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Donor's Motivation of the Educational Aid

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1. Introduction

Although a substantial amount of literature has shown that educational aid has made a positive impact on educational development in the recipient countries (Birchler, Michaelowa, Birchle, & Michaelowa, 2013; D'Aiglepierre & Wagner, 2010; Dreher, Nunnenkamp, & Thiele, 2008; Michaelowa, 2004; Michaelowa & Weber, 2007, 2008; Riddell & Niño-Zarazúa, 2016), the discussion regarding how to make this educational aid more effective is still underexplored. Since 2008, when the global conference of the Paris High Level Forum on Aid Effectiveness[1] was held, scholars have suggested several approaches to improve the impact of educational aid, such as providing a transparent process, increasing the dialogue between donors and recipients, promoting joint action (Global Partnership for Education, 2012), reducing the cost and conditionality of aid transactions (Ashford & Biswas, 2010), evaluating donor types and governance (Christensen, Homer, & Nielson, 2011), and harmonizing aid modalities (Cassity, 2010; Hattori, 2009).

In this discussion, scholars argue that enhancing aid allocative efficiency is an approach that increases educational aid effectiveness. Fredriksen (2010) argues that if individual donors make more strategic aid allocations, the overall impact of aid on educational outcomes will increase. In fact, it seems obvious that if aid is not allocated based on the needs of the recipient countries, the overall impact of the aid will be less effective. Moreover, the international community agreed in 2000 in the global agreement of the Dakar Framework for Action (UNESCO, 2000)[2] to make a 'collective commitment' to prioritize educational aid allocation to countries in need. However, recent statistics show seemingly unequal and inefficient aid allocations in which the aid to low and low-middle income countries declined 6% and 25%, respectively, whereas the aid to upper-middle income countries increased 5% between the two periods of 2010-2012 and 2008-2010 (UNESCO, 2015).

However, in discussing allocative efficiency or in even criticizing current allocation patterns, the evidence concerning whether donors provide aid to countries in need and what motivates donors to provide aid is very limited. Although the literature that examines overall development aid has produced a substantial amount of evidence for this discussion, studies that focus on the educational sector are still scarce. The evidence from the overall development aid literature shows that donors provide aid not only based on need but also to pursue their personal objectives or concerns regarding the outcomes that they can expect from their aid. This evidence, however, may not be applicable to the educational sector, because the educational sector has different characteristics from the general development aid that includes more commercial-oriented sectors, such as the agriculture and energy sectors. Thus, donors may have different or unique motivations to provide educational aid.

To the best of my knowledge, there are three studies that have tested whether donors provide aid to countries in need, although their findings contradict one another and are thus still inconclusive. Thiele, Nunnenkamp and Dreher (2007) find that donors did not target educational aid to countries in need between 2002 and 2004 as measured by the net primary school enrollment, primary school completion rate, and average years of schooling. Conversely, Nelson (2010) shows that in an examination of six major bilateral donors, namely, Canada, France, Germany, Norway, Sweden, the United Kingdom, and the United States, between 1981 and 2004, educational aid flows were

responsive to the primary school completion rate of the recipient country that particular donors found to be strategically important. Similarly, Dreher, Gehring, and Klasen (2014) show evidence of donors' responsiveness concerning gender inequality, and aid went to countries that had larger gender gaps and a lower rate of females in primary school completion and tertiary enrollment from 2002-2011.

The evidence from the literature that has examined other motivations to provide educational aid is also limited, which constrains the arguments regarding allocative inefficiency. Turrent and Oketch (2009) examine the relation between educational aid allocation and the fragility level of the recipient country by examining 52 low-income countries from 1999-2006; they find that the countries that are categorized as fragile states receive less aid than the countries that are categorized as non-fragile states. Baulch and Le (2015) examine social sector aid, including education, health and population, between 2009 and 2011 and find that the disbursement pattern of social sector aid simply follows the total development aid pattern. By conducting interviews concerning donors' financing decisions, Steer and Wathne (2010) report that regarding the issue of prioritizing aid to the basic educational sector, donors face many difficulties in their decisions, such as weak prioritization and leadership and little evidence of advocacy.

Reviewing the previous literature demonstrates that there are two deficiencies in the literature that constrain the critical arguments for allocative efficiency in the educational sector. First, no studies use a comprehensive data set that includes the total sum of educational aid, which represents the international 'collective commitments' to global educational goals, and that occurs over a long period of time, which allows for the consideration of historical changes in allocation. Second, none of the previous studies thoroughly examines donors' other motivations, which could potentially explain aid allocation in the educational sector. These deficiencies in the literature fail to provide evidence for educational policymakers to evaluate inquiries regarding not only allocative efficiency and, therefore, equal allocation but also the rhetoric concerning the international commitments to educational development. This lack of evidence may cause a decrease in allocative efficiency and the educational aid to be thus ineffective.

Accordingly, this study aims to extend the prior literature on donors' motivation to provide educational aid by using the total sum of educational aid and a long time duration and by testing other potential motivations. Following the previous literature, I use the rational choice model as a central theory and examine four particular models, namely, recipient's needs, donor's self-interest, good governance and fragile states. It is noteworthy that the total educational aid includes the aid from multilateral donors, such as the United Nations (UN) and the World Bank. This inclusion of such organizations may be a concern because if in principle, they do not have self-interest as a motivation, such as a political or economic return from the recipient country, then the portion of multilateral aid that includes these organizations is inappropriate for the analysis. However, the starting point of this study is to provide evidence to criticize or support the international 'collective commitment' that donors agree to prioritize educational aid allocation to countries in need. Therefore, I use total educational aid as a group and reveal the group's motivations to provide educational aid.

