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Alliances, Security Externalities, and Donor Coordination

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Abstract

Recent research on donor coordination has focused on the need to avoid duplication to improve aid efficiency. Instead, this study approaches donor coordination from the viewpoint of security and discusses that overlapping is theoretically preferable because foreign aid has security externalities. In this paper, I clarify the relationship between bilateral aid from the United States and aid from its allies. While the United States has withheld economic aid to enemy countries, it has given more aid to recipients that are important for its security. Similarly, US ally donors have decided to allocate aid in congruence with US policy goals. As a result, donor coordination (overlapping) occurs between the United States and its allies. Among allies, big donors can easily respond to the demands of the United States. Moreover, they have been more likely to coordinate since the onset of the War on Terror. I statistically demonstrate these theoretical expectations.

Keywords

foreign aid, donor coordination, alliance, security externalities, international political economy

Introduction

In May 2017, the 45th President of the United States, Donald Trump, accused NATO leaders of being dependent on the United States for their

security and 'not paying what they should be paying.' According to him, they take advantage of US taxpayers (The Washington Post, 25 May, 2017). Jens Stoltenberg, NATO Secretary General, immediately responded to this and expressed an increase in military spending by 4.3% (The Washington Post, 28 June, 2017). The President's dissatisfaction is not directed only toward European allies. In a CNN interview during the presidential election, Mr. Trump called for the Japanese government to significantly increase financial support for US military bases stationed in Japan. He said that Japan's current fiscal burden of hosting the US forces in Japan is 'too little,' and implied that they would withdraw if the Japanese government did not provide a sufficient level of financial support (The Japan Times, 5 May and 16 May, 2016). Donald Trump has consistently stated that the burden of the United States is huge, and that other allies are free riding.

However, increasing direct military spending or support for the stationed army is not the only military contribution allies could make. For example, allies could enforce a policy of not exporting militarily significant technologies and goods to enemy countries despite the resulting decrease in exports. The COCOM (Coordinating Committee for Multilateral Export Controls), established by the Western Block during the Cold War, is a typical example of this type of contribution to collective security. Member states refrained from exporting strategically significant technologies or goods to Communist countries. This was a security contribution from allies that did not require increased defense expenditures. However, if one country violated the COCOM accord, the country would benefit in the short run (free rider effect), but if other

allies followed suit, the effect of the accord would disappear. In other words, the coordination of allied countries is indispensable to preserving the security effect of this economic policy.

In addition to trade, foreign aid policy can contribute to joint security. A recipient of ODA (Official Development Assistance) from a developed country can purchase goods using the money. As a result, a surplus fund will be generated by the recipient, and it is possible to extend the armaments of the recipient country using that fund. In other words, since money is fungible, even pure economic aid from a donor could contribute to a military buildup. Thus, the choice of aid recipients and the amount of aid provided is not independent from the donor's national security. Nevertheless, previous research has overlooked the link between the security implications of such economic aid and donor coordination. With the exception of the US–Japan relations, few studies analyse the aid policies of allies. The purpose of this paper is to analyse this connection to determine whether aid is being coordinated among allies.

In this paper, I clarify the relationship between bilateral ODA from the United States, the unitary power, and ODA from its allies. The results presented in Section IV reveal that bilateral aid allocation of US allies are more likely to be overlapped with the United States than with other donors in determining both aid recipients and amounts. Moreover, in the era of the 'Global War on Terror,' those who provide greater absolute amounts of bilateral ODA are more overlapped with the United States. Thus, this research has shown that asymmetric allies like Japan, which suppress military expenditures, can contribute to the security of the United States through foreign aid. Moreover,

this study also reveals that security externalities of foreign aid could help explain why the OECD's call to eliminate duplication through donor coordination has not succeeded.

I Literature Review on Aid Coordination

Traditional aid researchers have assumed that donors are independent and that each donor country provides aid in accordance with its own interests and relationships with recipients. In practice, however, donors are not independent, and some donors' aid decisions can be of great interest to other donors and recipients. In recent years, research to assess collective behaviour among donors has been increasing. Especially after the OECD announced the 'Paris Declaration on Aid Effectiveness' in 2005 and encouraged efforts to eliminate duplication to donor countries to make aid more effective, research on aid coordination has been published continuously.[1]

Aldasoro et al. (2010) assesses whether donors have improved aid effectiveness through specialisation and coordination and demonstrated that few donors have specialised on a limited set of recipients and aid sectors. Overlapping aid (similarity of the patterns of aid distribution across different donors both in recipient countries and aid sectors) increased during the period 1995-2006, suggesting donor coordination has remained elusive. In the same vain, Frot and Santiso (2011) discover and measure the presence of 'herding' behaviours among donors. For recipients that suffer massive amounts of damage from natural disasters, for example, much humanitarian aid is supplied

by all the donor countries around the world, similar to investors that flock to invest in the most promising countries. Fuchs et al. (2015) reveals that export competition between donors is a major impediment to aid coordination. Moreover, Steinwand (2015) finds that aid coordination is more likely in the presence of a lead donor and competition is more likely in the absence of such a donor. In short, from the viewpoint of aid efficiency—i.e., the interests of recipients—coordination among donors is preferable to avoid redundancy and waste. Moreover, there is a consensus that the coordination that the Paris Declaration hopes is not occurring at present.

Interestingly, few studies have analysed aid coordination from the point of view of the donors' political interests. Moreover, among the studies that do exist, the subject is limited to US-Japan relations, and does not examine any other countries. Katada (1997) examines how the US has influenced Japanese foreign aid behaviour by analysing aid flows from Japan to Latin America, a region where the United States has been historically dominant. She discovered 'burden sharing;' the Japanese government restrains aid flows when US aid to the region increases, while it boosts aid when there is a decrease in US aid. In other words, Katada (1997) insists that aid to the Latin American countries from Japan and the United States is coordinated. On the other hand, Tuman et. al. (2009) discovers that Japan's aid disbursement pattern was associated with only a limited number of US security interests, and thus that aid coordination hardly exists. Thus, even in Japan, where the influence of the United States seems to be large, the extent to which it coordinates its aid allocation policy with the United States remains unclear.

The above two studies are limited to data on Japan and the US, and Katada (1997) only focuses on Latin America. Moreover, the analysis by Tuman et. al (2009) does not aid coordination among two countries but explores whether Japan is helping recipients who are strategically significant to the United States. In order to provide greater analytic scope, this paper analyses aid coordination among donors all over the world, using bilateral ODA data for 18 donors and 179 recipients from 1966 to 2015. The purpose of this study is to determine how security concerns affect coordination among donors.

The primary focus is on the United States, which exerts the greatest impact on the aid allocation of other donors. The magnitude of its economic, political, and military power and the extent of its reach do not affect all other countries. If there is no aid coordination between a group of Western developed countries and the United States from a security perspective, there may be little coordination between the other allies. Therefore, this paper focuses on whether the aid allocations of DAC (Development Assistance Committee) members countries have been coordinated with their largest and strongest ally—the United States—and if so, under what conditions this coordination takes place.

II Two Stages of Aid Allocation and Two Types of Donor Coordination

In analysing aid allocation decisions, it is important to note that there are two stages. The first stage is called the ‘selection’ or ‘eligibility’ stage, where a donor decides whether or not to give economic aid to a potential recipient. The second stage is called the ‘level’ stage, and a recipient who receives even a small amount of aid–i.e., not zero at the eligibility stage–is subject to analysis. As

described in this section and the next section, it is important to consider these two stages separately from the viewpoints of both theory and method. Theoretically, it is possible that an independent variable may affect one stage but not the other. Methodologically, the estimation result may be biased unless we choose an appropriate model.

Security Externalities, Gaiatsu, and Donor Coordination

Different from the usual assumption that coordination implies reducing redundancy, overlapping aid is actually desirable from the perspective of the donors' security interests because aid has security externalities. 'Security externalities' are uncompensated costs or benefits that the action of an actor influences security of third parties.[2] When a donor provides aid to a country, the recipient can purchase goods that it would otherwise have had to purchase from its national budget. As a result, the recipient's government has surplus funds that can be used for other purposes. Since the surplus funds are part of its own money, no one (not even the donor) can restrict their use. In an extreme case, the recipient can use it to purchase something against the donor's interests. In other words, even if economic assistance is strictly limited to education or infrastructure, etc., it has the potential to lead to the recipient's military buildup. The funds may be used to maintain international security, such as strengthening armaments for protection from foreign enemies as well as maintaining domestic security, such as suppressing insurgent groups. In other words, aid has both international and domestic security externalities.

During the Cold War period, the United States avoided providing ODA

to communist countries such as Cuba and North Korea, while the Soviet Union provided foreign aid to those countries (Walters 1970). Even after the end of the Cold War, rogue nations, such as Iran, Syria, and Libya, received little aid from the United States (Lai 2003: 108). Conversely, the United States offered substantial economic and military assistance to South Vietnam in the 1960s and to Egypt and Israel after the Camp David Accords in 1978. This is because security externalities were taken into consideration by US policymakers.

