# Loans versus Grants in Japanese Bilateral ODA - Evidence from Panel Data

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## 1  Introduction

In the present paper, I will examine the determinants of grant-loan allocation in Japanese ODA, focusing on the recipients' characteristics. In the series of discussions about Official Development Assistance (ODA), many studies have contributed to find the factors that determine the amount of aid, that is, "*Who gives aid and why?*", or "*Who receives aid and why?*". For example, Berthelemy (2006) examines whether and to what extent the donors' interest is accounted for the allocation of bilateral aids, making use of the two-part models. He finds that donors' interests in the recipient countries, measured by economic ties such as trade amount, do affect the aid allocation. He also finds that the extent to which these ties affect the aid allocation varies across the donor countries, and he classifies the donor countries into "altruistic", "neutral" and "egoistic" countries. Schudel (2008) reviews the relationship between foreign aid allocation and the recipients' corruption, taking into account the variation among donor countries, using both pooled OLS and fixed-effects estimations. The study shows that the amount of bilateral aid would be reduced if the recipients have high levels of corruption, and that this tendency would be alleviated if the donor country has relatively high levels of corruption.

These studies focus on the total aid allocation, irrespective of the kind of ODA. In many studies, the types of ODA - grans, loans and other types - are not of much interest. However, I argue that these types, especially the amount of grants, should exhibit much variation depending on the recipients' characteristics such as financial capacity of repaying loans. In addition, from the perspective of the donor countries, as loans can be executed politically more easily than grants, the amount or the proportion of grants should reflect the relative "importance" of the relation with the recipient country, i.e. more grants would be allocated to relatively "important" countries. Thus, by examining how grants are allocated, we can know how the donor country

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uses the types of ODA in the context of the foreign assistance strategy, as well as the total amount of ODA.

In this paper, I focus on the grants and loans allocation in Japanese ODA. Traditionally, Japan has spent the majority of their ODA in loans, but recently following the trends of foreign aids they are spending more grants than ever. In addition, as for the sector in which Japanese ODA is used, there has been a concentration on economic infrastructure and service, rather than social capital development. Also note that there has been a notable concentration of their ODA on Asian countries. These particular characteristics of Japanese ODA strategy has been criticized that Japan has been utilizing ODA to foster economic activities of Japanese industries.

In spite of the criticisms, it is argued that loans-based Japanese ODA would foster the development of recipients. Though I would not go into too much details, it is also argued that loans are more suitable than grants for development of the recipient countries.[1] On the other hand, foreign assistances in grants would help countries with heavy external debts. Besides its effectiveness, it is of much significance to know how the choices of grants versus loans (or loans versus grants) in Japanese ODA are determined. The objective of this paper is to find the factors that affect the use of grants versus loans, depending on the recipients' characteristics. Using panel data analysis with the data on Japanese ODA disbursements from 2004 to 2011, I find which countries would receive more grants compared to loans. Discovering how their grant-loan allocation is determined will contribute to the arguments of foreign aids, in terms of political economy in aid as well as its effectiveness.

By random-effects model and fixed effects model regression, I find that the policy quality, current account balance and external debt stocks of the recipients affect the ratio of grants, but not the volume. Better macroeconomic management would increase the rate of loans, while better external debt status increases the rate of grants. Also, Asian counties are found to receive more loans than grants, and more aid volume compared to other regions.

The composition of this paper is as follows. In the next section, I summarize the former studies concerning grants versus loans in ODA, and present the hypotheses for this paper. In

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[1]For more details about comparative advantage of loans versus grants, see Odedokun (2003).

section 3, I provide the econometric model and the details of data. In section 4, the results of regressions are shown and possible implications are discussed. The following section 5 concludes.

