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Why aid is unpredictable: an empirical analysis of the gap between actual and planned aid flows

Article (Accepted version)
(Refereed)

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Why Aid is Unpredictable:

An Empirical Analysis of the Gap between Actual and Planned Aid Flows

Forthcoming in:

Journal of International Development

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Abstract: Aid flows continue to be volatile and unpredictable, even though it is widely accepted that this erodes the effectiveness of foreign aid. We argue that fragmented donor-recipient relationships, notably the large number of minor aid relations that tend to be associated with donors' desire to 'fly their flag' around the world, increase aid unpredictability. Our empirical analysis of the determinants of aid unpredictability suggests that aid becomes less predictable with more fragmented donor-recipient relationships. Specifically, the effect of fragmentation on overshooting previous spending plans is statistically significant and substantively important. In contrast, fragmented donor-recipient relationships have no effect on the shortfall of actual aid compared to donors' spending plans.

1. Introduction

It is widely accepted among scholars that volatile and unpredictable aid flows impair the effectiveness of foreign aid in promoting the economic and social development of recipient countries (Lensink and Morrissey 2000; Kharas 2008; Mokoro 2011; Kodama 2012). Celasun and Walliser (2008) stress that both aid shortfalls and windfalls tend to undermine macroeconomic management in the recipient countries. Bulir and Hamann (2008) argue that it is mainly in poor, aid-dependent recipient countries that volatile aid has adverse macroeconomic effects.[1]

The donors have principally accepted that predictability in aid relationships is important.[2] In the so-called Paris Declaration of 2005, donors committed "to provide reliable indicative commitments of aid over a multi-year framework and disburse aid in a timely and predictable fashion according to agreed schedules" (paragraph 26).[3] The subsequent Accra Agenda for Action in 2008 strengthened this commitment: "Beginning now, donors will provide developing countries with regular and timely information on their rolling three- to five-year forward expenditure and/or implementation plans, with at least indicative resource allocations that developing countries can integrate in their medium-term planning and macroeconomic frameworks" (paragraph 26). Nevertheless, aid flows continue to be unpredictable from the perspective of various recipient countries. Assessing the progress in implementing the Paris Declaration, the OECD (2011a: 75) noted that some recipient countries (e.g., Angola and El Salvador) received only half of what donors indicated three years earlier, while some other

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[1] However, this claim is disputed by Hudson and Mosley (2008).
[2] For details, see e.g. OECD (2011a: chapter 5).
[3] For details on the Paris Declaration and the Accra Agenda for Action see: http://www.oecd.org/dac/effectiveness/34428351.pdf (accessed: June 2014).

recipient countries (e.g., the Central African Republic and Nigeria) received more than twice as much as indicated before.

This raises the question of *why* aid relationships continue to be unpredictable. We explore this question by analyzing the determinants of aid predictability, which to the best of our knowledge represents our first novel contribution to the literature. To do so, we analyze the effect of various factors that may result in deviations between actual and planned aid flows, including changing conditions in the recipient countries, donor characteristics, and strategic and trade-related aid motives. As our second contribution, we focus on one particular factor that has received significant attention in the literature on the effectiveness of aid. Specifically, we explore whether and, if so, why fragmented donor-recipient relationships have an impact on deviations between actual and planned aid flows in both upward and downward direction. Kilby (2011) as well as Gosh and Kharas (2011) observe a steeply rising number of aid projects, while the average size of projects has shrunk considerably. Gosh and Kharas (2011: 1918) suspect that the fragmentation of aid "makes it even harder for aid agencies to coordinate their activities and duplication and waste could be growing. Hence, we hypothesize that the large number of quantitatively minor aid relations that tend to be associated with donors' desire to 'fly their flag' around the world, instead of coordinating their aid allocation more closely, exacerbates aid unpredictability. We find that aid indeed becomes less predictable under conditions of fragmented donor-recipient relationships. Strikingly, however, the effect is contingent on whether actual aid exceeds or falls short of previous spending plans. Specifically, the effect of fragmentation on overshooting previous spending plans is statistically significant and substantively important whilst the effect on shortfalls of actual aid compared to spending plans is statistically indistinguishable from zero and diminishingly small in size.

Some donors (particularly Greece, Japan and the United States) do not release detailed forward spending plans.[4] Nevertheless, it is feasible to assess the determinants of the gaps between actual aid flows and the forward spending plans across recipient countries by drawing on data for the group of all donors as released by the OECD's Development Assistance Committee (DAC) in its recent Reports on Aid Predictability (OECD [a]).[5] We describe these data in more detail in Section 3, after specifying our hypothesis on fragmented donor-recipient relationships in Section 2. Section 4 presents our results. Section 5 summarizes and concludes.

2.   The role of fragmented donor-recipient relations

Donors may have good reasons for revising earlier spending plans, notably when the need of recipients for aid is higher or lower than expected. On the one hand, earlier spending plans may be revised upwards for recipient countries which have an unexpectedly high need for aid, e.g., due to natural disasters. On the other hand, spending plans may be revised downwards for recipient countries whose economic situation develops better than expected. Holding the need for aid constant, recipient countries may 'deserve' more aid than originally planned, e.g., when local governance conditions improve. Donors favoring democratic regimes are likely to increase aid allocations after countries move toward a more democratic regime. By contrast, countries may deserve less aid than anticipated when local conditions for making effective use of planned aid volumes deteriorate. In particular, donors may cut planned aid after military coups and regressions to autocracy.

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[4] According to the 2012 DAC Report on Aid Predictability, 15 out of 23 DAC members agreed to publish detailed spending plans (OECD [a], 2012 9). Only ten DAC donor countries participated in the assessment of aid predictability by Mokoro Ltd. (2011). As acknowledged in Mokoro's report, "there is a self-selection bias as the donors have chosen whether to participate or not in this exercise" (page 17). See Appendix 3 for the list of donors not releasing any spending plans in particular years.
[5] For the list of available reports, see: http://www.oecd.org/development/effectiveness/aidpredictability.htm (accessed: June 2014).

Apart from needs- and merit-related reasons to revise earlier spending plans, we hypothesize that the predictability of aid flows is impaired by the presence of various donors with uncoordinated aid activities in a particular recipient country. According to Easterly and Williamson (2011: 1935), it is widely agreed that the effectiveness of aid is undermined by "too many donors in too many countries, stretched across too many sectors or projects." For instance, Acharya et al. (2006: 1) argue that successful aid experiences after World War II – notably US support to Western Europe under the Marshal Plan and to South Korea and Taiwan – have proved difficult to repeat since "the number of sources and channels of aid have increased faster than the actual volume of aid." Today, "aid often underperforms because it flows through too many institutional channels" (ibid: 6).[6] The proliferation of donors and the fragmentation of aid relations render aid less effective not only by increasing transaction costs but also by weakening each single donor's incentive to assume responsibility for the overall development impact of total aid transfers. Competing donors are suspected to 'fly the flag' and care mainly about the visibility of their own projects rather than about the effectiveness of aid (Chun et al. 2010).