This study proceeds as follows. In the next section, I explain the theoretical framework for four rational choice models by reviewing the literature on overall development aid and other aid sectors. Section 3 describes the data and the methodology. Section 4 shows the results of the analysis regarding the motivations for aid allocation. The results are also checked for robustness. Finally, section 5 provides a conclusion.

2. Theoretical Framework

Following the previous literature, I employ the rational choice theory as a central framework to seek an explanation for donors' motivation in educational aid allocation. The rational choice theory is a theory to understand social and economic phenomena by focusing on individual agents who make choices. This theory is based on the premise that individual agents have preferences or rationales among the available choice alternatives and make their choices to maximize their happiness or utility (Edgeworth, 1881), which is therefore called rational choice. In the context of educational aid, it is assumed that a donor country has a certain rationale concerning which countries it likes to provide aid to, and it chooses countries to maximize its rationale. This rationale is particularly severe in the context of development aid, because this aid comprises not eternal but very limited resources, and donor countries attempt to exploit the most resources to pursue their rationale. Some rationales depend on the context, for instance, happiness, utility, and efficiency. In this study, I examine four models of rationales that are informed by previous studies and that are described as relevant in general aid discussions. These four models are recipient's needs, donor's self-interest, good governance, and fragile states. Figure 1 shows a diagram of the rational choice model of educational aid allocation that I created for this study.

(Figure 1) A Diagram of the Rational Choice Model

Recipient Needs

The first model is based on equity allocation, a more specific term for the need principle that supposes that donors provide more aid to the places that are most in need. The definition of the equity varies depending on the context; in some cases, equity means that the resources are allocated based on the efforts that one exerts or that the same amount of resources is allocated without considering any conditions. In the context of international educational aid, equity is generally considered in terms of the need principle. Many international laws[3] confirm that education is a human right and that the international community has a responsibility to support the provision of quality education to all children in the world with as much aid as is necessary, despite a country's efforts. This model is related to a humanitarian motive in which donors are expected to be ethical in their decisions and to provide aid to countries with the most expansive needs for educational development.

As previously presented, this model is plausible to analyze educational aid and, therefore, development aid overall. However, the model has only explained aid when this aid is conditioned by a certain category, such as by donor type, period and aid sector. By conditioning the overall aid by donor type, Maizels & Missanke (1984) show that the model explains the multilateral aid allocation in the 1970s by measuring needs with the three proxies of GDP per capita, the Physical Quality of Life Index (PQLI)[4], and the balance-of-payments current account to GDP. The later study of Claessens, et al. (2009) shows that bilateral aid also responds to poverty needs as measured by GDP per capita and population between 1990 and 2004. Dreher et al. (2011)[5] compare two groups of donors, old/traditional donors and old/emerging donors, from 2001-2008 and present that old/traditional donors are more responsive to the recipient's needs than the new/emerging donors, as measured by GDP per capita, malnutrition, the mortality rate, the human development index, and the people who are affected by disaster. By focusing on multilateral donors from 1983-1997, Neumayer (2003)[6] shows that the regional bank generally focuses on economic need as measured by per capita income, whereas the UN agencies consider human development needs in their allocation, as measured by the PQLI. By conditioning the aid according to individual donor, the research shows the model that is applicable to the aid from Switzerland, Austria, Ireland, most of the Nordic countries (Berthélemy,

2006), Australia (Gounder, 1994), and to some extent, India (Fuchs & Vadlamannati, 2013). By comparing the aid allocation by period, evidence shows that the aid before the 1970s was based more on need than the aid between the 1970s and 1980s (Maizels & Missanke, 1984).

Other scholars have examined the relation between development aid and specific sector needs and have found some connections between them. Neumayer (2005) shows that the flow of development aid follows the level of food needs, when measured with the daily average calorie supply per capital and the domestic food self-sufficiency index in the case of four large donors' aid from the European Union, the United States, the UN World Food Programme and non-governmental organizations (NGOs) in the 1990s. Nelson (2010) investigates the responsiveness of overall development aid to the seven sector-level needs between 1981 and 2004 and finds overall development aid to be responsive to the following three sector needs: the food sector as captured by the percentage of the population who suffer from undernourishment; the energy sector as captured by the electricity consumption per capita; and the education sector as captured by the primary school completion rate. Furthermore, a sector-level investigation, which matches sector-level aid and sector-specific needs (Fielding, 2011), finds that in the health sector, the volume of health aid is responsive to health needs, as observed by the change in the neonatal mortality rate. Similarly, Lee & Lim (2014) examine three major health indicators, namely, the infant mortality rate, child mortality rate, and HIV prevalence rate, and show that donors respond to these indicators as shown by the increase in the total volume of health aid as the deterioration level of health status increases.

Donor Self-Interest

The second model is donor's self-interest that signifies what donors expect to receive in return for providing development aid. As Todaro and Smith (2009) indicate, donors' primary motivation to provide aid is either a political strategy or economic self-interest, and which countries receive aid greatly depends on the donor government's diplomatic strategy. This motivation seems inevitable because the policy decisions of donor governments are influenced by many factors that form the domestic conditions, such as value, political party affiliation, constituency interest, public opinion, the country's deference and decision rules and global competition or alliances (Anderson, 1997). Thus, a donor's aid allocation decisions sometimes must become self-strategic to satisfy the best conditions for the donor.

