



## Is Chinese aid different? ☆

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### ABSTRACT

China's involvement in African countries has been criticized for being guided by self-interest rather than recipient need or merit. For the period 2000–2012, we compare China's aid allocation behaviour to that of the five largest donor countries globally: France, Germany, Japan, the UK, and the USA. We use regression analysis and a rigorous variance decomposition method to measure the importance of various factors in predicting aid commitments. We find that donors differ markedly in how they allocate aid. While Germany, Japan, the USA, and the UK assign high importance to recipient need, France's and China's allocation models are, for a large part, driven by variables that relate to self-interest: trade in the case of France, and the adherence to the “One-China policy” in the case of China. However, China is not a purely selfish donor. As most Western donors, China commits more aid to poorer countries. Furthermore, we find no evidence that commercial interests, such as trade or access to natural resources, determine Chinese aid allocation. This latter result contrasts with Western donors, which allocate more aid to their trade partners. France and the UK also commit significantly more aid to their former colonies. In conclusion, the claim that China's aid allocation is different must be qualified.

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## 1. Introduction

China is commonly depicted as a “rogue” donor, using aid to further its own interests abroad and secure access to natural resources (Naim, 2007). Is this critique empirically founded? And is China behaving any differently from other donors? Until recently, the rigorous study of China's aid allocation was complicated by the lack of publicly available and comparable data on Chinese aid (Brautigam, 2011). Data availability explains why the large literature on the determinants of aid allocation mostly focuses on aid provided by OECD governments and multilateral donors (e.g. Alesina & Dollar, 2000).<sup>1</sup> To address this gap, Strange, Dreher, Fuchs, Parks, and Tierney (2017) undertook an impressive data collection effort and collated time-series data on the known

universe of China's official financing activities in Africa between 2000 and 2013. Thanks to their data, it is now possible to rigorously examine China's aid allocation model (see Dreher, Fuchs, Parks, Strange, & Tierney, 2018) and compare it to that of other bilateral donors.

In this paper, we exploit the data of Strange et al. (2017) and take on the question of whether China behaves differently to other major donors. Specifically, we examine the questions of (1) what determines the amount of aid China commits to African countries, (2) how important these various determinants are, and (3) whether these determinants differ for the aid allocation models of France, Germany, Japan, UK, and USA. Focusing on the period 2000–2012, we use regression analysis and build on the same empirical strategy as Dreher et al. (2018)'s pioneering study of the determinants of Chinese aid allocation. We consider four categories of determinants of aid allocation, namely recipient need, recipient merit, donor self-interest, and the proximity between donor and recipient.

Our analysis is novel in two aspects. First, we connect the literatures on OECD and Chinese aid. Our analysis therefore complements the pioneering studies of the determinants of Chinese aid by Dreher et al. (2018) and Brautigam (2011) as well as the comparative analyses by Dreher and Fuchs (2015) and Dreher and Nunnenkamp (2011) on “new donors”. Second, we do not only

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<sup>1</sup> Notable exception exists: see Bader (2015) and Dreher and Fuchs (2015) on China, Neumayer (2003c) on Arab donors, and Dreher and Nunnenkamp (2011) for a comparative analysis of DAC and non-DAC donors.

ask what determines aid commitments, but we also assess the importance of the various determinants by applying the decomposition method proposed by Sterck (2019b). We improve the standard practice, which typically focuses on comparing regression coefficients across donors. For example, Berthélemy (2006) ranks donors according to their coefficients on the trade variable. Those with higher coefficients than the average donor are labelled “egoistic” and those with below average coefficients as “altruistic”. Other scholars explored how the  $R^2$  of a regression varies when groups of variables are dropped from the list of covariates (Hoeffler & Outram, 2011; Dreher & Fuchs, 2015). We go beyond this type of comparison by rigorously decomposing the variance of ODA flows into contributions associated with each explanatory factor (Sterck, 2019b).

We find that donors differ markedly in how they allocate aid. Our analysis identifies two broad categories of aid allocation models. First, the model adopted by Germany, Japan, the USA, and the UK, which predominantly weigh recipient needs, as proxied by GDP per capita, population size, disease burden, and the number of disaster victims. Second, the model adopted by France and China, which assigns high importance to self-interest. Self-interest, however, does not have the same meaning for France and China. While France gives more aid to important trade partners, China’s aid decisions are largely driven by the “One-China policy”, i.e. African countries that formally recognize Taiwan receive significantly less aid. This factor alone accounts for nearly half of the explained variation in Chinese aid. This result is not surprising and is in line with previous characterisations of China’s aid allocation model (Davies, 2007; Brautigam, 2011; Dreher et al., 2018). However, China is not a purely self-interested donor. China allocates more aid to poorer countries, as do Germany, Japan, the USA, and the UK. Furthermore, we find no evidence that commercial interests, such as trade or access to natural resources, determine Chinese aid allocation. This latter result contrasts with Western donors, which allocate significantly more aid to their trade partners. Another salient result is that France and the UK commit significantly more aid to their former colonies.

We conclude that the statement that Chinese aid is different should be qualified. On the one hand, China’s aid allocation model is different because it attaches high importance to the “One-China policy”, penalizing countries recognizing Taiwan. In contrast with Western donors, we find some evidence that China allocates aid irrespective of policies and institutions, which is consistent with China’s principle of non-interference. On the other hand, our analysis also reveals massive differences between the aid allocation frameworks of France, Germany, Japan, UK, and USA. It therefore seems unjustified to single out Chinese aid as being different. Furthermore, China’s model shows some similarities with France’s model. Both France and China give considerable importance to self-interest, but also account for recipient needs and proximity.

Our paper is structured as follows. Section 2 provides a brief overview of the existing aid allocation literature. Section 3 discusses the data and the empirical strategy. Section 4 presents the results and the last section concludes.

## 2. Background

In this section, we first define official development assistance (ODA). We then briefly summarize the findings and challenges of the early literature on the determinants of ODA. Finally, we describe the burgeoning literature on new donors and in particular on the determinants and characteristics of Chinese aid.

There is a large literature on development aid, by which we mean official development assistance (ODA). The Development Assistance Committee (DAC) of the Organization for Economic

Cooperation and Development (OECD) defines ODA as government aid that promotes and specifically targets the economic development and welfare of receiving countries. More specifically, ODA is the aid made available by official agencies (mainly state governments and multilateral agencies) and this assistance is concessional, consisting of grants and soft loans, i.e. loans arranged at below-market rates of interest. ODA explicitly excludes military aid and transactions that have primarily commercial objectives, e.g. export credits. Data on ODA from DAC donors are collected and made publicly available by the OECD.

Aid data have been used in applied statistical studies examining the impact of aid on a wide variety of outcomes, including growth, human development and civil war (e.g. Rajan & Subramanian, 2008; Clemens, Radelet, Bhavnani, & Bazzi, 2012; Ndikumana & Pickbourn, 2017; Nunn & Qian, 2014; De Ree & Nillesen, 2009). In our research, we instead focus on the literature on donor behaviour, analysing the allocation of aid. Some studies focus on the allocation by a specific donor (e.g. USA: McKinlay & Little, 1977; Fleck & Kilby, 2010; Australia: McGillivray & Oczkowski (1991); UK: McGillivray & Oczkowski (1992); Germany: Nunnenkamp & Öhler (2011)), while others examine donor behaviour over time, indicating that donor allocation decisions respond to changes in recipient countries (Feeny & McGillivray, 2008). In addition, there are many panel data studies comparing behaviour across donors (e.g. Svensson, 1999; Alesina & Dollar, 2000; Berthélemy & Tichit, 2004).

Donors can use aid for different purposes. For the analysis of allocation patterns, we find it useful to categorize the drivers of aid into recipient need, recipient merit, and donor self-interest (Nunnenkamp & Thiele, 2006), and account for historical and cultural proximity between the donor and the recipient. Ostensibly, aid should address the recipient’s developmental needs. Due to a number of different considerations, the donor may also take the recipient’s policies and institutions into account. This is based on the claim that aid is more effective in reducing poverty in good policy environments (Collier & Dollar, 2002).<sup>2</sup> In addition to immediate effectiveness considerations, donors may also want to encourage and reward democracy and human rights (Svensson, 1999; Neumayer, 2003a). Self-interest may also be an important motive for giving aid. McKinlay and Little (1977) argue that the provision of aid expands the donor’s influence. This can be achieved in a number of different ways: it supports geostrategic aims, entices and rewards similar voting in the UN General Assembly, strengthens historical ties, and supports trade relationships (Alesina & Dollar, 2000).

Aid allocation is often theorised as a two-step process (Dudley & Montmarquette, 1976) in which donors first select their recipients and then decide how much aid they should receive. This gives rise to a number of data and methodological challenges. The choice of a Heckman model to estimate the two steps seems appropriate. However, it has proven extremely difficult to find a selection variable, i.e. a variable that determines the selection of recipients but not the amount of aid allocated. When there is no exclusion restriction, the identification rests solely on the nonlinearity of the inverse Mills ratio; the literature shows that the Heckman estimator does not perform well in this case (Vella, 1998). Another approach is to consider the two steps of aid allocation jointly, using a one-step estimation procedure. In this case, a decision still has to be made on how to treat the zeros. However, Berthélemy (2006) finds that OLS, Tobit, and Heckman estimates tend to be qualitatively similar, alleviating our concerns regarding the choice of estimators in the aid allocation model.

<sup>2</sup> The suggestion that aid effectiveness is conditional on good policy is disputed by many, see for example Dalgaard, Hansen, and Tarp (2004), Rajan and Subramanian (2008), and Doucouliagos and Paldam (2009).

The empirical results from panel regressions suggest that the patterns of aid allocation show some similarities across donors, however most studies focus on the differences. While most donors provide more aid to poorer countries, some donors also appear to be acting out of self-interest. Japan provides more aid to countries with similar voting patterns in the UN General Assembly and the USA to trade partners, while few donors appear to consider good policies and institutions as important (Alesina & Dollar, 2000). Extending the analysis beyond the five largest DAC donors (USA, Germany, Japan, France, UK), Neumayer (2003b) shows that the so called “like minded donors” (Sweden, Norway, Denmark, Finland, Netherlands, and Canada) are not only the most generous donors in terms of aid as a percentage of GDP, but also seemingly have a greater regard for good governance, especially in terms of democracy and human rights.

