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Predictability of Aid: Do Fickle Donors Undermine Aid Effectiveness? [with Discussion]

Author(s): Oya Celasun, Jan Walliser, José Tavares and Luigi Guiso

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Predictability of aid

SUMMARY

Aid recipients and donors alike frequently voice concerns about the lack of predictability of development aid. The existing literature often treats predictability and volatility as closely related, but this paper shows that they are conceptually and empirically distinct. Using two main data sources, we demonstrate that, contrary to common belief, lack of predictability typically involves managing both aid shortfalls and windfalls, and hampers aid management even in countries with stable implementation of macroeconomic policies. Although regression analysis of the sources of low predictability for a large panel picks up two indicators that could be seen as justifying unexpected revisions in aid disbursements, a large unexplained residual remains for which we cannot identify a link between low predictability and aid effectiveness concerns by donors. Using detailed data from IMF programmes, we demonstrate the significant costs of low predictability of budget aid in relatively well performing recipient countries. Deviations of disbursed from expected budget aid of more than 1% of GDP on average are absorbed asymmetrically: aid shortfalls lead to debt accumulation and cuts in investment spending, whereas aid windfalls help reduce debt but also lead to additional government consumption. Lack of predictability thus shifts government spending from investment to consumption activities.

— Oya Celasun and Jan Walliser

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Oya Celasun and Jan Walliser

International Monetary Fund; The World Bank

1. INTRODUCTION

Poverty and the effectiveness of development aid remain at the centre of attention of the international community. With more than 1 billion people estimated to be living on less than US\$1 per day in 2002, developed countries agreed at that time to increase their development aid levels to 0.7% of their GDP by 2015. This promise was, however, predicated on recipient countries ensuring a more effective use of aid. At the same time, donor countries acknowledged weaknesses in their own aid delivery mechanisms and committed to tackling them. These commitments to provide ‘better aid’ were made at a high-level forum of the Organization for Economic Co-operation and Development (OECD) in Paris in 2005, at which participants agreed on a set of 12 indicators to measure progress in harmonizing aid and improving its quality.¹

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¹ The Forum issued what is now known as the Paris Declaration on Aid Effectiveness, see <http://www.oecd.org/dataoecd/57/60/36080258.pdf>.

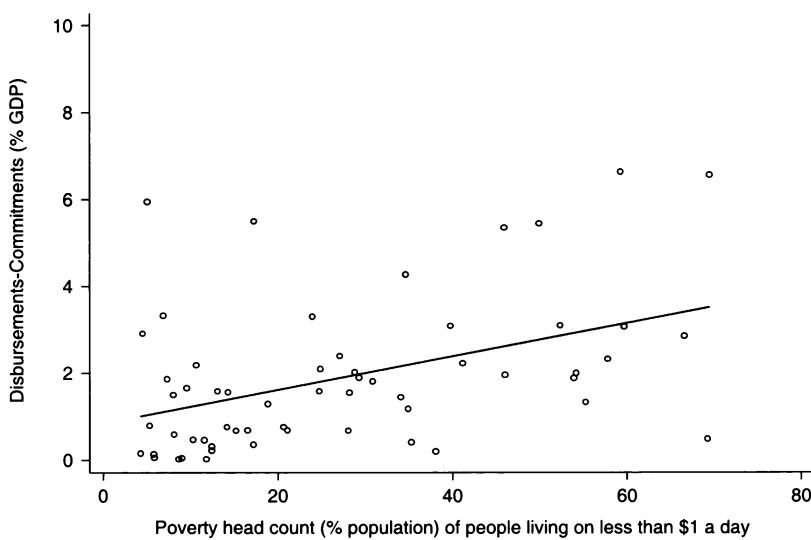


Figure 1. Lack of aid predictability and poverty

Notes: Sample includes IDA-eligible countries with net aid transfers between 2 and 25% of GDP, poverty headcount (people living on less than \$1 a day) of more than 2%, population above 1 million in 1990–2005. Observations are averages for 1990–2005. The regression represented by the straight line has a *t*-statistic of 3.62, $N = 58$, R -squared = 0.17. Data sources are listed in Appendix 1.