Many studies have shown a strong association between bilateral aid and a donor's political and economic interests, while the indicators that are used in the investigation are changed as the context changes. For political interests, the early-years' investigation tends to use indicators that relate to the Cold War. An early study by Wittkopf (1972) examines the aid motivation for major donors and finds that the variable of Cold War considerations was the most important factor in the 1960s for aid allocation from the United States. A series of case studies of major donors, namely, the United States, France, Germany, and the United Kingdom, by McKinlay & Little (1977, 1978a, 1978b, 1979) and McKinlay (1978) examine political indicators including the gross term of international liquidity holding, the gross expenditure on the armed forces, the gross size of the armed forces, military expenditures, population, GDP, and the association with Communist countries. These scholars conclude that political interests provide a good explanation for the aid allocation of all four donors concerning their aid in the 1960s. After the Cold War era ended around 1989, some scholars included different indicators for political interests that relate more to the UN. Alesina & Dollar (2000) construct a new variable of the UN voting pattern by calculating the correlation of the donor and recipient country's voting record in the UN General Assembly and find that the UN voting pattern is a highly

important driver of aid allocation, particularly for Japan's development aid between 1970 and 1994. By examining the cases of the United States and the UN between 1946 and 2001, Kuziemko & Werker (2006) find that the volume of development aid from the two donors increases when the developing country serves on the UN Security Council. The more recent study of Fuchs & Vadlamannati (2013) on the aid from India from 2008-2010 also confirms that the voting pattern in the UN is a significantly important factor that relates to aid allocation.

Regarding economic interests, various indicators have been included and strong associations have been found in overall aid allocation. An early study by Davenport (1970) examines aid between 1962 and 1964 and finds that among several variables, the most consistently significant variables are foreign reserve position, which is calculated as a portion of the import value for a foreign reserve asset such as gold, foreign exchange and the gold tranche. Wittkopf (1972) uses the variable of trade balance and finds that it is a strong explanatory factor for French, German and British aid in the 1960s. A series of case studies by McKinlay & Little (1977, 1978a, 1978b, 1979) and McKinlay (1978) also find the economic interests of four major donors in their aid in the 1960s through the proxies of the percentage of total exports and imports from the donor country, gross size of exports and imports, gross size of the returns on external investment, and net balance of private investment. In examining the individual donors in two periods from 1969-1970 and from 1978-1980, Maizels & Missanke, (1984) find that the level of the donor country's share of imports and exports plays a dominant role in the aid decision, particularly for France, Japan and the United Kingdom. Younas (2008) also confirms the strong association between aid and trade-related indicators but more specifically shows that donors favor countries that import the goods in which the donor country has a comparative advantage in production. Similarly, in the case of Indian aid, Fuchs & Vadlamannati (2013) also find that the variable of total exports (which is a proxy of Indian exports to a recipient country, and it conversely means the imports of a recipient country) is the significant factor that increases aid flows.

Good Governance

The third model is based on the recipient country's governance level, where donors favor countries that can use development aid most effectively. If the aid goes to a country that has a low capacity or commitment to aid implementation, the aid will not achieve the best possible outcome. This model is based on the cost-effectiveness perspective. Given the recent demand for accountability by taxpayers in their countries, donor governments prefer to give aid to countries in which the expected outcome is more likely to be realized than to countries that do not know whether they can achieve the expected outcome. The intensive aid program of the Education for All Fast-Track Initiative (EFA-FTI)[7], which was launched in 2002, is one example in which the good governance of the recipient country was an important criterion for providing aid. To become a recipient for aid from this program, the recipient country is required to demonstrate a serious commitment and ability to achieve universal primary school education by presenting good policies and coordination plans.

Several studies have clearly found an association between aid allocation and good governance. Berthélemy (2006) shows an association between development aid and two government proxies of the level of civil liberties and the political freedom evaluation that is given by Freedom House between 1980 and 1990, and simultaneously, the most significant trading partners also provide aid to alleviate some recipients' needs. Alesina & Dollar (2000) examine historical change in the relation between aid and governance level as measured by the democracy and civil liberties index of Freedom House; they find an increasing trend from 1970-1994 that favors democratized countries. By studying 1970-2004 and presenting a significant relation between the index of County Policy and Institutional

Assessment (CPIA) scores and development aid, Claessens et al. (2009) show that good governance became important in the allocative decisions of bilateral donors after 1999.

Fragile State Priority

The fourth model is in some ways the opposite of the third motivation. In the fourth model, donors direct their support to the countries that are more affected by conflict and weak political institutions, which are generally called fragile states. In recent discussions on educational aid, this rationale is new but seems to have a certain support. For example, one of the leading multilateral aid programs, the Global Partnership for Education, has shown a strong commitment to support fragile states. The Global Partnership for Education introduced a flexible aid program in 2002 and since then, has increased the amount of aid to fragile states from one country to 28 countries in 2016 (GPE, 2016). It has been argued that there are mixed motivations for aiding fragile states because fragile states are very likely to have a high level of unsatisfied needs; however, by ensuring a post-conflict reconstruction that sustains peace, new markets can be developed for future trade, which can also be considered a geopolitical priority for a donor country that can be regarded as acting in its self-interest (Addison et al., 2016). It is difficult to separate these hidden motivations; therefore, the rationale for the priority to fragile states must be examined separately from the three above-mentioned rationales. There is no solid definition of a fragile state, but it is generally characterized as a low-income country with weak state capacity and/or weak state legitimacy that leaves citizens vulnerable to a range of shocks. As discussed above, the study by Turrent and Oketch (2009) uses the CPIA index to group the 52 low-income countries into fragile and non-fragile states and shows that donors provide less educational aid to fragile states than non-fragile states. Table 1 shows a summary of the four models' concepts and indicators that have been used in the previous literature.

