Which donors, which funds?

The choice of multilateral funds by bilateral donors at the World Bank

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Abstract

The rapid growth of trust funds at multilateral development organizations has not received much attention in the academic literature yet. We examine the choice by sovereign donors among different trust fund options, using a simple illustrative model. We contend that the choice among various trust funds involves a fundamental tradeoff: Larger funds provide donors with the benefit of burden sharing. Conversely, each donor can better assert its individual preferences in a fund with fewer other donors. Our model yields testable implications on a range of factors affecting this fundamental tradeoff, notably the area of intervention of the trust fund as well as competing domestic interests of donor countries. Using a sample of World Bank trust funds, we examine the participation decisions of OECD/DAC donors over the last decade. In line with our theoretical argument, preference homogeneity among donors as well as indicators for global activities and fragile states assistance are robust determinants of (large) multi-donor funds. In contrast, donors tend to prefer single-donor trust funds in areas in which their national interests dominate. While they could use bilateral aid for the same purpose, they often prefer to channel their funds through multilateral agencies. They thereby can reduce their own administrative costs, while benefiting from the expertise of the multilateral agency. These findings confirm prior qualitative case studies and evidence from donor reports, suggesting that the heavy use of single-donor trust funds - a costly instrument from the perspective of multilateral agencies - may require some reconsideration.

1 Introduction

Existing theory suggests fundamental tradeoffs in the allocation of foreign aid. When choosing between bilateral aid and multilateral aid, donors trade off the ability to fully control disbursement decisions against the possibility to share the burden with other donors (Milner and Tingley 2013). Similarly, when choosing among different multilateral agencies, donors consider both the efficiency of the agency and the degree to which the donors find their own preferences aligned with the other donor countries supporting the agency (Schneider and Tobin 2013).

While established work considers the dichotomous choice of sovereign donors between bilateral aid and multilateral aid, it neglects the whole range of options on the continuum between these two extremes. These options have multiplied with the ascent of multi-bi aid since the early 1990s. Multi-bi aid refers to earmarked contributions to international development organizations to support specific development purposes, notably specific themes, sectors, or countries (OECD 2011). Such contributions are provided by individual donors or groups of donors, who wish to support a common cause, and funneled into trust funds housed at multilateral agencies (Droesse 2011). For the bilateral donors, these trust funds seem to combine the advantages of the two conventional types of aid. On the one hand, they can harness the benefits of multilateral delegation such as economies of scale, reduced fragmentation, improved coordination, and knowledge dissemination (IEG 2011; Tortora and Steensen 2014). On the other hand, they make the multilateral agency more directly accountable to individual donors (OECD 2011; Graham 2012; Sridhar and Woods 2013). Tailor-made governance arrangements enable the donor(s) to specify the terms of their cooperation, potentially even including bilateral staff exchange, and tailored reporting on program results. Trust funds also imply a high degree of flexibility, since they do not need approval by the formal governing bodies of multilateral organizations. Trust funds can even support activities beyond the formal mandate of multilateral organizations. From this perspective, multi-bi aid hence resembles bilateral aid.

Since the turn of the millennium, trust funds at international development organizations have grown massively. With a volume of 19 billion USD in 2012, multi-bi aid today amounts to almost 60 percent of the volume of multilateral aid and to roughly 20 percent of bilateral aid (Reinsberg, Michaelowa, and Eichenauer 2015). At the World Bank, annual trust fund contributions quadrupled within five years shortly after the millennium. Currently, the Bank receives annual contributions of about USD 4 billion (excluding funds for which the Bank only provides financial intermediary services), and these funds finance 10 percent of the country operations and almost 30 percent of the Bank advisory services and analytical tasks (World Bank 2013a). The sheer number of different funds is even more striking. Having reached over 700 in recent years (or even over a thousand if not only IBRD/IDA, but also IFC trust funds are included; see Tortora and Steensen 2014: 29), these developments have started raising concerns. For example, the Bank's Independent Evaluation Group worries about increased administrative burdens, unsatisfactory monitoring and supervision requirements, and the distortion of program priorities (IEG 2011). World Bank alumni refer

to the rise of trust funds as one of key problems the Bank will have to solve in the near future (The 1818 Society 2012). Obviously, the flexibility for sovereign donors and their increased influence on Bank activities tends to come along with reduced oversight and policy coherence within the Bank (IEG 2011). Similar concerns are burgeoning at the United Nations, which relies on earmarked funding for operational activities to an even larger extent (UN 2012; UNDP 2012).

As a consequence, the leadership of the different multilateral agencies has started to introduce some institutional reforms to limit the unrestricted growth of multi-bi aid, notably as far as the numerous small single-donor trust funds are concerned. For these small funds, the balance between costs and benefits is often considered as negative if all costs (including those arising to the multilateral agency) are truly taken into account (Tortora and Steensen 2014). Hence, reforms attempt to encourage a distinction between those trust funds that actually provide an efficient way of cooperation between sovereign donors, and those that primarily generate transaction costs and are not aligned with the overall strategy of the multilateral agencies.

For these reforms to be successful, it is essential to first gain an understanding of why and under which conditions sovereign donors engage in the different types of trust funds. This is precisely the question we seek to answer in this paper. There is a large number of agency reports and related case studies on which we can draw (for a review of these studies, see Reinsberg, Michaelowa, and Eichenauer 2015), but, to the best of our knowledge, the question has never been addressed directly. Generally, despite its undeniably strong relevance, multi-bi aid has so far remained widely neglected in the academic literature (Barakat, Rzeszut, and Martin 2012: x). By providing a systematic theoretical and econometric analysis we attempt to generalize the lessons from previous case study evidence. Analytically, our analysis is close to the existing literature on donor choices between the more established categories of bi- and multilateral aid (Milner and Tingley 2013; Schneider and Tobin 2013), but complements these studies by a focus on the neglected intermediate category of multi-bi aid. Regarding donor motivations, we can also draw from the general aid allocation literature, which has constituted a well-established research field since the mid-1970s (early examples are Dudley and Montmarquette 1976; McKinlay and Little 1977; Maizels and Nissanke 1984; or, Frey and Schneider 1986), and - albeit more indirectly - from the general literature on institutional choice and the proliferation of international organizations (e.g., Martin 1992; Abbott and Snidal 1998; Koremenos et al. 2001; Johnson 2014). We do not consider the general question whether aid is provided as bilateral, multilateral or multi-bi aid (for a game-theoretic model to examine this question, see Eichenauer and Hug 2014). Rather, we consider a fixed budget for multi-bi aid (after decisions for multilateral and bilateral aid have been taken) and examine how this budget is allocated over different types of funds.

Our argument builds on the premise that a bilateral donor's preference for a particular type of trust fund depends on the trade-off between synergies from cooperation with other donors (burden sharing) and the specificity of its regional and thematic preferences that may not be sufficiently addressed when donor numbers become high (reduced preference

homogeneity). Specific donor and fund characteristics influence how strongly either of these influence the overall utility gains from membership in any particular trust fund. For instance, in any area in which there is not much preference homogeneity between donors in the first place, we expect that cooperation with other donors is relatively less attractive, which implies a higher probability for a donor to opt for a single-donor trust fund. Conversely, in high-risk areas such as aid to post-conflict countries, cooperation leads to the possibility of risk sharing and should hence be valued rather highly. In this case, donors should opt for large multi-donor trust funds.

We test our hypotheses using a data set on World Bank trust funds and donors' participation decisions over a period covering the financial years 2002-2013 (World Bank 2014b). Using seemingly unrelated regression estimation to compare the effect of fund and donor characteristics on the participation decisions in single-donor, multi-donor, and large multi-donor trust funds, we find consistent support for our main hypotheses. Overall, results are in line with the qualitative evidence in agency reports and related case studies that served as a basis for this more general analysis.

In the following, we will first provide a more detailed review of the related literature (Section 2). On this basis, Section 3 develops our theoretical argument, and Section 4 derives concrete testable hypotheses related to donor choices of different types of trust funds. Section 5 proceeds with the econometric analysis. The implications are further discussed in Section 6, and Section 7 concludes.

2 Literature

Our paper relates to the literature on donor choices and institutional choices more generally. Rationalist accounts of institutional choices in the international realm have been very influential. These accounts have linked institutional choices to potential conflicts over the distribution of the gains from cooperation, the existence of an enforcement problem, the number of relevant actors in the field, as well as issue characteristics such as the distribution of state preferences, uncertainty, transaction costs, and group characteristics (e.g., Martin 1992; Abbott and Snidal 1998; Koremenos et al. 2001).