As aid has security externalities, major power donors, such as the United States and the Soviet Union, should be sensitive to the aid allocations of other countries. Recently, scholars have focused on the role of foreign aid as a bargaining tool, arguing that donors reward recipients change their policies to maintain donor's interest and punish recipients that fail to meet their demands (Bueno de Mosquita and Smith 2007, 2009). This reward/punishment policy does not make sense unless other countries join in. Although the United States has been one of the top bilateral donors after World War II, the financial resources of the United States are not inexhaustible, so it also relies on financial support from its allies. Therefore, as long as aid has security externalities, the United States should be sensitive to the aid allocation behaviour of allies, and its allies should be affected directly/indirectly by the United States. This effect will be observed in both stages of aid allocation: eligibility and level.

In terms of direct impacts, previous studies on the influence of the United States on Japan's aid allocations point out the existence of *gaiatsu*. *Gaiatsu* means pressure from a foreign country (the United States) in Japanese and has been mainly used in the context of Japanese economic policy. Japan has

refrained from undertaking major independent foreign economic policy initiatives even when it has the power and incentives to do so. When it changes its policy, it is normally responding to outside pressure (Calder 1988). Whether Japan's aid policy has been influenced by *gaiatsu* has become an issue of concern for Japanese aid researchers. For example, Miyashita (2003), who conducts five case studies based on an excellent research design, demonstrates that Japan changed its original aid policy because of pressure from the United States and confirms the existence of *gaiatsu*.

Such pressure from the United States may affect not only Japan but also other allies. Morrow (1991: 914) argues that asymmetric alliances have a trade-off relationship between national autonomy and security, and states that ally with major powers lose some autonomy as a cost of obtaining safety (see also Lake 2009 for the fully development of this argument). US allies that cannot make military contributions are likely to be affected by pressure from the United States. Such countries may have to change their aid policies because of *gaiatsu*. This impact includes not only suspension of aid to countries that pose a threat to the United States in the eligibility stage but also the increase of aid to security-significant countries in the level stage.

Even if apparent *gaiatsu* does not exist, allies of the United States will voluntarily refrain from providing aid to threatening countries (indirect impact) because if they provide aid to those countries, the surplus money arising from the funds could be used for military purposes and there is a possibility that the recipient country will become a threat to themselves and their allies (i.e., security diseconomy). In other words, donors that have formed an alliance with the United

States to protect their international safety, adopt aid coordination with the United States as their norm. To that end, allies may suspend or increase aid for a recipient that raises no direct security concerns.

Thus, if direct or indirect influence works, allied donors will suspend aid to recipients that are seen as a threat. On the contrary, they will increase aid to countries that have security significance (i.e., positive externalities). Table 1 shows the types of recipients to be targeted and consequences of the amount of aid given to those targets in the two stages.

Table 1 appears here

Therefore, from the viewpoint of security, overlap in both the eligibility and level stages through aid coordination between the United States and its ally donors is preferable. From the above discussion, the first hypothesis is derived:

H1: In both stages of bilateral aid allocation the donations of US allies are more likely to be coordinated (overlapped) with the United States than with other donors.[3]

Next, this study considers the conditions under which US influence becomes stronger, including which allies are most likely to coordinate and when they are most likely to coordinate. First, US influence should be stronger during an era when threats to the United States exist worldwide. During the Cold War, Western donors continued to confront the communist block centred around the

Soviet Union, and the so-called ‘Global War on Terror’ was started by the terrorist attacks on September 11th, 2001. During these two periods (1966-1989 and 2002-2015 in the data), the United States was likely intolerant of the free riding of its allies, and since the allies understood, they probably refrained from aid behaviour contrary to the will of the United States. In other words, the direct/indirect impact of the United States on its allies’ aid allocations should be stronger in these periods. Therefore, the second hypothesis is:

H2: During the Cold War or the War on Terror eras, the donors of US allies are more likely to coordinate (overlap) aid allocation with the United States in both stages.

Second, donors’ concern for recipient countries’ security is basically limited to countries with which they have historical relations (such as a colonial legacy) or that are neighbouring states (Buzan and Wæver 2003). Therefore, most donors’ priority areas for aid differ from those of the United States, which is a global power. However, if a donor’s absolute amount of total bilateral aid is large, it can afford to provide some amount to countries that are not related to its own security interests. In other words, donors with a large amount of aid do not stay in a specific region and instead allocate aid globally (Figure 1). Since the United States should be aware of this fact, it may concentrate *gaiatsu* on donors with a large absolute amount of aid.

Figure 1 appears here

On the contrary, it is not realistic to demand that donors with less available bilateral ODA expenditure increase their aid to recipients that are not directly related to their security interests. As a consequence, donors with a large amount of absolute bilateral aid increase the possibility of overlapping with US aid allocation in the level stage, as shown in Figure 1. Table 2 shows the top five donors in each decade.

Table 2 appears here

In contrast, it is relatively easy for small donors to coordinate with the United States globally at the eligibility stage because withholding aid does not impose a cost. Therefore, aid decisions in the eligibility stage are not affected by the amount of aid. The above discussion leads to the third hypothesis:

H3: Among US allies, donors with a large absolute amount of bilateral aid are more likely to coordinate (overlap) with the United States only at the level stage.

Table 3 shows the three hypotheses and the predictions associated with each stage. Hypotheses 1 and 2 are expected to have the same effects in both stages, but hypothesis 3 does not assert anything about the eligibility stage.

Table 3 appears here

III Data and Methods

Dependent Variable and the Cragg Hurdle Model

The unit of analysis in this study is dyad-year. The sample uses large-scale 'three-dimensional' panel data (Berthélemy and Tichit 2004), covering 18 donors, 179 recipients, and 50 years (1966-2015). The membership of the DAC is 29 as of the end of 2017 (Appendix 1). Since this study aims to grasp the long-term trend by testing the second hypothesis (the Cold War factor), the target donors are those with data from before 1990. Therefore, 18 countries including the United States will be analysed in this study.

In this study, I test whether the United States' allocations of bilateral aid are coordinated (overlapped) with those of other donors. Therefore, the dependent variable is the amount of aid of each donor allocated to a certain recipient in each year. This variable requires some caution. First, I use commitments since they reflect the wishes of the donor more accurately than do disbursements, which depend in part on the actions of the recipient countries (Berthélemy 2006: 180; White and McGillivray 1995: 166). Second, it is necessary to carefully handle data with missing values, omitted observations, and zeros. Data on bilateral aid by DAC members are obtained from the OECD database (Creditor Reporting System). Current OECD bilateral aid commitment data do not differentiate between a missing value, omitted observations, and a value of zero. Among the DAC 17 countries, there are only 148 observations of zero value out of more than 150,000 cases (17 donors × 179 recipients × 50 years). Furthermore, the United States has no value of zero at all. For example, the commitment value of bilateral aid to Afghanistan by the United States is

displayed as '..' in 1997 and 1998. The OECD explains that '..' is 'nil' or 'data not available.' That is, it does not discriminate between whether the mark is zero or a missing value. However, since the United States provided aid to other countries in those two years and to Afghanistan in other years it is natural to speculate that the US government decided not to provide aid to Afghanistan during those two years rather than that no data could be obtained.[4] Coding these cases as missing values or omitted observations occludes the possibility that the United States made a policy decision not to provide aid to Afghanistan in 1997 and 1998, and therefore, the estimation results could be biased. Hence, whenever an aid commitment was possible, the contents of those '..' data should be recorded as zero. When there is a possibility that the expected result differs between the eligibility stage and the level stage, careful consideration is required when handling zeros and missing values.

To tackle this problem, Kleibl (2013) replaces all missing values and omitted observations with zero values and then randomly replaced 20% of the zero values on the aid variable with missing values. However, this method is still arbitrary (why not 50% or 80%?). In this study, I code data with a rule that better reflects reality. If there is a possibility that a recipient received ODA from at least one DAC donor, I replace the OECD's '..' data with a zero (see the supplement document for more detailed criteria). A list of recipients, temporal ranges, and data that were coded according to the rule is provided in Appendix 2.