(Table 1) Concepts and Indicators for Four Rational Choice Models

3. Data and Methodology

3.1 Data

The data that I use in this study are panel data that I construct from several sources, including international organizations, governmental institutions, NGOs, and universities, and these data are publicly available through the sources' websites.

(1) Dependent Variable

The educational aid data are drawn from the Organisation for Economic Co-Operation and Development (OECD) Development Assistance Committee (DAC)'s Creditor Reporting System (CRS) database (http://stats.oecd.org/), which is self-reported information by the DAC countries. This educational aid includes the following four sub-sectors of aid that are divided by educational levels: aid for basic education; aid for secondary education; aid for post-secondary education; and aid for an unspecified educational level. In my data set, the aid for basic education is 30%, the aid for secondary education is 11%, the aid for post-secondary education is 33%, and the aid for the unspecified level is 24% of the total educational aid. It is assumed that donors have slightly different motivations to provide aid according to the sub-sectors. Because this study's objective is to examine the overall motivation for aid

in the educational sector, this study uses the aggregated amount of all four sub-sectors.

The data period spans 20 years beginning in 1995 when the report's completeness exceeded 70% until the most recent collection of data in 2014. Over this period, the data set covers 179 aid-recipient countries in total, but I excluded 10 countries/territories that did not receive any educational aid during this period. Because there are missing data regarding some of the explanatory variables, particularly the recipients' needs variables, I aggregated this information into three-year averages (1995-1997, 1998-2000, 2001-2003, 2004-2006, 2007-2009, 2010-2012, and 2013-2014). The values are the commitment amounts in constant 2014 US dollars, which accounts for variations in inflation and exchange rates over the period. There are some concerns regarding aid volatility in which the commitment amounts may differ from the actual disbursements. However, a study by Hudson (2013) reports that in the educational aid sector, nearly all of the commitments align with the actual disbursements within a two-year period; therefore, by using the three-year average values, this concern may not be significant. After these data restrictions, the analytical sample for this study included 169 recipient countries that were aggregated over seven three-year periods between 1995 and 2014. The aid variable varies across a wide range and exhibits a skewed distribution; therefore, this variable enters all regressions as a natural logarithm.

(2) Explanatory Variables

(a) *Recipients' Needs*

The needs of a recipient country are captured by the following six indicators that represent the educational level of the recipient country in different aspects: the enrollment rate in the primary level; the enrollment rate in the secondary level; out-of-school children; the gender parity index (GPI); the completion rate; and the student-teacher ratio. All the data were derived from the UNESCO Institute for Statistics (UIS) (http://data.uis.unesco.org/). The reason why I selected these six indicators is because the international community recognizes these indicators as fundamental needs in developing countries, and these indicators have been used to measure the progress of the global targets of EFA as well as the Millennium Development Goals. In addition, among the possible educational indicators, these six variables have a large set of countries and are more reliable than other indicators, such as the teacher attrition rate, the expenditures in education as a percentage of GDP and the literacy rate.

The six indicators are categorized in three educational dimensions, namely, access to school, equity, and quality. For access to school, the three variables of the enrollment rate in the primary level, the enrollment rate in the secondary level, and the number of out-of-school children are included. For the enrollment rate, I use the adjusted net enrollment rate (NER), because it is a more precise measure of the participation of the official primary school-age population in the education system; this measure includes the children who have started school early or who are enrolled in any type of educational institution. The variable for out-of-school children represents the number of children who are in the official primary school-age range but who are not enrolled in primary school. For the equity dimension, I use the GPI at the primary level, which is the ratio of the female total NER in primary school to the male total NER in primary school. A GPI that is equal to one means parity between females and males. A value of less than one indicates a disparity in favor of males, and a value of greater than 1 indicates a disparity in favor of females. For the quality dimension, the remaining two indicators of the completion rate and student-teacher ratio are included. The completion rate is the number of new entrants in the last grade of primary school education and is expressed as a percentage of the total population of the theoretical entrance age in the last grade of primary school.

This value is also considered to be the gross intake rate for the last grade of primary school education. This ratio can exceed 100% because of over- and under-aged children who enter primary school late/early and/or repeat grades. Finally, the student-teacher ratio is the average number of students per teacher that is based on the headcounts of both students and teachers and is calculated by dividing the total number of enrolled students by the number of teachers.

One may be concerned regarding the relevancy between the dependent variable and the needs variables because the dependent variable of educational aid includes all education levels such as higher educational levels, while the needs variables represent only the primary and secondary levels. Particularly, as I previously described, the total educational aid contains nearly one-third of the post-secondary educational level, which gives the impression that the total educational aid already does not correspond to the dependent variable of educational needs. However, a donor may have a belief that providing aid to post-secondary education has an indirect or catalytic impact on lower levels of education. For example, providing a quality tertiary education program stimulates children's motivation to learn at the primary level by showing them opportunities for future study. Accordingly, a donor may allocate more higher educational aid to a country where the primary educational level is low. Thus, it is still meaningful to estimate the relation between total educational aid and primary level educational needs. These variables exhibit a skewed distribution, and thus they are entered as natural logarithms in the estimations.