If states are bounded-rational actors, they check whether the status quo includes a focal institution to address their cooperation problem; if there is no effective pre-existing focal institution, they proceed to the stage of institutional choice among a broader set of potential institutions; only if they cannot find a suitable alternative institution, they adapt an existing institution to carry out new tasks, or, if such attempts are not far-reaching enough, they create a new institution (Jupille and Snidal 2005). Hence, states will demand new institutions when possibilities to change the existing institutions are forestalled. They thereby engage into "forum-shopping", creating new venues that maximize their leverage for policy change (Abbott and Snidal 1998; Alter and Vargas 2000; Hafner-Burton 2004; Raustiala and Victor 2004; Kellow 2012). Indeed, for institutional change to occur, states must overcome a number of obstacles, most notably important states must be dissatisfied by the status quo (Colgan, Keohane, and Van de Graaf 2012; Morse and Keohane 2014). Furthermore, as ar-

gued by organizational sociology, donors willing to impose "institutional change" on existing agencies may face obstacles related to deep-seated organizational cultures and contradictory incentives inside multilateral bureaucracies (Barnett and Finnemore 1999; Pincus and Winters 2002; Weaver 2007; Vetterlein and Moschella 2014). On the supply side, competition among agencies facilitates "forum-shopping" (Werle 2001).

As the hurdles for formal institutional change are arguably very high, states have relied on informal governance mechanisms. A growing body of literature has discussed informal institutions as rational responses by states seeking flexibility from rigid formal institutions without incurring the costs of institutional change (Abbott and Snidal 2000; Daase 2009; Helmke and Levitsky 2012; Reh 2012; Conzelman 2012; Kleine 2013).

Theoretical considerations regarding institutional change in international organization can be readily applied to aid. Based on the premise that the end of the Cold War brought about a new rationale for aid, notably the collective financing of initiatives to tackle global problems (Kaul et al. 1999; Hopkins 2000; Severino and Ray 2010), donors faced an institutional design challenge. None of the existing multilaterals seemed to be well-suited to particularly address these global challenges, either because the prevailing assistance model focused on specific countries or because multilateral agencies were perceived as inefficient (Held and McGrew 2003; Forman and Segaar 2006; Woods 2006). At the same time, bilateral aid did not appear to be a viable outside option, given increased public scrutiny on its uses (Milner 2006), and decreasing administrative capacities (World Bank 2013e). Moreover, concerns for development more strongly dominated aid allocation, as evidenced by the turn toward good governance (Burnside and Dollar 2000; Collier and Dollar 2002; Dollar and Levin 2006), and donors became aware of the need to harmonize aid, as epitomized in the Paris Declaration[1]. The accessible options to tackle new development challenges were "institutional change," going through the cumbersome process of forging a new consensus within existing multilateral governing bodies, versus "institutional creation," the development of new forums and financial mechanisms supported by a few like-minded donors. These forums supported through trust funds could rely on established multilaterals to implement their narrowly defined priorities.

This can explain the dramatic increase of multi-bi aid over the last two decades. However, to see what these arguments imply for the choice between different types of trust funds, we need to examine them in some more detail. Arguments related to improved donor cooperation (harmonization), to the willingness to jointly provide global public goods, or to the benefits of risk sharing in a situation of increased public scrutiny, can only explain the rise of multi-donor trust funds. Moreover, these arguments are based on the assumption that donors primarily strive for aid effectiveness in terms of improving the living conditions of people in developing countries. Yet, despite the improvements during the post-Cold War period mentioned above, the vast majority of the aid allocation literature still finds that individual donor interest is at least as strong a motivation for the provision of aid

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[1] For details on the Paris Declaration and the related Accra Agenda for Action, see http://www.oecd.org/dac/effectiveness/parisdeclarationandaccraagendaforaction.htm

as recipient need or recipient merit (in terms of policies enabling aid to be effective). In particular, trade interests and geo-strategic interests appear to be very important (see, e.g., Berthélemy 2006; Kuziemko and Werker 2006; Hoeffler and Outram 2011). In areas in which such specific interests are at stake, multi-donor trust funds do not appear to be a plausible choice for sovereign donors. The most obvious choice seems to be bilateral aid, which establishes a direct relationship between a donor government and a recipient government, therefore opening up the possibility for "aid-for-policy deals" (Bueno de Mesquita and Smith 2010). In essence, bilateral aid gives individual donors virtually unfettered autonomy in the allocation of aid. At the same time, due to limited aid implementation capacity at the level of national aid agencies, transferring some of the administrative burden to multilateral agencies and benefiting from their expertise and professionalism can be considered a useful strategy. Indeed, this is what bilateral donors confirm in a survey on motivations for multi-bi aid conducted by the OECD (Tortora and Steensen 2014: 15). In such cases, we should expect donors to opt for single-donor trust funds. In fact, currently the vast majority of trust funds are funded by a single donor (see Reinsberg, Michaelowa, and Eichenauer 2015: Figure 6). This is in line with the strong role of donor interest in aid allocation studies. Existing empirical studies on multi-bi aid also find that different types of trust funds show a large variation when it comes to their actual effect on the objectives of the Paris Declaration, i.e., harmonization, mutual accountability, and ownership (Barakat, Rzeszut, and Martin 2012; Tortora and Steensen 2014). This suggests that they may be driven by different donor motivations in the first place. It also confirms the relevance of examining the choice between different types of trust funds in a more systematic way.

Milner and Tingley's (2013) study on donor choice between bi- and multilateral aid provides a theoretical argument that can be adapted to this question. Donors face a trade-off between burden sharing and the ability to enforce their specific preferences. The importance of the latter depends on how closely these preferences are in line with the priorities of multilateral agencies. If they are well in line (as in the case of some Nordic donors), the benefits of burden sharing clearly dominate, and multilateral aid is the preferred choice. In our context, preference homogeneity is required among the different donors within a trust fund, rather than between the individual donor and the multilateral agency. In areas in which preference homogeneity is high, individual donors prefer larger trust funds due to the benefits of burden sharing. Conversely, they prefer single donor trust funds when individual special interests dominate.

In their study on choices between different multilateral agencies, Schneider and Tobin (2013) further introduce the aspect of risk related to a change in the organization's aid allocation priorities over time. When choosing among different multilateral institutions, donors maximize the benefits from delegation by channeling aid through those multilateral institutions whose policies best reflect their own bilateral preferences. However, they do so only up to the point where the risk related to the concentration of funding on these organizations becomes so high that they prefer to further diversify (Schneider and Tobin 2013). This theoretical approach has the advantage to provide an argument why donors spread their funding over different agencies. In Milner and Tingley's model, no such bal-

ancing mechanism is foreseen, so that it is not a priori clear why a donor might choose to provide some positive amount to both bi- and multilateral aid in any given sector or issue area. In reality, we observe that donors do make intermediate choices rather than to go to the extremes when selecting the institutional channel for aid. In our context, where donors choose between trust funds of different size (i.e., with different numbers of other donors), allowing for intermediate solutions implies that in certain situations, funds of intermediate size should be more attractive than either very small (single-donor) or extremely large multi-donor trust funds. We ensure this possibility by considering that preference homogeneity between the different members of a trust fund itself depends negatively on the number of individual donors. Hence, we can model the situation such that for a given trust fund, the utility of participation first increases and later decreases in the number of other donors.

We formalize our ideas and provide some further explanations in the following section.

3 Modeling trust fund choice

Let us assume that each sovereign donor i first takes a decision about (core) multilateral aid (often fixed through long-term international commitments) and about (pure) bilateral aid, i.e., aid implemented directly by bilateral agencies or their partners such as local NGOs. Once this decision is taken, the remaining aid budget is allocated to multi-bi aid. As highlighted by the ellipsis in Figure 1 this is the allocation process we are focusing on in this paper.

Figure 1: Individual donor decision among general aid types.
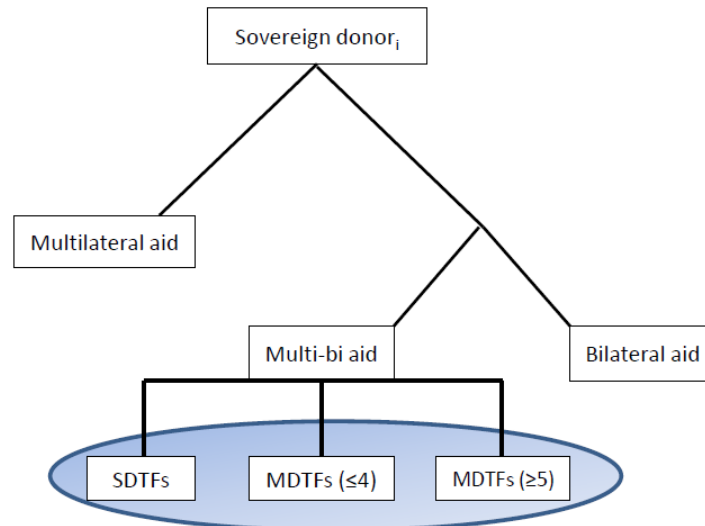
Multi-bi aid can be allocated to trust funds of different size varying from single-donor trust funds (SDTFs) to very large multi-donor trust funds (MDTFs). For illustrative purposes and simplicity, Figure 1 only refers to three major types, namely SDTFs, along with small MDTFs (with four or less donors), and large MDTFs (with at least five donors). Note

that the cut-off chosen between small and large MDTFs is somewhat arbitrary, but corresponds to the discussion in the literature. Moreover, donors are sometimes classified into groups with somewhat more similar preferences (e.g., the Nordic donors), which also usually include only 3-4 donors.