Reflecting a frequently voiced concern of aid recipients, a key pledge of the Paris forum was to make aid more predictable. In most years, disbursed aid volumes differ widely from commitments, a phenomenon that is more acute in the poorest and most aid-dependent countries (see Figure 1). As a result, recipient governments are often forced to abruptly adjust spending plans at short notice when promised aid is not disbursed or when additional aid is being disbursed unexpectedly.

A key concern related to the low predictability of aid is not only its impact on the level of government expenditure but also how it affects the composition and effectiveness of spending. Unexpected aid shortfalls could force governments to disproportionately cut investments in physical and human capital, while aid windfalls could disproportionately boost government consumption – since the latter, unlike investment spending, can be adjusted without much delay and planning. Thus, unpredictable aid may not only be more difficult to manage, it also can have effects on where aid is spent, and thereby reduce its intended impact, including on long-run capital accumulation and growth.

Predictability is a central point on the agenda of multilateral fora (see most recently World Bank, 2007, and IMF, 2007) as well as in campaigns by non-governmental development organizations for enhanced aid effectiveness (see, for example, BOND, 2005 and ActionAid, 2007). Yet, despite the strong focus on predictability as a precondition for the effective use of aid, little systematic empirical work is available to gauge whether low aid predictability is important and affects how aid is being spent. Our goal is to close this gap by providing comprehensive empirical evidence. Our contribution is threefold: (1) we study for the first time the magnitude and possible explanatory factors of low

predictability in widely used donor-reported data for aid flows; (2) we construct a new dataset to verify how government spending patterns respond to unpredictable aid flows and offer key evidence on the economic consequences of lack of aid predictability; and (3) we draw some important policy recommendations from our analysis.

2. AID PREDICTABILITY AND EFFECTIVENESS

Lack of aid predictability is not equivalent to volatility, which has been studied in some detail in the literature (see, for example, Bulir and Hamann, 2003; Fielding and Mavrotas, 2005; and DfID, 2006). Volatility is an *ex-post* description of the variability in aid disbursements over time. Predictability, by contrast, refers to the difference between disbursements expected *ex-ante* and actual disbursements during a given time period. Although aid is in many cases both volatile and unpredictable, it is conceivable that the ups and downs of volatile aid could be announced early enough for volatile aid to be entirely predictable for recipients. For example, aid for the construction of large infrastructure by its very nature is disbursed in large lumps, which are typically predictable but make disbursements appear volatile. Volatility in aid disbursements may also reflect donor efforts to counterbalance economic fluctuations. The presumption that volatile aid is necessarily more difficult to manage and less effective – since it reduces a recipient's ability to smooth expenditure – therefore is not valid. Chauvet and Guillaumont (2007) stress this point and show empirically that volatile aid is rarely destabilizing.²

Empirically, we find that lack of predictability and volatility exhibit a weak negative relationship (see Figure 2). This finding underscores that equating the two concepts is misleading, and highlights the relevance of the predictability dimension when studying aid effectiveness. Predictability measurement imposes significantly greater data requirements (see also Chauvet and Guillaumont, 2007), but is the more relevant concept in studying aid effectiveness issues.

In this paper we do not limit ourselves to a single motive for giving aid or alternatively a single definition of when aid is considered effective. Instead, we focus on whether aid, and the way in which it is delivered, is conducive to governments meeting the objectives attached to their expenditure plans. We therefore sidestep the widely debated issue whether aid enhances economic growth. The latter has played an important role in the recent literature (e.g., Burnside and Dollar, 2000; Easterly *et al.*, 2004; Rajan and Subramanian, 2007; Pattillo *et al.*, 2007) with to date inconclusive results. The question of predictability is relevant even if the main motive of aid is to transfer resources for offering some income protection, and to directly provide or build infrastructure for basic social services in recipient countries. Our results also

² To study whether aid is stabilizing or destabilizing, Chauvet and Guillaumont (2007) use exports, which are exogenous to contemporaneous aid, unlike the past literature which looked at variables such as GDP that are endogenous to aid. The use of an endogenous economic aggregate biases the results towards procyclical and destabilizing aid.