The third thing to understand when handling the dependent variables is the problem that arises as a consequence of logarithmic transformation. In estimating the allocation of bilateral aid, previous studies have used the logged

share or the percentage of the total amount of aid available to each recipient country (Neumayer 2003; Clist 2011) as a dependent variable. In this research, I also use the share or percentage of the total amount but not the logged share because, in recent years, the harmful effect of log transformation on dependent variables has been argued in the international trade gravity model. One problem is Jensen's inequality, which implies that the expected value of the logarithm of a random variable and the logarithm of its expected value are not the same.[5] Another problem is that data with a value of zero cannot be logarithmically transformed and is treated as a missing value (Burger et al 2009; Silva and Tenreyro 2006, 2011).[6] The latter problem is especially serious in this study, which codes many data to a value of zero. If a logarithmic transformation is performed, all data with a value of zero become missing values, and estimation of the eligibility stage becomes impossible. However, without the logarithmic transformation, it is not possible to control the disparity between a country with a large population receiving a large amount of aid and a sparsely populated country receiving only a small amount. To handle this problem, some prior studies make a logarithmic transformation after changing the zero data to one (then one is converted to zero). However, scholars have determined and pointed out that this method is arbitrary (see Shingal 2015: 399) because it cannot differentiate between a zero and a value that was originally one.

Therefore, as the dependent variable, I use the share or percentage of the total amount of aid in commitments to each recipient country without logarithmic transformation. That is,

$$AIDSHARE_{ij,t} = AID_{ij,t} / \sum_{i=1}^{n} AID_{ij,t} \quad (1)$$

where *i* is the recipient (n = 179), *j* is the donor, and *t* is the year. If a recipient receives half of the total amount of aid from a donor for example, *AIDSHARE* becomes 0.5.

The estimate is made with the hurdle model proposed by Cragg (1971) with the exponential option. The hurdle model is a two-part estimation of a selection model (bounded) and an outcome model (unbounded), characterised as follows:[7]

$$y_i = s_i h_i^* \quad (2)$$

where y_i is the observed value of the dependent variable, s_i is the selection variable, and h_i^* is the continuous latent variable. s_i is 1 if the dependent variable is not bounded and 0 otherwise. Formally,

$$s_i = \begin{cases} 1 & if\ z_i\gamma + \epsilon_i > 0 \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

where z_i is a vector of independent variables, γ is a vector of coefficients, and ϵ_i is a standard normal error term. Thus, continuous latent variable h_i^* is observed only if s_i is 1. The exponential of the outcome model is

$$h_i^* = \exp(X_i\beta + v_i) \quad (4)$$

where X_i is a vector of independent variables, β is a vector of coefficients, and v_i is a standard normal error term.

The following illustrate the reasons why I chose the hurdle model to test my hypotheses. First, since equation (4) is equal to $\ln h_i^* = X_i\beta + v_i$, it is possible to control the ODA scale of large and small countries without logarithmically transforming the dependent variable in advance. Second, the hurdle model best fits the objectives and conditions of this study. When estimating determinants of aid allocations, previous studies have used various models such as Tobit, or Heckman sample selection model, or have literally separated the eligibility stage and the level stage.[8] However, these models are not appropriate for estimating the hypotheses of this study. For example, as is well known, the Tobit model assumes each independent variable has an equal effect in both stages. However, my theory implies a possibility that the coordination may not be the same for both stages in the third hypothesis, so the assumption of the Tobit model is too strong for this study.[9] In the Heckman model, it is known that the bias becomes large when the independent variables are the same in the eligibility stage and the level stage (Puhani 2000). Moreover, to make the Heckman model function properly, it requires independent variables that are good predictors in the selection stage but not statistically significant in the level stage (Little and Rubin 1987: 230). Finding such variables is by no means easy. Therefore, there are great advantages to using the hurdle model in this study[10].

The histogram of the Figure 2 shows the distribution of the dependent

variable (*AIDSHARE*). As expected, a number of zero value are observed. Moreover, it shows few donors give aid more than 20% of their share to single recipient.

Figure 2 appears here

Independent and Control Variables

The basic independent variable is the share of the total amount of aid committed to each recipient by the United States (*USAIDSHARE*)[11]. The independent variable for the first hypothesis is an interaction term between *USAIDSHARE* and a dummy variable that takes on a value of 1 if the country is a US ally and 0 otherwise. As Appendix 1 shows, 12 out of the 17 donors are allies of the United States. Except for New Zealand, who dissolved its alliance with the United States in 1986, these states are US allies throughout all periods (1966–2015). If the first hypothesis is correct, the aid of the allies should overlap with that of the United States, meaning that the variables in both stages are expected to be positive.

The independent variable for the second hypothesis is an interaction term between *USAIDSHARE* and a dummy variable, which takes on a value of 1 during the Cold War (1966–1989) or War on Terror (2001–present), and a 0 otherwise. If the hypothesis is correct, the variable in both stages is positive.

Finally, the independent variable for the third hypothesis is the logged sum of absolute bilateral ODA in commitments of each donor[12] multiplied by *USAIDSHARE*. If this hypothesis is correct, then, as the absolute amount of total

bilateral aid increases, donors are more likely to be coordinated (i.e., overlapped) with the United States on aid allocation. Thus, the coefficient is expected to be positive. The latter two hypotheses are tested by restricting the sample to the 12 allies.

It should be noted that the existence of coordination between the United States and other donors regarding aid allocation does not necessarily mean that the former's aid allocation precedes that of the latter. As mentioned in Section II, the US influence on allies in aid allocation decisions can be direct or indirect. If there is strong *gaiatsu* in an alliance, negotiation and persuasion by United States policymakers should occur before the policy decision is made and the overlapping aid allocation behaviour should be done simultaneously by both countries. If there is a time lag, free riding is possible and the effect of coordination will be diminished. In addition, in the case of indirect influence, allies will act in congruence with the expected policy goals of the United States. As a consequence, the allocation of aid in both countries is likely to be simultaneous. Therefore, the independent variable takes the same year as the dependent variable.[13]

To avoid omitted variable bias, I include several control variables that previous research has identified (McGillivray 2003). First of all, two main factors should be included. One is the strategic interest of donor countries, such as ensuring security and export promotion. The other is recipient need, such as the degree of poverty of the recipient country or the degree of damage from a natural disaster. In this paper, I use logged exports from donors to recipients and voting similarity in the General Assembly (Kuziemko and Werker 2006; Voeten 2013) to

represent donor interest and logged GDP per capita and the population of recipient countries to represent recipient need. These variables are lagged one year. In addition to these two factors, donor–recipient relations are also considered. For example, if the geographic distance between two countries is closer or they have a colonial legacy, a donor may provide more aid because of its strong geographical or historic links (Alesina and Dollar 2000). As a representation of these relations, I incorporate the logged distance between each donor and recipient into the model. Since it is a time invariant variable, it acts as dyad-fixed effects.

Furthermore, after the research of Burnside and Dollar (2000) who argued that aid is effective if the recipient's governance is good, a number of studies have analysed the relationship between recipient governance and aid allocation (Neumayer 2003; Bueno de Mosquita and Smith 2007, 2009; Dietrich 2013). Considering this fact, I also add one year lagged recipients' democracy score (Polity II).

Finally, I consider the factor of herding. As introduced in Section I, aid duplication has been observed. To control for this bias, I introduce a variable for the sum of the other DAC's share of the total amount of aid commitments to each recipient. Formally,

$$OtherDAC\_AIDSHARE_{ij,t} = \sum_{\substack{k=1 \\ k \neq j}}^{m} (AID_{ij,t} / \sum_{i=1}^{n} AID_{ij,t}) \quad (5)$$

where k = other DAC donors and m = 28 (see Appendix.1).

Taking advantage of the three-dimensional data, year-fixed effects, donor-fixed effects, and recipient-fixed effects are included into the model. The donor-fixed effects, which absorb all time-invariant donor-specific variables, are particularly important. By including these effects, it becomes possible to test the effect of independent variables while avoiding a tautological explanation such as 'Japan follows the United States because it is Japan' or 'France is making an independent aid policy because it is France' (see also Kleibl 2013).

Table 4 shows each variable and its source.

Table 4 appears here

IV Results

The results of the two-part estimation by the hurdle model are shown in Table 5, and the marginal effects of each independent variable are shown from Figure 3 to Figure 5.

Table 5 appears here

The models are divided into two stages: Eligibility (Stage I) and Level (Stage II). Independent variables are the same in the two stages. I briefly examine the results of the control variables before discussing the effects of the main independent variables of interest. Most of them have expected sign in the two

stages. On average, donors provide more aid to recipients that import goods from them, are located geographically closer to them, have higher democracy score, have lower GDP per capita, and receive more aid from other donors. All models are statistically significant. Interest result is seen in the variable of the population of recipient countries. Although the sign of this variable is negative in all models in the Eligibility stage, it turns positive in the Level stage. This indicates that donors tend to not give aid to recipients whose population is large. But once they decide to give, more aid is allocated to larger population recipients.[14]

The first column of Table 5 (Model 1) is the baseline. *USAIDSHARE* is positive and statistically significant in both stages. This indicates that the allocation of bilateral aid by the DAC 17 countries overlaps with that of the United States when controlling for other factors. The second column (Model 2) examines Hypothesis 1. The interaction between *USAIDSHARE* and alliance dummy is positive and significant in both stages, supporting hypothesis 1. If a donor is a US ally, the probability of overlapping aid allocation with the United States is higher than with non-ally donors. The Whisker plots of Figure 3 and 4 show the marginal effects of *USAIDSHARE* on *AIDSHARE* of DAC donors. These show that, on average, the marginal effect of *USAIDSHARE* on *AIDSHARE* of allies is 8% and non-allies is 3.6% in the eligibility stage, and 7.5% and 3.2% in the level stage.