Among the transmission mechanisms through which fragmented donor-recipient relations could impair the effectiveness of aid, previous studies have paid particular attention to adverse effects on bureaucratic quality in the recipient countries. According to Acharya et al. (2006: 6), indirect transaction costs "take the form of the dysfunctional bureaucratic and political behaviour that is stimulated by aid proliferation." Knack and Rahman (2007: 193) present a formal model and empirical evidence "suggesting that competitive donor practices, where there are many small donors and no dominant donor, erode administrative capacity in recipient country governments." Kilby (2011: 1981) stresses an increasing number of smaller aid projects as an important implication of aid fragmentation, causing "more administrative work for overtaxed recipient

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[6] For a similar line of reasoning, see Knack and Rahman (2007).

governments per dollar of aid received."[7] Other transmission channels have been largely neglected so far. Our analysis therefore aims to complement the existing literature by identifying another important transmission mechanism and testing the hypothesis that fragmented donor-recipient relations lead to volatile and unpredictable aid flows, thereby undermining the recipients' macroeconomic management.

From the recipients' perspective it becomes increasingly difficult to predict expected aid flows in a reliable way if they have to negotiate with various donors. Recipient countries in Asia and Africa had to deal with an average number of 26 and 24 (bilateral and multilateral) official donors, respectively, in 2009 (OECD 2011b). The OECD report also observed that the problem of "too little aid from too many donors" was most common in low-income countries with the least institutional capacity to manage complex relations with an "increasing number of financially less-significant actors" (ibid: 8). Furthermore, it appears that the fragmentation problem originates to a large extent from bilateral sources of aid. Hence, our empirical analysis focuses on 23 bilateral donors from the OECD's Development Assistance Committee (DAC).

The outcome of negotiations with various donors is especially difficult to predict when donors do not coordinate their activities or even compete for attractive projects in recipient countries. In contrast to repeated official DAC declarations such as the Paris Declaration of 2005 and the Accra Agenda for Action of 2008, the available empirical evidence suggests that uncoordinated aid activities and the failure of donors, including those with only marginal contributions to overall aid, to agree on a clearer division of labor at the recipient country level continue to impede aid predictability. For instance, Aldasoro et al. (2010) provide descriptive statistics pointing to persistent aid duplication. Frot and Santiso (2011) find evidence for herding among donors by employing herding measures inspired by the financial market literature. The

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[7] Similarly, Knack et al. (2011: 1911) argue that the "proliferation of distinct aid projects imposes unnecessary transaction costs on recipients and unduly taxes their administrative capacity."

regression analyses of Nunnenkamp et al. (2013) indicate that coordination among donors has even weakened since the Paris Declaration. The OECD-DAC's own monitoring of donor behavior acknowledges that little progress has been made among donors to implement the Paris Declaration (OECD 2011a). This leads to our first hypothesis:

H1: More fragmented donor-recipient relations result in larger deviations of actual aid disbursements from predicted and planned aid.

The unpredictability of aid flows is not necessarily symmetric in the sense that overshooting and undershooting are equally likely. For instance, Frot and Santiso (2011) find evidence for asymmetric herding in the donors' response to political transitions in recipient countries. According to a preliminary assessment of aid predictability in a recent DAC report, overshooting is more likely than undershooting (OECD a, 2010). Aggregate figures for 2009 indicated that, on average, each donor disbursed, respectively, 3% and 8% more aid than planned one or two years earlier.[8] The OECD (a, 2010: 6) mentions the "conservatism of donors' predictions" and unexpected aid challenges in the context of food, energy and financial crises as plausible explanations of overshooting.[9] The sudden outbreak of Ebola in several countries in Western Africa in the summer of 2014 provides another example of unexpected challenges requiring aid interventions over and above previously planned activities.

Importantly, fragmented donor-recipient relations may help explain why overshooting previous spending plans is more likely than undershooting and why the extent of overshooting is

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[8] As noted below, however, this average hides considerable differences between donors. It hides even larger heterogeneity across recipient countries: In 48 per cent of observations in our sample did recipients experience an aid under-shoot rather than an aid over-shoot.

[9] Specifically, the report notes that aid programming by multilateral agencies may be deliberately conservative during the process of pending replenishment negotiations.

on average larger than the extent of undershooting.[10] Donor fragmentation may grant recipient governments leverage to extract extra funds over and above planned aid by playing off various donors against each other. By contrast, recipient countries would have less such bargaining power when being confronted by a dominant donor or a small group of coordinating donors.

This would explain why "recipient governments also contribute to proliferation-fragmentation, above all perhaps by taking few initiatives to overcome these problems" (Acharya et al. 2006: 14). In a similar vein, Knack and Rahman (2007) argue that recipient governments have weak incentives to avoid competitive donor practices by limiting the number of active donors and discontinuing non-significant aid relations. For instance, line ministries in the recipient country may exploit the duplication of donor efforts at the sector level to gain access to extra aid funds, including from quantitatively minor donors attempting to fly their flag and improve visibility.

Incentive structures on the part of donors render it also more likely that with fragmented donor-recipient relations forward spending plans are overshot rather than undershot. Donors often compete for attractive projects, the attention and time of policymakers and public servants, and influence over the recipient country's policies (Acharya 2006). Topping up planned aid in negotiations with the recipient government offers a promising way to win the competition among donor countries.

Incentives for overshooting also appear from a public choice perspective on the competition for resources and competencies among various aid agencies within donor countries.[11] According to Kilby (2011), competition among aid agencies is closely associated with fragmented aid, notably by leading to an increasing number of small projects. Agencies benefit in

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[10] US$ 61 million as opposed to 51 million on average in our sample.
[11] For instance, Germany and the United States are well-known for their complicated net of agencies engaged in foreign aid.

terms of status and future budgets from a more global project portfolio, even if the average size of projects is rather small.[12] At the same time, bureaucratic competition among fragmented agencies creates incentives for overshooting previously planned aid budgets. It would clearly be counterproductive not to fully exhaust currently available resources, considering that aid agencies are typically assumed to have the objective of maximizing future aid budgets (e.g., Knack and Rahman 2007). Whenever new and unexpected tasks emerge, the aid agencies are likely to argue that previously planned outlays, based on 'conservative' programming in parliament and central government, are insufficient to meet additional challenges. Hence, the incentives guiding agency behavior suggest that overshooting planned aid is more likely than undershooting. Since, all other things equal, with more donor fragmentation there will also be more aid agencies of donors involved and hence more competition among donor agencies, donor fragmentation is again more likely to result in over- than in under-shooting of actual aid.

This leads to a more specific second hypothesis on the predictability of aid:

H2: The effect of more fragmented donor-recipient relations is larger on overshooting of actual aid compared to spending plans than on undershooting.

3. Data and approach

As noted before, we follow the DAC Reports on Aid Predictability (OECD [a]) in considering CPA as the basis for calculating gaps between actual and planned aid as our dependent variable. As stressed by the DAC (see, e.g., OECD [a] 2009: 10), CPA captures the contributions of donors to 'core' development programs; it "is subjected to multi-year planning at

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[12] Kilby's reasoning may apply especially to the aid agencies of relatively small donors whose "aid agency officials derive prestige and influence from maintaining a global presence on par with the larger bilateral and multilateral agencies" (Knack and Rahman 2007: 195).

country/regional level and reflects the amount of aid that can be programmed at those levels."

CPA is defined through exclusion, by subtracting from overall aid those items that (i) are unpredictable by nature (humanitarian aid and debt relief); (ii) do not involve cross-border flows (e.g., administrative costs); (iii) are not part of cooperation agreements between governments (e.g., food aid); and (iv) cannot be programmed at the country level (e.g., core funding of NGOs). Again in line with DAC practice, we use gross disbursements of CPA in the following.