## 2 Former Studies and Hypothesis of the Research

As for the former studies concerning grants versus loans, Odedokun (2003) can be raised. He examines the economic and political factors that have influenced donor ' s past grant-loan mix and discusses the comparative advantages of grants, soft loans and non-concessional loans. In the first part of his research, he carries out empirical tests based on annual panel data over 1970 to 1999 for 22 donor countries and 72 recipient countries. He focuses on the factors from the donors' side, and finds that donors' GDP growth is the most powerful factor that increases the ratio of grants out of total aids, along with other economic and political variables.

Other studies about grants and loans in ODA mainly focuses on its effectiveness, such as Iimi and Ojima (2008) and Cohen et al (2007). Taking into account these former studies, there will be room for investigating the determinants for the choice of grants and loans from the recipients' characteristics rather than donors when we think about achieving the feasibility of the aids.

Although the use of grants would highly depends on the donor's capacity of finance, domestic political and economic situation and so on, it is natural to think that the rate of grants account for the recipients' economic and political characteristics. For instance, a recipient with heavy external debts would be less likely to receive loans, due to higher risks of not repaying the loans. I list the factors that would influence the rate of grants and their expected effects.

*External debt amount*

As mentioned above, heavy external debts of the recipients are expected to reduce the incentive to provide loans. This variable will positively affect grants.

*GDP per capita and GDP growth rate*

The economic outcomes of the recipients are expected to affect grants. Grants are more likely to given to poorer countries, hence GDP per capita will negatively correlate with grants. On the other hand, the effect of GDP growth rate is ambiguous. One can predict that more growth enables the recipients to receive more loans and therefore negatively affects grants. However,

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the contrary might also be true: more growth can result in more grants because of the donor's incentive to improve relation with that country for future economic or political ties.

*Policy quality*

Good governance is considered to be a precondition for effective foreign assistance, or even for receiving more aids. As described later, here I use policy indices to represent the quality of policy. Good policies are expected to affect the amount of ODA positively, as the donor country can more easily justify their aid. However, in terms of grants, we will have to look more carefully at the effects. Better policy quality are surely expected to increase loans, but how about grants? One presumption is that the proportion of grants will decrease, as loans increase relatively more than grants.

*Political freedom and democratic status*

These factors also affect grants, like policy quality. The democratic status will affect grants negatively, as is the case of policy quality.

*Economic ties with Japan*

ODA is said to reflect the relationship between the donor and the recipient, as argued in Berthelemy (2006). A stronger tie with Japan should increase grants, in terms of both the amount and the proportion out of the total aids.

*Region*

As mentioned earlier, Japan has provided relatively more aids on Asian countries. In the regression analysis here, I include Asian dummy variable to see whether the region affects the proportion of grants as well as the total amount of ODA. Which of grants or loans is higher in this region is unexpected, but observing the effect of this variable one can see whether there is a trend in Asian countries in terms grants versus loans.

# 3    Data Description and the Model

In this section I present the source of the data I use in the analysis, descriptive statistics of the variables, and the model.

| variable | N | mean | sd | min | max |
|---|---|---|---|---|---|
| lgrantsratio | 999 | -0.392 | 0.808 | -4.52 | 0.00 |
| lgrants_gdp | 953 | -20.233 | 2.236 | -27.97 | -14.52 |
| debtpolicy | 533 | 3.462 | 0.909 | 1.00 | 6.00 |
| macromanagement | 533 | 3.701 | 0.709 | 1.00 | 5.50 |
| transparency | 533 | 2.878 | 0.668 | 1.00 | 4.50 |
| caccount | 1089 | -3.274 | 12.342 | -51.00 | 48.20 |
| caccountsqrd | 1089 | 162.904 | 327.322 | 0.00 | 2601.00 |
| ldebt | 875 | 0.945 | 1.071 | -3.49 | 4.91 |
| ltrade | 1208 | 4.447 | 0.470 | 3.10 | 6.13 |
| lmilitaryex | 976 | 0.513 | 0.691 | -3.07 | 2.47 |
| fdi_gdp | 540 | 0.120 | 1.418 | -7.85 | 19.42 |
| fdisqrd | 540 | 2.022 | 24.340 | 0.00 | 376.99 |
| gdp_gr | 1320 | 4.255 | 4.767 | -18.00 | 34.50 |
| lgdp | 1334 | 23.830 | 2.420 | 16.90 | 30.34 |
| asia | 1641 | 0.229 | 0.420 | 0.00 | 1.00 |
| dac_1 | 1641 | 0.224 | 0.417 | 0.00 | 1.00 |
| dac_2 | 1641 | 0.029 | 0.167 | 0.00 | 1.00 |
| dac_3 | 1641 | 0.180 | 0.385 | 0.00 | 1.00 |
| dac_4 | 1641 | 0.241 | 0.428 | 0.00 | 1.00 |
| polconiii | 1446 | 0.272 | 0.195 | 0.00 | 0.71 |
| pr | 1544 | 3.351 | 2.144 | 1.00 | 7.00 |
| polity | 1116 | 0.968 | 15.855 | -88.00 | 10.00 |