Figure 3 and 4 appear here

The third to seventh columns (Models 3 to 7) are estimation results in which the samples are limited to the 12 donors allied with the US. The third to

fifth columns (Models 3 to 5) examine the effects of the two global 'wars.' Statistically significant results are not observed during the Cold War period (before 1989). The impact of the Cold War on aid allocation has been the subject of many previous studies, but inconsistent results have been reported (Meernik, Krueger and Poe 1998; Roundd and Odedokun 2004; Berthelemy and Tichit 2004, Lundsgaarde, Breuning and Prakash 2007; Clist 2011; Boutton and Carter 2014). Therefore, the reason that the United States and its donor allies did not coordinate during the Cold War period as compared to other times is unknown. I would like to continue to investigate this subject in future research. Conversely, the interaction term between the War on Terror dummy (after 2001) and *USAIDSHARE* is positive and statistically significant in both stages, supporting hypothesis 2. From the results of Model 5, the probability that each ally donor overlaps with the aid allocations of the United States after 2001 rises by 19.1% in the eligibility stage (Figure 3) and 18.7% in the level stage (Figure 4).

Model 6 examines hypothesis 3, which asserts that donors with a large absolute amount of bilateral aid (if a donor is able to allocate aid more globally) are more likely to coordinate (overlap) with the United States only at the level stage. The findings illustrate a positive and statistically significant result. As the Figure 5 shows, the probability of overlap with US aid allocation will increase as the absolute amount of bilateral aid increases. This figure also indicates that when the amounts of bilateral aid are small, donors tend to allocate more aid to recipients that get little amount of aid from the United States. But we cannot say 'burden sharing' is taking place between the Unites States and small donors because confidence intervals are very large in this case.

Figure 5 appears here

The last column (Model 7) includes all variables of hypotheses 2 and 3, and no difference is found between the results. In short, the results support the three hypotheses, except in regard to the Cold War factor.

V Robustness Check

In this study, I performed the following supplemental tests as a robustness check. First, to avoid endogeneity in the control variables, I changed the variables that take t-1 to t-2 and t-3. Second, considering the fact that relatively less variation in Polity II scores may cause multicollinearity with recipient fixed effects (Oneal and Russett 2001), Variety of Democracy (Coppedge et al. 2017) data were used instead. Third, instead of binomial (Yes/No) voting similarity at the United Nations General Assembly, data for trinomial voting similarity (Yes/abstain/No) were used. Fourth, the population and GDP per capita of donors (both are logged) were also included in the model, taking into account the possibility that the domestic situation of the donor is affecting ODA allocations. After all of the checks, the results from the previous section hardly changed and the robustness of the findings was confirmed.[15]

Finally, to test whether the results of this study are sensitive to Japanese data, I estimated with donors excluding Japan. According to Gibler (2009), Japan is the only allied donor (out of 17) that is an asymmetric ally of the United States.

Table 2 indicates that hypothesis 3 seems to apply well to Japan. Moreover, existing literature analysing donor coordination exclusively focuses on US–Japan relations. In other words, Japan is the most likely case to support this research hypothesis. Therefore, I tested whether the results would be changed by excluding Japan. If the results do not change, then support for this hypothesis should increase. The parsimonious version of the results is shown in Table 6.

Table 6 appears here

These results are almost identical to those shown in Table 5. Therefore, even if Japan, which is the most likely case, is excluded, the hypotheses of this study are still supported (except for the Cold War element).

VI Conclusion

Recent research on donor coordination has mainly focused on economic influences. In particular, studies have focused on the need to avoid duplication to improve aid efficiency. This study instead approaches donor coordination from the viewpoint of security. That is, I argue that overlapping is theoretically preferable, and empirically confirm that donor coordination has, in fact, occurred regularly. Despite its importance, this theme has not been explored in prior research, except for specifically in the context of US–Japan relations.

Foreign aid has security externalities. While major power donors have withheld economic aid to enemy countries, they have given more aid to recipients

that are important for their security. Similarly, US ally donors have decided to allocate aid in congruence with US policy goals, either in response to direct or indirect pressure and/or voluntarily. As a result, donor coordination (overlapping) occurs between the United States and its allies. Among allies, big donors can relatively easily respond to the demands of the United States. Moreover, they have been more likely to coordinate since the onset of the War on Terror. The results of the analysis of the dyadic panel dataset of 18 DAC donors and 179 recipients from 1966 to 2015, and the estimation by the Cragg hurdle model support these theoretical expectations. In addition, the above hypotheses are largely supported by the results of several robustness checks, especially in the estimation excluding Japan.

This research makes several important academic contributions. First, it clearly links foreign aid, security, and donor coordination theoretically as well as empirically. The connection between security and economic assistance has been discussed for a long time (Morgenthau 1962), but this research is the first to attempt to combine it with donor coordination, which is a topic that has attracted academic scholars and aid practitioners in recent years. While research on donor coordination has been limited to issues of economic efficiency, this research introduces a security perspective to shed new light on the topic. Second, this research shows that asymmetric allies like Japan, which suppress military expenditures, can contribute to the security of the United States through foreign aid. Of course, direct contributions, such as the dispatching of soldiers to conflict areas, are the most effective forms of military support. However, if an ally (especially a big donor) cannot do this due to domestic constraints, it can support

the United States by increasing economic assistance in line with US security interests.

Finally, this study reveals that security externalities of foreign aid could help explain why the OECD's call to eliminate duplication through donor coordination has proved disappointing. In fact, since the War on Terror started in 2001, aid overlapping among allies has become even stronger. Unfortunately, as long as the War on Terror continues, it is difficult for each Western donor to avoid aid duplication, which may enhance its security but decreases the effectiveness of economic assistance.

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Table 1 Type of Target Recipients and Aid Effect in the Two Stages

	Eligibility stage (Stage I)	Level stage (Stage II)
Target Recipient	Enemy	Friend with security significance
Consequence of aid	Security diseconomy	Positive security externalities
Ally donor's decision	No aid	Increase aid

Table 2 Top Five Donors (Excluding the United States) from 1960 to 2010

	1960s	1970s	1980s	1990s	2000s	2010s
1	UK	Japan	Japan	Japan	Japan	Japan
2	France	UK	France	France	France	France
3	Japan	France	Italy	UK	UK	UK
4	Canada	Canada	Netherlands	Netherlands	Netherlands	Australia
5	Australia	Netherlands	UK	Italy	Canada	Canada

(10 year average of total bilateral aid in commitments (except 1966-1969 in the 1960s and 2010-2015 in the 2010s))

Source; OECD CRS Database

Table 3 Three Hypotheses and their Predictions on aid coordination between the United States and its ally donors in Both Stages

	Eligibility stage (Stage I)	Level stage (Stage II)
H1: Alliance	+ (overlap)	+ (overlap)
H2: Global Wars	+ (overlap)	+ (overlap)
H3: Total value of ODA	Not predictable	+ (overlap)

Table 4 List and Sources of Variables

Variable	Definition	Source
AIDSHARE	Share of total amount of ODA to each recipient from donors (in commitments) (see equation (1))	OECD CRS database
USAIDSHARE	Share of total amount of ODA to each recipient from the United States (in commitments) (see footnote 11)	OECD CRS database
lnX (t-1)	Exports from donors to recipients (Million US dollars)	IMF direction of Trade statistics
UNvote (t-1)	Roll-call votes in the UN	Voeten (2013)

	General Assembly 1946–2015, Dyadic affinity score using 2 category vote data. From -1 (least similar interests) to 1 (most similar interests)	Version 17.0
lnDIST	Geographic distance between recipient and donor	CEPII database
lnPOP_R (t-1)	Population of recipient countries	World Bank database
lnGDPPC_R (t-1)	Recipient's GDP Per Capita (constant 2010 US dollars)	World Bank database
PTY2 (t-1)	Recipients democracy score, from -10 (autocracy) to 10 (full democracy).	Marshall and Jaggers (2016)
OtherDAC_AIDSHARE	Sum of the aid share for a particular recipient of other donors (see equation (5))	OECD CRS database
Ally	Dummy variable equal to 1 when the donor is an ally of the United States, and 0 otherwise	Gibler (2009) Version 4.1
Cold_War	Dummy variable equal to 1 if year is before 1989, and 0 otherwise	Gibler (2009) Version 4.1

Terror_War	Dummy variable equal to 1 if year is after 2001, and 0 otherwise	Gibler (2009) Version 4.1
lnAIDTOTAL	Sum of absolute bilateral ODA from each donor (in commitments, constant 2015 million US dollars, see footnote 12)	OECD CRS database