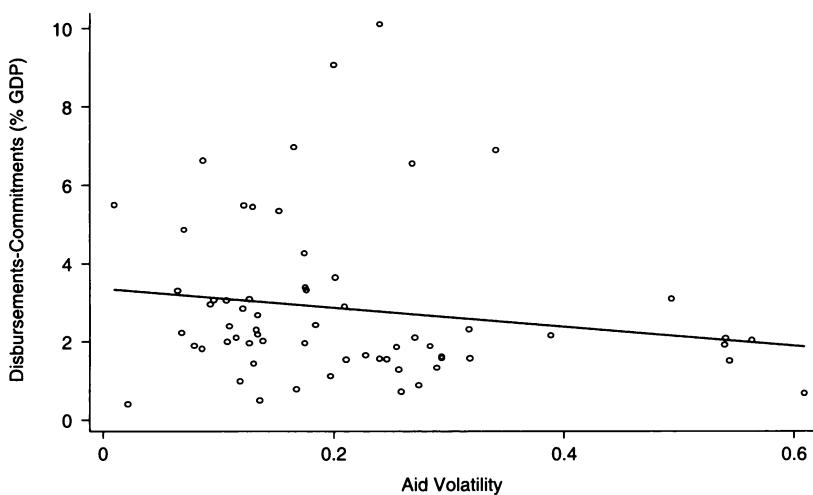


Figure 2. Lack of aid predictability and aid volatility

Notes: Sample includes IDA-eligible countries with net aid transfers between 2 and 25% of GDP, and population above 1 million in 1990–2005. Volatility is given by the coefficient of variation using the standard deviation from a three-year moving average. The regression represented by the straight line has a *t*-statistic of -1.31 , $N = 63$, R -squared = 0.03. Data sources are listed in Appendix 1.

contribute to the literature that seeks to understand what aspects of aid may undermine its potential growth benefits (see, e.g., Rajan and Subramanian, 2006).

We analyse annual predictability defined as the difference between the expected or planned aid flows for a given year and actual disbursements for that year. This yearly time horizon corresponds closely to typical budgetary planning cycles, and is appropriate for studying the impact of unexpected changes in aid volumes on annual fiscal budgets in recipient countries.³

2.1. Management of government spending and unpredictable aid flows

How does low aid predictability influence the spending decisions of governments in low-income countries and how could it affect aid effectiveness? In considering these questions we briefly discuss the special financing circumstances for many low-income countries, and the potential impact of low predictability on the composition of government spending.

Aid-dependent low-income countries have very limited, if any, access to international capital markets in order to smooth government spending in the presence of ‘aid surprises’. They need to rely on domestic revenue and external concessional resources (usually in the form of development assistance) to finance their budgets. Domestic borrowing can help smooth some of the aid surprises but given the heavy aid dependency of the poorest countries, and lack of depth in local financial markets, this buffer

³ The donor community is also working to improve longer-term predictability to give governments certainty about aid flows needed to finance increases in recurrent costs.

has limits. It also has significant costs in terms of higher inflation or crowding out of private investment. Moreover, as shown by Deaton (1991), under fixed borrowing limits, optimal wealth stocks to self-insure against income fluctuations are small if overall income (government tax revenues plus aid) is highly auto-correlated.⁴ This is the case in our data for aid recipients. The adjustment needs resulting from unexpected shortfalls in aid volumes are therefore often more severe for poor countries without access to international capital markets since neither external savings nor significant buffer stocks can be accessed to smooth government incomes.

Surprises in aid disbursements compared to planned levels – shortfalls or windfalls – not only affect levels of government spending but also their composition. Government budgets contain investment items (i.e., construction of a road or school) and consumption items (i.e., salaries of teachers or materials and services). Investment spending can typically not be increased significantly in the near term as it takes time to plan and implement, which is why the bulk of investment spending is typically executed at the end of a budget year. Conversely, consumption spending can be difficult to adjust downward in the near term, particularly since in most low-income countries it is comprised largely of salaries. As a result, one could expect aid shortfalls to be compensated first by cuts or delays in investment spending while aid windfalls could be absorbed by expanding government consumption (e.g., by buying more goods and services). Beyond creating a temporary inconvenience for finance ministers in managing aid surprises, low aid predictability could therefore encourage less effective composition of government budgets by biasing spending towards unplanned consumption.