While the behaviour of the DAC donors has been the subject of numerous studies, other bilateral donors have received less attention. One of the few exceptions is Dreher and Nunnenkamp (2011)'s study of the so called “new donors”, e.g. Brazil, Korea, and Saudi Arabia. Because of lack of data, this latter study does not consider China, which is also often referred to as a “new donor” even though China has been providing aid to Africa since the 1950s (Brautigam, 2011; Dreher & Fuchs, 2015). China is a much maligned donor, accused of providing assistance without conditionality, thus ignoring, or even fostering autocratic regimes, corruption and human rights abuses. Furthermore, it is alleged that Chinese credits generate loan traps, making recipient countries dependent on further assistance from this “rogue” donor (Naim, 2007). According to critics, this not only increases China's global political influence but also benefits China economically by strengthening trade relations, in particular by gaining access to oil and other primary commodities (Tull, 2006). Others argue that China's aid delivery amounts to a “silent revolution”. China does not overtly challenge the existing aid landscape, it just offers alternatives to aid recipients, thereby introducing competitive pressures to the existing system. This weakens the bargaining position of the OECD and multilateral donors (Woods, 2008). While it is generally acknowledged that China respects recipients' choices regarding their development path, this principle has two exceptions. (1) Some development projects make specific provisions for the use of Chinese goods and services. (2) Countries that formally recognize Taiwan, thus violating the “One-China policy”, receive very little development assistance (Davies, 2007; Brautigam, 2011).

Although China's assistance, in particular in Africa, has increased considerably over the past two decades, it has been difficult to examine China's aid allocation behaviour using statistical analysis due to lack of data availability and transparency. Since China does not report ODA according to the OECD definition, many critics make assertions about official flows from China which include other flows beyond ODA, i.e. flows that are not primarily intended for development. In comparisons between the DAC donors and China, these critics are not comparing like with like, or as Chapter 6 Brautigam (2011) suggests, they are comparing “apples and lychees”.

Thanks to Strange et al. (2017)'s impressive efforts at collating data on Chinese official flows, it is now possible to make like with like comparisons of Chinese and DAC aid allocation models. Strange et al., 2017 constructed the AidData's Chinese Official Finance to Africa dataset, where official flows are broken down into ODA-like flows and other official flows (OOF). The latter includes loans and export credits that have little or no grant element and flows that are not primarily intended for development purposes. While OOF from China to Africa for the period 2000–2012 amounted to 71 billion USD, only 24 billion USD were ODA (Dreher et al., 2018). Using these aid data, Dreher et al. (2018) examine China's aid allocation and find that ODA allocation is

mainly determined by political considerations while economic variables determine OOFs.<sup>3</sup>

Geocoding of the AidData database has also made it possible to study aid allocation and impact at the subnational level (Dreher et al., 2019; Gehring & Wong, 2019). This emerging literature on the local impact of Chinese development projects suggests that they may fuel local corruption and protests (Isaksson & Kotsadam, 2018; Iacoella, Martorano, Metzger, & Sanfilippo, 2021) and discourage trade union involvement (Isaksson & Kotsadam, 2018), while the effect on support for incumbent politicians is mixed (Knutsen & Kotsadam, 2020; Dreher et al., 2021; Anaxagorou & Efthyvoulou, 2020).

### 3. Data and empirical method

Building on Dreher et al.'s (2018) pioneering work, our objective is to assess whether China's aid allocation pattern differs from the aid allocation of major OECD countries (France, Germany, Japan, UK, and USA). We are particularly interested in assessing the relative importance of recipients' needs, merit, and proximity, and of donors' strategic motives in the allocation of ODA. In order to explore this question, we built a dataset that includes six donor countries, 53 African recipient countries, and 13 years of ODA data (from 2000 to 2012), for a total of 3,445 observations. We start from the same regression model as Dreher et al. (2018) but group the explanatory variables slightly differently:

$$ODA_{i,j,t} = \beta_0 + \beta_1 needs_{j,t-1} + \beta_2 merit_{j,t-1} + \beta_3 self - interest_{i,j,t-1} + \beta_4 proximity_{i,j,t-1} + \tau_t + \gamma_i + \epsilon_{i,j,t} \quad (1)$$

#### 3.1. ODA commitment data

The dependent variable,  $ODA_{ijt}$ , measures donor  $i$ 's official development assistance to recipient  $j$  at time  $t$ . For DAC members, the OECD database provides information on ODA. As China does not provide official statistics, we used the Chinese ODA data as in Dreher et al. (2018), who base their information on Strange et al. (2017). Essentially this data effort results in information on ODA-like commitments from China to African recipients as reported in publicly available sources. In order to make relevant comparisons across donors, we use OECD data on commitments in 2009 constant USD.

Fig. 1 shows the evolution of aid commitments to Africa over time for each donor. For China, the total amount of aid commitments to Africa has been increasing from 0.4 billion USD in 2000 to 6.7 billion USD in 2012. While China was the least important donor in 2000, among the six donors considered in our analysis, China was ranked second in 2012, just after the USA. Descriptive statistics are shown in Table 1.

Two characteristics of ODA commitment data have methodological implications. First, 11 percent of ODA data are zero-valued observations.<sup>4</sup> Thus, not all donors commit ODA to all recipients every year. According to our data, China committed aid to 54 percent of recipient-year pairs. Percentages are much higher for the five OECD countries we consider, ranging between 85 percent for the UK and 100 percent for France. Second, ODA data are skewed to the right, as a few countries received large amounts of aid following exceptional events. For example, in 2005 and 2006, ODA commitments from our five DAC donors to Nigeria totaled 4 billion USD and

<sup>3</sup> Research on OOF from DAC donors is rare, one of the exceptions is White (2004). His analysis suggests that OOF from DAC donors to recipients in Sub-Saharan African is very small, only 0.8 percent of total official flows are OOFs. On the other hand, export credits are a key tool of China's development strategy; their impact is examined by Hopewell, 2021.

<sup>4</sup> For UK aid commitments, five observations are negative; we set these to zero.

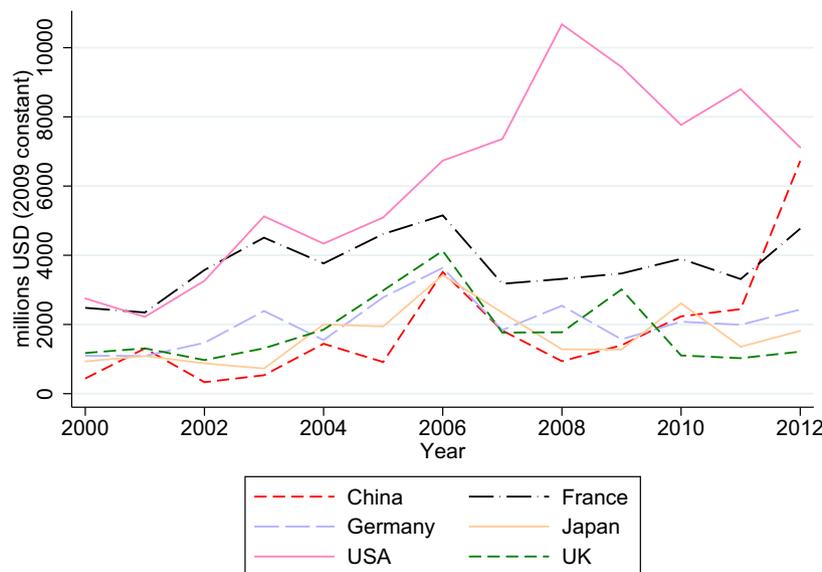


Fig. 1. Total aid commitments to Africa per donor (in million USD, constant 2009).

9 billion USD respectively, which is extraordinarily high compared to the 220 million USD average ODA that these five donors committed yearly to Nigeria between 2000 and 2004. These large amounts are explained by large debt relief operations agreed by the Paris Club. In 2003, the five DAC donors committed nearly 4 billion USD to the Democratic Republic of Congo following the end of the Second Congo War. In the main analysis, we use the same strategy as Dreher et al. (2018) to deal with missing observations and reduce the weight given to extreme values. We treat missing values as zeros and we consider the natural logarithm of ODA, assuming ODA is equal to one when the level of ODA is zero.

### 3.2. Explanatory variables

We proceeded in three steps to select relevant explanatory variables. First, we estimated regressions with the exact same set of explanatory variables that Dreher et al. (2018) used to study the predictors of Chinese aid. In a second step, we assessed whether regression results are robust to considering supplementary explanatory variables which capture the historical links between some DAC countries and Africa (e.g. colonial links) and the specific priorities of some DAC donors (e.g. respect for human rights, health). Finally, for each donor, we estimated a regression model that combines the explanatory variables selected by Dreher et al. (2018) and the variables that were identified as statistically significant and important in the second step.

Explanatory variables are described in Table 1. We group explanatory variables into four categories:<sup>5</sup>

The first category includes variables that proxy for recipient needs. Three variables are taken from Dreher et al. (2018): GDP per capita (World Bank, in log), population size (World Bank data, in log), and the total number of people affected by natural disasters in the recipient country (Guha-Sapir & Below, 2017). We also proxy for the burden of disease in recipient countries using a measure of Disability Adjusted Life Years (DALYs) produced by the IHME (2018).

The second category includes variables that proxy for recipient merit and donors' expectations that aid will be put into good use. Three variables are borrowed from Dreher et al. (2018). We proxy for recipients' institutional quality using the polity2 variable constructed by Marshall, Gurr, and Jaggers (2013). This variable ranges

from  $-10$  (total autocracy) to  $10$  (total democracy). We proxy for governance quality using the control of Corruption index from the Worldwide Governance Indicators project (Kauffmann & Kraay, 2004). This variable captures "perceptions of the extent to which public power is exercised for private gain" and is expressed in units of a standard normal distribution (i.e. with a mean of zero and a standard deviation of one). Higher values represent lower corruption. Since part of ODA flows are provided as loans, we proxy for recipient countries' creditworthiness using debt-to-GDP ratios (Abbas, Belhocine, ElGanainy, & Horton, 2010).<sup>6</sup> To these three variables we add a measure of political terror, defined as a violation of civil and human rights by agents of the state (Wood & Gibney, 2010). This measure ranges from one to five, where higher values indicate higher levels of political terror, such as imprisonment for nonviolent political activity, torture and extrajudicial killings. Three different sources are used to construct three separate proxies of political terror and we use the one based on the USA Department of State reports because it summarizes the USA judgement on the country's human rights situation (Gibney et al., 2020).

The third category consists of variables capturing geographical and socio-historical proximity between donors and recipient countries. We use one variable from Dreher et al. (2018): a dummy variable which is equal to one if English is one of the official languages of the recipient country and equal to zero otherwise (Mayer & Zignago, 2011). As this dummy variable is closely related to historical processes, we also study a "former colony" dummy variable taking the value one if the recipient is a former colony of the donor and zero otherwise. We also consider a measure of geographical distance between donor and recipient countries.

The final category of explanatory variables captures donors' strategic interest to give aid, either to reward past behaviours or to influence future actions of recipient countries. We borrow seven variables from Dreher et al. (2018). The first variable captures whether the voting patterns of the donor and recipient countries at the United Nations General Assembly (UNGA) are closely aligned. UNGA voting similarity takes a value between zero and one, where one (zero) indicates that donor and recipient displayed the same (different) voting behaviour, while abstention and

<sup>5</sup> Hoeffler and Outram (2011) provide a critical discussion of grouping explanatory variables into these commonly used categories.