Table 1: Descriptive statistics of the dependent and independent variables

The data for the regression analysis was collected through online databases. Bilateral ODA from Japan, FDI from Japan, developing country classification by DAC were collected from DAC databases of OECD. Most of the economic and political variables of the recipient countries, such as external debts, GDP, GDP growth rate and policy quality indices rely on the World Development Indicator, obtained through the World Bank databases. As other political variables, I use Polcon III of the political constraint database, political freedom index by Freedom House, and democracy index by Polity IV.

The descriptive statistics of the variables are described in Table 1.

The variables *lgrantsratio* and *lgrants_gdp* denote the rate of grants received out of the total ODA and the amount of grant disbursements divided by GDP (both in logarithm), respectively. These two variables are used as the dependent variable in the regression models. The variable

*grantsratio* is of our primary interest, and *lgrants_gdp* helps us when we think about whether or not the effects of the independent variables are also the same for aid volume.

The next three variables *debtpolicy*, *macromanagement* and *transparency* are the indices of policy quality, generated by the assessment of the CPIA. The variable *debtpolicy* represents the effectiveness of the public sector to manage the debt account, *macromanagement* the rating of macroeconomic management, and *transparency* the accountability of the governmental information to public, respectively. As these variables had fewer observations compared to the other variables, I test the models with and without these variables.

The next two variables *caccount* and *caccountsqrd* represent the current account of the recipients, and square of the current account respectively. The variables *ldebt*, *ltrade* and *lmilitaryex* are the gross external debts, the total amount of trade and the military expenditure (again all in logarithm), respectively. The next two variables *fdi_gdp* and *fdisqrd* are the amount of foreign direct investment from Japan and its squared form. These two variables are used as proxies of economic ties with Japan. *gdp_gr* is the GDP growth rate and *lgdp* is the GDP per capita in logarithm of the recipients.

The next five variables are dummy variables. *Asia* means that the recipient country is an Asian country, and the next four variables means the classification of the developing country by DAC of OECD. All developing countries are classified into 4 groups depending on the GDP per capita, and in this dataset the dummy variables *dac_1*, *dac_2*, *dac_3* and *dac_4* are attached to these groups, from the group with the lowest GDP per capital to the group with the highest.

The last three variables represent the democratic status of the recipients. *Polconiii* is the political constraint index, *pr* is the political rights index by Freedom House, and *polity* is the democracy index by Polity IV.

For the econometric model, I basically follow the approach of Schudel (2008), which investigates the bilateral aid allocation using panel data method. To begin with, I assume the following panel data model:

$$Y_{i,t} = \alpha \boldsymbol{X}_{i,t} + \beta \boldsymbol{Z}_{i,t} + \gamma \boldsymbol{D}_i + \nu_{i,t} \tag{1}$$

where $Y_{i,t}$ denotes the amount of bilateral grants or the rate of grants out of the total bilateral ODA amount from Japan, $\boldsymbol{X}_{i,t}$ a set of recipients' economic status variables, $\boldsymbol{Z}_{i,t}$ a set of recipients' political variables, $\boldsymbol{D}_i$ a set of other dummy variables for the aid trends and $\nu_{i,t} = a_i + u_{i,t}$ a composite error term, respectively. As the difference from the approach of Schudel (2008), here I assume two types of regression models: the random-effects (RE) model and the fixed-effects (FE) model.