In practice, there are different modalities for aid. The most relevant case for asymmetric responses to aid shortfalls and windfalls is budget aid – the kind of aid that flows directly into a government's budget – since it leaves full discretion to aid recipients where to spend the aid. In the case of budget aid shortfalls, the government must cut current expenditure or budgetary investment outlays, or mobilize additional domestic financing. Since most current expenditure cannot be reduced rapidly, budgetary investment outlays often serve as a buffer for unexpected budget aid cuts. By contrast, project aid is earmarked for spending on a particular investment project and thus shortfalls or windfalls in project aid are automatically tied to equal variations of investment spending without government discretion.⁵ Project aid shortfalls typically generate no cash shortages or pressures on the remainder of the budget because project expenditures are normally not committed before a donor's approval. Overall, budget aid therefore deserves particular attention in studying the impact of low aid predictability.

A country example from our database described in Section 4 illustrates the asymmetric responses to unpredictable budget aid. In 2000, Burkina Faso received

⁴ Deaton's (1991) analysis assumes that consumers are impatient, an assumption we consider reasonable for low-income countries. Deaton also notes that his analysis carries over for cases in which the borrowing constraint is non-zero, which would represent a government's internal debt limits and external non-concessional borrowing limit. Our analysis confirms that the combination of aid flows and tax revenue is highly auto-regressive for most countries.

⁵ A previous version of the paper gives a more detailed overview of different types of aid and the impact of their predictability.

0.8% of GDP less in budget aid than planned. In 2002 it received 0.8% of GDP more in budget aid than planned. In both years, it faced an about equal shortfall in tax revenue compared to original projections under the government's programme (about 1% of GDP). In the year with a shortfall, budgetary investment spending was severely cut (by 1.2% of GDP), while current expenditure was fully executed as planned. In the year with aid windfalls, investment spending was still not fully executed, but current expenditure increased significantly over original plans (by 1.1% of GDP). In other words, in the year of excess aid there was excess consumption spending and no catching up of investment spending. Over these two years, unpredictable aid resulted in significantly higher-than-planned government consumption and lower-than-planned investment spending, even though there was no overall shortfall of aid.

2.2. Why donors may not always want aid to be predictable

The previous literature (e.g. Bulir and Hamann, 2003) has asserted that lack of aid predictability mostly results from unjustified bureaucratic and administrative delays by the donors. However, donors may have aid effectiveness and technical and reasons for not being fully predictable. These need to be distinguished from other reasons – what we call ‘fickle’ donor behaviour – to understand when lack of predictability is a concern.

Table 1 summarizes the different cases outlined above and identifies whether different reasons for lack of predictability can be clearly justified by donor concerns about the effective use of aid or whether they may indicate or result from a ‘fickle donor’ problem. As a technical matter, project aid may be lumpy and unexpected delays in project implementation by recipients would normally lead to unexpected shortfalls in disbursements. This would not be an aid effectiveness issue. Delays in project disbursements may also result from recipients not meeting specific procedural requirements for safeguarding aid resources (e.g., procurement rules for project aid).

Table 1. Characterizing ‘fickle donor’ behaviour

Reason for difference between expected/announced and disbursed aid	Fickle donor problem?	
	Budget aid	Project aid
Technical, project-related		
Slow project implementation speed	N/a	No
Difficulties meeting donor-specific project disbursement procedures	N/a	Possible
Country circumstances and conditions		
Major shift in policy or country circumstances, including emergencies	No	No
Specific conditions not met	Possible	Possible
Donor-related		
Administrative delays and slow response by donors	Yes	Yes
Aid re-allocation or additions to aid envelopes for political or donor-related reasons	Yes	Yes

Source: Authors.

Whether such delays are justified by aid effectiveness concerns largely depends on how relevant the procedures are in preventing aid from being misspent and cannot be determined *a priori*.

A major shift in country circumstances clearly is an event that justifies changing disbursement patterns. Fundamental shifts in a country's policy or governance that put in doubt aid recipients' commitments to use aid for the intended purposes may force donors to withdraw announced aid to protect resources from being misspent. On the opposite end, some aid may also have to be disbursed unexpectedly to be effective. Emergency aid by nature is hard to predict, and such unexpected additions to disbursements in response to natural disasters and major economic shocks, help rather than hinder its effectiveness. In the next section we provide first evidence on the degree to which such fundamental shifts and justifiable concerns tend to influence lack of predictability.