Table 5 Regression Results of the Cragg Hurdle Model

(Year, donor, and recipient fixed effects are included but not shown)

	Model 1 (base)	Model 2 (Ally)	Model 3 (Cold War)	Model 4 (War on Terror)	Model 5 (Wars)	Model 6 (Total Aid)	Model 7 (ALL)
Stage II: Level							
USAIDSHARE	4.223**	2.033**	4.646**	3.773**	3.603**	-13.268**	-13.377**
	(0.489)	(0.745)	(0.657)	(0.540)	(0.599)	(2.732)	(2.568)
lnX (t-1)	0.381**	0.381**	0.445**	0.445**	0.445**	0.444**	0.445**
	(0.008)	(0.008)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
UNVote (t-1)	0.006	0.005	0.112	0.101	0.100	0.095	0.084
	(0.055)	(0.056)	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
lnDIST	-0.901**	-0.904**	-0.731**	-0.728**	-0.728**	-0.728**	-0.725**
	(0.028)	(0.028)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
lnPOP_R (t-1)	0.270**	0.277**	0.337**	0.162	0.163	0.346**	0.173
	(0.096)	(0.097)	(0.110)	(0.112)	(0.112)	(0.109)	(0.112)
lnGDPPC_R (t-1)	-0.649**	-0.648**	-0.688**	-0.704**	-0.702**	-0.686**	-0.702**
	(0.037)	(0.037)	(0.043)	(0.043)	(0.043)	(0.042)	(0.043)
PTY2 (t-1)	0.016**	0.016**	0.020**	0.020**	0.020**	0.020**	0.020**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)

OtherDAC_AIDSHARE	0.888**	0.886**	0.967**	0.942**	0.937**	0.972**	0.946**
	(0.057)	(0.058)	(0.067)	(0.066)	(0.066)	(0.067)	(0.066)
Ally		-0.166					
		(0.119)					
Ally * USAIDSHARE		2.916**					
		(0.756)					
Cold_War			0.927**		0.228*		0.274**
			(0.111)		(0.092)		(0.092)
Cold_War * USAIDSHARE			-0.914		0.388		0.811
			(0.774)		(0.756)		(0.779)
Terror_War				-0.692**	-0.694**		-0.633**
				(0.089)	(0.089)		(0.089)
Terror_War * USAIDSHARE				12.899**	13.099**		12.754**
				(1.746)	(1.785)		(1.791)
lnAIDTOTAL						-0.243**	-0.242**
						(0.024)	(0.024)
lnAIDTOTAL * USAIDSHARE						2.357**	2.261**
						(0.380)	(0.351)
	1.886	1.806	-0.034	3.562	3.544	1.497	5.001*
	(1.709)	(1.709)	(1.939)	(1.952)	(1.953)	(1.936)	(1.953)
Stage I: Eligibility							
USAIDSHARE	1.421**	0.137	2.706*	1.230*	1.154	3.029	4.222
	(0.473)	(0.514)	(1.267)	(0.602)	(0.872)	(2.588)	(2.590)
lnX (t-1)	0.149**	0.150**	0.148**	0.148**	0.148**	0.152**	0.152**
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
UNVote (t-1)	-0.183**	-0.191**	-0.046	-0.066	-0.066	-0.017	-0.030
	(0.042)	(0.042)	(0.049)	(0.048)	(0.049)	(0.049)	(0.049)
lnDIST	-0.741**	-0.744**	-0.608**	-0.607**	-0.607**	-0.591**	-0.589**
	(0.024)	(0.024)	(0.028)	(0.028)	(0.028)	(0.029)	(0.029)
lnPOP_R (t-1)	-0.134*	-0.133*	-0.212**	-0.327**	-0.327**	-0.236**	-0.351**

	(0.066)	(0.066)	(0.080)	(0.081)	(0.081)	(0.079)	(0.081)
lnGDPPC_R (t-1)	-0.250**	-0.249**	-0.265**	-0.263**	-0.262**	-0.265**	-0.265**
	(0.026)	(0.026)	(0.031)	(0.031)	(0.031)	(0.031)	(0.032)
PTY2 (t-1)	0.013**	0.013**	0.010**	0.009**	0.009**	0.010**	0.009**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
OtherDAC_AIDSHARE	0.665**	0.663**	0.781**	0.735**	0.735**	0.812**	0.769**
	(0.061)	(0.061)	(0.081)	(0.080)	(0.080)	(0.084)	(0.083)
Ally		-0.054					
		(0.065)					
Ally * USAIDSHARE		2.134**					
		(0.604)					
Cold_War			-0.039		-0.213**		-0.222**
			(0.088)		(0.078)		(0.080)
Cold_War * USAIDSHARE			-1.537		0.125		0.159
			(1.126)		(0.849)		(0.862)
Terror_War				-0.224**	-0.224**		-0.277**
				(0.077)	(0.077)		(0.076)
Terror_War * USAIDSHARE				27.333**	27.410**		26.572**
				(3.404)	(3.447)		(3.411)
lnAIDTOTAL						0.530**	0.529**
						(0.023)	(0.023)
lnAIDTOTAL * USAIDSHARE						-0.180	-0.443
						(0.359)	(0.333)
_cons	12.145**	12.171**	12.464**	14.445**	14.445**	9.122**	11.185**
	(1.184)	(1.184)	(1.408)	(1.411)	(1.411)	(1.413)	(1.420)
Lnsigma							
_cons	0.552**	0.551**	0.541**	0.540**	0.540**	0.539**	0.538**
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Sigma	1.736	1.736	1.717	1.716	1.716	1.714	1.713
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

Observations	67203	67203	46814	46814	46814	46760	46760
Log pseudolikelihood	222901.23	222917.7	167673.39	167762.2	167762.35	168157.79	168242.97
Wald Chi square	38147.78**	38194.24**	31852.21**	31953.04**	31974.17**	32103.56**	32248.30 **

Robust standard errors in parentheses

* p < 0.05, ** p < 0.01

Table 6 Regression Results of Cragg Hurdle Model Excluding Japan, Parsimonious Version

	Model 8 (base)	Model 9 (Ally)	Model 10 (Cold War)	Model 11 (War on Terror)	Model 12 (Wars)	Model 13 (Total Aid)	Model 14 (ALL)
Stage II: Level							
USAIDSHARE	4.134**	2.104**	4.808**	3.638**	3.602**	-16.483**	-15.964**
	(0.511)	(0.748)	(0.727)	(0.575)	(0.649)	(3.484)	(3.209)
Ally		-0.238*					
		(0.118)					
Ally * USAIDSHARE		2.790**					
		(0.764)					
Cold_War			0.963**		0.243*		0.320**
			(0.118)		(0.098)		(0.098)
Cold_War * USAIDSHARE			-1.426		0.082		0.400
			(0.848)		(0.823)		(0.863)
Terror_War				-0.713**	-0.714**		-0.651**
				(0.095)	(0.095)		(0.095)
Terror_War * USAIDSHARE				14.857**	14.899**		14.435**
				(1.865)	(1.911)		(1.932)
lnAIDTOTAL						-0.309**	-0.308**
						(0.025)	(0.025)

lnAIDTOTAL * USAIDSHARE						2.853**	2.682**
						(0.507)	(0.468)
Stage I: Eligibility							
USAIDSHARE	1.492**	0.234	2.974*	1.332*	1.348	3.655	5.325
	(0.484)	(0.523)	(1.336)	(0.620)	(0.920)	(2.797)	(2.815)
Ally		-0.056					
		(0.065)					
Ally * USAIDSHARE		2.113**					
		(0.615)					
Cold_War			-0.053		-0.229**		-0.242**
			(0.091)		(0.079)		(0.082)
Cold_War * USAIDSHARE			-1.768		-0.027		-0.002
			(1.180)		(0.887)		(0.900)
Terror_War				-0.226**	-0.226**		-0.268**
				(0.079)	(0.079)		(0.078)
Terror_War * USAIDSHARE				28.178**	28.162**		27.320**
				(3.449)	(3.497)		(3.452)
Observations	62758	62758	42369	42369	42369	42315	42315
Log pseudolikelihood	199679.36	199695.45	144366.23	144462.36	144462.36	144810.23	144903.45
Wald Chi square	33857.65**	33913.21**	26990.34**	27116.89**	27128.16**	27261.65**	27411.91**