<sup>6</sup> As a robustness check, we also consider external debt-to-GDP ratios, as measured by the World Bank (World Bank, 2020). We consider different lags of the variable to account for the fact that it can take several years for loans to be negotiated and disbursed.

**Table 1**  
Descriptive statistics.

|  | Descriptive statistics |                    |         |         |     |
|--|------------------------|--------------------|---------|---------|-----|
|  | Mean                   | Standard deviation | Minimum | Maximum | N   |
| <b>Outcomes:</b>                                     |                        |                    |         |         |     |
| ODA from China (log, constant 2009 USD)              | 8.81                   | 8.24               | 0.00    | 21.11   | 644 |
| ODA from France (log, constant 2009 USD)             | 16.83                  | 2.04               | 9.90    | 21.46   | 644 |
| ODA from Germany (log, constant 2009 USD)            | 16.08                  | 2.83               | 0.00    | 21.43   | 644 |
| ODA from Japan (log, constant 2009 USD)              | 15.77                  | 2.80               | 0.00    | 21.52   | 644 |
| ODA from the United States (log)                     | 17.04                  | 3.06               | 0.00    | 21.38   | 644 |
| ODA from the United Kingdom (log, constant 2009 USD) | 13.30                  | 5.99               | 0.00    | 21.77   | 644 |
| ODA from China (dummy)                               | 0.54                   | 0.50               | 0.00    | 1.00    | 644 |
| ODA from France (dummy)                              | 1.00                   | 0.00               | 1.00    | 1.00    | 644 |
| ODA from Germany (dummy)                             | 0.99                   | 0.12               | 0.00    | 1.00    | 644 |
| ODA from Japan (dummy)                               | 0.99                   | 0.12               | 0.00    | 1.00    | 644 |
| ODA from the United States (dummy)                   | 0.99                   | 0.12               | 0.00    | 1.00    | 644 |
| ODA from the United Kingdom (dummy)                  | 0.85                   | 0.35               | 0.00    | 1.00    | 644 |
| <b>Needs:</b>  |                        |                    |         |         |     |
| GDP per capita (log, constant 2009 USD)              | 6.77                   | 1.10               | 4.81    | 10.07   | 644 |
| Population (log, number of people)                   | 15.91                  | 1.39               | 12.97   | 18.91   | 644 |
| Affected from disasters (log, number of people)      | 7.00                   | 5.20               | 0.00    | 16.52   | 644 |
| *DALYs all causes (log, per 100,000 population)      | 11.09                  | 0.36               | 10.14   | 11.78   | 644 |
| <b>Merit:</b>  |                        |                    |         |         |     |
| Polity   | 1.11                   | 5.29               | -9.00   | 10.00   | 644 |
| Control of corruption                                | -0.60                  | 0.56               | -1.73   | 1.25    | 644 |
| *Political terror                                    | 3.02                   | 0.93               | 1.00    | 5.00    | 644 |
| Debt/GDP   | 74.71                  | 66.54              | 0.00    | 523.38  | 644 |
| *External debt/GDP                                   | 62.87                  | 58.53              | 3.02    | 485.67  | 593 |
| <b>Proximity:</b>                                    |                        |                    |         |         |     |
| English language                                     | 0.42                   | 0.49               | 0.00    | 1.00    | 644 |
| *Former French colony                                | 0.40                   | 0.49               | 0.00    | 1.00    | 644 |
| *Defense Pact with France                            | 0.10                   | 0.30               | 0.00    | 1.00    | 644 |
| *Former British colony                               | 0.38                   | 0.49               | 0.00    | 1.00    | 644 |
| <b>Self-interest:</b>                                |                        |                    |         |         |     |
| UN voting with China                                 | 0.84                   | 0.11               | 0.50    | 0.96    | 644 |
| UN voting with France                                | 0.60                   | 0.05               | 0.47    | 0.74    | 644 |
| UN voting with Germany                               | 0.65                   | 0.06               | 0.47    | 0.78    | 644 |
| UN voting with Japan                                 | 0.69                   | 0.07               | 0.47    | 0.82    | 644 |
| UN voting with USA                                   | 0.26                   | 0.09               | 0.11    | 0.51    | 644 |
| UN voting with UK                                    | 0.58                   | 0.04               | 0.45    | 0.71    | 644 |
| UNSC member  | 0.06                   | 0.24               | 0.00    | 1.00    | 644 |
| Oil dummy  | 0.34                   | 0.47               | 0.00    | 1.00    | 644 |
| *Oil rents (% GDP)                                   | 5.68                   | 13.04              | 0.00    | 66.71   | 638 |
| *Natural resource rents (% GDP)                      | 12.50                  | 13.09              | 0.00    | 67.92   | 638 |
| Trade with China (log, constant 2009 USD)            | 19.08                  | 2.14               | 12.62   | 24.51   | 644 |
| Trade with France (log, constant 2009 USD)           | 12.16                  | 2.00               | 6.13    | 16.54   | 644 |
| Trade with Germany(log, constant 2009 USD)           | 11.65                  | 1.92               | 6.77    | 16.79   | 644 |
| Trade with Japan(log, constant 2009 USD)             | 10.82                  | 2.03               | 5.57    | 16.43   | 644 |
| Trade with USA (log, constant 2009 USD)              | 12.22                  | 2.11               | 5.56    | 17.59   | 643 |
| Trade with UK (log, constant 2009 USD)               | 11.38                  | 2.11               | 5.77    | 16.83   | 644 |
| Taiwan recognition                                   | 0.10                   | 0.30               | 0.00    | 1.00    | 644 |
| *Right-wing government                               | 0.09                   | 0.29               | 0.00    | 1.00    | 644 |

absence are scored as 0.5.<sup>7</sup> The second variable is a dummy equal to one for recipient countries that are members of the UN Security Council (UNSC).<sup>8</sup> The third variable is a dummy equal to one for recipient countries that were oil producers in 1999. Fourth, we proxy for trade interest using the value of trade flows between donor and recipient economies (UN Comtrade data, in log). Fifth, we consider a dummy equal to one for recipient countries that formally recognize the government of Taiwan, and thereby explicitly or implicitly oppose the “One-China policy”. Sixth, we follow Dreher, Nunnenkamp, Öhler, and Weisser (2012, 2018) and control for strategic competition among donors by using the residuals of an OLS regression of logged ODA commitments from other donors<sup>9</sup> (in constant 2009 USAs) on all of the other explanatory variables.

Finally, we consider a dummy variable identifying right-wing, conservative, or Christian democratic governments in recipient countries (Beck, Clarke, Groff, Keefer, & Walsh, 2001).<sup>10</sup> As a robustness check, we study a dummy variable identifying recipient countries having a defense or consultation pact with France (Leeds, Ritter, Mitchell, & Long, 2002).<sup>11</sup> Because the “oil dummy” is quite “crude”, we also consider time-varying measures of “oil rents” and “natural

<sup>10</sup> This variable is introduced in the Appendix of Dreher et al. (2018).

<sup>11</sup> Military alliance covers two categories, defense and consultation pacts. Defense pacts are coded when the treaty partners are obligated to provide active military support to an ally in the event of an attack on the ally's sovereignty. Consultation pacts commit allies to develop coordinated actions and communication strategies during crises. However, they do not commit allies to active military support. Data on Defense and Consultation Pacts are provided by the ATOP database on alliances and treaty obligations (Leeds et al., 2002). We only examined military alliances with France as, for the period 2000–2012, neither the UK, Germany, nor Japan had any military alliance with any African State and the USA only had a consultation pact with Liberia. For France, we tested two dichotomous variables indicating whether an African country was part of a Defense or a Consultation Pact in a given year.

<sup>7</sup> Kilby (2009) describes in more detail how the UN voting variable is generated.

<sup>8</sup> In addition to the five permanent UNSC members (China, France, Russia, UK, USA) the General Assembly elects ten non-permanent members for two-year terms, with five replaced each year.

<sup>9</sup> For each donor, the dependent variable is constructed as (ODA from DAC countries + ODA from China – ODA from the donor considered).

resource rents". Both variables are taken from the World Bank and expressed as a percentage of GDP.<sup>12</sup>

### 3.3. Fixed effects

Our main specification includes time fixed effects but excludes recipient country fixed effects. A lot of the interesting variation we seek to explain is indeed taking place between countries: simple regressions with recipient country fixed effects show that between-country variation represents between 35 percent (for China) to 83 percent (for France) of the total variation in ODA. Including recipient country fixed effects would therefore discard a substantial fraction of potentially interesting variation in ODA. Furthermore, many of the explanatory factors we hypothesize as important are either time invariant or do not vary much over time. In particular, this is the case for needs, merit, and proximity factors, which change slowly over time. For these variables, the inclusion of recipient country fixed effects creates an issue of multicollinearity.<sup>13</sup>

### 3.4. Lagged versus contemporary values

Lagging variables can have two purposes: (1) to reflect the fact that the effect of changes in explanatory variables may take time to materialize, and (2) to mitigate the risk of reverse causality.

An important methodological question is whether changes in explanatory variables take time to affect ODA. In practical terms, this raises the question of whether we should lag explanatory variables and if yes, by how many years. Answers to these questions are likely to differ from variable to variable. For example, disasters or voting patterns at the UN General Assembly may generate immediate reactions from donor countries, while changes in policy or trade may affect ODA more slowly, not least because changes are usually small, progressive, and difficult to observe.

Lagging explanatory variables is also frequently used to mitigate the risk of reverse causality. Reverse causality is possible in our research as - in theory - aid can directly affect governance, debt levels, and GDP per capita (for bad or for good). The practice of lagging variables to address reverse causality has recently been criticised (Reed, 2015; Bellemare, Masaki, & Pepinsky, 2017; Leszczensky & Wolbring, 2019).

In our benchmark analysis, we follow Dreher et al. (2018) and lag explanatory variables by one year. We however recognize that this choice is arbitrary and unlikely to fully mitigate reverse causality issues. Given the absence of credible solutions to the reverse causality issue, our analysis only aims at identifying the important predictors of ODA rather than the causal factors of ODA.

### 3.5. Measuring importance

We assess the predictive importance of explanatory variables by decomposing the variance of the dependent variable - ODA commitments (in log) - into contributions associated with each variable (Sterck, 2019b). We briefly describe the intuition of the decomposition method using a general regression model  $y = \beta_0 + \sum_{i=1}^n \beta_i x_i + \epsilon$ . The variance of  $y$  is given by:

$$Var(y) = \sum_{i=1}^n Var(\beta_i x_i) + 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^n Cov(\beta_i x_i, \beta_j x_j) + Var(\epsilon). \quad (2)$$

<sup>12</sup> Oil rents are the difference between the value of crude oil production at regional prices and total costs of production. Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. See Lange, Wodon, and Carey (2018) for more details.

<sup>13</sup> Variables that are not changing over time would be perfectly collinear with fixed effects and the constant.