We draw on the annual DAC Reports on Aid Predictability (available since 2008) to calculate the deviations between actual and planned disbursements in constant 2011 US$ during the 2008-2011 period. As noted in the introduction, the forward spending plans of individual donors revealing the distribution of planned aid across recipient countries were kept confidential by the DAC during our period of observation. Nevertheless, the aggregated information provided by the DAC for aid flows to *all* recipient countries in 2009 indicates that donors differ considerably in terms of adhering to previous spending plans (see Table 1 in the 2010 Report for details). The DAC's one-year predictability ratio, relating actual flows in 2009 to flows planned for 2009 one year before, ranged from 60% (Italy) to 120% (Germany) among bilateral donors. Deviations from plans issued one year before were less than five percent for just seven of the 20 bilateral donors listed in the report. Compared to bilateral donors, multilateral agencies typically exceeded previous plans (on average by 13% within a year). [13]

For the subsequent analysis, we compare actual CPA disbursements by the group of donors covered in the DAC reports with CPA disbursements as planned one, two, or three years earlier.[14] Given that planned CPA is available since 2008 the data allows for nine comparisons for each recipient country: four comparisons of actual CPA with plans in the preceding year, three comparisons of actual CPA with plans two years earlier, and two comparisons of actual

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[13] The issue of donor-specific adherence to forward spending plans is taken up again in the concluding section.

[14] The 2012 report was the first with extended forward spending plans of four years, instead of three years.

CPA with plans three years earlier. In our empirical analysis of the determinants of deviations between actual and planned aid, we pool all nine observations of the dependent variable for each recipient country. Considering that deviations between actual and planned aid may be larger when the comparison refers to earlier plans, we include 'deviation-specific' fixed effects accounting for the number of years between the release of planned aid for a particular year and actual aid in that particular year. In addition to the pooled estimations, we perform estimations where we assess the determinants for one, two and three year deviations separately (see the robustness tests at the end of Section 4 for details).

Importantly, we observe positive and negative deviations between actual and planned aid. In about 55 percent of observations in our sample we observe positive (upward) deviations from spending plans. For a start, we do not differentiate between positive and negative deviations with our dependent variable simply being the natural log of absolute deviations, assuming that our explanatory variables affect deviations in both directions in the same way. Subsequently, we relax the assumption that the factors that result in positive deviations are the same and affect aid predictability in the same strength as negative deviations. Hence, we estimate separate effects for positive and negative deviations of actual aid from planned aid for a particular recipient-year combination. This gives us two coefficients for each variable in the estimations, one for positive and one for negative deviations. To estimate elasticities, we not only log the dependent variable but also all non-categorical explanatory variables.

As discussed in Section 2, fragmented donor-recipient relationships represent our explanatory variable of major interest. Recent academic studies often refer to the industrial organization literature and employ concentration measures such as the Herfindahl-Hirschmann Index (HHI) to measure the inverse of aid fragmentation. In particular, the HHI is widely used to rank donors by their degree of specialization and the concentration of aid in a limited number of

recipient countries and aid sectors (e.g., Easterly and Williamson 2011; Knack et al. 2011).[15] Kilby (2011) employs the HHI to capture several dimensions of fragmentation, including agency fragmentation within donor countries and aid fragmentation in recipient countries. In contrast to the popular donor rankings, our focus is on fragmentation at the level of recipient countries, i.e., "the degree to which a given country's aid receipts are fragmented across many different donors" (Kilby 2011: 1981).

Instead of calculating the HHI at the level of recipient countries, we follow the official OECD-DAC definition by calculating two fragmentation ratios reflecting the relative importance of 'non-significant' aid relations for each recipient country j in year t (OECD 2009; OECD 2011b). We prefer this approach since we expect donors to comply with official DAC rules if and when attempting to reduce fragmentation. Moreover, practitioners in the aid business may more easily observe whether they engage in non-significant aid relations, compared to assessing their 'contribution' to a low HHI. The ratio *Fragmentation_1* considers aid relations to be non-significant if donor i provides a lower share of aid to recipient country j than the donor i's overall share in aid to all recipient countries. The number of non-significant aid relations is then related to the number of all aid relations of recipient country j in year t. Importantly, the number of all aid relations excludes those donors among the 23 DAC donor countries in our sample not providing any aid to recipient country j in year t. The ratio *Fragmentation_2* considers an aid relation to be significant if donor i is among the 23 DAC donors that when ranked according to their aid contribution together provide 90 percent of aid or more to recipient country j in year t. All other aid relations are considered non-significant. Again, the number of non-significant aid relations is then related to the number of all aid relations of recipient country j in year t. Hence,

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[15] Ghosh and Kharas (2011) use z-scores to rank donors according to the transparency of their foreign aid operations.

lower values of both *Fragmentation_1* and *Fragmentation_2* indicate less fragmented aid programs in a particular recipient country at a particular point in time.

As noted in OECD (2011b), *Fragmentation_1* may be biased towards significant aid relations with smaller donors. Smaller donors are usually involved in fewer recipient countries, which makes it easier for them to exceed their global aid share at the country level. In contrast, *Fragmentation_2* may be biased towards significant aid relations with larger donors, for which it is easier to be among the top donors that cumulatively reach the 90 percent threshold at the country level. This is why we prefer a third fragmentation measure which combines the two criteria underlying *Fragmentation_1* and *Fragmentation_2*. Specifically, *Fragmentation_3* considers only those aid relations to be non-significant if donor i provides a lower share of aid to recipient country j than donor i's overall aid share <u>and</u> if donor i is not among the largest donors that cumulatively provide at least 90 percent of aid.[16]

As will be shown in Section 4, the choice between the three alternative measures of fragmented donor-recipient relations hardly matters for our empirical results. The three measures are highly correlated with each other; throughout the period of observation (2007-2011), the correlation coefficients range from 0.85 to 0.92. It may also be noted that the average fragmentation ratios across recipient countries were slightly higher at the end of our period of observation, compared to the first year.[17] This is in striking contrast to repeated donor commitments to reduce the fragmentation of aid.

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[16] By applying these two criteria to significant aid relations, the OECD introduces a 'narrow' definition of concentration "where the recipient is a significant partner country both from the donor's perspective and from the recipient's perspective" (OECD 2009: 11). Likewise, combining the donor's and the recipient's perspective with regard to non-significant relations results in a 'narrow' definition of fragmentation.

[17] *Fragmentation_1* increased from 0.661 to 0.693; *Fragmentation_2* increased from 0.630 to 0.664; *Fragmentation_3* increased from 0.559 to 0.604.

The list of other potential determinants of aid predictability follows the standard aid allocation literature.[18] In our baseline specification, we therefore include recipient countries' GDP per capita (*GDPpc (ln)*) as the most widely used indicator of the recipients' need for aid. Furthermore, we draw on the Polity IV dataset to account for the recipient countries' merit of aid. We use the combined polity score (*Polity2*), which ranges from -10 (most autocratic) to 10 (most democratic). We also control for the recipient countries' population (*Population (ln)*). On the one hand, absolute deviations between actual and planned aid tend to be larger for the major aid recipients, compared to less populated recipients where both actual and planned aid volumes are relatively small. On the other hand, deviations may be relatively large for minor recipient countries as disbursements related to just a few projects could be associated with considerable deviations from planned aid.

We include the lagged dependent variable to control for temporal dynamics. The lagged dependent variable should have a negative sign if donors aspire to correct for previous (positive or negative) deviations. By contrast, a positive sign of the lagged dependent variable would indicate that there is inertia in (positive and negative) deviations over time. With the mean of the dependent and of the aid fragmentation variables almost constant over the period of our studies, we see no reason for being concerned about non-stationarity of the data.