(b) *Donor's Self-Interest*

The information regarding donors' political interests is measured by a dummy variable for having a seat on the UN Security Council. The data were derived from the UN Security Council website (http://www.un.org/en/sc/members/). The mandate of the UN Security Council is to maintain global peacekeeping, and it is given the power to authorize multilateral sanctions and military action when an unsecured event occurs, such as in the Korean War, the US invasion of Iraq and the Gulf War. Having a seat on the UN Security Council means that the country plays a representative role and makes decisions on behalf of all UN member states for significant world events. Thus, some donor countries may want to increase the development aid to a country with a UN Security Council seat to reflect their political will on the Council. As previously discussed, Kuziemko & Werker (2006) show that in the case of aid from the United States and the UN, political interests were significantly relevant to the volume of development aid, and they increased US aid by 59% and UN aid by 8%. Five seats of the Council are held by permanent members, and the other ten seats are reserved for non-permanent members who are selected among the UN member states to serve a two-year term. In the sampled countries in this study, 59 countries had a seat on the UN Security Council during the sample period.

Donors' economic interests are captured by two variables, specifically the value of the imports of goods and services as a percentage of the GDP of the recipient countries and the value of the total production of petroleum and other liquid resources in barrels per day. The value of the imports of goods and services is an indicator that represents trading capacity. As presented above, the recent literature on overall development aid shows that the import value has become an important factor for donors to allocate aid, and this variable is thus included in a form of natural logarithms. To observe the different aspects of the trade indicator, I selected the variable of petroleum and other liquid resources as another variable of economic interest. This selection was also informed by the recent literature that assumes the influence of resource-related indicators, such as mineral and energy depletion (Dreher et al., 2011) and crude oil reserves (Lee & Lim, 2014) because it is also argued that resource-oriented aid allocation has become

much more limited in recent years (Tull, 2006). The information for imports was obtained from the World Development Indicators (WDI) (http://data.worldbank.org/) in constant 2010 U.S. dollars, and the petroleum information was obtained from the United States Energy Information Administration (http://www.eia.gov/).

(c) *Good Governance*

The level of good governance of a recipient county is captured by two proxies, namely, the scores for the rule of law and political rights. The data for the rule of law were drawn from the Worldwide Governance Indicators (WGI) (http://info.worldbank.org/governance/wgi/), and the data for political rights were derived from the Freedom House (https://freedomhouse.org/). The rule of law represents the extent to which agents have confidence in and abide by the rules of society, particularly the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. This data set is based on a large survey of many enterprises, citizens and experts in both developed and developing countries. The variables are scored in ranges from approximately -2.5, which represents the weakest level, to 2.5, which is the strongest level. Political rights represent the degree of freedom in the country based on a world survey that examines political conditions, such as the electoral process, political pluralism and participation, the functioning of government, and the degree of freedom of expression and belief. Political rights are measured on a one-to-seven scale, with one representing the highest level of freedom and seven representing the lowest level of freedom.

(d) *Fragile State Priority*

The measurement of a fragile state is captured by the two variables of the state fragility index and a dummy indicator for armed conflict. The state fragility index is a combined index that is produced by the Center of Systemic Peace and is measured based on the following four performance dimensions: security (total residual war and state repression); political (regime/governance stability and regime/governance inclusion); economic (GDP per capita and share of export trade in manufactured goods); and social (human development indicator (HDI) and infant mortality rate). This index ranges from 0 for no fragility to 25 for extreme fragility. The dummy variable for armed conflict is drawn from the Uppsala Conflict Data Program (http://ucdp.uu.se/) and represents by conflict-years the armed conflict where at least one party was the government of a state.

(e) *Control Variables*

Following the previous literature, particularly the research that focuses on sector-level studies, I account for the effect of potential confounding variables. This process is necessary to observe the effect of the included variables by ensuring that their remaining effect is not due to omitted variable bias. Informed by the previous literature, I included the natural log of GDP per capita and total population. For GDP per capita, I also included the squared value to mitigate the middle-income bias in which the higher-level group of middle-income countries tends to receive less foreign aid. Both data are drawn from the World Development Index. The data for GDP per capita are in constant 2011 international dollars.

The descriptive statistics for all of the included variables in this analysis are presented in Table 2. In addition, Table 3 presents the bivariate correlation coefficient for all the explanatory variables. Most of the correlations are not very high, except the strong relation among the six needs variables. Thus, the needs variables are included one-

by-one in the estimation. For the other variables, I calculated the variance inflation factors for all models to check whether the multicollinearity caused a problem in the estimation, but I could not find any evidence that suggests that it seriously affected the estimation results.