Let us now present our model to clarify and illustrate the donor's decision-making process when choosing to which funds to contribute. We assume that the utility U_i^f of donor i to participate in trust fund f depends on the efficient use of resources and the extent to which trust fund outcomes are accredited to the donor government by its national constituency. Cooperation with other donors is expected to bring about a number of advantages in this respect. Following Milner and Tingley (2013), we will refer to them as advantages of burden sharing. In practice, this may include efficiency gains through synergies, risk sharing opportunities, or the possibility for the donor government to take full credit for all outcomes achieved by a fund in which it participates, even if it only contributes a small share of the input. Hence for each donor, U_i^f should positively depend on α, the number of other donors participating in the fund.

At the same time, we consider that large divergences of preferences between donors reduce the utility of individual participation. Preference heterogeneity implies that donors do not really share the same objectives, and from the perspective of each individual donor, this leads to reduced efficiency. This is due to both, the transaction cost related to finding a consensus, and the lack of congruence between this consensus and each donor's own objectives, on the basis of which it defines efficiency. Hence, U_i^f positively depends on preference homogeneity (γ).

Note that for single-donor trust funds, preferences are homogenous by definition (greatest possible value of γ). At the same time, the more donors there are, the less homogeneous their preferences will be. Hence, γ negatively depends on α, and $\gamma(\alpha = 0) = \gamma^{\max}$. Since the direct effect of α on U_i^f is positive, while its indirect effect (through γ) is negative, the optimal trust fund may be of intermediate size. Whether this is the case or whether the optimum is at the extremes (if the fund is attractive only for a single donor or, reversely, for a very high number of donors) depends on the "weight" given to burden sharing relative to preference homogeneity $c(x_i^f)$, whereby x_i^f reflects the specific characteristics of the fund (e.g., area of activity and country or region covered implying different risk sharing opportunities, and so on), and of the individual donor (e.g., donor seeking global leadership role versus small donor using the multilateral organization primarily to compensate the lack of own administrative capacities). As it appears implausible that for a given combination of fund and donor characteristics, the utility peaks at different levels of α, we assume that $U_i^f(\alpha)$ is unimodal.

Let us finally assume that there is no benefit from funds that are financed only by other donors because their outcomes will not be accredited to the donor government as long as it is not a member of the fund. While this is an obvious simplification of the complex preferences donors may have in reality, the assumption is broadly in line with the donors' strong concern for visibility that is one of the most important general drivers of multi-bi aid according to a survey carried out by the OECD/DAC Secretariat (Tortora and Steensen 2014).

Let trust fund membership be denoted by an indicator variable M_i^f, with $M_i^f = 1$ if

donor i is a member of trust fund f, and $M_i^f = 0$ otherwise. The utility of donor i from trust fund f is then given by:

$$U_i^f = \begin{cases} U_i^f(\alpha^f, \gamma(\alpha^f), c(x_i^f)) & \text{if} \quad M_i^f = 1, \\ 0 & \text{if} \quad M_i^f = 0. \end{cases} \tag{1}$$

Donor i decides about membership in any given fund by considering the utility this fund will provide to it, subject to a budget constraint that limits its multi-bi contributions to $\bar{M}_i$ (i.e., the overall aid budget net of the resources required for bilateral and multilateral commitments). For simplicity, let us assume that donor i contributes an equal amount (say, 1 unit) to each trust fund in which it participates. Then, $\bar{M}_i$ also reflects the maximum number of trust funds the donor can participate in.

Let F be the overall number of possible trust funds. The optimization problem then becomes:

$$\max \sum_{f=1}^{F} U_i^f \quad \text{s.t.} \quad \sum_{f=1}^{F} M_i^f \leq \bar{M}_i \tag{2}$$

The obvious solution is that the $\bar{M}_i$ trust funds providing the greatest utility will be funded. Let us denote the utility of the marginal fund the donor will become a member of (i.e., the $\bar{M}_i$-best fund) as $\bar{U}_i$. We abstract from the case that two or more funds would have exactly the same utility. Then the optimal participation decision for each individual fund is given by:

$$M_i^f = \begin{cases} 1 & \text{if} \quad U_i^f \geq \bar{U}_i, \\ 0 & \text{if} \quad U_i^f < \bar{U}_i. \end{cases} \tag{3}$$

For illustrative purposes, let us assume for the moment that $\bar{U}_i$ is fixed. This allows us to graphically demonstrate the implications of our model. Figure 2 shows $U_i^f(\alpha)$ for three different constellations $c(x_i^f)$. Simplifying notification by skipping the sub- and superscripts i and f, we can focus on these three constellations, say A, B, and C. The function $U_A(\alpha)$ (solid line) shows potential trust fund options that vary only in the number of participating donors α, and are otherwise fully identical (all corresponding to fund and donor characteristics in constellation A). In the illustration, $\bar{U}$ is fixed at 2.5 (dotted line). In this setting, under constellation A, neither a single-donor trust fund nor a large multi-donor trust fund would be attractive, but the utility of membership would be above the threshold for a number of other donors between one and four.

Now imagine that the context changes, for instance because the funds are proposed to support development in very risky environments, such as post-conflict states. In such a situation, the potential for risk sharing among donors dominates the negative impact of

additional donors on preference homogeneity, for any plausible number of donors.[2] This is reflected in a different $c(x)$, represented by constellation B and the respective utility function $U_B(\alpha)$ in Figure 2 (dashed line, large dashes). $U_B(\alpha)$ is at or above the threshold value of $\bar{U}_i = 2.5$ for at least four other donors.

Finally, in constellation C, the situation is such that even with just one other donors, preferences heterogenity becomes so bad (and burden-sharing is of such minor importance) that only in the case of a single-donor trust fund, $U_C(\alpha)$ (small dashes) is sufficiently high to make the fund attractive for membership. This could be situations in which geopolitical or trade interests are at stake, and in which the trust fund channel is hence not used to seek cooperation, but rather, to roll over some of the administrative burden to an international agency.

Figure 2: Comparing the utility of differently sized trust funds for different constellations (A, B, C).
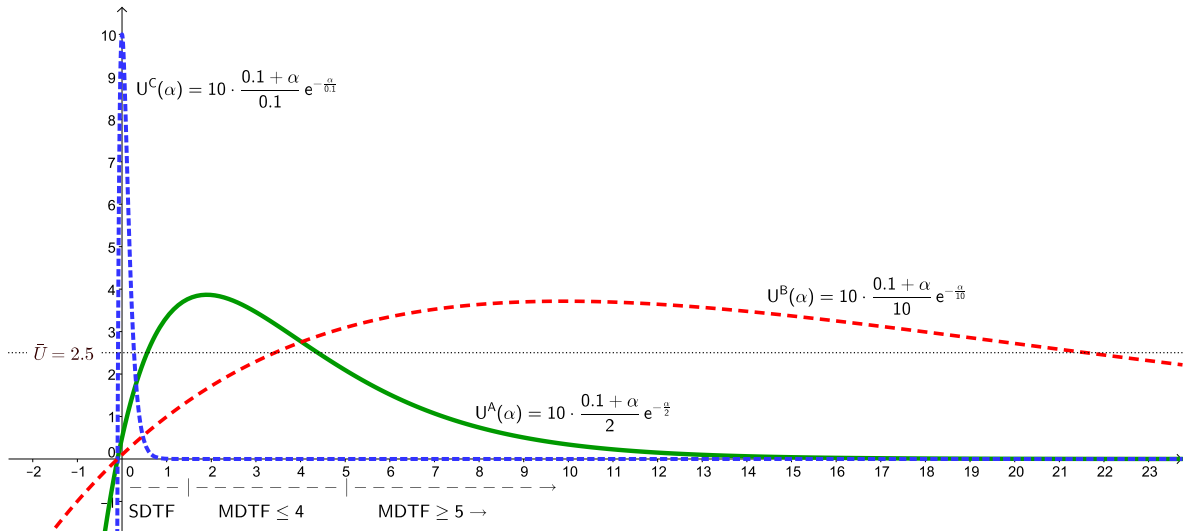
Notes: The concrete utility function used for this figure is $U(\alpha, \gamma(\alpha), c(x)) = f(\alpha, c) \cdot \gamma(\alpha, c)$, whereby $f(\alpha, c) = 10 \cdot \frac{0.1 + \alpha}{c}$, and $\gamma(\alpha, c) = e^{-\frac{\alpha}{c}}$. This is in line with the required properties formulated above, $f'(\alpha) > 0$, $U'(\gamma) > 0$, $\gamma'(\alpha) < 0$, and $U(\cdot)$ is unimodal. Moreover, for the parameter of preference homogeneity we have $\gamma(\alpha = 0) = \gamma^{\max} = 1$ (for single-donor trust funds), and $\lim_{\alpha \to \infty} \gamma(\alpha) = 0$.
$c(x)$ enters as a factor that increases preference homogeneity γ for any given number of donors. More generally, it scales down the effect of α in a way that for high α the reduction in preference homogeneity is mitigated, which reflects a stronger emphasis on burden sharing. The three constellations are presented using $c = 2$ (constellation A), $c = 10$ (constellation B, strong role of burden sharing), and $c = 0.1$ (constellation C, emphasis on the loss of preference homogeneity).
As α is discrete rather than continuous, the solidly drawn lines are not exactly correct, but allow us to better distinguish the shape of $U(\alpha)$ across the three constellations.