This equation shows that the variation in  $y$  that can be linked to a variable  $x_i$  can come from two sources: (1) the variation generated by  $x_i$  independently of other variables, as captured by the variance terms  $Var(\beta_i x_i)$  and (2) the variation co-generated through the covariance of  $x_i$  with other regressors - as captured by the covariance terms  $Cov(\beta_i x_i, \beta_j x_j)$ .

Based on this decomposition of  $Var(y)$ , Sterck (2019b) explores two approaches to assess the importance of explanatory variables following a regression of  $y$  on the  $x_i$ s.<sup>14</sup>

The first approach, labelled *ceteris paribus*, focuses on the variation generated independently by explanatory variables, holding other variables constant. Consequently, the *ceteris paribus* approach focuses on variance terms and disregards covariance terms (the covariance between a variable and a constant is zero). The *ceteris paribus* variation generated by a variable  $x_i$  is therefore equal to  $Var(\beta_i x_i)$ . For ease of interpretation, this quantity can be expressed in percentage of  $Var(y)$ . The contribution of a variable  $x_i$  is denoted  $b_i^{*2}$  and given by:

$$b_i^{*2} = Var(\beta_i x_i) / Var(y). \quad (3)$$

Interestingly,  $b_i^{*2}$  is the square of the standardized beta coefficient of  $x_i$ . Standardized betas are widely used in economics and political science to assess the importance of explanatory variables, as standardized betas allow an interpretation in terms of standardized effects (e.g. a one standard deviation in  $x_i$  is, on average, associated with an increase of  $b_i^*$  standard deviations in  $y$ , *ceteris paribus*). The decomposition of  $Var(y)$  shows that standardized betas - or their square - focus on *ceteris paribus* variation and, therefore, they do not offer a complete decomposition of  $Var(y)$  because they disregard covariance terms.

The second approach, labelled "non-*ceteris paribus*", considers both variance and covariance terms. Sterck (2019b) shows that splitting the covariance terms  $\frac{Cov(\beta_i x_i, \beta_j x_j)}{Var(y)}$  equally between  $x_i$  and  $x_j$  yields a measure which can be interpreted as the elasticity of  $Var(y)$  with respect to  $Var(\beta_i x_i)$ :

$$E_i = \frac{Var(\beta_i x_i) + \sum_{j \neq i} Cov(\beta_i x_i, \beta_j x_j)}{Var(y)}. \quad (4)$$

The sum of the elasticities  $E_i$  is equal to the population- $R^2$ . Indeed, the non-*ceteris paribus* approach fully decomposes the variance of  $y$  into contributions associated with explanatory variables and the error term.<sup>15</sup>

Following Slutsky's theorem, the measures  $b_i^{*2}$  and  $E_i$  can be consistently estimated as the empirical analogs of the theoretical quantities defined in Eqs. 3 and 4 (Sterck, 2019b). This implies that if the regression coefficients are consistently estimated, then the importance measures can also be consistently estimated. This has implications on how to interpret the measures of importance. If a regression coefficient of a variable can be interpreted causally, then the statistics  $b_i^{*2}$  and  $E_i$  can be interpreted as measures of causal importance for that variable. If causality is uncertain, the statistics  $b_i^{*2}$  and  $E_i$  should be interpreted as measures of predictive importance. As omitted variable bias and reverse causality bias are possible in our study, we focus on predictive importance.

The two approaches are complementary and their results should be interpreted jointly. They bring different information, especially when their outcomes differ markedly. While the *ceteris*

<sup>14</sup> See Sterck (2019a) and Grömping (2015) for critiques of other existing methods.

<sup>15</sup> The elasticity  $E_i$  is equal to the product measure  $b_i^* \rho_{iy}$ , where  $\rho_{iy}$  is the simple correlation between  $x_i$  and  $y$ . This measure was first proposed by Hoffman (1960) and its theoretical properties were studied by Pratt (1987), Shorrocks (1982), and Thomas and Hughes (1998).

paribus approach focuses on the independent effect of an explanatory variable on the dependent variable, the non-ceteris paribus explicitly considers whether this effect is reinforcing or attenuating the effects of other correlated variables. If the non-ceteris paribus importance of the variable is larger than its ceteris paribus importance, it suggests that the effect of that variable is going in the same direction as the effects of other important variables. On the contrary, if the non-ceteris paribus importance of a variable is lower than its ceteris paribus importance, it suggests that the effect of that variable is going against the effects of other regressors included in the estimated model. In what follows, we apply and compare the two measures of importance.

#### 4. Results

We conducted the empirical analysis in three steps. First, we used the exact same specification as Dreher et al. (2018)'s analysis of Chinese aid. Results are presented in Table 2a for China, France, and Germany, and in Table 2b for Japan, the USA, and the UK. Then, we assessed the robustness of results to the addition of supplementary explanatory variables accounting for the historical links of DAC countries in Africa (e.g. colonial links) and the specific priorities of some DAC donors (e.g. respect for human rights, health). The results of these robustness checks are presented in the Appendix. For some countries, we actually found that the additional variables are important predictors of aid commitments. Therefore, for each country, we estimated a new specification combining the model of Dreher et al. (2018) and the variables identified as statistically significant and important in the robustness checks.

These extended specifications are our preferred models because they account for the history and preferences of each donor. Results are presented in Table 3a for China, France, and Germany, and in Table 3b for Japan, the USA, and the UK. We focus on these extended specifications in our description of results below. We first discuss the results obtained for each donor country separately before comparing the six aid allocation models.

##### 4.1. China

Chinese aid commitments to Africa have been sharply increasing during the study period, from 0.4 billion USD in 2000 to 6.7 billion USD in 2012 (Fig. 1). The number of recipients has also increased, from 15 in 2000 to 30 in 2012 (the maximum of 37 was reached in 2007).

For China, none of the variables considered in the robustness checks appear to be important. We therefore focus on the same specification as Dreher et al. (2018).

The lagged Taiwan recognition dummy is by far the strongest predictor of Chinese aid commitments. This result is not surprising and has already been characterised in previous work on the determinants of Chinese aid (Davies, 2007; Brautigam, 2011; Dreher et al., 2018). The regression coefficient is statistically significant and negative, which confirms that China commits significantly less ODA to countries recognizing Taiwan. The lagged dummy variable alone explains more than 10 percent of the total variation in Chinese ODA commitments. Interestingly, the importance of the Taiwan dummy jumps to 13 percent when the Taiwan dummy is not lagged (Table A.8 in Appendix C). In other words, the cutting of diplomatic ties with Taiwan is associated with an immediate surge in Chinese ODA commitments. To grasp the importance of this factor, it is worth noting that 13 percent is about half of the  $R^2$  of the regression, meaning that this factor alone predicts about half of the explained variation in Chinese aid commitments. Eight African countries had recognised Taiwan for one or more years during the study period (2000–2012). Four of these countries recognised Taiwan for the full study period and have never

received Chinese aid (Burkina Faso, Gambia, Sao Tome and Principe, and Eswatini). The other four countries have recognised Taiwan for some but not all years (Chad, Liberia, Malawi, and Senegal). As shown in Fig. A.1 in Appendix A, China never committed aid to these countries while they were recognizing Taiwan, highlighting that the link between Taiwan recognition and absence of Chinese aid commitments is automatic.

Other strategic considerations appear to be less important. Power dynamics at the UN do not seem to matter much. Aid commitments to recipients that voted in line with China are higher on average, but this factor is not statistically significant ( $p$ -value = 0.12) and its importance is low (0.8 percent). China commits less aid to members of the UN Security Council. While this factor is statistically significant, its importance is minor (0.8 percent).<sup>16</sup> In contrast to the assertions by many Chinese aid critics (e.g. Tull, 2006), oil producers do not receive significantly more Chinese ODA. The results are similar when we consider time-varying measures of oil rents or natural resources rents, rather than a dummy variable.<sup>17</sup> The variable trade with China is positively correlated with Chinese ODA. However, this variable explains only two percent of the total variation and its  $p$ -value is slightly larger than conventional thresholds of statistical significance ( $p$ -value = 0.12).

Recipient needs also contribute to the explanation of how Chinese ODA commitments are allocated. GDP per capita is negatively associated with Chinese aid, i.e. more aid is committed to poorer countries. The ceteris paribus importance of GDP per capita (six percent) is almost double of its non-ceteris paribus importance (three percent). The difference between the two measures is due to the fact that the variation generated by the variable GDP per capita is going against the variation generated by the variable trade with China. These two variables are positively correlated, but GDP per capita is negatively associated with aid while trade is positively associated with aid. As a result, the covariance term associated with these two variables is negative. Population size and the number of disaster victims do not explain variation in Chinese ODA commitments.

The three recipient-merit variables have high  $p$ -values and low predictive power, suggesting that the policy environment in recipient countries does not affect the allocation of Chinese aid.

The English language dummy is positively correlated with aid commitments. This factor explains about five percent of the total variation in Chinese ODA. This result is difficult to interpret because it has two likely explanations, which are not mutually exclusive (Dreher et al., 2018). First, it can be driven by the fact that the data collection effort by Strange et al. (2017) relies on mainly Chinese- and English-language sources. Thus, their data may under-represent China's development finance activities in states where English is not one of the official languages. Second, more assistance may be provided to English-speaking countries because English is the most widely-taught language in China (Wei & Su, 2012) and, as a result, communication between Chinese officials, aid workers, and locals may be easier in English-speaking countries. The positive correlation between Chinese ODA and the English dummy should therefore not be over-interpreted.

Since much of Chinese transfers consists of OOFs, we also examine the significance and importance of our model for Chinese OOFs in Table A.9 in the Appendix. This examination is considered in more detail by Dreher et al. (2018), here we only want to highlight key similarities and differences in the OOF and ODA allocation

<sup>16</sup> Only 10 countries are temporary members of the UNSC at any time and only a couple of them are in Africa. As a result, only five percent of the observations for the variable "UNSC member" are coded as one. The variance of the variable is therefore low, which – given Eqs. (3) – explains why its importance is relatively limited despite the fact that its regression coefficient is statistically significant.

<sup>17</sup> For further discussion see the sub-section "Robustness checks" and Tables A.4a–A.5b in the Appendix.