(Table 2) Descriptive Summary
(Table 3) Correlation Matrix for the Explanatory Variables

3.2 Model Specification

As a benchmark model, I first run an Ordinary Least Squares (OLS) estimator with a country-clustered robust standard error and a year dummy. The specification is shown in equation (1). As discussed above, the regression included the four groups of explanatory variables and the control variables.

$$Aid_{it} = \alpha + \beta_1 Needs_{it} + \beta_2 Interests_{it} + \beta_3 Governance_{it} + \beta_4 Fragility_{it}$$
$$+ \delta X_{it} + \theta_t + \varepsilon_{it} \tag{1}$$

where the dependent variable Aid_{it} is the amount of educational aid that is provided to recipient country i in period t. $Needs_{it}$ represents the needs of recipient country i in period t, which includes **six** variables. **As mentioned before,** these **six** *Needs* variables have strong multicollinearity; therefore, they were estimated separately. $Interest_{it}$ is a vector of variables that captures the donor's political and commercial interests in recipient country i in period t, such as a UN seat, the import value and petroleum and other liquid resources. $Governance_{it}$ is a vector of variables that captures the degree of good governance of recipient country i in period t, as measured by the rule of law and political rights. $Fragility_{it}$ is a vector of variables that captures the level of fragility of recipient country i in period t, as measured by the fragile state index and armed conflict. X_{it} is the control variables of GDP per capita, squared GDP per capita, and the total population of recipient country i in period t. θ_i is the time dummy, and ε_{it} is the error term.

Second, because the data in this study are panel data that have two dimensions, namely, the recipient country and time, I include the country fixed effects to control for the unobserved county-specific and time-invariant factor determinants of educational aid.

Third, I also include the lagged dependent variable because donors tend to allocate aid to a country that has already received a certain amount of aid rather than to a country that they do not know about; thus, the aid flows in the current period tend to be related to the previous period. In addition, educational aid projects generally last for several years, and although my data use 3-year averages, aid distribution can stretch over several periods. This new specification is shown in equation (2).

$$Aid_{it} = \alpha + \rho Aid_{t-1} + \beta_1 Needs_{it} + \beta_2 Interests_{it} + \beta_3 Governance_{it} + \beta_4 Fragility_{it}$$
$$+ \delta X_{it} + u_i + \theta_t + \varepsilon_{it} \tag{2}$$

where u_i is a vector of the country fixed effects and denotes the time-invariant differences in educational aid across the recipient countries. However, Aid_{it-1} is correlated with the fixed effects in error term ε_{it}, which gives rise to 'dynamic panel bias' (Nickell, 1981) that inflates the coefficient estimate for the lagged aid variable by attributing

predictive power to it that actually belongs to the country's fixed effects. The impact of one year's shock on a country's apparent fixed effects would diminish, and the endogeneity problem would also diminish. To solve these problems, I use the system general method of moments (GMM) estimation that was developed by Blundell and Bond (1998). The system GMM solves the endogenous bias problem that relates to the inclusion of the lagged dependent variables and instrumental variables for other possible endogenous variables and addresses the independent variables that are not exogenous, as well as the fixed effects, heteroskedasticity and autocorrelation within countries. The estimation is run by building a system of two equations, including the original equation (equation (2)) and the transformed equation or difference equation, as specified in equation (3).

$$\Delta Aid_{it} = \rho(\Delta Aid_{it-1}) + \beta_1(\Delta Needs_{it}) + \beta_2(\Delta Interests_{it}) + \beta_3(\Delta Governance_{it})$$
$$+ \beta_4(\Delta Fragility_{it}) + \delta(\Delta X_{it}) + \Delta \theta_t + \Delta \varepsilon_{it} \tag{3}$$

When selecting the endogenous variables to control for the unobserved factors in educational aid, I limited the number of endogenous variables to two, specifically the lagged dependent variable of educational aid and the lagged *Needs* variable, because too many instrumental variables can over-fit the endogenous variables and fail to expunge their endogenous component (Roodman, 2009). The lagged difference in the endogenous variables is used as an instrument for the original equation, and the lagged levels of the endogenous variables are used as an instrument for the transformed equation. To illustrate, the instrument for Aid_{it-1} is Aid_{it-2}, and if the data are transformed by differencing, Aid_{it-1} is ΔAid_{it-2}. In the differenced case, both Aid_{it-2} and $\Delta Aid_{it-2}\Delta$ are mathematically related to $\Delta Aid_{it-1} = Aid_{it-1} - Aid_{it-2}$ but not to the error term $\Delta \varepsilon_{it} = \varepsilon_{it} - \varepsilon_{it-1}$ as long as ε_{it} is not serially correlated. The two-step robust system GMM is estimated by using a Windemeijer (2005) finite-sample correction.

4. Results

Tables 4-1 and 4-2 show the results of the association of the four rationales with educational aid. Table 4-1 uses the OLS regression, and Table 4-2 uses the fixed effects and the system GMM. In Table 4-2, columns (7) through (12) are the result of the fixed effects model, and columns (13) through (18) are the result of the system GMM. In the OLS regression, all of the specifications show a moderate fitness to the regression lines, with R-squared values between 0.597 and 0.624. Similarly, the fixed effects model also has a moderate fit, with R-squared values from 0.329 to 0.39. In the system GMM estimation, all of the specifications passed the Arellano-Bond test of serial independence in the error terms, where the hypothesis that the errors were not correlated was rejected, as in AR(1), and the hypothesis that the error-component specification was not correlated was not rejected, as in AR(2). In addition, all of the GMM specifications passed the Hansen J test by not rejecting the null hypothesis that the over-identification restriction is valid, which indicates that the instruments for the lagged dependent variables and the needs variables are exogenous.