It becomes clear that the decision to enter any individual trust fund depends on the number of other donors, the specific characteristics of the fund and the donor ($c(x)$ sum-

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[2] Note that the OECD/DAC membership counted 22 members - including all traditional donor countries (and a few others) - during most of our period of analysis. Hence, trust funds of about size 20 are the largest possible funds one should imagine here.

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marized here in constellations A, B, and C), and the complex interaction of the two that work through the direct effect of α on burden sharing versus the indirect effect of α via preference homogeneity. To understand complex interactions of this type, it is often useful to categorize the dependent variable along the lines of one of the interacting variables, and to then look at the effect of the remaining explanatory variables within the different categories. This is how we will proceed in the following. We will thus analyze the participation decision for different categories of trust fund size, namely single-donor trust funds (SDTF), small multi-donor trust funds (MDTF$\leq$ 4), and large multi-donor trust funds (MDTF$\geq$ 5), as already defined above. For each of these categories, we can assess the effect of the different constellations (different $c(x)$). This also allows us to discuss the model implications without any pre-defined $\bar{U}$. Indeed, since $\bar{U}$ is defined as the utility of the $\bar{M}$-best trust fund, it itself depends on $c(x)$.

Let us stick to the functional form of $U(\cdot)$ chosen for Figure 2. Let us further assume that the choice set consists of three trust funds, each of them reflecting one of the constellations A, B, or C. Now within each of the constellations, the trust fund proposed could be either a SDTF, a small MDTF, or a large MDTF. Consider that the budget is limited to $\bar{M}=2$, i.e., two out of three trust funds can be funded. We can go through the 3^3 possible combinations (3 constellations combined with 3 trust fund types) and determine what the choice would be in each case. We will cover three arbitrary examples below; the full set of combinations is presented in the Annex, Table A-1.

First, let us consider the case that for all three constellations, only single-donor trust funds are available (Case 1 in Table A-1). Among these, the donor chooses the trust funds with characteristics C and A. The marginal trust fund is trust fund A with $\bar{U} = U^A$.

As a second example, we consider a case in which for constellation A and B, the available options are small multi-donor trust funds, while a single-donor trust fund is available for C. In this case the two best options are the funds A and C, and A is again the marginal fund (Case 13 of Table A-1).

In the third example, we again keep the option of a single-donor trust fund for C, but propose large multi-donor trust funds for the constellations A and B. Again fund C achieves the highest level of utility, but this time, it is followed by fund B, which therefore becomes the marginal fund, so that $\bar{U} = U^B$ (Case 21 of Table A-1).

As these few examples again demonstrate, specific characteristics of donors and trust funds $c(x)$ have a different impact on the membership decision depending on whether a single- donor trust fund, a small multi-donor trust fund, or a large multi-donor trust fund are the possible options. In the following, we will look into these characteristics more closely, and derive testable hypotheses for the link between these characteristics and the participation decisions of bilateral donors for the different fund types.

4 Hypotheses and operationalization

The country and fund characteristics that may be relevant in driving a donor's participation decision have already been discussed in a range of illustrative examples above. Their impact

depends on their role for preference homogeneity on the one hand, and burden sharing on the other hand. We will now examine these factors more systematically.

Preference homogeneity

In some areas, donor preferences differ considerably, while in others, they are much more aligned. In the latter case, adding additional donors to a trust fund should not substantially decrease preference homogeneity. Donors can hence benefit from the advantages of burden sharing without incurring strong losses from a dilution of focus within the fund or the risk that the fund's objectives will move away from the preferences of each of the individual trust fund members. The most straightforward way to look at preference homogeneity between donors is to consider the differences in their allocation of bilateral aid. These differences appear in the weight given to individual sectors in each donor's bilateral aid portfolio. If all donors provide a similar share of bilateral aid to a sector, we consider that interests in this area are relatively homogenous. In contrast, a strong variation of bilateral aid shares for a given sector indicates heterogeneity. The stronger the differences in sectoral interests, the less should be the donors' willingness to invest in large trust funds.

Hypothesis 1 Sectoral variation of donor interests predicts increasing participation in small trust funds as opposed to large trust funds.

We capture sectoral variation by calculating the coefficient of variation based on the sectoral shares of bilateral aid provided to the sector(s) relevant for the respective trust funds by all donors covered in the OECD/DAC's Creditor Reporting System (CRS) (OECD 2014b). This is in line with other studies that also use bilateral aid in order to assess and compare individual donor preferences (e.g., Lyne, Nielson, and Tierney 2009; Schneider and Tobin 2013), and that compute the coefficient of variation to reflect preference heterogeneity (e.g., Copelovitch 2010).

As evidenced by the aid allocation literature, along with responding to recipient needs, the promotion of a donor's commercial and geopolitical interests is often a strong motivation for aid. In areas in which such interests are at stake, donors compete and hence preferences will be very different. In such a situation, adding additional donors to a fund will lead to a strong reduction of the utility for each sovereign donor. Donor competition is particularly strong when aid to middle-income countries is concerned. In this context, aid is often used to strengthen the position of the donor's own industry relative to its competitors in this foreign market. We can thus formulate our second hypothesis:

Hypothesis 2 A donor should channel its support for middle-income countries through small trust funds as opposed to large trust funds.

To group countries into middle-income and other developing countries, we use an indicator variable based on the standard World Bank classification (see World Bank 2014b).

An economic downturn in the donor country can lead to increased emphasis on the use of aid for such short-term economic benefits, rather than for development objectives broadly shared within the donor community. Especially when the economic situation leads

to increased unemployment, the donor country constituency might demand related measures. This is reflected in our third hypothesis:

Hypothesis 3 When donors face increased unemployment, they tend to invest in small trust funds rather than large trust funds.

Unemployment rates (in percent) for all bilateral donors are taken from the World Bank's (2014c) World Development Indicators (WDI).

Burden sharing

Some other situations suggest that the benefits of burden sharing may dominate over the reduction of preference homogeneity unless the number of donors becomes extremely large. For instance, when the topic was discussed at the level of the G8 and led to commitments there, this can be interpreted as an indication of issues that require some common action and that should be of shared interest among at least several of the G8 member states.

Hypothesis 4 Trust funds related to areas previously considered as relevant at the level of the G8 should lead to small or even large multi-donor funds rather than single donor trust funds.

Trust funds related to areas previously considered as relevant at the level of the G8 are coded by considering donors pledges at the G8 summit in the year before the activation of each fund. We generate a variable that counts the sectors covered by the trust fund that simultaneously have received such pledges.

The strong relevance of cooperation is even more evident when it comes to addressing global phenomena, such as climate change or the spread of communicable diseases. Activities in these areas usually require a large common effort to move things forward. In addition, spill-overs should increase the utility of participation for each donor. Hence cooperation between many donors appears as the most effective form of intervention:

Hypothesis 5 A contribution to global activities will be most attractive in the form of large multi-donor trust funds.

We use an indicator variable for global activities that is based on the World Bank's own classification of trust fund activities (World Bank 2014b).

Finally, when the activities of the fund are perceived as high-risk, cooperation between multiple donors is required for risk sharing. Even if the expected overall effect of the interventions is positive, the outcome of some projects may be disastrous. However, when many donors contribute, the overall project portfolio is larger, which leads to some diversification and hence a reduction of the overall risk of failure. Moreover, it may be politically useful for individual donors to share the responsibility if individual project turn out to be problematic. Risk sharing is particularly relevant in the context of fragile states, e.g., post-conflict states or countries having faced major natural disasters. In this context, cooperation of many donors should therefore increase the utility of each.

Hypothesis 6 A contribution to activities in support of fragile states will be most attractive in the form of large multi-donor trust funds.