We also account for the possibility that deviations between actual and planned aid could be smaller for forward spending plans released in more recent years (independent of whether they are looking forward by one, two, or three years) – assuming that an increasing number of donors paid heed to repeated calls for predictable aid relationships and engaged in better planning.

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[18] See Appendix 1 on detailed definitions and data sources. Appendix 2 provides summary statistics.

Consequently, we include report-specific fixed effects capturing whether data on planned aid are taken from reports published in 2009, 2010 and 2011, respectively.[19]

In addition, we include year fixed effects accounting for the possibility that deviations of actual aid in particular years from previous plans (independent of when these plans were released) are systematically larger or smaller for all recipient countries due to general cyclical aid fluctuations. Note that we do not include recipient country fixed effects. If we included recipient country fixed effects, our estimations would not conform to the hypotheses introduced above. Importantly, we expect that aid is less predictable for recipients with more fragmented aid relations, rather than only for recipients whose aid relations become more fragmented over time. In other words, both the 'between' and the 'within' variation of fragmentation is relevant in the context of our hypotheses. However, we perform a robustness test below where we include regional fixed effects, employing the World Bank's regional classification. Standard errors are clustered on the recipient countries since not clustering standard errors may overstate the estimator precision. In robustness tests, we show that for the pooled estimations our results are robust to two-way clustering on both countries and reports, following Cameron et al. (2011), accounting for the fact that observations are not independent across information derived from the same DAC report.

In sum, for our main estimations we firstly estimate models of the following specification:

$$\ln(\text{abs}(Aiddev_{ikt})) = \beta_1 \cdot \ln(\text{abs}(Aiddev_{ikt\text{-}1})) + \beta_2 \cdot \ln(Pop_{it\text{-}1}) + \beta_3 \cdot \ln(GDPpc_{it\text{-}1}) + \beta_4 \cdot Polity2_{it\text{-}1}$$

$$+ \beta_5 \cdot Fragmentation_{it} + \mu_r + \lambda_t + \varepsilon_{ikt},$$

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[19] The 2008 report represents the benchmark. Note that we cannot use data on planned CPA from the 2012 report as actual CPA was not yet available.

where i represents recipient country, k represents one, two or three year deviations from spending plans, t represents years; μ_r, λ_t, and ε_{ikt} stand for report-specific fixed effects, year fixed effects, and the error term, respectively.

In a second step, we estimate separate effects for upward and downward deviations from planned aid. We run pooled regressions for these upward and downward deviations, rather than performing separate regressions for them. Doing so allows us to easily test for the equality of coefficient estimates. We therefore create dummy variables for positive and negative deviations of actual from planned aid and interact these with the explanatory variables, thus estimating separate coefficients for the effect of variables on over- and under-shooting.[20] Formally, following the notation in Meyer and von Cramon-Taubadel (2004), we estimate:

$$\ln(abs(Aiddev_{ikt})) = \beta_1 \cdot D_{ikt}^+ \cdot \ln(abs(Aiddev_{ikt-1})) + \beta_2 \cdot D_{ikt}^- \cdot \ln(abs(Aiddev_{ikt-1})) + \beta_3 \cdot D_{ikt}^+ \cdot \ln(Pop_{it-1}) +$$

$$\beta_4 \cdot D_{ikt}^- \cdot \ln(Pop_{it-1}) + \beta_5 \cdot D_{ikt}^+ \cdot \ln(GDPpc_{it-1}) + \beta_6 \cdot D_{ikt}^- \cdot \ln(GDPpc_{it-1}) + \beta_7 \cdot D_{ikt}^+ \cdot Polity2_{it-1} +$$

$$\beta_8 \cdot D_{ikt}^- \cdot Polity2_{it-1} + \beta_9 \cdot D_{ikt}^+ \cdot Fragmentation_{it} + \beta_{10} \cdot D_{ikt}^- \cdot Fragmentation_{it} + \mu_r + \lambda_t + \varepsilon_{ikt},$$

where D_{ikt}^+ and D_{ikt}^- are dummy variables with $D_{ikt}^+ = 1$ if $Aiddev_{ikt} > 0$ and $D_{ikt}^+ = 0$ otherwise; and with $D_{ikt}^- = 1$ if $Aiddev_{ikt} < 0$ and $D_{ikt}^- = 0$ otherwise.[21] In other words, we estimate nested

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[20] The interaction of all explanatory variables with the dummy variables means that we allow the slope of each explanatory variable X to be different for upward and downward deviations from planned aid as our dependent variable Y. We 'split' the effect of the independent variables on the dependent variable, depending on whether the deviation from planned aid is positive or negative, rather than splitting the independent variables according to whether they have positive or negative values. The estimation of different effects of independent variables X on the dependent variable Y is appropriate in the present context since the dependent variable is stated in absolute terms (i.e., it ignores the sign of the deviation). Our approach implies that the splitting variables (i.e., our dummies for negative and positive deviations) have to refer to the same period as the dependent variable (t), not the same period as most of the independent variables (t-1). This resembles the approach in Hühne et al. (2014) who assess the impact of aid-for-trade and gravity-type determinants on bilateral trade in opposite directions, i.e., on the aid donors' exports to aid recipients and vice versa on the aid donors' imports from aid recipients. It is in contrast to another strand of the literature which estimates different effects on Y for positive values of X and for negative values of X. Examples of the latter strand include Meyer and Cramon-Taubadel (2004) and Choi and Kim (2010).

[21] There are no observations in which actual aid is exactly equal to planned aid.

models in order to identify significantly different effects of our explanatory variables on aid deviations in opposite directions.

In additional estimations, we extend the baseline model specification by including further potential determinants of aid unpredictability. Specifically, we include a variable measuring change in the *Polity2* variable, which allows us to test whether it is not just the level of democracy that has an effect, but also a move toward democracy. We construct the variable *Deviation from growth path* to capture donor reactions to unexpected changes in the recipient countries' GDP per capita. Specifically, we calculate the deviation in the growth rate of GDP per capita from the average growth rate in the three previous years. Further, we consider the (logged) number of people affected by natural disasters (*Disasters*) as an additional indicator of unexpectedly large need for aid. Also related to need, we enter two dummy variables accounting for so-called aid orphans and aid darlings. The first dummy variable (*Orphan*) is set to one for all recipient-year combinations for which actual aid is below the 'normal pattern' by at least one percent of the recipient country's GDP. The second dummy variable (*Darling*) is set to one for all recipient-year combinations for which actual aid is above the 'normal pattern' by at least one percent of the recipient country's GDP. In both cases, the 'normal pattern' is estimated by regressing disbursements of CPA (in constant 2011 US$) to all recipient countries in years 2007-2011 on the recipient countries' GDP per capita, their population and their score with regard to the World Bank's governance indicator "voice and accountability." If donors (re-) allocated aid in favor of identified orphans and away from identified darlings, the former dummy should be associated with smaller negative and/or larger positive deviations between actual and planned aid, while the latter dummy should be associated with smaller positive and/or larger negative deviations between actual and planned aid.

In another set of extended estimations, we account for two donor characteristics: (i) whether or not donors released aid spending plans and (ii) whether donors belong to the group of donors classified as egoistic by Berthélemy (2006).[22] Specifically, we include the share of aid coming from donors without forward aid spending plans issued in a particular year (*No_spplan*) and the share of aid coming from egoistic donors (*Egoistic*) in total aid received from all DAC donors by each recipient in year *t*. One may suspect that deviations between actual and planned aid are generally larger (in both directions) when a larger share of aid comes from donors not releasing forward spending plans or classified as egoistic.