Robust standard errors in parentheses

* p<0.05, ** p<0.01

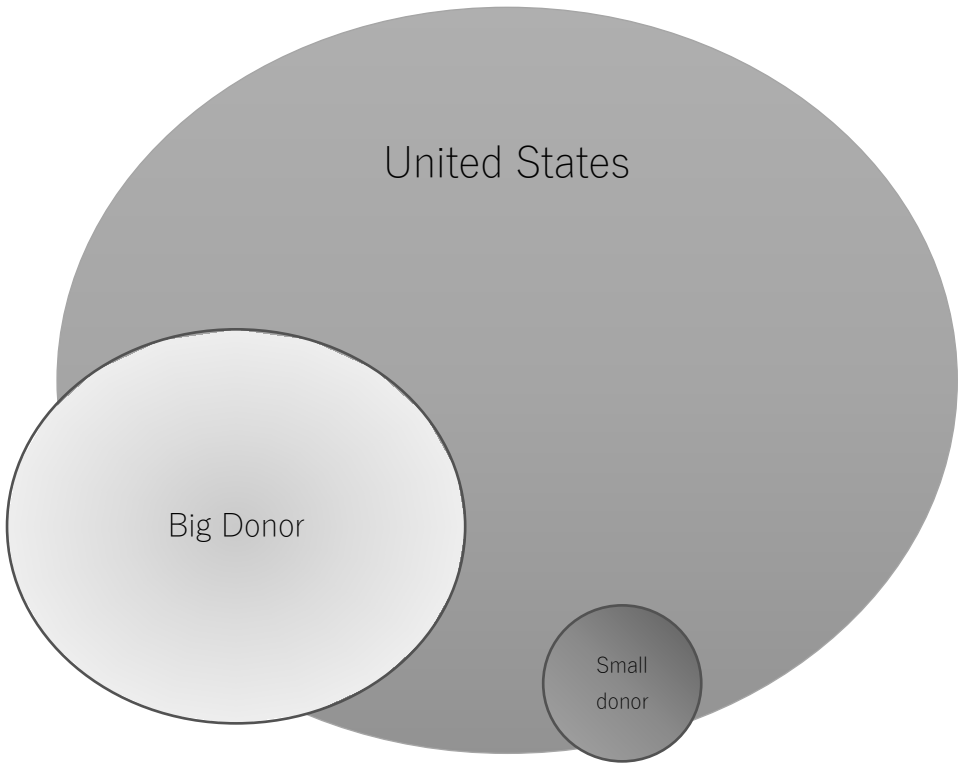
United States
Big Donor
Small
donor

Figure 1 Overlapping security regions of three types of donors

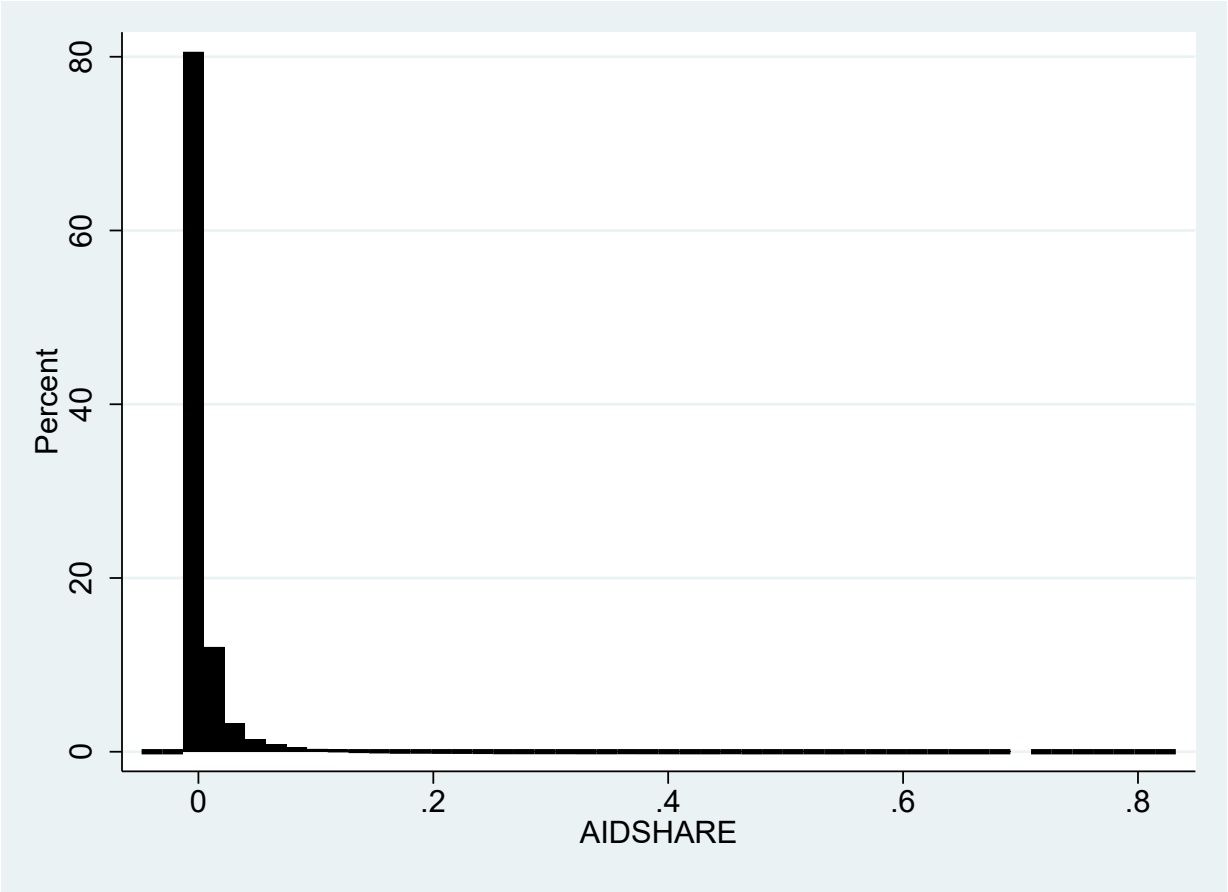

Figure 2 The distribution of the dependent variable

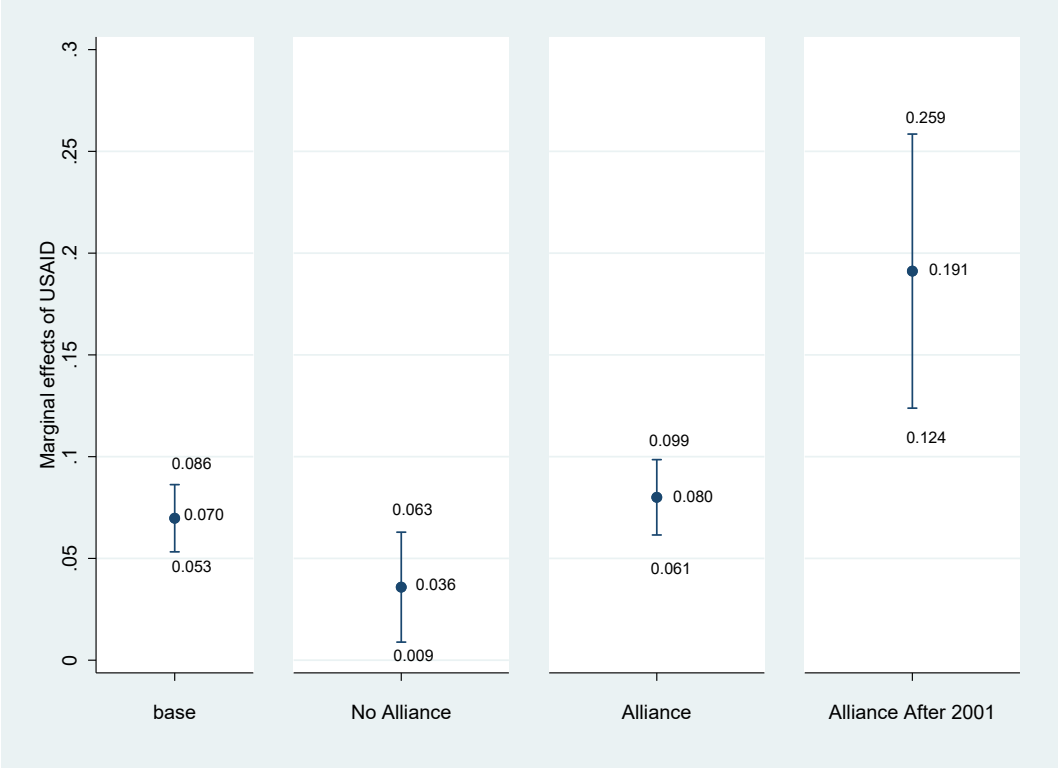

Figure 3 Points estimates and 95% confidence intervals for the marginal effect of US bilateral aid on that of other DAC countries (eligibility stage): conditioned on the status of Alliance and after 2001