For the *Needs* variables, the results of the OLS estimation show a significant relation in five indicators except for out-of-school children, while in the fixed effects model, a significant relation only appears for three indicators, which are the secondary NER, gender parity, and the completion rate in columns (8), (10) and (11). Furthermore, in the system GMM, this significant relation disappears for the secondary NER and completion rate in columns (14) and (17) but appears for the primary NER in column (13) and remains for the GPI in column (16). From these results,

there is evidence of a relation between educational aid and the GPI, which indicates that donors provide more educational aid to countries with a lower ratio of gender parity. Specifically, this result implies that a 10% decrease in the gender disparity index will induce an increase of educational aid in a range from approximately 13% to 29%.

Among the *Self-Interest* variables, the variable of a seat on the UN Security Council showed no significant relation in all specifications, except for one specification in the fixed effects model in column (11) and one specification in the system GMM in column (18). The variable of imports showed a plausible relation but unstable significance, with only one positively significant association in the OLS specification in column (5), while it appears to be significant in most of the fixed effects and system GMM specifications. The variable of petroleum shows a dubious negative coefficient in the OLS and the system GMM specifications, while it shows a positive coefficient in the fixed effects estimation, but all coefficients have insignificant signs. From these results, I could not find strong evidence that donors provide more aid to countries based on their political and economic interests.

For the *Governance* variables, the variable of the rule of law is found to be positively associated with educational aid in all of the specifications. In contrast, the variable of political rights only appears to have significant associations in the four specifications of the fixed effects model in columns (7) to (11) and in one system GMM specification in column (14). In the overall results for the good governance motivation model, I have limited evidence in which only one of two indicators have a statistically significant relation. However, when I focus on the indicator of the rule of law, I have strong evidence that donors favor a government that can abide by the rules of the country's society. This finding suggests that for donors, the legal order of the recipient country matters in the aid allocation decision but not the level of the freedom conditions in the country.

Among the *Fragility* variables, the level of the state fragility index does not show any statistically significant relation in the OLS estimations; however, this variable has one positive relation in the fixed effects specification in column (12) and three positive relations in the system GMM specifications in columns (15), (17) and (18). The armed conflict variable does not appear to have any significant association except one negative association in the OLS specification in column (5). From these results, I conclude that I have no evidence that donors provide more educational aid to fragile states.

For the control variables, as I expected, the variable of the log of GDP per capita shows a positive coefficient, and its squared value shows a negative coefficient particularly in the OLS and system GMM specifications, which indicates that there is a middle-income bias in educational aid allocation. Finally, population size has a positive relation with educational aid.

(Table 4-1) Relation between Educational Aid and the Four Motivations: OLS regression
(Table 4-2) Relation between Educational Aid and the Four Motivations: Fixed Effects and System GMM

Robustness Check

To check the robustness of the above results, I conducted several estimations by using different variables and with conditions on the dependent variable. Table 5 presents the results of these estimations. First, I was concerned about whether the use of a different variable for gender parity in the *Needs* model would lead to a different result. I replaced the GPI in primary level education with two different variables, namely, the GPI at the primary and secondary levels and the GPI at all levels from the primary to the tertiary levels, and I re-ran the preferred specification of system GMM. The results show in columns (1) and (2) in Table 5 that both variables have the same

result as my previous results with statistical significance, which confirms that gender disparity is negatively associated with the volume of educational aid.

Similarly, I was concerned about whether the inclusion of alternative proxies and the covariances of the variable of the rule of law in the *Good Governance* model would affect my results. Thus, I re-ran the model by using two different indicators that demonstrate the quality of governance, specifically the CPIA score and the index of government effectiveness. The CPIA score is a composite rating of the quality of a country's policy and institutional framework[8] and is published by the World Bank. The rates are based on 16-20 criteria and produce scores from 1 (low) to 6 (high)[9]. The data contain 77 countries for 1995 to 2004 and 95 countries for 2005 to 2014; therefore, the sample countries are restricted to smaller sizes. The variable of government effectiveness is derived from the same database as the rule of law from the World Governance Indicator, but it reflects different perceptions of the quality of a country, such as the quality of public services, the quality of the civil service and the degree of its independence from political pressure, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. With the preferred specification of system GMM, the results show in columns (3) and (4) that both variables have the same sign as my previous results and show a statistically positive relation with educational aid.

Third, I was concerned about whether separating the donor types may result in different results. I worked with an aid sample in which aid is provided by both multilateral and bilateral donors. As many studies have discussed, aid donors have different mandates for providing aid that may differ by donor type, such that multilateral donors provide aid that is based more on need, while bilateral donors provide aid that is based more on self-interest. Therefore, as a robustness check, I restricted the sample to bilateral donors and checked whether my previous results of educational aid's relations to gender disparity and the rule of law are still valid for this specific donor group. As reported in column (5) of Table 5, the results show that my findings are also robust to bilateral donor aid, and the two variables of gender parity and the rule of law remain in the same statistically significant direction.

Finally, the model was run by using a different sample period. I originally used a sample period between 1995 and 2014. However, the coverage of the aid commitment data by the OECD/CRS until 1999 was 70% before reaching over 90% after 2000. Therefore, I re-ran the six restricted periods between 2000 and 2014 instead of the seven periods between 1995 and 2014. The result in column (6) remains stable for both the variables of gender parity and the rule of law. Through these checks, my previous results were confirmed for their robustness, and I can conclude that donors provide more aid to countries with lower levels of gender parity and higher levels of the rule of law.