We also consider specific egoistic motives of granting aid which could be associated with larger deviations between actual and planned aid. To capture political motives we include a dummy variable set to one whenever a recipient country was a member of the UN Security Council (UNSC). We expect that positive deviations between actual and planned aid are larger at times of UNSC membership when donors have stronger incentives to buy votes by granting more aid. However, this would only be the case to the extent that politically motivated donors could not anticipate which recipient countries were likely to be elected as temporary UNSC members and did not plan aid disbursements accordingly.[23] Moreover, political motivations could also be associated with larger negative deviations if donors observe UNSC votes first and use aid to punish non-compliant and aid-dependent members by cutting planned aid.[24]

To capture trade-related aid motives, we construct a measure of export competition. Following Fuchs et al. (2014), export competition between a dyad of donors *d1* and *d2* with aid

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[22] The group of egoistic donors includes Australia, France, Italy, Japan, and the United States. Appendix 3 provides the list of donors not releasing spending plans in particular years.

[23] According to Dreher et al. (2014), it is often known well in advance which country will be the next representative of a certain region. However, it is not unusual that more than one country competes for this position. In these cases, it will only be clear by October of a certain year, the month the election takes place, which country will enter the UNSC on January 1 the following year.

[24] See Vreeland and Dreher (2014) for a detailed analysis of donor attitudes in the UNSC.

activities in recipient country i at time t is defined as $\text{Min}(X^{d1,i,t}; X^{d2,i,t}) / \text{Max}(X^{d1,i,t}; X^{d2,i,t})$, with X representing the share of exports to recipient i in donor country d's total exports. A larger value of this ratio is supposed to indicate stronger competition within donor dyads with more similar export interests in a recipient country.[25] We then take the average of all dyadic ratios, with higher average ratios indicating stronger competition among all donors with aid activities in the recipient country. While actual aid may exceed planned aid where donors compete for relevant markets, competition for relevant export markets should be rather persistent and be reflected in forward spending plans already.

4. Results

In Table 1, we present our baseline estimations to assess the effects on deviations between actual and planned aid of the three alternative fragmentation measures introduced in Section 3, together with the core set of variables accounting for the recipient countries' merit and need for aid. We start by not differentiating between the effects of variables on over- as compared to under-shooting. Before we come to our variables of principal interest, we briefly describe results on the other explanatory variables. As can be seen, the lagged dependent variable is statistically significant and positive in all three estimations. In other words, donors do not 'correct' earlier deviations from spending plans by subsequent moves in the opposite direction. However, the estimated degree of temporal dependence is rather low. A one percent increase in the deviation observed in the previous year is predicted to be followed by an increase in the same direction by about 0.22 percent.

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[25] A high value of this ratio may also reflect that both countries are equally disinterested in a particular recipient country. We control for this possibility by including the average share of a recipient's exports in a donor's total exports (*Exp_ave*).

Deviations between actual and planned aid are statistically significantly larger for recipient-year combinations with a larger population. The country-size effect clearly dominates the higher relative volatility of aid in small recipient countries with just a few aid projects. Higher GDP per capita goes along with smaller deviations, whereas more democratic regimes experience larger deviations from planned aid.

Most interestingly in the present context, all three alternative measures of fragmented donor-recipient relations carry a positive sign and coefficients are of similar size in Table 1, even if *Fragmentation_2* is not statistically significant at conventional levels. An increase in *Fragmentation_3*, on conceptual grounds our preferred fragmentation measure, by one standard deviation (0.13) is predicted to increase the deviation between actual and planned aid by about 11 percent.

Next, we move to testing our second hypothesis, with results reported in Table 2. Recall that for these tests we report two coefficients for each explanatory variable: the first column shows the effect of the explanatory variable on positive deviations between actual and planned aid, while the second column shows the effect on negative deviations between actual and planned aid. Positive coefficients on an explanatory variable in both columns thus imply that it is associated with larger deviations in both directions. Below the respective standard errors we report the p-value of an F-test for coefficient equality for the effect on positive versus negative deviations for each variable.

The evidence on the lagged dependent variable in Table 2 indicates that, independently of whether we consider positive or negative deviations between actual and planned aid, there is mild inertia in upward and downward deviations over time of roughly the same substantial magnitude as reported above for the estimations in Table 1. Likewise, the positive effects of population hold for deviations in both directions. In contrast, higher GDP per capita in recipient countries goes

along with smaller upward deviations, while its negative effect on downward deviations is not statistically significant. A more democratic regime is predicted to experience more upward deviation of aid with democracy having no statistically significant effect on downward deviations.[26] A one point higher score on *Polity2* (on the 21 point scale from -10 to 10) would result in an around 4 percent increase in actual aid compared to planned aid.

Turning to our explanatory variables of principal interest, all three alternative measures of fragmented donor-recipient relations prove to be significant, at the one percent level, and positive when positive deviations between actual and planned aid represent the dependent variable. In quantitative terms, fragmented donor-recipient relations have a considerable impact on aid predictability as far as positive deviations from forward spending plans are concerned. An increase in *Fragmentation_3* by one standard deviation (0.13) is predicted to increase the positive deviation between actual and planned aid by about 21 percent – a sizeable if perhaps not very large effect. A move from the .05 to the .95 percentile in *Fragmentation_3* is predicted to increase upward aid deviation by 67 percent. The quantitative impact is similarly large for the other measures of donor fragmentation. In contrast to positive deviations, all fragmentation measures are statistically insignificant at conventional levels when negative deviations between actual and planned aid represent the dependent variable. They are also diminishingly small in size. Strikingly, we thus find the effect of fragmented donor-recipient relations not only to be smaller for downward deviations compared to upward deviations, but there is in fact no statistically significant evidence at all for an effect on the shortfall of actual aid compared to previous spending plans. Despite the large standard errors for the coefficients of the fragmentation variables for under-shooting of aid, the marginal effects of fragmentation are

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[26] Note, however, that the F-tests do not reject the equality of coefficients on GDP per capita and *Polity2* for upward and downward deviations.

statistically significantly larger for over- than for under-shooting for the *Fragmentation_2* and *Fragmentation_3* variables.[27]

In Table 3, we report results from extended specifications of the specification from Table 2 in which we include further potential determinants of aid unpredictability. In particular, we include additional indicators to better account for recipient countries' need and merit (column 1), we account for potentially relevant donor characteristics (column 2), and we add variables capturing selfish donor motives (column 3). Finally, we enter all these additional variables at the same time in column 4 of Table 3. For the sake of brevity, we restrict ourselves to *Fragmentation_3*, our preferred measure of fragmented donor-recipient relations.

The evidence on our core set of control variables is essentially as before in Table 2, with one exception. In particular, the signs and significance levels of the coefficients on *Population* and *Polity2* are hardly affected when accounting for a longer list of potential determinants. The same applies to the lagged dependent variable, though the degree of estimated temporal dependence becomes even smaller. The one exception is that a higher per capita income now statistically significantly predicts also smaller downward deviations in aid, not just smaller upward deviations, in columns 1 and 4. One can interpret this finding as suggesting that relatively richer recipient countries manage to keep deviations in check by better capacity of bargaining aid delivery with donors and more efficient domestic aid administration. Conversely, this finding implies that mainly poor countries, which also tend to be more dependent on aid, are likely to suffer from less predictable aid.