**Table 2a**  
Predictors of ODA – regression model of Dreher et al. (2018).

|                                  | Dependent variable: ODA (log) |         |       |                    |         |       |                   |         |       |
|----------------------------------|-------------------------------|---------|-------|--------------------|---------|-------|-------------------|---------|-------|
|                                  | China                         |         |       | France             |         |       | Germany           |         |       |
|                                  | $\beta_i$                     | $b_i^2$ | $E_i$ | $\beta_i$          | $b_i^2$ | $E_i$ | $\beta_i$         | $b_i^2$ | $E_i$ |
| (1)                              | (2)                           | (3)     | (4)   | (5)                | (6)     | (7)   | (8)               | (9)     |       |
| GDP per capita (log)             | −1.88**<br>(0.84)             | 6.30    | 3.19  | −0.73**<br>(0.28)  | 15.71   | −1.29 | −0.47<br>(0.31)   | 3.38    | 4.86  |
| Population (log)                 | −0.32<br>(0.51)               | 0.29    | −0.87 | −0.01<br>(0.18)    | 0.01    | −0.40 | 1.24***<br>(0.28) | 37.07   | 42.98 |
| Affected from disasters (log)    | 0.01<br>(0.07)                | 0.01    | 0.10  | 0.01<br>(0.02)     | 0.10    | 0.44  | 0.02<br>(0.02)    | 0.13    | 1.20  |
| Polity                           | 0.08<br>(0.10)                | 0.24    | 0.77  | 0.03<br>(0.02)     | 0.75    | 0.23  | −0.02<br>(0.04)   | 0.13    | −0.16 |
| Control of corruption            | −0.26<br>(0.84)               | 0.03    | 0.02  | 0.60**<br>(0.29)   | 2.64    | −1.19 | 1.25***<br>(0.44) | 6.04    | 1.61  |
| Debt/GDP                         | −0.00<br>(0.01)               | 0.10    | 0.05  | −0.00<br>(0.00)    | 0.53    | 0.64  | 0.00<br>(0.00)    | 0.53    | −0.08 |
| English language                 | 3.93***<br>(1.12)             | 5.53    | 5.24  | −1.31***<br>(0.40) | 9.99    | 15.02 | 0.07<br>(0.39)    | 0.01    | 0.20  |
| UN voting with donor             | 4.96<br>(3.16)                | 0.42    | 0.80  | −1.60<br>(2.24)    | 0.14    | −0.38 | 1.39<br>(2.25)    | 0.09    | 0.48  |
| UNSC member                      | −3.00***<br>(1.07)            | 0.74    | 0.79  | −0.02<br>(0.19)    | 0.00    | −0.02 | 0.47**<br>(0.23)  | 0.15    | 0.25  |
| Oil dummy                        | −0.42<br>(1.73)               | 0.06    | 0.22  | 0.29<br>(0.45)     | 0.46    | 2.73  | −0.39<br>(0.65)   | 0.43    | −0.70 |
| Trade with donor (log)           | 0.60<br>(0.38)                | 2.44    | 2.04  | 0.69***<br>(0.10)  | 45.92   | 43.41 | 0.25**<br>(0.11)  | 2.90    | 7.82  |
| Taiwan recognition               | −8.84***<br>(1.12)            | 10.60   | 10.38 | −0.74*<br>(0.40)   | 1.21    | 2.11  | 0.15<br>(0.39)    | 0.02    | −0.08 |
| Predicted ODA other donors (log) | 0.46**<br>(0.23)              | 0.93    | 0.93  | −0.02<br>(0.02)    | 0.17    | 0.17  | 0.03<br>(0.05)    | 0.07    | 0.07  |
| Observations                     | 644                           |         |       | 644                |         |       | 644               |         |       |
| $R^2$                            | 0.267                         |         |       | 0.625              |         |       | 0.589             |         |       |

**Table 2b**  
Predictors of ODA – regression model of Dreher et al. (2018) (continued).

|                                  | Dependent variable: ODA (log) |         |       |                   |         |       |                    |         |       |
|----------------------------------|-------------------------------|---------|-------|-------------------|---------|-------|--------------------|---------|-------|
|                                  | Japan                         |         |       | USA               |         |       | United Kingdom     |         |       |
|                                  | $\beta_i$                     | $b_i^2$ | $E_i$ | $\beta_i$         | $b_i^2$ | $E_i$ | $\beta_i$          | $b_i^2$ | $E_i$ |
| (1)                              | (2)                           | (3)     | (4)   | (5)               | (6)     | (7)   | (8)                | (9)     |       |
| GDP per capita (log)             | −0.65*<br>(0.38)              | 6.59    | 2.14  | −0.83**<br>(0.40) | 9.33    | 9.17  | −1.90***<br>(0.48) | 12.21   | 11.91 |
| Population (log)                 | 0.79**<br>(0.35)              | 15.26   | 19.52 | 0.89***<br>(0.28) | 17.14   | 24.49 | 1.54***<br>(0.38)  | 12.73   | 19.44 |
| Affected from disasters (log)    | 0.03<br>(0.02)                | 0.34    | 1.68  | 0.06**<br>(0.03)  | 0.95    | 3.99  | −0.03<br>(0.05)    | 0.08    | −0.76 |
| Polity                           | −0.02<br>(0.03)               | 0.12    | −0.39 | 0.02<br>(0.04)    | 0.15    | 0.56  | 0.04<br>(0.06)     | 0.13    | 0.35  |
| Control of corruption            | 1.41***<br>(0.40)             | 7.87    | 5.07  | 0.92*<br>(0.48)   | 2.91    | −0.13 | 0.80<br>(0.63)     | 0.55    | 0.16  |
| Debt/GDP                         | −0.01**<br>(0.00)             | 7.65    | 9.56  | 0.00*<br>(0.00)   | 0.79    | −0.24 | 0.01<br>(0.01)     | 1.05    | 0.74  |
| English language                 | −0.04<br>(0.32)               | 0.00    | −0.08 | 0.35<br>(0.35)    | 0.33    | 1.31  | 4.28***<br>(0.69)  | 12.40   | 16.86 |
| UN voting with donor             | 3.39*<br>(2.00)               | 0.80    | 2.17  | 0.56<br>(2.29)    | 0.03    | −0.19 | 0.52<br>(5.34)     | 0.00    | 0.02  |
| UNSC member                      | 0.25<br>(0.30)                | 0.04    | 0.11  | 0.07<br>(0.30)    | 0.00    | 0.01  | −0.23<br>(0.85)    | 0.01    | 0.02  |
| Oil dummy                        | 0.24<br>(0.43)                | 0.17    | 0.23  | −0.87<br>(0.62)   | 1.89    | 0.44  | 0.30<br>(0.78)     | 0.06    | −0.13 |
| Trade with donor (log)           | 0.02<br>(0.11)                | 0.03    | 0.44  | 0.43*<br>(0.22)   | 9.03    | 7.70  | 0.57**<br>(0.28)   | 4.05    | 5.10  |
| Taiwan recognition               | −0.03<br>(0.68)               | 0.00    | 0.02  | 0.14<br>(0.35)    | 0.02    | −0.05 | 1.12<br>(0.68)     | 0.32    | 0.25  |
| Predicted ODA other donors (log) | 0.06*<br>(0.03)               | 0.26    | 0.26  | 0.05<br>(0.07)    | 0.36    | 0.36  | 0.22*<br>(0.13)    | 0.62    | 0.62  |
| Observations                     | 644                           |         |       | 643               |         |       | 644                |         |       |
| $R^2$                            | 0.449                         |         |       | 0.533             |         |       | 0.561              |         |       |

**Table 3a**  
Predictors of ODA – with other important covariates.

|                                  | Dependent variable: ODA (log) |            |       |                   |            |       |                   |            |       |
|----------------------------------|-------------------------------|------------|-------|-------------------|------------|-------|-------------------|------------|-------|
|                                  | China                         |            |       | France            |            |       | Germany           |            |       |
|                                  | $\beta_i$                     | $b_{*i}^2$ | $E_i$ | $\beta_i$         | $b_{*i}^2$ | $E_i$ | $\beta_i$         | $b_{*i}^2$ | $E_i$ |
| (1)                              | (2)                           | (3)        | (4)   | (5)               | (6)        | (7)   | (8)               | (9)        |       |
| GDP per capita (log)             | -1.88**<br>(0.84)             | 6.30       | 3.19  | -0.19<br>(0.21)   | 1.04       | -0.33 | -0.49<br>(0.29)   | 3.65       | 5.05  |
| Population (log)                 | -0.32<br>(0.51)               | 0.29       | -0.87 | 0.36**<br>(0.16)  | 6.20       | 10.02 | 1.11***<br>(0.24) | 29.78      | 38.52 |
| Affected from disasters (log)    | 0.01<br>(0.07)                | 0.01       | 0.10  | 0.00<br>(0.02)    | 0.00       | 0.09  | 0.01<br>(0.02)    | 0.05       | 0.77  |
| DALYs all causes (log)           |                               |            |       |                   |            |       | 1.39*<br>(0.73)   | 3.17       | 1.87  |
| Polity                           | 0.08<br>(0.10)                | 0.24       | 0.77  | 0.05**<br>(0.02)  | 1.69       | 0.34  | -0.03<br>(0.04)   | 0.25       | -0.21 |
| Control of corruption            | -0.26<br>(0.84)               | 0.03       | 0.02  | 0.37<br>(0.25)    | 1.04       | -0.74 | 1.54***<br>(0.51) | 9.07       | 1.97  |
| Debt/GDP                         | -0.00<br>(0.01)               | 0.10       | 0.05  | 0.00<br>(0.00)    | 0.03       | -0.16 | 0.00<br>(0.00)    | 0.47       | -0.08 |
| English language                 | 3.93***<br>(1.12)             | 5.53       | 5.24  | -0.66*<br>(0.37)  | 2.55       | 7.60  | -0.30<br>(0.40)   | 0.26       | -0.87 |
| Former French colony             |                               |            |       | 1.69***<br>(0.40) | 16.54      | 24.47 |                   |            |       |
| UN voting with donor             | 4.96<br>(3.16)                | 0.42       | 0.80  | -1.52<br>(1.80)   | 0.13       | -0.36 | 1.28<br>(2.25)    | 0.08       | 0.44  |
| UNSC member                      | -3.00***<br>(1.07)            | 0.74       | 0.79  | -0.15<br>(0.15)   | 0.03       | -0.13 | 0.50**<br>(0.23)  | 0.17       | 0.27  |
| Oil dummy                        | -0.42<br>(1.73)               | 0.06       | 0.22  | 0.43<br>(0.42)    | 0.99       | 4.00  | -0.32<br>(0.62)   | 0.28       | -0.56 |
| Trade with donor (log)           | 0.60<br>(0.38)                | 2.44       | 2.04  | 0.33**<br>(0.14)  | 10.28      | 20.54 | 0.41***<br>(0.15) | 7.56       | 12.62 |
| Taiwan recognition               | -8.84***<br>(1.12)            | 10.60      | 10.38 | -0.67**<br>(0.31) | 0.98       | 1.90  | 0.01<br>(0.39)    | 0.00       | -0.01 |
| Predicted ODA other donors (log) | 0.46**<br>(0.23)              | 0.93       | 0.93  | -0.00<br>(0.01)   | 0.00       | 0.00  | 0.03<br>(0.05)    | 0.05       | 0.05  |
| Observations                     | 644                           |            |       | 644               |            |       | 644               |            |       |
| $R^2$                            | 0.267                         |            |       | 0.683             |            |       | 0.603             |            |       |

models. GDP per capita is a statistically significant and somewhat important predictor of both ODA and OOF. The recognition of Taiwan is also statistically significant in both models. However, the importance of this variable is greatly reduced, from 10 to 11 percent in the ODA model to 2–3 percent in the OOF model. Furthermore, in contrast to the ODA model, the coefficients on the oil and trade variables are statistically significant in the OOF model,<sup>18</sup> suggesting not only that OOF is more commercially oriented but also that criticism of Chinese financial assistance may be more relevant for OOF than ODA. Other differences pertain to merit variables, and in particular the control of corruption and debt variables.<sup>19</sup> While the coefficients of these variables are insignificant and close to zero in the ODA model, they are negative and strongly significant in the OOF model. However, these variables are not very important (values between 1.3 and 3.4 percent). This supports the evidence that the more commercially oriented OOFs are partly determined by corruption and creditworthiness, but that these variables are not relevant for ODA commitments.