A dummy variable indicating whether a trust fund supports fragile states can be drawn directly from the World Bank's (2014b) trust fund database.

5   Empirical analysis

We test these hypotheses using robust linear probability models with standard errors clustered at the level of donor countries. The donors considered are the 24 DAC member countries for which information on trust fund membership and a range of key predictors are available. The dependent variable is a dummy reflecting the participation of each individual donor i in fund f (see equation 3). We run the estimations separately for single-donor trust funds, small multi-donor trust funds, and large multi-donor trust funds. However, we consider that the decisions are not taken independently from each other. Possible correlations of errors across equations are taken into account using seemingly unrelated estimation with unbalanced equations, a method that uses a common variance-covariance matrix for the different regressions.[3] The observation numbers across equations are unbalanced because the World Bank manages far more single-donor trust funds than multi-donor trust funds. Robust estimation can flexibly handle this unbalancedness. To assess our hypotheses, we conduct Wald tests to compare the coefficients across equations.

For each block of three regressions corresponding to the three categories of funds, we use exactly the same specification. The first block includes only the six above-mentioned variables without further controls or fixed effects. The second block includes two-way fixed effects with respect to donor countries and individual years.[4] A Hausman test indicates that alternative random effects specifications would lead to inconsistent coefficients. The third block includes additional control variables. They include variables related to bi- and multilateral aid as alternative funding options to multi-bi aid as a whole. Moreover, they include a variety of indicators capturing the (development-related and general) know-how and capacity of the donor country. Such capacity should generally reduce the need to use the multilateral channel. Finally, we include a control for particularly contentious issues derived from a small expert survey carried out within the World Bank (2013b). These issues identify areas in which the creation of a trust fund may be considered as a means to circumvent lengthy decision-making processes at the international level, and hence generally increase the propensity to use trust funds. All variables and their sources are described in more detail in the Annex, Table A-2.

In the Annex, we also show a replication of the same regressions for different cutoffs between small and large multi-donor trust funds. Since the exact cutoff point is somewhat arbitrary, we should be able to confirm that a small change will not substantially affect our

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[3] We employ the *suest* routine for STATA to run these estimations (McDowell 2004). This approach also follows the standard guidance on the estimation of fixed-effects panel data systems (Blackwell 2005).

[4] Year fixed effects relate to the trust fund starting year.

results. In addition to the cutoff at 4-5 donors used so far, Tables A-3 and A-4 present estimations for a cutoff at 6-7 and 10-11 donors. Given that only few funds comprise much more than 10 members, the latter is already a relatively big step that tends to blur the distinction between the two categories. The outcomes are generally in line with these expectations.

Another important methodological issue is the definition of the choice set. In line with the model, all possible trust funds should be considered here. However, information is available only for trust funds that actually exist. To generate the full data set, we proceed with two alternative assumptions. First, we consider that within each group of trust funds (single-donor, small multi-donor, and large multi-donor trust funds), any fund that is used by at least one of the bilateral donors, could have been chosen by any other donors, too (Choice set A). As an example, when Switzerland agrees with the World Bank on a single-donor trust fund in any specific area, we assume that any other donor could have made the same kind of arrangement. Similarly, if there is a multi-donor trust fund in a given area, we assume that those donors that do not participate in this fund, would in principle also have had the option to do so.

Second, we assume that beyond the choices included in Choice set A, for all funds that exist in the form of one particular fund type, the two other fund types would also have been possible (Choice set B). This implies, for example, that a specific single-donor trust fund that the Netherlands use to channel money through the World Bank could have been set up alternatively as a small or large multi-donor trust fund. This greatly increases the number of observations in the sample by adding further zeros for non-membership (since many of the potential funds never got to exist in reality). It is not clear a priori, which choice set is more plausible in practice.

Tables 1 and 2 show the results for Choice sets A and B respectively. As expected, the stronger the variation of bilateral sectoral aid preferences, the less is the propensity of any donor to contribute to large multi-donor trust funds. This result is strongly robust across specifications. In Table 1, a 1 percent increase in the coefficient of variation leads to a 16 percentage points decrease in the probability that any given donor joins such a large fund, no matter whether or not fixed effects or control variables are included. In Table 2, the effect is similarly robust, although coefficients are much smaller (varying between -2.3 and -2.8 percentage points). This is due to the much greater number of observations in Choice set B. In fact, for large multi-donor trust funds, 4he sample size increases tenfold, and since only observations for potential funds that did not really come into existence are added, the addition leads to a greatly reduced share of ones in the overall dataset. As the baseline probability for being a member of any of these multiple potential funds is reduced to about one tenth of its initial value, a similar reduction in coefficients is a normal consequence and in line with the results of Table 1.

Table 1: Main regressions using Choice set A.

	SDTF	MDTF≤ 4	MDTF≥5	SDTF	MDTF ≤ 4	MDTF≥5	SDTF	MDTF≤ 4	MDTF≥5
Preference heterogeneity	-0.005	-0.000	-0.159***	-0.003	-0.011	-0.159***	-0.004	-0.002	-0.171***
	(0.005)	(0.017)	(0.042)	(0.006)	(0.017)	(0.040)	(0.007)	(0.020)	(0.043)
Middle-income country assistance	-0.001	-0.005	-0.088***	-0.001	-0.004	-0.087***	0.001	-0.008	-0.090***
	(0.003)	(0.010)	(0.019)	(0.003)	(0.010)	(0.019)	(0.003)	(0.011)	(0.021)
Unemployment rate	-0.005***	-0.010***	-0.016***	0.005	0.045**	-0.017	0.009	0.040**	-0.013
	(0.000)	(0.001)	(0.003)	(0.005)	(0.019)	(0.033)	(0.007)	(0.021)	(0.048)
Number of G8 summit pledges	-0.002	0.011**	0.000	-0.002	0.005	0.024**	-0.003	0.003	0.017
	(0.002)	(0.005)	(0.010)	(0.002)	(0.006)	(0.012)	(0.003)	(0.007)	(0.013)
Global activity	-0.005*	0.014	0.105***	-0.005*	0.019**	0.112***	-0.008**	0.023**	0.125***
	(0.003)	(0.009)	(0.018)	(0.003)	(0.009)	(0.017)	(0.004)	(0.010)	(0.019)
Fragile state assistance	-0.007**	-0.006	0.055***	-0.008**	-0.005	0.072***	-0.009**	0.002	0.068***
	(0.004)	(0.010)	(0.019)	(0.003)	(0.010)	(0.019)	(0.004)	(0.011)	(0.022)
Logarithm of GDP							-0.005	0.045	0.219
							(0.046)	(0.180)	(0.317)
Logarithm of bilateral aid							-0.015	-0.104	0.134
							(0.025)	(0.081)	(0.147)
Multilateral aid (% of total aid)							-0.038	0.382	-0.700
							(0.185)	(0.549)	(1.227)
Administrative costs (% of bilateral aid)							-0.011	-0.035*	0.061
							(0.007)	(0.019)	(0.068)
Researcher density							-0.006**	0.023**	-0.027
							(0.003)	(0.010)	(0.019)
Logarithm of R&D expenditure							0.091***	-0.115	0.248*
							(0.020)	(0.070)	(0.132)
Government quality							-0.042	-0.198	-0.340
							(0.055)	(0.220)	(0.366)
DAC (co)chair							-0.005	-0.005	0.068**
							(0.005)	(0.016)	(0.032)
Contentious issue							0.003	0.019	-0.001
							(0.004)	(0.014)	(0.026)
_cons	0.074***	0.148***	0.520***						
	(0.006)	(0.019)	(0.044)						
Donor fixed effects	no	no	no	yes	yes	yes	yes	yes	yes
Year fixed effects	no	no	no	yes	yes	yes	yes	yes	yes
Observations	23075	5007	3101	23075	5007	3101	18195	4067	2624
Adjusted R^2	0.01	0.01	0.03	0.09	0.18	0.45	0.10	0.19	0.46
Percent correctly predicted positives	77.4	73.1	65.3	83.3	80.6	79.9	87.5	85.3	81.3
Percent correctly predicted negatives	40.7	42.3	51.4	59.8	62.6	60.0	43.7	48.5	51.1
Cutoff	0.034	0.083	0.324	0.034	0.083	0.324	0.034	0.083	0.324

Robust standard errors clustered on donors in parentheses. Significance levels: *.1 **.05 ***.01

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Table 2: Main regressions using Choice set B.