The evidence on our additional indicators of need and merit is mixed. There is evidence that a move toward a more democratic regime is rewarded with the disbursement of more aid than originally planned. However, we find no statistically significant effects of changes in growth

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[27] However, the F-test for *Fragmentation_1* does not reject the equality of coefficients for upward and downward deviations – in contrast to the F-tests for *Fragmentation_2* and *Fragmentation_3*.

of GDP per capita and natural disaster severity on aid deviations. The latter is not implausible: Recall that we consider country programmable aid (CPA) as the basis for calculating gaps between planned and actual aid, while donors react to disasters mainly by increasing emergency relief. The significantly negative coefficients on *Orphan* for downward deviations suggest that donors reduced the bias against identified aid orphans (as reflected in negative deviations from planned aid), while the significantly positive coefficients on *Darling* suggest that positive deviations from planned aid were self-reinforcing for identified aid darlings.

We find no evidence that aid becomes less predictable for recipient countries whose aid is largely from donors not releasing forward spending plans. Likewise, we find no (column 4) or only weak (column 2) evidence that a larger share of aid from egoistic donors results in higher overshooting of planned aid. As concerns specific aid motives, it appears that UNSC membership increases deviations from planned aid in both directions. The significantly positive coefficients for *UNSC* with respect to overshooting planned aid were to be expected from donors granting aid to buy votes from UNSC members. At the same time, the significantly positive coefficients for *UNSC* with respect to undershooting planned aid may indicate that donors tend to cut planned aid after observing non-compliant UNSC votes. In contrast to the strong evidence on political aid motives, we do not find that export-related aid motives result in less predictable aid. The typically insignificant coefficients on *Exp_ratio* and *Exp_ave* are in line with the view that competition for relevant export markets should be rather persistent and reflected in forward spending plans already. More generally, recent studies have cast into doubt that trade-related donor interests are a major driving force of aid allocation.[28]

Importantly, the inclusion of additional explanatory variables in Table 3 affects our major result only modestly. As with the basic specification in Table 2, the coefficients on our preferred

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[28] Barthel et al. (2014) provide an overview of the relevant literature.

measure of fragmented donor-recipient relations, *Fragmentation_3*, continue to be significantly positive with respect to overshooting planned aid. Comparing the quantitative impact of a one standard deviation increase in *Fragmentation_3*, it is of similar size in columns 1 and 3, but slightly weaker in columns 2 and 4 of Table 3 (16 percent) than in the corresponding column 3 of Table 2 (21 percent). Again, as before, we do not find statistically significant effects of *Fragmentation_3* on negative deviations between actual and planned aid and the estimated coefficients are small. However, several F-tests for the coefficients on *Fragmentation_3* prove to be weaker than in Table 2. Specifically, it is only in column 1 of Table 3 that the F-test points to significantly different coefficients on *Fragmentation_3* for upward and downward deviations form planned aid.

In Table 4, we report results from specifications that test the robustness of our inferences to plausible extensions and changes to our model specification. In column 1 we cluster standard errors on both countries and reports. In column 2, we include regional dummy variables, employing the World Bank's regional classification. All our estimations so far are based on data pooled across one, two and three year deviations from spending plans. In columns 3 to 5, we estimate the determinants for one, two and three year deviations separately.

We find in column 1 that our results fully uphold to additionally accounting for the fact that observations that use information from the same report are not independent from each other. Column 2 shows that the inclusion of regional dummy variables has practically no effect on our results. Compared to the pooled estimations, we find differences if we restrict our analysis to one, two or three year deviations between actual aid and scheduled aid plans, respectively. In particular, we find that fragmented donor-recipient relations have a much stronger effect on longer term upward deviations than shorter term deviations. The effect on two year deviations is 40 per cent larger than the effect from the pooled estimation. The effect on three year deviations

is three times larger than the effect from the pooled estimation. Naturally, this can only be consistent with our main estimations if the effect on one year deviations is small or even negative. This is indeed what we find: a negative effect that is however small in size and statistically indistinguishable from zero. The pattern of small and insignificant effects on deviations in the short run and much stronger effects on longer term deviations is not surprising. It was to be expected that aid allocation resembles the more general phenomenon that deviations from planned state budgets tend to widen over time. Increasing cost overruns for projects in public infrastructure, compared to the originally planned baseline, provide a well-known example.

5. Conclusion

Aid flows continue to be volatile and unpredictable, even though it is widely accepted that this erodes the effectiveness of foreign aid in promoting the economic and social development of recipient countries. The donors of the OECD's Development Assistance Committee (DAC) have principally accepted that predictability in aid relationships is important to enable sound economic management in the recipient countries. This invited the question of why there is little progress, if any, in rendering aid more predictable.

We hypothesized that deviations between actual and planned aid flows can in part be attributed to fragmented donor-recipient relationships, notably the large number of minor aid relations that tend to be associated with donors' 'flying their flag' around the world. We considered several measures of fragmentation. At the same time, we accounted for various other factors that may result in deviations of actual aid from previously released spending plans, including changing conditions in the recipient countries, donor characteristics, and strategic and trade-related aid motives. To allow for heterogeneous effects on positive and negative deviations

between actual and planned aid, we estimated separate effects on overshooting and undershooting of actual aid compared to scheduled aid.

Accounting for temporal dynamics with the lagged dependent variable, we find inertia in upward and downward deviations over time. In other words, donors do not 'correct' an earlier over- or under-shooting of spending plans by subsequent moves in the opposite direction. A more democratic regime is predicted to experience more upward deviation of aid with democracy having no statistically significant effect on downward deviations. Moreover, a move toward a more democratic regime is rewarded with the disbursement of more aid than originally planned. There is some evidence that richer recipient countries have better chances to keep deviations in check, while mainly poor countries, which also tend to be more dependent on aid, are likely to suffer from less predictable aid. The evidence on indicators capturing unexpected changes in need is surprisingly weak. Specifically, donors did not react to deviations in growth in GDP per capita from the recent past by adjusting aid spending plans.

Our findings on donor characteristics and egoistic aid motives are inconclusive. While export-related interests do not appear to be responsible for unpredictable aid flows, UNSC membership of recipient countries is associated with higher (upward and downward) deviations of actual aid from previous spending plans. In future research, it will be possible to analyze the links between aid fragmentation and donor characteristics and motives more systematically. An increasing number of bilateral donors have agreed since 2012 to make their detailed spending plans public. Consequently, the DAC now provides access to donor-specific survey results on planned aid across recipient countries for 2013 and subsequent years (http://stats.oecd.org/index.aspx?DataSetCode=CRS1). These data can be used to assess the differences in aid predictability between donors once actual aid flows become available for these years.

Regarding our explanatory variables of principal interest, all measures of fragmented donor-recipient relations prove to be statistically significantly positive and substantive in size when positive deviations between actual and planned aid represent the dependent variable. In contrast to positive deviations, all fragmentation measures are statistically insignificant and diminishingly small in size when negative deviations between actual and planned aid represent the dependent variable.