Table 3: Robustness Checks

5. Conclusion

This study explored donors' decision-making rationales in educational aid allocation by examining the relation between educational aid and the four rational choice models of the recipient's needs, donor's self-interest, good governance, and fragile states. This study found statistical evidence in two of these models, namely, the recipient's needs and good governance. In the recipient's needs model, a strong association was found with the gender disparity index, which suggests that donors provide more aid to the countries that have greater gender inequality. This result corresponds to the previous findings of Dreher, et al. (2014) and confirms that donors respond to educational needs

in the equity aspect. However, out of six needs variables, five variables that relate to the access and quality aspects did not show strong evidence in the model, and one can argue that donors do not provide aid based on needs concerning the access and quality aspects.

For the good governance model, this study found strong evidence that educational aid is associated with one of the governance indicators, specifically the level of the recipient country's rule of law. This result implies that donors particularly favor countries that have rules of society and that maintain contract enforcement, which implies that they use aid money appropriately. This finding serves as evidence to criticize the current aid allocations because donors presently emphasize more the recipient's governance level and neglect fundamental educational needs in access and quality. This criticism further provides a warning for the recent aid modality of result-based financing, where donors provide aid when the promised outcome is achieved. Again, too much of a focus on the outcome risks a failure to recognize the vast needs of a country that desperately requires educational aid.

Overall, this study did not find a statistical relation between educational aid and the remaining two models of donor's self-interest and fragile states. However, this study used total educational aid, and when examining the allocation by individual donor, this result may change. An investigation of individual donors could advance an understanding of the more detailed and context-specific motivation for educational aid allocation by including historical ties, geographic distance, common language, and cultural similarities.

Although this study attempted to produce empirical evidence within a possible range, this study has at least two limitations as followings. First, this study used the rational choice model for the theoretical framework, which presumes that the two agents of a donor and recipient country are in a static condition. However, the aid allocation arena could be more complex and interrelated or interdependent among donors, between donors and recipient countries, and among recipient countries; thus, this arena may need a dynamic perspective to more precisely understand the allocation phenomena. Future study is needed to consider this perspective by using a theory that helps to explain the dynamics, such as game theory, the principal-agent relationship, the logic of collective action, and free-rider theory.

Second, the relevance of the educational needs proxies, particularly the quality proxy, remains a crucial issue when testing needs-based allocation. In this study, I used six needs indicators that are measurable and widely used in the international debate. However, a global agenda was renewed in 2015 concerning the Sustainable Development Goals, and the educational agenda also shifted in focus from access to education to quality of education. Accordingly, the traditional understanding of quality, such as the quality that is defined by learning outcomes and that is measured by test scores, has been revisited and is currently still underexplored by scholars who must find a more appropriate way to define the quality of education (Alexander, 2015; Rose, 2015; Tikly, 2015). This problem that occurred from the shift of the educational agenda affects not only the discussion of allocative efficiency; scholars who discuss educational policy (Riddell & Niño-Zarazúa, 2016) and program implementation (Heyneman & Lee, 2016) already acknowledge the challenges ahead and call for a fundamental mental shift in the discussion. Meanwhile, the discussion concerning the motivation for educational aid also must be revisited when international society knows what the educational needs are in a recipient country and how to measure these needs under the new global goals.

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[1] The Paris Declaration suggested five mutually reinforcing principles to improve the effectiveness of aid in general, namely, ownership, alignment, harmonization, managing for results, and mutual accountability.

[2] The Dakar Framework states that "the challenge of education for all is greatest in sub-Saharan Africa, in South Asia, and in the least developed countries. Accordingly, while no country in need should be denied international assistance, priority should be given to these regions and countries" (UNESCO, 2000).

[3] Several examples include Article 26 of the Universal Declaration of Human Rights, Articles 13 and 14 of the International Covenant on Economic, Social and Cultural Rights, the 1960 UNESCO Convention against Discrimination in Education, the 1981 Convention on the Elimination of All Forms of Discrimination Against Women, the 2006 Convention on the Rights of Persons with Disabilities, and the African Charter on Human and Peoples' Rights.

4 PQLI is published by the Overseas Development Council. The score is calculated based on an average of life expectancy at age one, infant mortality and literacy.

5 The authors also refer to Development Assistance Committee (DAC) donors and non-DAC donors. The non-DAC donors in the study include the 16 countries of Brazil, Chile, Colombia, Estonia, Hungary, the Republic of Korea, Kuwait, Latvia, Lithuania, Poland, Saudi Arabia, the Republic of Slovakia, the Republic of South Africa, Taiwan, Thailand, and the United Arab Emirates.

6 The UN agencies that the author examines in the study are UNDP, UNICEF and UNTA. The multilateral development banks are the African Development Bank, the Caribbean Development Bank, and the Asian Development Bank.

7 This aid program is currently called the Global Partnership for Education. It is a joint program that involves aid donors, developing countries, international organizations, foundations, the private sector, teacher organizations, and civil society organizations. The objective is to encourage low- and middle-income countries to develop national education plans and to commit greater political and financial resources to education.

8 The ratings are based on four clusters, namely, economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions. More details can be found at http://data.worldbank.org/data-catalog/CPIA.

9 There were 20 criteria from 1995-2004 but 16 after 2004. The ratings from 1995-1998 range from 1 (low) to 5 (high).