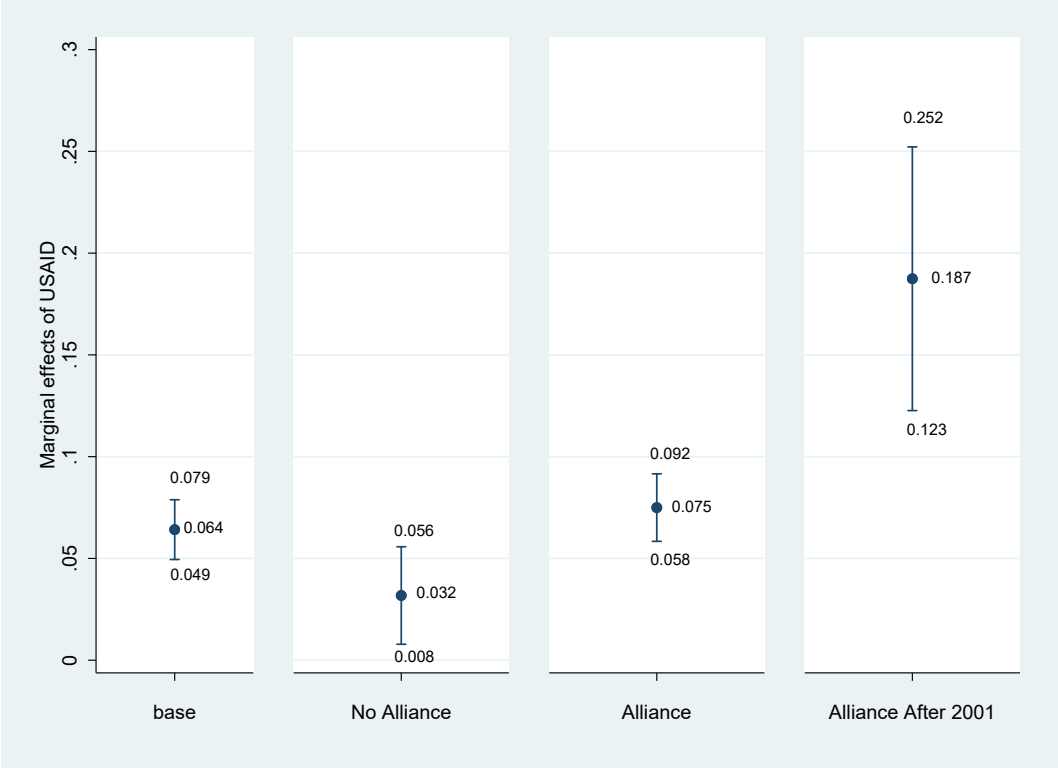

Figure 4 Points estimates and 95% confidence intervals marginal effect of US bilateral aid on that of other DAC (level stage): conditioned on the status of Alliance and after 2001

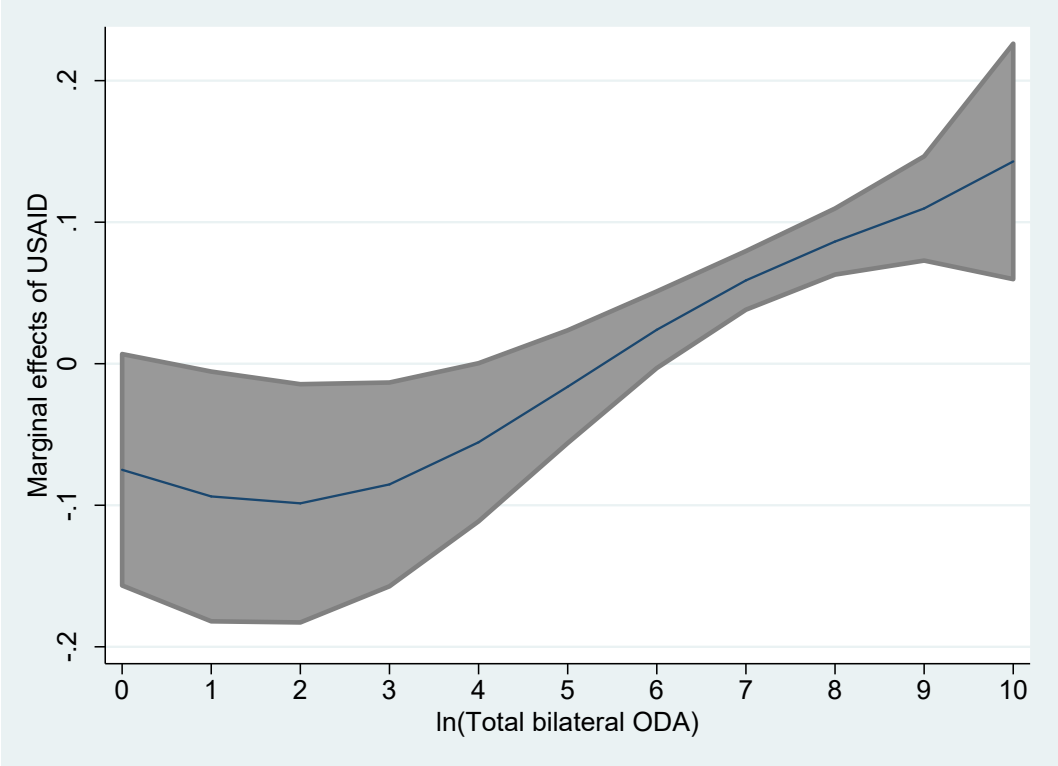

Figure 5 Marginal effects and 95% confidence interval of US bilateral aid on that of other DAC countries across the total value of bilateral ODA (logged)

*******Appendix. 1**********

Country name	ODA data existed (Commitment)	Alliance with the US
Australia	1966, 1968–2015	Yes
Austria	1966–2015	No
Belgium	1968–2015	Yes
Canada	1966–2015	Yes
Switzerland	1966, 1968–2015	No
Czech Republic	1998–2001, 2011–2015	Yes (1999–)
Germany	1968–2015	Yes
Denmark	1966–2015	Yes

Spain	1992–2015	Yes (1970–)
Finland	1973–2015	No
France	1966–2015	Yes
UK	1966–2015	Yes
Greece	1996–2015	Yes
Hungary	2007, 2015	Yes (1999–)
Ireland	1974–1993, 1996–2015	No
Iceland	2011–2015	Yes
Italy	1966–2015	Yes
Japan	1967–2015	Yes
Korea	1987–1993, 1995–2015	Yes
Luxembourg	1992, 1996–2015	Yes
The Netherlands	1966–2015	Yes
Norway	1966–2015	Yes
New Zealand	1972–1988, 1990–1994, 1996, 1998–2015	Yes (–1986)
Poland	1998–1999, 2003–2007, 2013–2015	Yes (1962–1964, 1999–)
Portugal	1991–2015	Yes
Slovak Republic	2002–2003, 2013–2015	No
Slovenia	2012–2015	No
Sweden	1966–2015	No
US	1966, 1968–2015	–

Appendix.1 List of DAC countries. Donors used in this study are meshed.

Source; OECD CRS Database and Gibler (2009)

*********Appendix. 2*************

Recipients Name	Data Existed	notes
Afghanistan	1966-2015	
Albania	1988-2015	
Algeria	1966-2015	
Angola	1966-2015	
Anguilla	1975-2013	British Overseas Territories
Antigua & Barbuda	1974-2015	
Argentina	1966-2015	
Armenia	1993-2015	Former Soviet Union
Aruba	1985-1999	Constituent country of the Netherlands
Azerbaijan	1993-2015	Former Soviet Union
Bahamas	1966-1995	
Bahrain	1967-2004	
Bangladesh	1971-2015	
Barbados	1966-2010	
Belarus	2005-2015	Former Soviet Union
Belize	1966-2015	
Benin	1966-2015	
Bermuda	1966-1996	British Overseas Territories
Bhutan	1966-2015	
Bolivia	1966-2015	

Bosnia-Herzegovina	1994-2015	Former Yugoslavia
Botswana	1966-2015	
Brazil	1966-2015	
Brunei	1966-1995	
Burkina Faso	1966-2015	
Burundi	1966-2015	
Cambodia	1966-2015	
Cameroon	1966-2015	
Cape Verde	1975-2015	
Cayman Islands	1974-1996	British Overseas Territories
Central African Rep.	1966-2015	
Chad	1966-2015	
Chile	1966-2015	
China	1979-2015	
Chinese Taipei	1966-1996	
Colombia	1966-2015	
Comoros	1966-2015	
Congo, Dem. Rep.	1966-2015	
Congo, Rep.	1966-2015	
Cook Islands	1972-2015	Realm of New Zealand
Costa Rica	1966-2015	
Cote d'Ivoire	1966-2015	
Croatia	1994-2010	Former Yugoslavia