A more controversial and complicated question is whether 'specific' conditions meant to assure that country objectives are aligned with donor objectives should justify lack of predictability. Such conditions, which are typically applied to budget aid, can include specific policy actions (e.g., changes to education policies) or indicators (e.g., increases in school enrolment rates). If recipients do not comply with such specific conditions, conditionality may also cause lack of predictability by reducing or delaying aid flows; but whether such conditionality really enhances the effective use of aid may be less evident.⁶ In recent years, many budget support donors therefore have adopted measures to reduce the impact of specific conditionality on annual predictability by making financing decisions early in the budget cycle, and downplaying the importance of any one action or indicator as a condition for disbursement.

Excessive administrative delays in aid bureaucracies, cumbersome approval and disbursement processes, and intra-year aid reallocations that prevent the timely disbursement of announced and expected aid for a recipient country clearly present a problem of fickle donor behaviour. Donors may also add to or subtract from their originally planned aid to a recipient country during the year in response to political developments in, or based on the aid needs of, other recipient countries, and such intra year reallocations that are not driven by the circumstances of the recipient country itself would also represent fickle donor behaviour.⁷

2.3. Measuring aid predictability

Measuring annual predictability of aid flows should be easy: all one would need are comparisons of aid flows expected at the beginning of the year and outturns. Ideally one would compare aid flows *anticipated* by aid recipients and ultimate disbursements

⁶ See the contributions in Koerberle *et al.* (2005) and the overview in Koerberle and Walliser (2006).

⁷ The well-known 'November fever' of the budget cycle in donor countries also applies to aid budgets, as budget administrators try to ensure that budget allocations for aid in any given year are being used fully. It is therefore possible to find aid 'top-ups' late in the donor countries' budget years.

by donors to these recipients, differentiated by type of aid. In addition, a perfect dataset would record the underlying reasons for differences between anticipated and realized aid flows (thereby allowing us to disentangle unpredictability due to justifiable and unjustified reasons), and give information on the impact of aid surprises on government spending and other economic indicators. Unfortunately no existing data source meets all these information needs.

We approach the predictability issue using two different data sets, both of which have advantages and limitations. The first is the widely used data on aid flows by the Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD-DAC). This data has comprehensive time and country coverage. We construct the second dataset from available programme data of the International Monetary Fund (IMF), with data only being available for countries with long-term IMF programmes.

OECD-DAC data are based on *donor*-reported commitments and disbursements. Given that commitments recorded by OECD-DAC are legally binding, they represent a strong signal to recipient countries in forming expectations about aid flows. In Section 3, we treat commitments as a proxy for expected disbursements, but this assumption has limitations because recipients may discount commitments based on experience. IMF-based data, which we use in Section 4, derives from a government planning exercise and expected aid flows therefore represent disbursements expected by governments after discounting for donor behaviour.

Finally, standard aid data from the OECD DAC is not embedded in a set of internally consistent macro-fiscal variables and thus does not permit comparing expected and realized aid flows within such a setting. By contrast, IMF-based data traces out the expected and realized variables (including tax revenue, spending, and deficit financing) allowing to determine the impact of low predictability on budget decisions. Table 2 summarizes the different strengths and limitations of our main two datasets.

An ideal dataset would also indicate why committed or expected aid and actually disbursed aid differ. An initiative by the budget support working group of the Strategic Partnership with Africa (SPA) programme, a group of multi- and bilateral donors, delivers new and fairly comprehensive information on budget aid in select African countries (SPA, 2005 and 2007). These data are focused on budget aid predictability for a set of about 15 African countries with some small variation in coverage over the years. The SPA survey provides commitment data that reflects agreements between donors and recipients and actual disbursement data. It also helps to identify reasons for disbursement delays, and we will use some of its results. However, the timeframe of the data is too short for statistical analysis.

3. PATTERNS OF PREDICTABILITY IN DONOR-REPORTED AID DATA

Two fundamental questions can be addressed with OECD-DAC statistics on commitments and disbursements. First, using commitments as a proxy for expected aid flows,

Table 2. Measurement issues for aid predictability

Measurement issue	OECD-DAC data	IMF-based data
Comprehensive coverage across countries and time	(+) Long-term data series on commitments and disbursements	(-) Data can only be extracted for countries with long-term IMF programme engagements
Aid expectations are those of recipient countries	(-) Aid expectations are from donor-reported commitments, disbursement data are also donor-reported	(+) Aid expectations are constructed from IMF programme data that is based on agreed projections with recipient countries and discounts donor commitments; disbursements are those recorded and reported by recipients
Differentiation by aid type	(-) Does not distinguish between project aid and budget aid	(+) Distinguishes budget aid and project aid
Identification of fiscal adjustments to aid surprises	(-) Does not offer any additional data on adjustments to unanticipated changes in aid flows	(+) Allows for a comparison of anticipated spending and actual out-turns for a variety of fiscal and economic variables
Direct identification of reasons for lack of predictability	(-) Differences between commitments and disbursements cannot be traced to specific donor decisions	(-) Data cannot directly identify the reasons for unanticipated aid shortfalls or excesses