The asymmetric effects of fragmented donor-recipient relations on overshooting and undershooting previously released aid plans may be surprising when considering "that over-disbursement (donors disbursing more than scheduled) can be as challenging for a partner government as under-disbursement (a donor disbursing less than the amount scheduled) as it hinders effective planning, budgeting and execution" (OECD 2011a: 74). However, these longer-term problems of unpredictable aid in general – independent of whether plans are over- or undershot – may be discounted by short-sighted actors on both sides of aid relations. Recipient countries may not press harder for less fragmented aid relations, e.g., by unilaterally discontinuing non-significant relations, as they are mainly concerned about unexpected cuts of aid inflows, while taking the opportunity of playing competing donors off against each other and extract extra funds over and above planned aid. Donor agencies trying to maximize their budget may be willing to adhere in order to win the competition among donors and convince key constituencies at home that the agency's current funds are insufficient.

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Table 1 – Baseline results, no differentiation between over- and under-shooting

	(1)	(2)	(3)
lagged DV (ln)	0.218***	0.219***	0.216***
	(0.0492)	(0.0510)	(0.0499)
Population (ln)	0.325***	0.334***	0.330***
	(0.0443)	(0.0441)	(0.0443)
GDPpc (ln)	-0.123**	-0.133**	-0.134**
	(0.0613)	(0.0651)	(0.0628)
Polity2	0.0321***	0.0326***	0.0333***
	(0.0104)	(0.0106)	(0.0106)
Fragmentation_1	0.872*		
	(0.460)		
Fragmentation_2		0.873	
		(0.586)	
Fragmentation_3			0.852**
			(0.429)
Observations	631	631	631
R-squared	0.344	0.343	0.345

Note: Standard errors clustered on recipient country in parentheses. Estimations include year-, report- and deviation-specific fixed effects (coefficients not shown).
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2 – Baseline results, differentiating between over- and under-shooting

	(1)		(2)		(3)	
	Pos dev	Neg dev	Pos dev	Neg dev	Pos dev	Neg dev
lagged DV (ln)	0.234***	0.209***	0.238***	0.210***	0.232***	0.209***
	(0.0620)	(0.0734)	(0.0647)	(0.0739)	(0.0638)	(0.0731)
	0.79		0.76		0.80	
Population (ln)	0.293***	0.345***	0.303***	0.351***	0.306***	0.345***
	(0.0507)	(0.0550)	(0.0505)	(0.0536)	(0.0510)	(0.0536)
	0.35		0.37		0.45	
GDPpc (ln)	-0.155**	-0.0984	-0.181**	-0.0956	-0.176**	-0.102
	(0.0731)	(0.0753)	(0.0773)	(0.0797)	(0.0749)	(0.0748)
	0.49		0.33		0.36	
Polity2	0.0421***	0.0211	0.0425***	0.0214	0.0436***	0.0214
	(0.0132)	(0.0135)	(0.0134)	(0.0135)	(0.0132)	(0.0135)
	0.22		0.22		0.19	
Fragmentation_1	1.601***	0.253				
	(0.596)	(0.693)				
	0.14					
Fragmentation_2			1.742**	0.141		
			(0.715)	(0.773)		
			0.09			
Fragmentation_3					1.596***	0.197
					(0.538)	(0.606)
					0.08	
Observations	631		631		631	
R-squared	0.351		0.351		0.354	

Note: Standard errors clustered on recipient country in parentheses followed by p-value of F-test for coefficient equality. Estimations include year-, report- and deviation-specific fixed effects (coefficients not shown). *** p<0.01, ** p<0.05, * p<0.1

Table 3 – Extended specifications

	(1) Pos dev	(1) Neg dev	(2) Pos dev	(2) Neg dev	(3) Pos dev	(3) Neg dev	(4) Pos dev	(4) Neg dev
lagged DV (ln)	0.156**	0.194**	0.229***	0.201***	0.226***	0.179**	0.143**	0.167**
	(0.0650)	(0.0753)	(0.0608)	(0.0730)	(0.0643)	(0.0735)	(0.0640)	(0.0740)
	0.68		0.76		0.61		0.79	
Population (ln)	0.265***	0.348***	0.295***	0.325***	0.348***	0.345***	0.302***	0.327***
	(0.0602)	(0.0658)	(0.0519)	(0.0543)	(0.0880)	(0.0841)	(0.0972)	(0.101)
	0.16		0.56		0.96		0.73	
GDPpc (ln)	-0.204**	-0.199**	-0.205**	-0.106	-0.182**	-0.123	-0.230*	-0.221**
	(0.0915)	(0.0849)	(0.0787)	(0.0747)	(0.0855)	(0.0905)	(0.116)	(0.108)
	0.95		0.23		0.48		0.93	
Polity2	0.0458***	0.0224	0.0444***	0.0179	0.0432***	0.0211	0.0437***	0.0195
	(0.0134)	(0.0144)	(0.0133)	(0.0140)	(0.0134)	(0.0152)	(0.0142)	(0.0165)
	0.18		0.12		0.24		0.21	
Fragmentation_3	1.634***	0.166	1.276**	0.465	1.588***	0.338	1.291**	0.681
	(0.560)	(0.607)	(0.586)	(0.741)	(0.553)	(0.627)	(0.639)	(0.744)
	0.06		0.36		0.14		0.51	
Change in polity2	0.122***	0.0112					0.126***	0.00930
	(0.0357)	(0.0421)					(0.0361)	(0.0419)
	0.06						0.04	
Deviation from growth path	0.00606	-0.000901					0.0105	-0.00595
	(0.0186)	(0.0155)					(0.0187)	(0.0153)
	0.76						0.46	
Disasters (ln)	0.0271	-0.000604					0.0192	0.00528
	(0.0176)	(0.0166)					(0.0193)	(0.0173)
	0.23						0.57	
Orphan	-0.214	-0.545**					-0.205	-0.524**
	(0.204)	(0.220)					(0.224)	(0.254)
	0.18						0.29	
Darling	0.679***	-0.342					0.729***	-0.323

	(1)	(2)	(3)	(4)
	(0.187) (0.334)			(0.197) (0.365)
	0.00			0.01
No_spplan		0.0910 0.956		0.809 0.467
		(0.507) (0.640)		(0.621) (0.711)
		0.28		0.71
Egoistic		0.860* -0.878		0.314 -0.817
		(0.445) (0.618)		(0.498) (0.635)
		0.01		0.14
UNSC			0.629*** 0.637**	0.519** 0.700**
			(0.226) (0.249)	(0.226) (0.302)
			0.98	0.62
Exp_ratio			-1.168 0.840	-1.653 0.452
			(1.243) (1.259)	(1.115) (1.398)
			0.22	0.20
Exp_ave			-0.0431 -0.0398*	0.0303 -0.0394
			(0.0619) (0.0206)	(0.0688) (0.0257)
			0.95	0.28
Observations	619	625	631	613
R-squared	0.384	0.365	0.367	0.408

Note: Column 1 includes further variables of recipient need and merit, column 2 variables of donor characteristics and column 3 variables of donor interest. Column 4 includes all additional control variables together. Standard errors clustered on recipient country in parentheses followed by p-value of F-test for coefficient equality. Estimations include year-, report- and deviation-specific fixed effects (coefficients not shown).