The RE model can be estimated by transforming the equation (1) as:

$$Y_{i,t}^* = \alpha \boldsymbol{X}_{i,t}^* + \beta \boldsymbol{Z}_{i,t}^* + \gamma \boldsymbol{D}_i^* + \nu_{i,t}^* \tag{2}$$

where $Y_{i,t}^* = Y_{i,t} - \lambda \overline{Y}_i$, $\boldsymbol{X}_{i,t}^* = \boldsymbol{X}_{i,t} - \lambda \overline{\boldsymbol{X}}_i$ and so on, and $\lambda$ can be estimated through the estimator of $\mathrm{se}(u_{i,t})$ and $\mathrm{se}(a_i)$. This model allows us to include the time-constant variables like a region dummy in the regression, while alleviating the bias caused by the unobserved effect $a_i$ for each $i$. However, the drawback of this model is that we even have to suffer from the bias caused by $a_i$, unless we count for the desirable data on control variables. Thus, this model is used only to find whether there is notable trends on the rate of grants or the grants volume, depending on the region or other time-constant factors.

The FE model is defined as follows:

$$\ddot{Y}_{i,t} = \alpha \ddot{\boldsymbol{X}}_{i,t} + \beta \ddot{\boldsymbol{Z}}_{i,t} + \gamma \ddot{\boldsymbol{D}}_i + \ddot{u}_{i,t} \tag{3}$$

where $\ddot{Y} = Y_{i,t} - \overline{Y}_i$ and so on. The merit of using the FE model is that this allows us to eliminate the unobserved effect $a_i$, although in this model we cannot use the time-constant variables. Hence, the objective of using this model is to see the pure effects of the economic and political variables on the grants.[2]

## 4   Results

The following Table 2 reports the results of the RE models.[3]

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[2]See Wooldridge (2008) for more details.

[3]Note that here I also included year dummy variables for each year, but these are not shown in the results. None of them is significant.

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | lgrantsratio | lgrantsratio | lgrants_gdp | lgrants_gdp |
| debtpolicy | 0.383 |  | -0.423 |  |
|  | (3.64)*** |  | (1.94)* |  |
| macromanagement | -0.327 |  | 0.243 |  |
|  | (3.31)*** |  | (1.18) |  |
| transparency | -0.366 |  | 0.387 |  |
|  | (2.93)*** |  | (1.50) |  |
| caccount | 0.017 | 0.019 | -0.006 | 0.001 |
|  | (2.63)*** | (2.86)*** | (0.49) | (0.14) |
| caccountsqrd | 0.000 | 0.000 | 0.001 | 0.000 |
|  | (1.42) | (1.12) | (1.71)* | (1.63) |
| ldebt | -0.163 | -0.173 | 0.045 | 0.108 |
|  | (2.61)*** | (2.99)*** | (0.35) | (1.38) |
| ltrade | -0.056 | -0.353 | 0.317 | 0.423 |
|  | (0.33) | (1.72)* | (0.91) | (1.44) |
| lmilitaryex | -0.186 | -0.028 | -0.469 | -0.267 |
|  | (1.96)* | (0.26) | (2.45)** | (1.73)* |
| fdi_gdp | -0.183 | -1.239 | 3.523 | 0.988 |
|  | (0.12) | (6.91)*** | (1.12) | (4.24)*** |
| fdisqrd | -2.394 | -0.754 | -1.186 | 0.535 |
|  | (1.79)* | (3.71)*** | (0.42) | (1.99)** |
| gdp_gr | 0.005 | 0.026 | -0.065 | -0.030 |
|  | (0.32) | (2.11)** | (1.94)* | (1.83)* |
| lgdp | -0.308 | -0.260 | -0.244 | -0.380 |
|  | (5.06)*** | (3.88)*** | (1.99)** | (3.87)*** |
| asia | -0.530 | -0.631 | 1.192 | 1.481 |
|  | (3.43)*** | (3.24)*** | (3.89)*** | (5.09)*** |
| dac_2 | 0.437 | 0.537 | 0.062 | -0.341 |
|  | (1.29) | (0.93) | (0.09) | (0.40) |
| dac_3 | -0.157 | -0.187 | -0.633 | -0.766 |
|  | (0.91) | (0.78) | (1.83)* | (2.16)** |
| dac_4 | 0.064 | 0.028 | -3.437 | -2.501 |
|  | (0.18) | (0.10) | (4.67)*** | (5.96)*** |
| polconiii |  | -0.057 |  | -0.244 |
|  |  | (0.18) |  | (0.58) |
| pr |  | 0.008 |  | -0.092 |
|  |  | (0.18) |  | (1.50) |
| polity |  | 0.001 |  | -0.001 |
|  |  | (0.30) |  | (0.12) |
| _cons | 8.456 | 7.363 | -14.849 | -11.446 |
|  | (4.72)*** | (3.58)*** | (4.11)*** | (3.83)*** |
| *N* | 132 | 323 | 132 | 323 |
| Number of groups | 40 | 73 | 40 | 73 |
| Wald Chi-squared | 142.20 | 120.67 | 126.20 | 293.20 |