#### 4.2. France

Aid commitments from France to Africa have fluctuated between 2.3 and 5.2 billion USD over the study period (Fig. 1). France has been committing aid to all African countries.

For France, we find that the specification of Dreher et al. (2018) is insufficient because it does not account for the history of France

in Africa. The results of this specification, shown in Columns 4–6 of Table 2a, suggest that trade with France and – to a lesser extent – language are the most important predictors of aid commitments from France. Yet, these results are biased by the omission of variables identifying the colonial and military links between France and certain African countries. In Table A.11 in Appendix D, we show that the addition of a dummy variable identifying former French colonies greatly improve the fit. This variable explains a significant proportion of the variation in French aid commitments; part of this variation is wrongly attributed to the trade and language variables in the short specification of Table 2a. These results confirm the findings from previous research, agreeing that France tends to favour its former colonies (e.g. Alesina & Dollar, 2000). Despite France's long history of military involvement in its former colonies, we find that French Defense and Consultation Pacts with African countries do not significantly predict French ODA once French colonial links are controlled for (Table A.11 in Appendix D). We also find that France does not commit more aid to countries characterized by political terrorism (Table A.12 in Appendix D).

Given the results of these robustness checks, our preferred specification includes the dummy variable identifying former French colonies (Columns 4–6 of Table 3a). This turns out to be the most important predictor of French aid commitments: the former French colony dummy explains 24 percent of the total variation in French ODA. Language also seems to explain the allocation of French ODA. Aid commitments to English speaking countries are 48 percent lower, ceteris paribus. This variable – which is very much related to the former French colony dummy – explains about eight percent of the total variation in French ODA commitments.

<sup>18</sup> We note that the regression coefficients of the trade variable in the ODA and OOF models are not statistically different at conventional thresholds.

<sup>19</sup> The coefficient on the polity measure is insignificant in both models, consistent with China's stated approach of non-interference in domestic political affairs.

**Table 3b**  
Predictors of ODA – with other important covariates (continued).

|  | Dependent variable: ODA (log) |         |       |           |         |       |                |         |       |
|--|-------------------------------|---------|-------|-----------|---------|-------|----------------|---------|-------|
|  | Japan                         |         |       | USA       |         |       | United Kingdom |         |       |
|  | $\beta_i$                     | $b_i^2$ | $E_i$ | $\beta_i$ | $b_i^2$ | $E_i$ | $\beta_i$      | $b_i^2$ | $E_i$ |
| (1)                                      | (2)                           | (3)     | (4)   | (5)       | (6)     | (7)   | (8)            | (9)     |       |
| GDP per capita (log)                     | -0.65*                        | 6.59    | 2.14  | -0.62*    | 5.18    | 6.83  | -2.43***       | 19.94   | 15.22 |
|  | (0.38)                        |         |       | (0.33)    |         |       | (0.37)         |         |       |
| Population (log)                         | 0.79**                        | 15.26   | 19.52 | 0.98***   | 20.62   | 26.86 | 1.41***        | 10.65   | 17.78 |
|  | (0.35)                        |         |       | (0.27)    |         |       | (0.31)         |         |       |
| Affected from disasters (log)            | 0.03                          | 0.34    | 1.68  | 0.04*     | 0.55    | 3.03  | -0.07          | 0.34    | -1.53 |
|  | (0.02)                        |         |       | (0.02)    |         |       | (0.04)         |         |       |
| DALYs all causes (log)                   |                               |         |       | 2.26***   | 7.48    | 7.61  | 1.68*          | 1.04    | 2.96  |
|  |                               |         |       | (0.73)    |         |       | (0.94)         |         |       |
| Polity                                   | -0.02                         | 0.12    | -0.39 | -0.01     | 0.01    | -0.18 | -0.01          | 0.00    | -0.04 |
|  | (0.03)                        |         |       | (0.03)    |         |       | (0.06)         |         |       |
| Control of corruption                    | 1.41***                       | 7.87    | 5.07  | 4.05***   | 9.67    | 1.80  | 5.41***        | 3.41    | 1.54  |
|  | (0.40)                        |         |       | (1.05)    |         |       | (1.12)         |         |       |
| Political terror                         |                               |         |       | -0.62**   |         |       | -0.89**        |         |       |
|  |                               |         |       | (0.29)    |         |       | (0.43)         |         |       |
| Interaction pol. terror x c. of corrupt. |                               |         |       | -0.96***  |         |       | -1.43***       |         |       |
|  |                               |         |       | (0.35)    |         |       | (0.35)         |         |       |
| Debt/GDP                                 | -0.01**                       | 7.65    | 9.56  | 0.01**    | 1.26    | -0.30 | 0.01*          | 1.00    | 0.72  |
|  | (0.00)                        |         |       | (0.00)    |         |       | (0.00)         |         |       |
| English language                         | -0.04                         | 0.00    | -0.08 | -0.17     | 0.07    | -0.62 | 2.28***        | 3.53    | 9.00  |
|  | (0.32)                        |         |       | (0.33)    |         |       | (0.68)         |         |       |
| Former British colony                    |                               |         |       |           |         |       | 1.57**         | 1.61    | 5.54  |
|  |                               |         |       |           |         |       | (0.63)         |         |       |
| Distance                                 |                               |         |       |           |         |       | 0.35*          | 1.43    | 3.02  |
|  |                               |         |       |           |         |       | (0.18)         |         |       |
| UN voting with donor                     | 3.39*                         | 0.80    | 2.17  | -1.29     | 0.15    | 0.44  | -0.14          | 0.00    | -0.00 |
|  | (2.00)                        |         |       | (2.05)    |         |       | (5.09)         |         |       |
| UNSC member                              | 0.25                          | 0.04    | 0.11  | 0.28      | 0.05    | 0.03  | 0.21           | 0.01    | -0.01 |
|  | (0.30)                        |         |       | (0.29)    |         |       | (0.81)         |         |       |
| Oil dummy                                | 0.24                          | 0.17    | 0.23  | -0.66     | 1.10    | 0.33  | 1.30**         | 1.06    | -0.55 |
|  | (0.43)                        |         |       | (0.57)    |         |       | (0.62)         |         |       |
| Trade with donor (log)                   | 0.02                          | 0.03    | 0.44  | 0.38**    | 7.20    | 6.88  | 0.72***        | 6.50    | 6.46  |
|  | (0.11)                        |         |       | (0.18)    |         |       | (0.24)         |         |       |
| Taiwan recognition                       | -0.03                         | 0.00    | 0.02  | -0.03     | 0.00    | 0.01  | 1.24**         | 0.39    | 0.28  |
|  | (0.68)                        |         |       | (0.37)    |         |       | (0.56)         |         |       |
| Right-wing government                    |                               |         |       |           |         |       | -2.20***       | 1.13    | -1.49 |
|  |                               |         |       |           |         |       | (0.64)         |         |       |
| Predicted ODA other donors (log)         | 0.06*                         | 0.26    | 0.26  | 0.07      | 0.57    | 0.57  | 0.15           | 0.28    | 0.28  |
|  | (0.03)                        |         |       | (0.05)    |         |       | (0.10)         |         |       |
| Observations                             | 644                           |         |       | 643       |         |       | 644            |         |       |
| R <sup>2</sup>                           | 0.449                         |         |       | 0.601     |         |       | 0.610          |         |       |

Another important predictor of French aid commitments is trade, which suggests that strategic considerations also seem to play an important role. The magnitude of trade flows with France is the second most important predictor of French ODA, predicting about 21 percent of the total variation in French ODA commitments. This is large: about one-third of the  $R^2$ . Other strategic considerations do not appear to matter.

The former colony and English dummy variables and the trade variable are highly correlated and their effects are reinforcing each other. France has higher volumes of trade with its former colonies, which rarely have English as one of their official languages. Trade and being a former colony are positively correlated with French ODA, while English language is negatively correlated with French ODA. This explains why the non-ceteris paribus importance of these variables is much higher than the ceteris paribus importance.

Only one variable in the need category is statistically significant: population size. Larger countries receive more aid from France. The ceteris paribus importance of this variable is much more important (ten percent) compared to its non-ceteris paribus importance (six percent) because the effect of trade and population size are reinforcing each other. Both variables are positively correlated – i.e. France trades more with more populous countries – and both variables are positively correlated with aid.

As a result, the covariance term associated with these two variables is positive.

Like China, France does not appear to give much weight to recipient merit. Although the coefficient on the polity variable is positive and statistically significant, suggesting that France rewards recipients institutional quality, but this variable only explains a very small proportion of total variation in French ODA (0.3 percent). Other merit variables are not statistically significant and their importance is low.

#### 4.3. Germany

Aid commitments from Germany to Africa increased sharply from 1.1 billion USD in 2000 to 3.6 billion USD in 2006 (Fig. 1). However, since 2006, the amounts of aid committed by Germany have been decreasing or stagnating, reaching 2.4 billion USD in 2012. Germany is committing aid to nearly all African countries.

For Germany, we add a measure of the burden of diseases in recipients countries – the DALYs – to the original specification of Dreher et al. (2018) to account for Germany's expanding investments in global health (Kickbusch et al., 2017). This variable was identified as statistically significant and relatively important in robustness checks (Table A.1a in Appendix B).

The results of our preferred specification show that Germany puts much more emphasis on needs than France and China when allocating aid in Africa (Table 3a). African countries with a larger population receive substantially more aid commitments from Germany. The population elasticity of German ODA is close to one, which means that German aid commitments are approximately proportional to population size in recipient countries. Population size alone explains 39 percent of the total variation in German ODA, which is about two-thirds of the  $R^2$ . Germany also commits more aid to countries with low GDP per capita (p-value = 0.1) and high burden of disease. The non-ceteris paribus importance of these two variables is five percent and two percent respectively. Together, the variables in the need category explain 46 percent of the total variation in German ODA, which is extremely high given that the  $R^2$  is 0.60.