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4 –Robustness tests

	(1)		(2)		(3)		(4)		(5)	
	Pos dev	Neg dev	Pos dev	Neg dev	Pos dev	Neg dev	Pos dev	Neg dev	Pos dev	Neg dev
lagged DV (ln)	0.232***	0.209***	0.229***	0.186***	0.218**	0.139	0.260***	0.168*	0.229*	0.355***
	(0.0423)	(0.0422)	(0.0656)	(0.0685)	(0.0876)	(0.116)	(0.0725)	(0.0916)	(0.116)	(0.112)
	0.63		0.63		0.58		0.41		0.44	
Population (ln)	0.306***	0.345***	0.313***	0.361***	0.290***	0.342***	0.309***	0.428***	0.297***	0.209**
	(0.0318)	(0.0763)	(0.0521)	(0.0546)	(0.0615)	(0.0691)	(0.0637)	(0.0674)	(0.0785)	(0.0923)
	0.55		0.34		0.46		0.07		0.34	
GDPpc (ln)	-0.176***	-0.102	-0.158*	-0.0868	-0.133*	-0.220**	-0.143	-0.126	-0.387**	0.203*
	(0.0503)	(0.132)	(0.0809)	(0.0752)	(0.0729)	(0.0867)	(0.104)	(0.113)	(0.177)	(0.119)
	0.63		0.39		0.37		0.91		0.00	
Polity2	0.0436**	0.0214	0.0537***	0.0315**	0.0424***	0.0182	0.0592***	0.0381*	0.0260	-0.00911
	(0.0171)	(0.0144)	(0.0138)	(0.0142)	(0.0155)	(0.0151)	(0.0176)	(0.0222)	(0.0167)	(0.0273)
	0.42		0.20		0.26		0.44		0.27	
Fragmentation_3	1.596***	0.197	1.496***	-0.0102	-0.186	-0.0767	2.310***	0.168	5.241***	0.862
	(0.400)	(0.294)	(0.536)	(0.593)	(0.648)	(0.791)	(0.741)	(0.879)	(1.502)	(1.194)
	0.00		0.05		0.92		0.06		0.03	
Observations	631		625		316		211		104	
R-squared	0.354		0.360		0.285		0.429		0.546	

Note: Column 1 clusters observations on both countries and reports. Column 2 includes regional dummy variables. Columns 3 to 5 present separate (instead of pooled) estimations for one, two and three year deviations from spending plans. Standard errors clustered on recipient country in parentheses followed by p-value of F-test for coefficient equality. Estimations include year- and report--specific fixed effects; pooled estimations also include deviation-specific fixed effects (coefficients not shown). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix 1 – Definition of variables

Variable	Definition	Source
Dependent Variable	aid deviation, i.e., the difference between actual and planned (CPA); in absolute terms, constant 2011 US$, million, logged	DAC reports
Population (ln)	Total population of a recipient country in year t; logged and lagged by one year	World Bank, WDI
GDPpc (ln)	GDP per capita of a recipient country in year t; logged and lagged by one year	World Bank, WDI
Polity2	Revised combined polity score of a recipient country in year t; democracy score minus autocracy score; range from 10 (strongly democratic) to -10 (strongly autocratic); lagged by one year	Polity IV dataset
Fragmentation_1	First proxy of the relative importance of 'non-significant' aid relations for each recipient country in year t; aid relations are considered non-significant if a donor country provides a lower share of aid to a recipient country than the donor's overall share in aid to all recipient countries; the number of non-significant aid relations is then related to the number of all aid relations of a recipient country in year t; see text for details	Creditor Reporting System; own calculations
Fragmentation_2	Second proxy of the relative importance of 'non-significant' aid relations for each recipient country in year t; aid relations are considered non-significant if a donor country is not among the largest donors that cumulatively provide at least 90 percent of aid from all 23 DAC donors to a recipient country in year t; see text for details	Creditor Reporting System; own calculations
Fragmentation_3	Combination of Fragmentation_1 and Fragmentation_2; see text for details	Creditor Reporting System; own calculations
Deviation from growth path	Difference in the growth rate in GDP per capita (constant local currency) in year t from the average growth rate in the three previous years t-3, t-2, and t-1; lagged by one year	World Bank, WDI
Disasters (ln)	Number of people affected by natural disasters; logged and lagged by one year	International Disaster Database (http://www.emdat.be/)
Orphan	Dummy variable set to one for recipient countries and years when actual aid (CPA in constant US$) was lower than the 'normal pattern' by at least one percent of the recipient country's GDP in year t; the 'normal pattern' is estimated by regressing CPA in constant 2011 US$ on the recipient countries' GDP per capita, population and its score on 'voice and accountability' from the World Bank's Worldwide Governance Indicators (pooled across all recipient countries and the years 2007-2011); see text for details	DAC reports; World Bank; own calculations
Darling	Dummy variable set to one for recipient countries and years when actual aid (CPA in constant US$) was higher than the 'normal pattern' by at least one percent of the recipient country's GDP in year t; the 'normal pattern' is estimated by regressing CPA in constant 2011 US$ on the recipient countries' GDP per capita, population and its score on 'voice and accountability' from the World Bank's Worldwide Governance Indicators(pooled across all recipient countries and the years 2007-2011) ; see text for details	DAC reports; World Bank; own calculations
No_spplan	Share of donor countries not releasing forward aid spending plans in total aid commitments by all donors to a recipient	DAC reports; Creditor Reporting System; own

	country in year t; donors belonging to this group vary over time, with Japan and the United States being included throughout the period of observation	calculations
Egoistic	Share of donors classified as egoistic by Berthélemy in total aid commitments by all donors to a recipient country in year t; including Australia, France, Italy, Japan, and the United States	Berthélemy (2006); Creditor Reporting System, own calculations
UNSC	Dummy variable set to one for recipient countries and years with membership in the UN Security Council; lagged by one year	United Nations
Exp_ratio	Proxy of export competition among donors granting aid to a recipient country in year t; for all dyads of active donors, we calculate the ratio of export shares by dividing the lower export share by the higher export share in the dyad of donors active in a recipient country in year t; we then take the average of all dyadic ratios, with higher average ratios indicating stronger competition among donors (see text for details); lagged by one year	COMTRADE; own calculations
Exp_ave	Proxy of the average importance of a recipient country in year t as an export market for donors granting aid; calculated as the average export share of all active donors in a recipient country in year t (see text for details) ; lagged by one year	COMTRADE; own calculations

Appendix 2 – Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dep. Variable (pooled)	631	4.03	1.41	-2.66	7.55
One year deviation	316	3.84	1.41	-2.66	7.07
Two year deviation	211	4.11	1.40	-1.09	7.01
Three year deviation	104	4.45	1.35	-0.18	7.55
Population (ln)	631	16.21	1.61	13.09	20.99
GDPpc (ln)	631	7.31	1.11	4.98	9.63
Polity2	631	2.80	5.89	-9.00	10.00
Fragmentation_1	631	0.73	0.11	0.27	0.95
Fragmentation_2	631	0.69	0.10	0.27	0.91
Fragmentation_3	631	0.64	0.13	0.09	0.91
Change in polity2	628	0.05	1.42	-9.00	11.00
Deviation from growth path	631	-1.35	5.01	-25.63	13.58
Disasters (ln)	631	8.16	5.56	0.00	19.08
Orphan	622	0.22	0.41	0.00	1.00
Darling	622	0.14	0.34	0.00	1.00
No_spplan	625	0.25	0.17	-0.03	0.85
Egoistic	625	0.35	0.20	-0.03	0.91
UNSC	631	0.08	0.27	0.00	1.00
Exp_ratio	631	0.39	0.10	0.13	0.65
Exp_ave	631	0.91	2.50	0.00	23.81

Appendix 3 – Donors not releasing forward spending plans

DAC Reports on Aid Predictability from:				
2008	2009	2010	2011	2012
Japan	Greece	Greece	Greece	Greece
Korea	Japan	Japan	Japan	Japan
United States	United States	United States	United States	Norway
				United States