*p*<0.1; ** *p*<0.05; *** *p*<0.01

T-statistics are given in parenthesis

Table 2: Results from RE models

Here I assumed four models, two of which (the model (1) and (2)) take the ratio of grants out of total ODA as the dependent variable, and the rest (the model (3) and (4)) take the amount of grants divided by GDP. In the model (1) and (3) the policy quality variables are used, and in the model (2) and (4) Polcon III, political rights and polity are used instead of them, in order to maintain the number of observations.[4]

From the results, one can observe some important factors for the grants. First, let's look at the model (1) and (2) that take the ratio of grants as the dependent variable. In both models, the variables *caccount*, *ldebt*, *lgdp* and *asia* turn out to be statistically significant. The signs of the coefficients on *caccount ldebt* are somewhat contrary to the expectation. The result suggests that a country with better current account balance or with less external debts is more likely to receive more *grants*, compared to loans. One explanation for this is that Japan might be providing grants as a result of the recipients' efforts of improving their government account balances, not as a way of improving it. A country with better current account balance or with less external debts is considered to be awarded by higher proportion of grants.

The variable *lgdp* is also significant for both models, with a negative sign of its coefficient. This means a country with higher GDP per capita would receive more proportion of loans than grants. This result does not contradict to the expectation.

The most powerful independent variable is *asia* for both models, in terms of its absolute value of the coefficient as well as statistic significance. This variable suggests that Japan is providing more loans than grants in Asian region. This might be because Japan is promoting ODA for economic sector, such as infrastructure in Asia. For the projects of economic sector, it seems easier to capture the expected outcome of the project, making it easier to plan loans.

The difference between the model (1) and (2) is the political variables. In model (1) policy quality indices are used, while in model (2) they are altered by *polconiii*, *pr* and *polity*. Looking at the policy quality variables in model (1), all of them turn out to be significant. However, the signs of the coefficients should be observed carefully. The result shows that a country with good

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[4]The t-statistics in the table are usual ones (i.e. not heteroskedasticity-robust ones). I also tried using heteroskedasticity-robust t-statistics, but little changes were found. This is also the case for the results from FE models.

policy in managing external debts (represented in *debtpolicy*) is likely to receive more *grants*, rather than loans. As is the case of external debts, this is contrary to the expectation. This suggests that a country with better at handling external debts would be awarded by higher proportion of grants. The coefficients on the other two variables suggest that a country with good macroeconomic management or transparency is expected to have more loans than grants.