	SDTF	MDTF≤4	MDTF≥5	SDTF	MDTF≤4	MDTF≥5	SDTF	MDTF≤4	MDTF≥5
Preference heterogeneity	-0.004	0.004	-0.028***	-0.004	0.002	-0.023***	-0.005	0.002	-0.024***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.005)	(0.005)	(0.004)	(0.006)
Middle-income country assistance	-0.002	0.000	0.005**	-0.002	0.001	0.005*	-0.001	0.002	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Unemployment rate	-0.003***	-0.002***	-0.002***	0.003	0.007**	-0.001	0.006	0.009**	-0.003
	(0.000)	(0.000)	(0.000)	(0.004)	(0.003)	(0.004)	(0.005)	(0.004)	(0.006)
Number of G8 summit pledges	-0.003**	0.004***	0.007***	-0.002	0.003**	0.007***	-0.003	0.002	0.008***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Global activity	-0.010***	0.007***	0.058***	-0.009***	0.006***	0.059***	-0.011***	0.006***	0.065***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Fragile state assistance	-0.009***	0.005***	0.023***	-0.008***	0.004**	0.023***	-0.009***	0.007***	0.022***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Logarithm of GDP							-0.007	0.019	0.006
							(0.035)	(0.026)	(0.040)
Logarithm of bilateral aid							-0.012	-0.014	0.031
							(0.018)	(0.014)	(0.021)
Multilateral aid (% of total aid)							-0.039	0.129	-0.081
							(0.134)	(0.100)	(0.151)
Administrative costs (% of bilateral aid)							-0.009*	-0.007*	0.010*
							(0.005)	(0.004)	(0.005)
Researcher density							-0.006***	0.005***	-0.001
							(0.002)	(0.002)	(0.002)
Logarithm of R&D expenditure							0.081***	-0.036***	0.021
							(0.015)	(0.011)	(0.017)
Government quality							-0.023	-0.041	-0.005
							(0.042)	(0.031)	(0.048)
DAC (co)chair							-0.004	-0.004	0.003
							(0.004)	(0.003)	(0.004)
Contentious issue							0.005*	-0.002	-0.005
							(0.003)	(0.002)	(0.003)
_cons	0.058***	0.017***	0.043***						
	(0.004)	(0.003)	(0.005)						
Donor fixed effects	no	no	no	yes	yes	yes	yes	yes	yes
Year fixed effects	no	no	no	yes	yes	yes	yes	yes	yes
Observations	31183	31183	31183	31183	31183	31183	24886	24886	24886
Adjusted R^2	0.01	0.00	0.03	0.07	0.03	0.07	0.08	0.03	0.07
Percent correctly predicted positives	81.7	74.2	51.0	83.5	87.5	71.9	87.9	90.4	77.5
Percent correctly predicted negatives	39.6	39.0	55.2	60.3	50.0	48.0	45.0	38.6	36.9
Cutoff	0.025	0.013	0.031	0.025	0.013	0.031	0.025	0.013	0.031

Robust standard errors clustered on donors in parentheses. Significance levels: *.1 **.05 ***.01

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The expectation that aid for middle-income countries is based on very specific national preferences of each individual donor, and should hence lead to the use of single-donor, rather than multi-donor trust funds, is only partially confirmed. It is broadly in line with the results in Table 1, but does not find support by the results in Table 2 using the larger Choice set B. For this particular variable, the outcome thus hinges on the beliefs about the more appropriate option space for bilateral donors. If we believe that Choice set A is more appropriate (because, for instance, the multilateral agency might not be willing to offer trust funds of all types in all areas), then the results indicate that a large multi-donor trust fund targeting middle income countries has a 9 percentage points lower chance to receive contributions from any donor. Generally, a focus on middle-income countries tends to reduce the chances of a fund to receive contributions, but this is significantly more so for large multi-donor funds. This is shown by the associated Wald tests (see Annex, Tables A-5 and A-6).

Unemployment is the only variable whose coefficient estimates within each choice set strongly depend on fixed effects and controls. In the very simple models without fixed effects or controls, these coefficients capture, to a large extent, pure cross-sectional variation. Our hypothesis, however, is not related to the base level of unemployment (which is due to structural problems of the economy that can certainly not be addressed through multi-bi aid), but to temporary downturns of the economy that lead to situations in which the donor government might want to signal its concern for higher employment even through its foreign policy. This situation is reflected in the regressions that control for donor fixed effects.[5] When the cross sectional variation is controlled for by the fixed effects (with or without additional controls), the coefficients turn positive and partly significant for the smaller fund types, i.e. single-donor funds and small multi-donor trust funds. This corresponds to our hypothesis. The results hold for both choice sets.

Prior pledges at the G8 should indicate a common interest of at least some donors in a common activity. As expected, this tends to increase participation in (small or large) multi-donor trust funds as opposed to participation in single-donor trust funds for which the coefficient is generally negative, although mostly insignificant. For the G8 variable, results for the larger Choice set B are generally more clearly significant than for Choice set A.

An even more robust relationship can be observed between global activities and trust fund participation. In line with our hypotheses, no matter the specification and the choice set considered, trust funds for global activities tend to include multiple donors. When the focus is on global activities, the probability of participation in a large multi-donor trust fund increases by more than 10 percentage points in Choice set A (6-7 percentage points in Choice set B), which is significantly higher than the corresponding effect on small multi-donor funds (1-2 percentage points in Choice set A; 0.6 or 0.7 percentage points in Choice set B), which is in turn significantly higher than for single-donor trust funds (negative coefficients, not

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[5] Year fixed effects further control for negative shocks on the world economy as a whole. However this is not what drives the difference in coefficients.

significantly different from zero). For the significance of the differences in coefficients across regression types, see the corresponding Wald tests in the Annex, Tables A-5 and A-6.

Regarding trust funds focusing on fragile states, results are equally robust. As expected, in this context, the opportunity of risk sharing usually leads to large multi-donor trust funds, while single-donor trust funds tend to be less attractive. If the focus of the trust fund is on fragile states, the propensity to become a member of a large multi-donor trust fund increases by 6-7 percentage points in Choice set A, and by 2.2 or 2.3 percentage points in Choice set B.

Overall, these results hence confirm our hypotheses, whereby the coefficient of sectoral variation and the indicator variables for global activities and fragile states are particularly robust.

A brief consideration of the control variables can be useful as a further assessment of the plausibility of the overall specification. Among the variables that control for overall resources at a donor's disposal, the logarithm of GDP and the percentage share of multilateral aid in total aid are not significant. However, the logarithm of bilateral aid is significant, and it has a positive effect on membership in large funds. The effect on large funds alone may relate to the fact that large donors have enough capacity to spend the aid for which they have very donor-specific preferences directly as bilateral aid, so that within multi-bi aid, the greater resources positively affect only the large cooperative undertakings. This is in line with the coefficient estimates for the share of administrative cost (in percent of bilateral aid). The higher this share, the greater should be the bilateral donor's own capacity (including staff and expertise). This reduces the need to roll over administrative tasks such as concrete project identification and monitoring to the multilateral agency. At the same time, it increases the possibility to adhere to (and even initiate and drive) multi-donor activities. When capacity is high, donors may actually want to take up leadership roles to promote their ideas within the donor community.

We use a concrete measure for specific leadership skills, namely the service as a chair or co-chair of DAC working parties related to the topic of the fund. According to our regression estimates, such a role within the DAC is indeed positively related to participation in large multi-donor trust funds (although the coefficient is significant only in Choice set A). The remaining variables that we include to capture (other forms of) capacity do not show any clear relationship with trust fund participation. The number of researchers and the volume of investment in research and development have compensating effects and they vanish, if only one variable is included in the model (not shown). The general measure of donors' bureaucratic quality also remains insignificant. Our final control variable that looks at particularly contentious issues within the World Bank does not show the expected positive effects on multi-bi aid in general. If at all, it has a negative effect on large trust fund membership (significant in Choice set B). This finding could reflect that these sensitive topics are not only difficult to agree upon among World Bank members as a whole, but also among a larger set of donor countries. In this sense, it would, in fact show yet another situation in which preference heterogeneity among donors hinders the creation of large multi-donor trust funds, which is in line with the results from the main part of our analysis.

Our main findings are also unaffected by different estimation techniques. As another robustness check, we performed conditional logit estimations, accounting for the binary nature of the dependent variable. As a result, all coefficients of the variables of interest were virtually unaffected.[6]

6 Discussion

Overall the results of the empirical analysis are well in line with the predictions of our model. The arguments usually mentioned in support of the new instrument of multi-bi aid, namely synergies between individual donors, the opportunity for greater donor cooperation and coherence in line with the objectives of the Paris Declaration, the opportunity for risk sharing, and the chance to provide fast finance to activities commonly recognized as urgent global problems, can only explain multi-bi aid to a limited extent. Clearly, these factors are related to participation in (usually large) multi-donor trust funds, but the large number of single-donor trust funds cannot be explained by these considerations. Preference heterogeneity seems to be so strong that for a large number of activities and recipients, donor countries prefer a single-donor relationship. Whether this relationship is then build on multi-bi aid or on bilateral aid without any multilateral channel seems to be primarily a matter of individual donor capacity, and of individual donor tastes captured by the fixed effects in our econometric analysis.