Cuba	1967-2015	
Cyprus	1966-1996	
Djibouti	1966-2015	
Dominica	1974-2015	
Dominican Republic	1966-2015	
Ecuador	1966-2015	
Egypt	1966-2015	
El Salvador	1966-2015	
Equatorial Guinea	1976-2015	
Eritrea	1993-2015	
Ethiopia	1966-2015	
Fiji	1966-2015	
Former Yugoslav Republic of Macedonia (FYROM)	1994-2015	Former Yugoslavia
French Polynesia	1966-1999	French overseas collectivities
Gabon	1966-2015	
Gambia	1966-2015	
Georgia	1993-2015	Former Soviet Union
Ghana	1966-2015	
Gibraltar	1966-1999	British Overseas Territories
Grenada	1974-2015	
Guatemala	1966-2015	

Guinea	1966-2015	
Guinea-Bissau	1969-2015	
Guyana	1966-2015	
Haiti	1966-2015	
Honduras	1966-2015	
Hong Kong, China	1966-1996	
India	1966-2015	
Indonesia	1966-2015	
Iran	1966-2015	
Iraq	1966-2015	
Israel	1966-1996	
Jamaica	1966-2015	
Jordan	1966-2015	
Kazakstan	1993-2015	Former Soviet Union
Kenya	1966-2015	
Kiribati	1966-2015	
Korea	1966-1999	
Korea, Dem. Rep.	1985-2015	
Kosovo	2009-2015	Former Yugoslavia
Kuwait	1967-1995	
Kyrgyz Republic	1993-2015	Former Soviet Union
Laos	1966-2015	
Lebanon	1966-2015	

Lesotho	1966-2015	
Liberia	1966-2015	
Libya	1966-1999, 2005-2015	
Macao	1966-1999	
Madagascar	1966-2015	
Malawi	1966-2015	
Malaysia	1966-2015	
Maldives	1966-2015	
Mali	1966-2015	
Malta	1966-2002	
Marshall Islands	1992-2015	Former United States Trust Territory
Mauritania	1966-2015	
Mauritius	1966-2015	
Mayotte	1977-2010	French overseas department
Mexico	1966-2015	
Micronesia	1992-2015	Former United States Trust Territory
Moldova	1997-2015	Former Soviet Union
Mongolia	1984-2015	
Montenegro	2006-2015	Former Yugoslavia
Montserrat	1974-2015	British Overseas Territories

Morocco	1966-2015	
Mozambique	1966-2015	
Myanmar (Burma)	1966-2015	
Namibia	1983-2015	
Nauru	1976-2015	
Nepal	1966-2015	
Netherlands Antilles	1966-1999	
New Caledonia	1966-1999	French special status
Nicaragua	1966-2015	
Niger	1966-2015	
Nigeria	1966-2015	
Niue	1972-2015	Realm of New Zealand
Northern Marianas	1966-1996	Former United States Trust Territory
Oman	1968-2010	
Pakistan	1966-2015	
Palau	1992-2015	Former United States Trust Territory
Panama	1966-2015	
Papua New Guinea	1966-2015	
Paraguay	1966-2015	
Peru	1966-2015	
Philippines	1966-2015	

Qatar	1967-1995	
Rwanda	1966-2015	
Samoa	1966-2015	
Sao Tome & Principe	1972-2015	
Saudi Arabia	1966-2007	
Senegal	1966-2015	
Serbia	1994-2015	Former Yugoslavia
Seychelles	1966-2015	
Sierra Leone	1966-2015	
Singapore	1966-1995	
Slovenia	1994-2002	Former Yugoslavia
Solomon Islands	1966-2015	
Somalia	1966-2015	
South Africa	1993-2015	
South Sudan	2011-2015	
Sri Lanka	1966-2015	
St. Helena	1966-2015	British Overseas Territories
St. Kitts-Nevis	1974-2013	
St. Lucia	1974-2015	
St.Vincent & Grenadines	1974-2015	
Sudan	1966-2015	
Suriname	1966-2015	

Swaziland	1966-2015	
Syria	1966-2015	
Tajikistan	1993-2015	Former Soviet Union
Tanzania	1966-2015	
Thailand	1966-2015	
Timor-Leste	1974-2015	
Togo	1966-2015	
Tokelau	1972-2015	Realm of New Zealand
Tonga	1966-2015	
Trinidad & Tobago	1966-2010	
Tunisia	1966-2015	
Turkey	1966-2015	
Turkmenistan	1993-2015	Former Soviet Union
Turks & Caicos Islands	1974-2007	British Overseas Territories
Tuvalu	1976-2015	
Uganda	1966-2015	
Ukraine	2005-2015	Former Soviet Union
United Arab Emirates	1967-1995	
Uruguay	1966-2015	
Uzbekistan	1993-2015	Former Soviet Union
Vanuatu	1966-2015	
Venezuela	1966-2015	

Vietnam	1966-2015	
Virgin Islands (UK)	1966-1999	British Overseas Territories
Wallis & Futuna	1970-2015	French overseas collectivities
West Bank & Gaza Strip	1993-2015	
Yemen[16]	1966-2015	
Zambia	1966-2015	
Zimbabwe	1966-2015	

Appendix. 2 List of Recipients

Supplement document

(1) Data for recipients are listed based on the OECD's 'History of DAC Lists of Aid Recipient Countries.'[17]

(2) Even if a recipient does not have sovereignty, if aid from a DAC member exists, it is listed as a recipient. For example, in 2005 and 2010 the United States provided aid to Montserrat, an overseas territory of the UK. This fact indicates that it is possible for other countries to also give aid to the British territory.

(3) If a recipient receives aid from at least one donor in a certain year, all the other values of '..' are set to zero in that year.

(4) A newly established country (such as the countries of the former Soviet bloc) is coded with a missing value before its establishment and with a zero once it receives aid from at least one donor.

(5) If there is an inconsistency between the OECD's explanation and the commitment data, priority is given to the latter. For example, Albania is reported to have been added to the recipient list in 1989, but commitment data exist since 1988 (aid from Austria, Italy, and the US). Similarly, South Africa was added to the list in 1991, but it began to receive assistance from 1993. In the former case, '..' for Albania becomes missing before 1988 and a zero value afterward. In the latter case, all data are coded as missing before 1993.

End of Supplementary document

[1] In practice, Djankov et al. (2009) demonstrates that as a result of duplication of aid programs and the administrative burden accompanied with it, growth performance suffers (see also Kilby 2011; Bigsten and Tengstam 2014).

[2] Security externalities of trade and their relations with alliances is developed by Gowa (1994).

[3] This theoretical prediction differs from Katada (1997), which finds burden sharing aid coordination between the U.S. and Japan. To make burden sharing work, extremely close policy coordination between two nations is necessary. When analysed regions and periods are limited, burden sharing might be observed. However, the possibility of such coordination is low when more than 150 recipients and 50 years are analysed. Katada (1997) focuses on only Latin America and, therefore, the result may have sample selection bias. Moreover, her regression result shows that only the 1975-1982 period is statistically significant.

[4] Moreover, other donors, such as the United Kingdom, gave aid to Afghanistan in those two years.

[5] Namely, $\mathrm{E}(\ln I_{ij}) \neq \ln \mathrm{E}(I_{ij})$

[6] Recent studies of international trade, therefore, try to estimate level data by the Poisson Pseudo Maximum Likelihood or (Zero-Inflated) Negative Binominal model.

[7] https://www.stata.com/manuals14/rchurdle.pdf (15 January, 2018)

[8] The last case method is reported to raise a serious estimation problem in the level stage (see Bueno de Mesquita and Smith 2009: appendix).

[9] In this respect, the same is true for the Poisson Pseudo Maximum Likelihood or Negative Binominal models.

[10] Moreover, Monte Carlo simulation shows this model performs better than the other techniques (Manning, Duan, and Rogers 1987; Clist 2011: 1726).

[11] That is, $USAIDSHARE_{i,t} = USAID_{i,t} \,/\, \sum_{i=1}^{n} USAID_{i,t}$ where *i* is the recipient (n = 179) and *t* is the year.

[12] That is, $\ln (AIDTOTAL_{ij,t}) = \ln (\sum_{i=1}^{n} AID_{ij,t})$.

[13] Another possibility is that the allocation of aid from the United States is the result of following allies' aid policies. Although this is an interesting hypothetical story, it is unrealistic. Therefore, I do not consider it in this study.

[14] This result will never be discovered with the Tobit model.

[15] The only difference is seen in the version of Model 3 that uses Variety of Democracy data, where the interaction term between the Cold War dummy and *USAIDSHARE* is negative and statistically significant at the 5% level. However, it is not significant in the version of Model 5, that estimated simultaneously the War on Terror dummy and its interaction with *USAIDSHARE*. The Cold War element, including this result, cannot be explained by my hypotheses. I would like to clarify why in future research.

[16] Although Yemen was divided into north and south before 1990, they are treated as one country in the OECD's data. Therefore, this study also combines data for the two Yemens.

[17] 'Chronology of changes in recipient country coverage, 1989-2014' http://www.oecd.org/dac/stats/historyofdaclistsofaidrecipientcountries.htm (18 April, 2017)