Countries with higher control of corruption receive more aid from Germany. This effect, however, is going against the effect of the variables population size, GDP per capita and DALYs, which explains why the ceteris paribus importance of the control of corruption variable (nine percent) is much higher than its non-ceteris paribus importance (two percent).<sup>20</sup>

Previous studies on the significance of political interest variables, such as voting with Germany in the UNGA, come to different conclusions. While Nunnenkamp and Öhler (2011) and Dreher and Nunnenkamp (2015) find that Germany allocates more ODA to recipient countries with similar voting patterns, Hoeffler and Outram (2011) find no such evidence. We do not find UNGA voting to be a correlate of German aid. In contrast, we find that Germany gives more aid to members of the UN Security Council, but the importance of this latter variable is rather limited.

The other proxy for donor self-interest, trade, is positively associated with German aid, predicting about 12 percent of the total variation in German ODA.

Overall, while need considerations seem to dominate German aid allocation, merit (i.e. control of corruption) and self-interest (i.e. trade) also play important roles.

#### 4.4. Japan

Japanese aid commitments from Japan to Africa increased between 2000 and 2006, and stagnated afterwards (Fig. 1). In 2012, Japan committed 1.8 billion USD to African countries.

For Japan, we use the original specification of Dreher et al. (2018) as none of the variables studied in our robustness checks matter for Japan. Results are shown in Columns 1–3 of Table 3b.

As with Germany, Japan's aid allocation model focuses on recipient needs and merits. By far the most important factor is population size, which explains 20 percent of the total variation in aid. Japan also commits more aid to countries with low GDP per capita.<sup>21</sup> Taken

<sup>20</sup> Control of corruption is positively correlated with GDP per capita. Control of corruption is associated with higher levels of German aid, ceteris paribus, while GDP per capita is associated with lower levels of aid. As a result, the variations generated by control of corruption and GDP per capita are cancelling each other. Similarly, control of corruption is negatively correlated with population size and DALYs. However, Germany commits more aid to countries with large populations and higher DALYs. As a result, the variations generated by control of corruption on the one hand, and population size and DALYs on the other hand, are cancelling each other out.

<sup>21</sup> The ceteris paribus importance of GDP per capita (seven percent) is much larger than its non-ceteris paribus importance (two percent). Indeed, the variation generated by GDP per capita is conflicting with the variation generated by the control of corruption variable and the debt-to-GDP ratio. GDP per capita is positively correlated with control of corruption. GDP per capita is associated with lower levels of aid, while control of corruption is associated with higher levels of aid. As a result, the variations generated by GDP per capita and control of corruption are cancelling each other. Similarly, GDP per capita is negatively correlated with the debt-to-GDP ratio. Countries with high debt-to-GDP ratios receive less aid. As a result, the variations generated by GDP per capita and debt-to-GDP ratio are cancelling each other.

together, the need variables explain 23 percent of the total variation, which is slightly more than half of the variation explained by the regression model.

Merit also explains Japanese aid allocation. Japan commits more aid to countries that control corruption and have low levels of debt. The non-ceteris paribus importance of these variables is quite high, five and ten percent respectively.

Self-interest seems to play a minor role. While aid commitments are significantly higher to African countries voting in line with Japan, the importance of this factor is relatively low. Other self-interest variables are either not statistically significant or not important, or both.

We conclude that Japan's aid allocation model mostly depends on need and merit variables, without much consideration for self-interest and proximity.

#### 4.5. The United States of America

USA aid commitments to Africa increased from 2.8 billion USD to 10.7 billion USD between 2000 and 2008 and oscillated around 8 billion USD thereafter (Fig. 1). The USA committed aid to almost all African countries during the study period.

For the USA, we make two additions to the original specification of Dreher et al. (2018). First, we include a measure of the burden of diseases - the DALYs - to account for the USA's long-standing prioritization of global health, including through the President's Emergency Plan for AIDS Relief (PEPFAR) programme. Robustness checks confirm that USA aid commitments are significantly higher in countries with a high burden of disease (Table A.1b in Appendix B). Second, given the USA commitment to promote freedom, we include our measure of human rights violations.<sup>22</sup> The robustness tests presented in Table A.14 in Appendix E suggest that the effect of human rights violations is best captured when this variable is interacted with control of corruption. Our preferred specification includes the measures of DALYs and human rights violations as well as the interaction between human rights violations and control of corruption (Table 3b, Columns 4–6).

The commitment of USA ODA heavily depends on recipient needs. Population size is by far the most important factor, explaining 27 percent of the total variation in USA ODA. The USA also commits more aid to countries with low GDP per capita and high burden of disease as well as countries affected by disasters. The non-ceteris paribus importance of need variables is generally higher than their ceteris paribus importance, because the effects of these variables on the variance of ODA are mutually reinforcing.

Merit variables also matter. The USA prioritize countries with low levels of corruption and political terror. The ceteris paribus importance of these factors is high – ten percent – much higher than their non-ceteris paribus importance (two percent). This difference is explained by the fact that the variation explained by merit variables clashes with the variation explained by need variables. For example, control of corruption and GDP per capita are positively correlated. Control of corruption is positively associated with USA aid, while GDP per capita is negatively associated with USA aid. The variations explained by these two variables are therefore partly cancelling out. Similarly, control of corruption and DALYs are negatively correlated. But both variables are positively

<sup>22</sup> USAID (2021) defines their mission as follows: "Our Mission: On behalf of the American people, we promote and demonstrate democratic values abroad, and advance a free, peaceful, and prosperous world. In support of America's foreign policy, the U.S. Agency for International Development leads the U.S. Government's international development and disaster assistance through partnerships and investments that save lives, reduce poverty, strengthen democratic governance, and help people emerge from humanitarian crises and progress beyond assistance."

associated with USA aid. Consequently, the two variables are generating variations that cancel each other out.

Countries with high levels of debt receive more aid commitments from the USA, suggesting that this variable would be a better fit with the need category in the case of USA aid. The importance of this variable is however limited, suggesting that the mis-categorisation of this variable has little impact on our conclusions.

Finally, we also find evidence that trade with the USA is an important predictor of USA ODA. The variable is statistically significant and its importance is relatively high, at seven percent. This suggests that self-interest plays a secondary role in the allocation of USA aid.

#### 4.6. The United Kingdom

As with other OECD donors, UK aid commitments to Africa reached a maximum around 2006 (4.1 billion USD) and then stagnated or decreased, reaching 1.2 billion USD in 2012 (Fig. 1). For each year of the study period, the UK committed aid to about 85 percent of African countries.

For the UK, we add five extra explanatory variables to the original specification of Dreher et al. (2018), as the regression coefficients of these variables are statistically significant in robustness checks: (1) DALYs (Table A.1b in Appendix B), (2) a measure of political terror in recipient countries as well as its interaction with control of corruption (Table A.18 in Appendix F), (3) a dummy identifying former British colonies (Table A.17 in Appendix F), (4) a measure of the distance between the most populated cities of donor and recipient countries (Table A.2b in Appendix B), and (5) a dummy identifying right-wing, conservative, or Christian democratic governments in recipient countries (Table A.3b in Appendix B). Results of our preferred specification – which includes these variables – are shown in Columns 7–9 of Table 3b.

The commitment of UK aid seems to be mainly driven by needs and proximity. The UK commits significantly more ODA to poorer and larger countries, *ceteris paribus*. GDP per capita and population size respectively explain 15 percent and 18 percent of the total variation in UK ODA, that is, about one quarter of explained variation each (the  $R^2$  is 0.61). The UK also commits more aid to countries that have a high burden of disease. However, this factor is relatively less important, explaining about three percent of the total variation in UK ODA.

Another quarter of the variation in UK aid is explained by the UK's historical and linguistic proximity to recipient countries. The UK commits significantly more aid to former colonies and countries that have English as one of their official languages. The effects of these variables are mutually reinforcing, explaining why their non-*ceteris paribus* importance (5.5 and 9 percent respectively) is much higher than their *ceteris paribus* importance (1.6 and 3.5 percent respectively).<sup>23</sup>

Merit does not seem to play a major role in the allocation of UK ODA. The UK commits more aid to countries with low levels of corruption and political terror. The *ceteris paribus* importance of these factors is more than twice as large as their non-*ceteris paribus* importance (3.4 vs. 1.5 percent). As for the USA, the variation explained by merit variables clashes with the variation explained by need variables. As with the USA, the UK commits more aid to countries with higher debt-to-GDP ratios, suggesting that this variable would be better classified in the need category. However, the importance of the debt-to-GDP ratio, and of merit variables in general, is relatively limited.

<sup>23</sup> Results also suggest that recipient countries that are more distant to the UK receive more aid. The mechanism behind this relationship is unclear. Only three percent of the total variation in UK aid is explained by distance.

Four variables in the self-interest category are statistically significant: the measure of trade flows, the dummy identifying oil producers, the Taiwan recognition dummy, and the dummy identifying right-wing, conservative, or Christian democratic governments in recipient countries. Only the first variable in this list – trade – is relatively important, explaining 6.5 percent of the variation in UK ODA.

In conclusion, while UK ODA commitments appear to be driven by multiple factors, three factors stand out as particularly important: GDP per capita, population size, and historical or linguistic proximity.

#### 4.7. Cross-donor comparison

Three important findings emerge from this overview of the individual regression results.

First, although our benchmark regression model was originally specified for China by Dreher et al. (2018), it explains only 27 percent of the total variation in Chinese aid. Remarkably, the model of Dreher et al. (2018) does much better when applied to DAC countries, with  $R^2$  ranging between 45 percent for Japan and 63 percent for France. The percentages of explained variation are even higher with our preferred specifications: 68 percent for France and about 60 percent for Germany, the USA, and the UK (see Fig. 2). The lower  $R^2$  for China could be due to the higher proportion of zeros in Chinese ODA data and the lower amounts of aid committed by China in the early 2000s (Table 1 and Fig. 1).

Second, our analysis reveals the wide diversity of aid allocation models across donors. Not a single predictor is common to all aid allocation models. While DAC donors commit more aid to recipients with large populations, this is not the case for China. This variable is statistically significant and very important for Germany, Japan, the USA, and the UK. For these donors, regression coefficients are close to one, indicating that aid is approximately proportional to population size. By contrast, population size is neither statistically significant nor important for China and is of secondary importance for France.<sup>24</sup> Among the other need variables, the case of GDP per capita is particularly telling. While this variable is statistically significant and very important for the UK, it is statistically insignificant and not at all important for France.<sup>25</sup> For China, Germany, Japan, and the USA, the coefficients of GDP per capita are statistically significant or almost significant (the p-value is 0.1 for Germany) but the variable is of secondary importance. We also observe interesting differences across donors when it comes to merit variables: all donors but China attribute some importance to institutional quality or governance. The importance of language and past colonial links also differs across donors. Being a former French colony is the most important factor explaining ODA from France. Similarly, the UK gives more aid to English speaking countries and former British colonies. By contrast, these factors do not matter for other OECD countries.<sup>26</sup> We also note that, in contrast to China, all DAC donors commit more aid to larger trade partners.