In brief, for single-donor trust funds, the advantages of multi-bi aid are limited to private gains for the individual donor, while, at the same time, the costs for the multilateral agency are high. As for all multi-bi aid, oversight, monitoring and strategic choices can be severely impacted. As these costs arise mainly at the higher management level while the individual operative units at the multilateral agency may enjoy the freedom through own third party funding, a situation in which overall costs exceed overall benefits can easily arise.

Figure 3 shows the number of trust funds within the World Bank by number of member countries, and hence the extent of the potential problem. The share of single-donor trust funds within overall funds is as high as 80 percent, and large multi-donor trust funds with at least five donors are a minority of 8 percent.

This calls for a closer analysis of the cost and benefits of single-donor trust funds including all the different perspectives (of bilateral donors, and of different levels within the multilateral agency). At the least, multilateral agencies might want to ensure that trust funds have to be agreed upon at their executive or governing boards, and that they have to follow some of the essential rules generally in place for the organization. The recent reform strategies adopted by the World Bank and some other major multilaterals hence point into the right direction.

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[6] Results can be obtained from the authors upon request.

Figure 3: Distribution of trust fund sizes by number of donors.
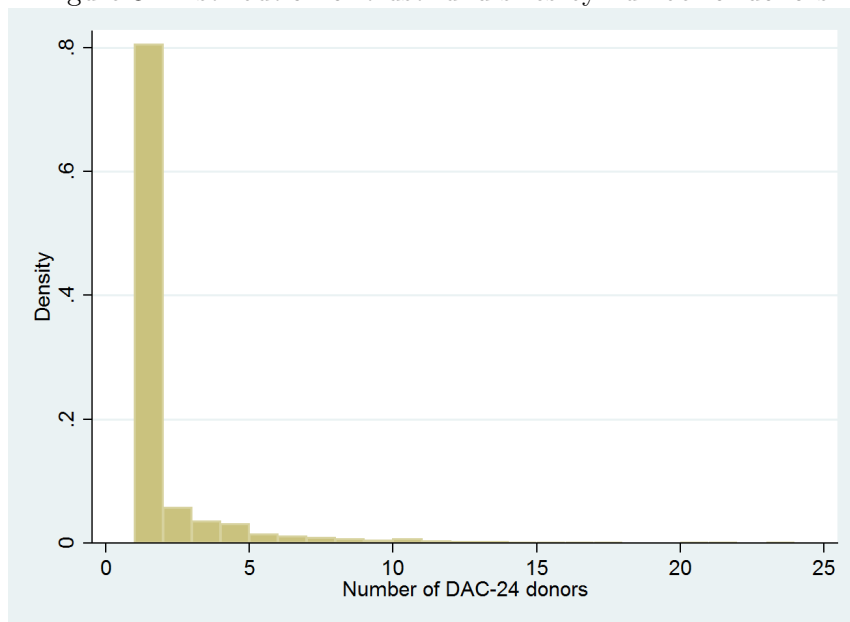
7 Conclusion

While existing studies of donors' institutional choices focus on bi- and multilateral aid, this paper discusses the multiple choices in between. They matter both in terms of volume and numbers that increased massively since the early 1990s, and in terms of the tradeoff between costs and benefits involved. For bilateral donors the latter can be conceived as a tradeoff between the ability to control disbursement decisions, and the possibility to share the burden with other donors. For the multilateral agencies involved, additional transaction costs for management, monitoring and administration of these multiple funds must be considered. This implies that the bilateral donors' optimal choices (that are generally welcomed by the operative units of the multilaterals concerned) may not always be in the the interest of the multilateral agency as a whole, and may not be efficient from a general development perspective.

We consider that potential gains are smallest for single-donor trust funds, as they cannot reap benefits from cooperation and - just as bilateral aid - allow donors to pursue their private interests, which may well be to the detriment of development priorities. In an illustrative theoretical model we show the individual donor choices under different external conditions regarding the (thematic and geographic) area of intervention, and the economic situation in the donor country. Based on a seemingly unrelated regression analysis of the World Bank's trust fund database over the last decade, we find that preference homogeneity among donors as well as indicators for global activities and fragile states assistance (all cases where burden sharing is important) increase the donors willingness to opt for (large) multi-donor funds. In contrast, donors tend to prefer single-donor trust funds in areas in which their national (e.g., commercial) preferences dominate. While they could use bilateral aid for the same purpose, they often prefer to channel the funds through multilateral agencies

to benefit from the agency's expertise and to role over administrative cost, notably when their own capacity is limited. This confirms prior qualitative case-studies and evidence from donor reports, and suggests that the heavy use of the instrument of single-donor trust funds requires some reconsideration. Reform processes that have started at the World Bank and other international organizations in recent years show that the problem has now been recognized and that action is taken to improve full cost recovery and the alignment with the multilaterals' priorities. Our results suggest that these reforms are useful steps to improve overall efficiency.

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Annex

Table A-1: A simple example to illustrate the model.

Case	A	B	C	Funding choice	Marginal fund
1	SDTF	SDTF	SDTF	$M^A{=}1$, $M^B{=}0$, $M^C{=}1$	$\bar{U} = U^A$
2	SDTF	SDTF	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$
3	SDTF	SDTF	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$
4	MDTF≤ 4	SDTF	SDTF	$M^A{=}1$, $M^B{=}0$, $M^C{=}1$	$\bar{U} = U^A$
5	MDTF≤ 4	SDTF	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$
6	MDTF≤ 4	SDTF	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$
7	MDTF≥ 5	SDTF	SDTF	$M^A{=}1$, $M^B{=}0$, $M^C{=}1$	$\bar{U} = U^C$ *
8	MDTF≥ 5	SDTF	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$ *
9	MDTF≥ 5	SDTF	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$ *
10	SDTF	MDTF≤ 4	SDTF	$M^A{=}0$, $M^B{=}1$, $M^C{=}1$	$\bar{U} = U^B$
11	SDTF	MDTF≤ 4	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^A$
12	SDTF	MDTF≤ 4	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^A$
13	MDTF≤ 4	MDTF≤ 4	SDTF	$M^A{=}1$, $M^B{=}0$, $M^C{=}1$	$\bar{U} = U^A$
14	MDTF≤ 4	MDTF≤ 4	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$
15	MDTF≤ 4	MDTF≤ 4	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^B$
16	MDTF≥ 5	MDTF≤ 4	SDTF	$M^A{=}.$, $M^B{=}.$, $M^C{=}1$	$\bar{U} = .$ **
17	MDTF≥ 5	MDTF≤ 4	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = .$ **
18	MDTF≥ 5	MDTF≤ 4	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = .$ **
19	SDTF	MDTF≥ 5	SDTF	$M^A{=}0$, $M^B{=}1$, $M^C{=}1$	$\bar{U} = U^B$
20	SDTF	MDTF≥ 5	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^A$
21	SDTF	MDTF≥ 5	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^A$
22	MDTF≤ 4	MDTF≥ 5	SDTF	$M^A{=}.$, $M^B{=}.$, $M^C{=}1$	$\bar{U} = .$ **
23	MDTF≤ 4	MDTF≥ 5	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = .$ **
24	MDTF≤ 4	MDTF≥ 5	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = .$ **
25	MDTF≥ 5	MDTF≥ 5	SDTF	$M^A{=}0$, $M^B{=}1$, $M^C{=}1$	$\bar{U} = U^B$
26	MDTF≥ 5	MDTF≥ 5	MDTF≤ 4	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^A$
27	MDTF≥ 5	MDTF≥ 5	MDTF≥ 5	$M^A{=}1$, $M^B{=}1$, $M^C{=}0$	$\bar{U} = U^A$

Notes: Donor choices under all possible constellations and all possible types of trust funds available to each donor for an example of 3 donors, 3 funds, and 3 constellations. M^X refers to the funding choice with respect to the proposed fund X, whereas $\bar{U}$ gives the utility of the $\bar{M}$-best fund, or, the marginal fund still being funded.

* (unless MDTF≥ 5 is very large)
** (depends on exact α)

Table A-2: Detailed information on all variables.