Another difference between the model (1) and (2) is the statistic significance of the variable $fdi\_gdp$, which is significant in model (2) but not in model (1). This means that once we control for the policy quality, economic tie plays little role in determining the rate of grants. In other words, the effect of policy quality is more dominant than that of economic tie.

The political variables *polconiii*, *pr*, *polity* are not significant at all in all the models. This might not be so surprising: the decision for ODA disbursements is made insider the governments, irrespective of the voices of the public.

In the model (3) and (4), the dependent variable is the amount of grants, not the rates. By comparing them with model (1) and (2), we can see whether or not each independent variable affects the increase (or decrease) in the grants volume. One important implication may be drawn for those variables that are significant in model (1) and (2) but not in model (3) and (4). These variables are considered to affect the *proportion* of grants versus loans, but not the volume. Hence, policy quality, current account balance and external debts do affect the proportion of grants, but do not increase or decrease the amount.

In the model (3) and (4), the Asian dummy variable turns out to be significant, too. Taking account its positive sign, one can say that Japan is providing larger amount of grants in Asia compared to other regions, as well as loans. This means that Japan is providing more ODA to Asian countries in both grants and loans, and the majority of their assistance is loans.

Looking at other variables enables us to find the factors that affect the aid volume of grants. However, it is probable that the factors that affect the volume differ from the ones that affect the ratio of grants, so other variables should be needed. Finding the determinants of the aid volume is outside the scope of this paper.

The following Table 3 refers to the results from FE models.[5]

| | (5) | (6) | (7) | (8) |
|---|---|---|---|---|
| | lgrantsratio | lgrantsratio | lgrants_gdp | lgrants_gdp |
| debtpolicy | 0.436 | | -0.340 | |
| | (3.02)*** | | (1.04) | |
| macromanagement | -0.231 | | 0.307 | |
| | (2.09)** | | (1.23) | |
| transparency | -0.048 | | 0.063 | |
| | (0.28) | | (0.16) | |
| caccount | 0.016 | 0.021 | 0.014 | 0.006 |
| | (1.76)* | (2.49)** | (0.67) | (0.59) |
| caccountsqrd | 0.000 | 0.001 | 0.001 | 0.000 |
| | (1.42) | (1.99)** | (2.20)** | (1.39) |
| ldebt | -0.226 | -0.187 | 0.187 | 0.152 |
| | (2.57)** | (2.55)** | (0.94) | (1.60) |
| ltrade | -0.422 | -0.621 | 1.121 | 0.491 |
| | (1.29) | (1.88)* | (1.53) | (1.14) |
| lmilitaryex | -0.113 | -0.093 | -1.295 | -0.638 |
| | (0.54) | (0.41) | (2.74)*** | (2.18)** |
| fdi_gdp | -0.841 | -1.257 | 4.407 | 1.168 |
| | (0.40) | (6.75)*** | (0.93) | (4.82)*** |
| fdisqrd | -2.237 | -0.661 | -0.993 | 0.734 |
| | (1.43) | (3.00)*** | (0.28) | (2.56)** |
| gdp_gr | 0.004 | 0.029 | -0.068 | -0.025 |
| | (0.24) | (2.70)*** | (2.04)** | (1.74)* |
| lgdp | -0.381 | -0.000 | -1.099 | -1.212 |
| | (2.29)** | (0.00) | (2.93)*** | (6.58)*** |
| polconiii | | -0.304 | | 0.103 |
| | | (0.82) | | (0.21) |
| pr | | -0.023 | | -0.089 |
| | | (0.32) | | (0.94) |
| polity | | 0.001 | | 0.002 |
| | | (0.15) | | (0.21) |
| _cons | 9.956 | 2.107 | 2.431 | 7.725 |
| | (2.12)** | (0.52) | (0.23) | (1.46) |
| N | 132 | 323 | 132 | 323 |
| Number of groups | 40 | 73 | 40 | 73 |
| R-squared | 0.39 | 0.22 | 0.41 | 0.33 |

$p<0.1$; ** $p<0.05$; *** $p<0.01$

T-statistics are given in parenthesis

Table 3: Results from FE models

These models allow us to see the pure effects of each variable, controlling for the individual

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[5]Note that the dummy variables like *asia*, *dac_2* and so on are excluded from the model, because they are constant over time.

country's characteristics. Comparing the results from FE models with RE models, we can confirm if the results obtained by RE models is credible or not. The dependent and independent variables are the same with RE models, so we can compare directly two models, such as model (1) and (5), model (2) and (6) and so on.