Third, the weights given to each of the four categories of factor – needs, merit, proximity, self-interest – also sharply differ across donors. To facilitate the comparison of aid allocation models, we represent the importance of our four categories of predictors – needs, merit, self-interest, and proximity – using a bar chart in

<sup>24</sup> The differences in regression coefficients are statistically significant for China-Germany, China-Japan, China-USA, China-UK, France-Germany, France-USA, and France-UK.

<sup>25</sup> The difference between the regression coefficients of the UK and France is statistically significant at the 1% level.

<sup>26</sup> As explained above, the positive correlation between the English language dummy and Chinese ODA should not be over-interpreted as it could be partly driven by data issues (Dreher et al., 2018).

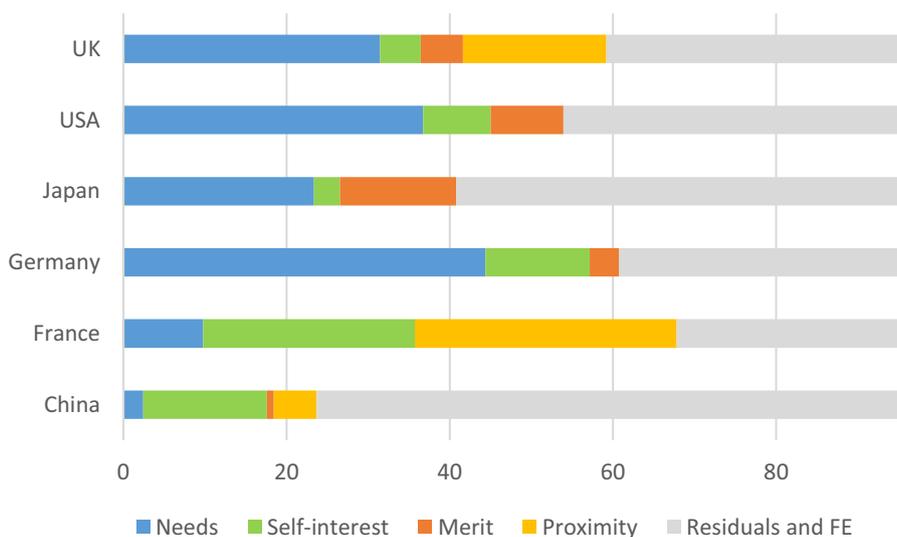


Fig. 2. Importance of categories of predictors for the non-ceteris paribus approach (based on results from Tables 3a and 3b).

Fig. 2 and “radar” charts in Fig. 3f. To illustrate the decision of donors to favor their own interests or the needs of recipients, the categories “needs” and “self-interest” are put at the opposite ends of the horizontal axis, and the categories “merit” and “proximity” are placed at the opposite ends of the vertical axis. The figures highlight similarities between the allocation model of China and France, where self-interest is more important than needs when it comes to allocating ODA. By contrast, the allocation models of Germany, Japan, the UK, and the USA predominantly focus on needs. The high importance of language and past colonial links for France and the UK is also salient in these figures.

#### 4.8. Robustness checks

We applied various checks to assess the robustness of our findings. All results are presented in the Appendix.

First, starting from the original specification of Dreher et al. (2018), whose results are shown in Tables 2a and 2b, we assessed the relevance of other explanatory variables, including a measure of the burden of disease,<sup>27</sup> a measure of geographical distance between donor and recipient countries,<sup>28</sup> a dummy variable identifying right-wing, conservative, or Christian democratic governments in recipient countries,<sup>29</sup> a measure of oil rents,<sup>30</sup> a measure of natural resource rents,<sup>31</sup> and the external debt-to-GDP ratio.<sup>32</sup> For some donors, we also considered supplementary variables capturing their historical involvement in Africa (former colony dummy, French Defense and Consultation Pacts dummy) or their specific priorities (measure of political terror/human right violations, Egypt dummy for USA aid, Ethiopia dummy for Chinese and USA aid).<sup>33</sup> Relevant variables were added to the regressions shown in Tables 3a and 3b.

<sup>27</sup> See Tables A.1a and A.1b.

<sup>28</sup> See Tables A.2a and A.2b.

<sup>29</sup> There is a large literature debating whether African political parties can be characterized in this manner (Erdmann, 2004; Manning, 2005; Erdmann & Basedau, 2008; Osei, 2012) and we would therefore like to urge caution when interpreting the results. See Tables A.3a and A.3b.

<sup>30</sup> See Tables A.4a and A.4b.

<sup>31</sup> See Tables A.5a and A.5b.

<sup>32</sup> See Tables A.6a and A.6b. For the external debt-to-GDP ratio, we also considered different lags of the variable to account for the fact that it often takes several years for loans to be negotiated and disbursed, see Tables A.7a and A.7b.

<sup>33</sup> See Tables A.8–A.16.

Second, we assessed whether the results are robust to using three-year averages. Results are qualitatively similar. We note that  $R^2$  are higher than in benchmark regressions (especially for China), probably because the averaging of the data attenuates the noise from idiosyncratic variation in aid commitments over time. We also used cross-sectional regressions with 2012 data, but results are more imprecise because cross-sectional regressions rely on 49 observations only. We also studied and compared intensive versus extensive margins. However, results are not very informative because DAC donors commit aid to most or all African countries each year.<sup>34</sup>

Finally, we compared the predictors of aid commitments versus aid disbursements using data from DAC donors (data on aid disbursements are not available for China). Results are qualitatively different (Tables A.22a and A.22a in Appendix H). For example, the predictive power of GDP per capita is generally higher for disbursements compared to commitments. Given important differences, we emphasize that our results and conclusions only apply to commitments; future research should be undertaken to explain differences between commitments and disbursements.

## 5. Conclusion

China’s involvement in African countries has received much criticism (Naim, 2007), suggesting that China’s aid is mainly motivated by self-interest. According to this narrative, China wants to gain access to natural resources and extend her global influence by supporting poorer countries.

Our paper questions this narrative. We study China’s aid allocation model over the period 2000–2012 and compare it to the five largest donor countries: France, Germany, Japan, the UK and the USA. We make use of recently compiled data on Chinese aid (Strange et al., 2017) and use these in standard aid allocation regressions. Comparisons of this kind, while common practice, often lack a rigorous methodology for cross-donor comparisons. The focus is typically on comparing regression coefficients (Alesina & Dollar, 2000; Berthélemy, 2006) or, more rarely, variants

<sup>34</sup> Percentage of country/years with positive aid commitments are 100% for France, 99% for Germany, Japan, and the USA, and 85% for the UK (see Table 1 for descriptive statistics).



Fig. 3. Comparison of aid allocation models (based on results from Tables 3a and 3b).

of the partial and semi-partial  $R^2$  (Hoeffler & Outram, 2011; Dreher & Fuchs, 2015). We go beyond this type of comparison by applying the innovative decomposition method developed by Sterck (2019b). We first estimate the same aid allocation model for all donors, using the specification of Dreher et al. (2018) and we group explanatory variables into recipient needs, merit, donors' self-interest, and proximity. We then decompose the variance of aid into the contributions associated with each explanatory variable. This enables us to measure how important each explanatory variable is in the allocation of aid. We then compare the importance of each explanatory variable, or groups of variables, across donors.

Our results suggest the following. First, China commits more aid to poorer countries, as do the USA, the UK, Japan and Germany. This observation contrasts with China's characterisation as a purely

self-interested donor. Furthermore, we find no evidence that commercial interests, such as trade or access to natural resources, determine Chinese aid allocation. This latter result contrasts with Western donors, which commit more aid to larger trade partners.

Second, we find that two countries - namely France and China - assign high importance to variables that relate to self-interest. However, self-interest does not mean the same thing for France and China. France gives significantly more aid to important trade partners. By contrast, China's aid decisions are largely driven by the "One-China policy", i.e. countries that recognize Taiwan receive no aid. Non-adherence to the "One-China policy" explains nearly half of the explained variation in Chinese aid, making the recognition of Taiwan the most important explanatory variable in Chinese aid allocation. This suggests that China's self-interest is

mainly driven by political considerations and not commercial ones, since oil and trade do not appear to be important in China's aid allocation. This result is consistent with existing qualitative and quantitative accounts of China's aid allocation model (Davies, 2007; Brautigam, 2011; Dreher et al., 2018).

Third, recipient merit (polity, control of corruption, and the debt to GDP ratio) does not explain Chinese aid allocation. Thus, there is some evidence that China allocates aid irrespective of policies and institutions, adhering to the principle of non-interference. On the other hand, our results also show that recipient merit is of secondary importance for DAC donors, despite some aid agencies (e.g. USAID) explicitly stating their commitment to strengthen democratic governance.

Fourth, we find historical proximity to be important: the UK and France commit more aid to their former colonies and, while the UK gives more to countries that have English as an official language, the contrary is true for France.

Overall, our analysis suggests that two main allocation models co-exist. The model of Germany, Japan, the USA, and the UK, where donors commit ODA mainly according to recipient needs. This is in contrast to the model of France and China, where self-interest and proximity considerations dominate recipient needs. We conclude that the characterisation of China as a rogue donor is overstated. Yes, China does not give aid to countries that recognize Taiwan, in line with its "One-China policy". However, China's aid allocation model also accounts for recipient needs and is therefore not completely different from the allocation model of other major donors. More generally, we find that all donors differ markedly in how they allocate aid. Therefore, singling out China as being different from other donors does not seem justified based on our results.

Several limitations to our analysis should be recognized, alongside pathways for future research. First, our regression model does not explain the full variation in aid allocation, with  $R^2$  ranging between 27 and 68 percent (for China and France respectively). Interestingly, although the model by Dreher et al. (2018) was generated to investigate aid from China, it explains more of the variation in Western donors' aid commitment. We explored different avenues to expand the model of Dreher et al. (2018) but were often constrained by data availability and quality. This is particularly true for variables relating to strategic interests. More research is needed to identify the missing variables in our analysis. The analysis could also be expanded to include more countries and cover a longer time period. Second, the categorization of explanatory factors into needs, merit, self-interest, and proximity is necessarily fuzzy and questionable. Quantitative research should therefore be complemented with qualitative studies and case studies to triangulate findings and provide a coherent picture of donor motives. Third, our analysis focused on the empirical specification of Dreher et al. (2018) which, we acknowledge, may suffer from endogeneity issues. Our results should be interpreted cautiously. In particular, variables that are characterized as important should be interpreted as predictors – but not necessarily as causes – of ODA allocation. Finally, China has been accused of violating environmental standards and labour rights and our analysis is somewhat limited because it does not consider these important aspects of development assistance. For a small number of African countries, emerging statistical evidence suggests that Chinese aid may fuel local corruption and discourages local trade union involvement (Isaksson & Kotsadam, 2018; Isaksson & Kotsadam, 2018). Brautigam (2011) discusses a large number of examples in which China has been accused of violating international standards, but argues that many of these accusations are unsubstantiated and examples from other donors show that China may be no worse than other donors. More research is needed to settle the question.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.worlddev.2022.105908>.

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