Variable name	Further explanations and base sources
Dependent variable	
Participation decision	1 whether the donor *ccode* indeed was a donor to trust fund with identifier *trustee* over FY02–FY13 (World Bank 2014b)
Categorical variables	
Single-donor trust fund (SDTF)	Exactly one participating donor (sovereign donor with a positive vote share in the Board); this is a behavioral definition, not a legal definition, as a single donor could set up a trust fund using the legal instrument of a MDTF; the discrepancy is empirically irrelevant; as above, any contribution over FY02 and FY13 will be considered (World Bank 2014b)
Small multi-donor trust fund (MDTF≤4)	More than one sovereign donor participating in the fund, but at most four donors; participation requires at least one positive contribution over FY02–FY13 (World Bank 2014b)
Large multi-donor trust fund (MDTF≥5)	More than four sovereign donors participating in the fund (World Bank 2014b)
Main predictors	
Preference heterogeneity	Coefficient of variation in donor preferences in the sectors underlying the trust fund over the three years before its establishment; donor preferences are given by sector shares in bilateral aid, using data from OECD/DAC Creditor Reporting System (2014b). Formally, the measure computes as follows: For S sectors of a TF, obtain the relative shares s_i (i=1, ..., n). Compute the standard deviation σ_s of the series $\{s_i\}$ and divide by its mean μ. Take the simple average over all S sectors to obtain the heterogeneity measure.
Middle-income country assistance	Trust fund supports non-member country of the World Bank; obtained from string pattern matching algorithm on the *trusteename* (World Bank 2014b)
Unemployment rate	Donor unemployment rate (%) in the three years before activation of the trust fund (OECD 2014a)

Number of sectors with G8 summit pledges	Number of sectors of the trust fund in which the international community made a pledge at the G8 summit in the year before activation of the TF (hand-coding available upon request)
Global activity	Trust fund supports global activities; variable *countrygrouping* in the original data set; non-global activities are country-specific activities and regional activities (World Bank 2014b)
Fragile state assistance	Trust fund supports fragile state; variable *fragileflag* in the original data set (World Bank 2014b)
Control variables	
Logarithm of GDP	Gross Domestic Product (GDP), logarithm of constant billion USD value, PPP and output approach, in the three-year period prior to TF creation (OECD 2014a)
Logarithm of bilateral aid	Bilateral aid in the three-year period prior to TF creation (using constant million USD values reported in DAC1) (OECD 2014b)
Multilateral aid (% of total aid)	Multilateral aid in % of total ODA in the three-year period prior to TF creation OECD 2014b, DAC1 table)
Administrative costs (% of bilateral aid)	Administrative costs share in % of bilateral aid in the three-year period prior to TF creation (OECD 2014b, DAC1 table)
Researcher density	Researcher density: Number of researchers per 100 full-time employees, in the three years prior to TF creation (OECD 2014a)
Logarithm of R&D expenditure	R&D expenditure, logarithm of constant USD value, in the three-year period prior to TF creation (OECD 2014a)
Government quality	ICRG index on bureaucratic quality of donor country (QoG 2014)
DAC (co)chair	Whether donor held a (co)chair in the relevant OECD/DAC working group in the three years before establishment of the trust fund; relevant working groups are related to the sector underlying the trust fund (e.g., chairmanship in the Peace and Governance Working

	Group was only coded for trust fund assisting fragile states) (hand-coding available on request)
Contentious issue	At least one match in the titles of any of the projects under the fund search string: "hydropower", "rain forest" and "Brazil", "privatization" and "school" (or "education"), "North Korea", or "Cuba"; At least one match with the list of underlying World Bank sectors and themes deemed to be contentious (i.e., hydropower, privatization, anti-terrorism and money laundering); expert survey item was considered contentious if it was judged relative more contentious than not (World Bank 2013b)

Table A-3: Robustness tests with different thresholds using Choice set A.

	SDTF	MDTF≤ 6	MDTF≥7	MDTF≤ 10	MDTF≥11
Preference heterogeneity	-0.003	0.002	-0.016	-0.050***	-0.431***
	(0.006)	(0.017)	(0.057)	(0.017)	(0.109)
Middle-income country assistance	-0.001	-0.003	-0.123***	-0.007	-0.140***
	(0.003)	(0.009)	(0.024)	(0.009)	(0.041)
Unemployment rate	0.005	0.027*	-0.010	0.022	0.035
	(0.005)	(0.016)	(0.063)	(0.017)	(0.068)
Number of G8 summit pledges	-0.002	0.007	0.030**	-0.001	0.058**
	(0.002)	(0.006)	(0.014)	(0.006)	(0.023)
Global activity	-0.005*	0.015*	0.126***	0.037***	0.203***
	(0.003)	(0.008)	(0.024)	(0.008)	(0.050)
Fragile states assistance	-0.008**	-0.003	0.067***	0.006	0.126***
	(0.003)	(0.010)	(0.025)	(0.010)	(0.042)
_cons	-0.004	0.047	0.359	-0.364	1.084***
	(0.041)	(0.082)	(1.048)	(0.295)	(0.276)
Donor fixed effects	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Observations	23075	6041	2067	7074	1034
Adjusted R^2	0.06	0.11	0.22	0.11	0.29
Percent correctly predicted positives	83.3	77.7	76.7	77.7	78.0
Percent correctly predicted negatives	59.8	63.6	63.7	62.9	68.7
Cutoff	0.034	0.097	0.401	0.125	0.515

Robust standard errors clustered on donors in parentheses. Significance levels: *.1 **.05 ***.01
Cutoffs for each fund type represent the unconditional means.

Table A-4: Robustness tests with different thresholds using Choice set B.

	SDTF	MDTF≤ 6	MDTF≥ 7	MDTF≤ 10	MDTF≥ 11
Preference heterogeneity	-0.004	0.002	-0.030***	0.002	-0.012***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
Middle-income country assistance	-0.002	0.001	0.004*	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Unemployment rate	0.003	0.007**	-0.001	0.007**	-0.002
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
Number of G8 summit pledges	-0.002	0.003**	0.006***	0.003**	0.007***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Global activity	-0.009***	0.006***	0.056***	0.006***	0.043***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Fragile states assistance	-0.008***	0.004**	0.022***	0.004**	0.014***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
_cons	-0.051	-0.083	-0.021	-0.083	-0.016
	(0.071)	(0.054)	(0.073)	(0.054)	(0.059)
Donor fixed effects	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Observations	31183	31183	31183	31183	31183
Adjusted R^2	0.05	0.02	0.04	0.02	0.03
Percent correctly predicted positives	83.5	87.5	87.5	87.5	95.4
Percent correctly predicted negatives	60.3	49.9	55.1	49.9	49.6
Cutoff	0.025	0.013	0.031	0.013	0.017

Robust standard errors clustered on donors in parentheses. Significance levels: *.1 **.05 ***.01
Cutoffs for each fund type represent the unconditional means.

Table A-5: Wald tests corresponding to Table 1.

(1)	SDTF	SDTF	MDTF≤4	SDTF	SDTF	MDTF≤4	SDTF	SDTF	MDTF≤4
(2)	MDTF≤4	MDTF≥5	MDTF≥5	MDTF≤4	MDTF≥5	MDTF≥5	MDTF≤4	MDTF≥5	MDTF≥5
Preference heterogeneity	0.820	0.000***	0.000***	0.711	0.000**	0.000***	0.922	0.000***	0.000***
Middle-income country assistance	0.720	0.000***	0.001***	0.843	0.000***	0.000***	0.600	0.000***	0.003***
Unemployment rate	0.067*	0.225	0.391	0.086*	0.386	0.083*	0.090*	0.434	0.166
Number of G8 summit pledges	0.016**	0.727	0.249	0.322	0.008***	0.111	0.452	0.096*	0.339
Global activity	0.080*	0.000***	0.001***	0.034**	0.000***	0.001***	0.012**	0.000***	0.001***
Fragile state assistance	0.929	0.006***	0.012**	0.839	0.001***	0.002***	0.427	0.006***	0.019**

Significance levels: * .1 ** .05 *** .01

Notes: Cell entries are p-values of Wald tests on the differences between coefficients from equation (1) and (2) as shown by the column header (robust standard errors clustered on donors are used).

Table A-6: Wald tests corresponding to Table 2.

(1)	SDTF	SDTF	MDTF≤4	SDTF	SDTF	MDTF≤4	SDTF	SDTF	MDTF≤4
(2)	MDTF≤4	MDTF≥5	MDTF≥5	MDTF≤4	MDTF≥5	MDTF≥5	MDTF≤4	MDTF≥5	MDTF≥5
Preference heterogeneity	0.204	0.000***	0.000***	0.205	0.000***	0.000***	0.369	0.020**	0.000***
Middle-income country assistance	0.458	0.041**	0.121	0.461	0.041**	0.000***	0.602	0.390	0.694
Unemployment rate	0.232	0.266	0.952	0.506	0.210	0.209	0.722	0.111	0.228
Number of G8 summit pledges	0.000***	0.000***	0.040**	0.000***	0.000***	0.039**	0.001***	0.000***	0.012**
Global activity	0.010***	0.000***	0.000***	0.010**	0.000***	0.000***	0.011**	0.000***	0.000***
Fragile state assistance	0.041**	0.000***	0.000***	0.042**	0.000***	0.000***	0.013**	0.000***	0.000***

Significance levels: * .1 ** .05 *** .01

Cell entries are p-values of Wald tests on the differences between coefficients from equation (1) and (2) as shown by the column header (robust standard errors clustered on donors are used).