
LFPR	−.439	.660	−.665	.514
YuUnemp	−.727	.856	−.849	.407
Trade.Openness	−.172	.282	−.610	.549
PolGl	−1.174	1.049	−1.120	.277
SocGl	.144	.838	.172	.865
PRER	−.431	.830	−.519	.610
LSER	1.254	.816	1.537	.142
USER	−1.507	.898	−1.677	.111
GrTER	.841	.515	1.633	.120
EdEx	.136	2.237	.061	.952
n=45				

국문 초록

고등교육 양자원조의 결정요인 연구

-수원국의 사회 정치적, 경제적,
교육적 관점을 중심으로 -

김성겸

서울대학교 사범대학원

글로벌교육협력 전공

국제 개발협력의 관점에서 원조를 통한 개발도상국의 고등교육기관 발전에 대한 중요성은 증가하고 있다. 나아가, 세계 각국에서 시행되고 있는 고등교육 국제화 노력과 더불어 고등교육의 발전을 위한 원조량은 꾸준히 증가하는 추세이다. 이 같은 원조는 고등교육의 특성상 국제 장학금과 국제 학생을 위한 자금 지원의 형태를 중심으로 이루어지게 되며, 양자원조 프로그램의 경우 공여국과 수원국의 고등교육기관들이 직접적으로 사업에 참가하는 양상이 증가하고 있다 (Varghese, 2010). 다시 말해 고등교육 발전을 목표로 하는 원조는 수많은 학생이 혜택을 받게 되고, 다양한 대학기관들이 직접 참여를 하게 되는 반면, 아직까지 고등교육 원조의 결정 요인과

효과성에 대한 경험적 연구는 충분히 이루어지지 않고 있다. 따라서 본 연구는 지난 2000년부터 2017년까지 OECD DAC의 공여국들의 고등교육 원조 결정요인을 분석함으로써 고등교육 원조의 담론에 기여하고자 한다.

우선 DAC 전체와 개별적인 공여국의 고등교육 양자 원조 결정요인을 분석하기 위해 본 연구는 고등교육을 목적으로 하는 양자 원조 약정액을 종속변수로 선택하고, Donor Interest-Recipient Needs (공여국의 이익-수원국의 필요) 모델을 바탕으로 독립변수를 선정하여 수원국의 경제적, 인도적, 교육적 요구와 수원국에 대한 공여국의 정치, 경제적 요인들을 분석하였다. 또한, 국가 간 정보 흐름의 용이함을 나타내는 독립변수를 추가함으로써 정보의 흐름에 따른 약정액의 차이도 분석이 가능하도록 하였다.

위와 같은 분석에 따라 두 가지 주요 결과를 도출하였다. 첫째, DAC에 속한 다양한 공여국들의 중점 협력국과 지역들이 존재한다는 것을 감안하더라도 각각의 수원국에 약정되는 고등교육 양자 원조 금액은 고등교육의 특성과 관련된 여러 가지 요인들에 의해 결정된다는 것이다. DAC 전체의 분석 결과에 따르면 수원국의 요구, 공여국의 이익, 그리고 수원국의 사회적 정보 체계의 다양한 요인들이 고등교육 원조에 영향을 미치는 것으로 나타났다. 또한, 고등교육에 대한 원조는 수원국의 GDP와 반비례하며 인구수와 비례하는 등 전체적인 원조의 결정요인을 대체적으로 따르는 것으로 나타났지만, 특히 수원국의

노동력 및 3차 교육 취학률과 반비례하는 것으로 나타났다. 반면, 수원국의 정보 기반 시설의 수준이 높거나 수원국의 정부가 국제사회에서 활발하게 활동을 할수록 고등교육 발전을 위한 지원을 더욱 많이 받는 것으로 나타났다.

둘째, 공여국들의 개별적인 분석 결과 각각의 공여국마다 고등교육 발전을 위한 양자 원조 약정액의 결정요인이 다른 것으로 나타났다. 예로, 프랑스, 독일, 오스트리아의 경우 자국으로 국제학생의 유학을 장려하기 위해 장학금과 학생 지원금 형태의 원조에 투자를 많이 한다는 공통점을 가지고 있으나, 1) 프랑스는 높은 정보 기반 시설을 가지고 있으나 중등교육 취학률이 낮은 구(舊) 식민지권 국가들과 프랑스어권 국가들에 대한 원조에 집중하는 것으로 나타났고, 2) 독일은 비교적 역량이 있는 고등교육기관을 갖춘 수원국을 대상으로 고등교육 원조를 선호하며, 3) 오스트리아는 청년실업률이 높고 기초교육기관이 제대로 작동하지 않는 국가들에게 고등교육 원조를 집중하는 것으로 나타났다.

결론적으로, 위와 같은 경험적 분석을 통해 DAC 전체적으로는 고등교육을 위한 양자 원조가 인도적, 경제적, 교육적 필요성과 관심, 그리고 수원국 정보 체계의 활성화 정도에 따라 규범적으로 시행되고 있는 것처럼 보이지만, 실질적으로는 다양한 공여국들이 각기 다른 요인을 바탕으로 고등교육 양자 원조를 집행하는 것이 확인되었다. 따라서 본 연구의 중요성은 공적개발원조(ODA)와 개도국의 고등교육

발전과 관련된 공여국과 수원국의 여러 가지 관점들이 고등교육 양자원조에 영향을 미치는 것을 DI-RN 모델을 바탕으로 확인한 데 있다. 반면, 본 연구에서는 DI-RN을 바탕으로 한 분석틀로는 확인이 되지 않는 고등교육 양자 원조 결정요인들을 더욱 포괄적으로 분석하기가 어려웠고, DAC에 속한 공여국들의 특유한 사회·정치적 맥락이 깊이 있게 고려되지 않은 점이 제한점이다. 추가로, 향후 수원국의 관점에서 공여국들이 시행한 고등교육 양자 원조의 효과성을 분석하는 후속 연구가 진행된다면 고등교육 ODA 및 원조효과성 담론의 발전에 이바지할 것이다.

주제어: 고등교육, 고등교육 원조, ODA, 원조 결정요인, 양자 원조, 고등교육 국제화, 장학금

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