Comparing model (5) and (6) with model (1) and (2), one can see there are not so much differences, although for some variables statistic significance is less in the FE models. For most of the independent variables, the signs of the coefficients are the same. This would support the credibility of the results obtained by RE models. However, there are some differences between the FE and RE models.

Looking at the model (5) and (1), one can see that the policy quality index for transparency turns out to be insignificant in FE model. This means that once we control for the recipients' individual characteristics, transparency has nothing with the ratio of grants. The other two policy quality variables exhibit almost the same effects. Therefore, we can say that in terms of policy quality, external debt management and macroeconomic management matter.

As for other variables, the results are quite similar, except for the GDP per capita in model (6).This variable somehow turns out to have almost no effect in the model (6). This weakens the credibility of the results of model (2), but in model (1) and (5) this variable exhibits almost the same effect.

Even looking at the model (7) and (8), the results are quite similar to the results from RE models. One interesting point is that military expenditure is quite significant in all of the model (3), (4), (7), (8). This suggests that the recipients' military expenditure reduces grants volume, but again finding the determinants for the aid volume is outside the scope of this paper.

In summary, the regression models show that policy quality affects the ratio of grants, especially the quality of external debt management and macroeconomic management. Current account balance and external debt stocks also affect the ratio, but somewhat in unexpected ways. One can say that a country with better current account balance or less external debts would be awarded by more grants. However, these effects are not the case in terms of aid volume.

Also, GDP per capita affects the ratio: poorer countries are more likely to receive grants, in terms of both ratio and volume. Finally, Asian countries are much more likely to receive loans, compared to grants. Moreover, they are receiving more grants and loans in volume, and the amount of loans overwhelms the amount of grants.

# 5    Conclusion

In the present paper, I examined which factors affect the rate of grants in Japanese ODA, focusing on the recipients' characteristics. This paper would shed a light on the unfamiliar topic among the studies of foreign assistance: the determinants of grants versus loans. The main finding is that the policy quality of the recipients affect the ratio of grants, but not the volume. Then, one question arises: if the improvement in policy or government deficit doesn't affect the aid volume, what is the importance of improving them? However, I argue that the types of ODA matter when we think about the effectiveness of aid as well as the government's financial capacity, as argued in other studies. An interesting finding of this paper would be that Japan is providing more grants because a recipient makes good efforts of improving current account or reducing external debts. Also I find that Asian countries receive more loans rather than grants, but in terms of aid volume, they are receiving relatively larger amount of Japanese ODA.

Finally, I raise some drawbacks of this paper. First, as a result of limiting the donor to Japan, the regressions suffered from a lack of observations. For model (1), there were only 40 groups of recipient countries. This might have resulted in unstable results of the regressions. Also due to this small number of the observations, it was difficult to try more variables, for example, interaction terms and lagged variables as well as other possible variables.[6] With more observations, I would be able to allow more variables in the models.

Second, the model does not include the multilateral aid, which consists of a large amount of grants. I would expect different results by including this, though it would be more difficult to interpret the results.

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[6]I would like to add that for available variables like GDP growth, I took their lags but there were little changes in results.

To conclude, I would raise a new way of thinking ODA allocation. As is in this paper, it is worth considering the proportion of grants versus loans as well as aid volume, when we think about the aid allocation.I argue that the quantity of ODA consists of two dimensions: volume and grant-loan ratio. It may be useful to observe the ratio of grants, in order to see more details of the aid allocation.

# References

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