Source: Authors. (+) signifies a strength of the data, (–) a limitation.

we can identify how unpredictable aid flows really are. Second, we can test to what extent lack of predictability is associated with standard variables that are seen as important for ‘aid effectiveness’ and whether major shifts in the aid environment (such as a breakdown of trust in donor relations or emergencies) are significantly associated with this predictability measure. As noted above, we measure aid flows on an annual basis. The sources and definitions of the data used in this section are detailed in Appendix 1.

3.1. Predictability of aggregate donor-reported aid flows

3.1.1. Measuring predictability with OECD-DAC data. We analyse patterns of aid commitments and disbursements in 60 low income countries during 1990–2005 in OECD-DAC data. The sample consists of countries which had GDP less than US\$1675 in constant 2005 value, were eligible for concessional resources from the International Development Association (IDA), received net aid flows exceeding 2% of GDP on average during 1990–2005, and had average population exceeding 1 million. Key features of the data and definitions used to arrive at the aid data are summarized in Box 1.

3.1.2. Aid predictability by country and region. Aid is highly unpredictable. In many years, aid disbursements deviate from commitments, both exceeding and falling short of commitments. A simple measure of predictability, the absolute

Box 1. DAC statistics on aid flows

Established in 1961, The Development Assistance Committee (DAC) of the OECD is a key forum of major bilateral donors. Members of the DAC – donor countries – are required to report to DAC on the official development assistance (ODA) flows originating from their official agencies to developing countries, including those channelled through multilateral development agencies. ODA flows cover transactions that satisfy a minimum degree of concessionality and have the promotion of economic development and welfare of developing countries as their main objective. Covering virtually all recipients of ODA, the DAC statistics constitute the most comprehensive, readily available dataset on aid flows.

Tables 2a and 3a of the DAC Statistics report the total (bilateral and multi-lateral) disbursements and commitments of ODA to developing countries. Commitments are firm written obligations by a government or official agency, backed by the appropriation or availability of the necessary funds, to provide resources of a specified amount under specified financial terms and conditions and for specified purposes for the benefit of a recipient country. Commitments are considered to be made at the date a loan or grant agreement is signed or the obligation is otherwise made known to the recipient. Commitments for a given year comprise new commitments and additions to earlier commitments, excluding any commitments cancelled during the same year. A disbursement is the placement of resources at the disposal of a recipient country or agency, or in the case of internal development-related expenditures, the outlay of funds by the official sector.

Table 2a of the DAC statistics provide information on gross and net ODA, as well as some sub-categories of net ODA, such as technical cooperation, development

Table DAC 2a. Destination of ODA – Disbursements

Grants (201)
of which:
Debt Forgiveness (212)
Loans and Other Long-term Capital
Extended (204)
of which:
Rescheduled Debt (214)
Received, excl. offsetting debt relief (205) (-)
Offsetting entres for debt relief (215) (-)
Total Net Loans and Other Long-term Capital (218)
Total Net Disbursements (206)
of which:
Technical Cooperation (207)
Developmental Food Aid (213)
Emergency Aid (216)

food aid, and emergency aid which typically do not affect the recipient country's government budget. Gross ODA is given by the sum of grants (201) and extended loans (204). Gross ODA net of debt relief would exclude debt forgiveness grants (212) and rescheduled debt (214) from gross ODA. Net ODA equals gross ODA minus loan repayments, given by actual payments, received loans excluding debt relief (205) and offsetting entries for debt relief (215). Roodman (2006) provides estimates of net aid transfers that further exclude received and forgiven ODA interest payments, and offsetting entries for forgiven loans which were not classified as being concessional at the time of disbursement.

Table 3a of the DAC statistics documents gross commitments of ODA by recipient country, broken down into grants and loans and other long-term capital. These commitments include debt forgiveness grants and rescheduled debt flows, although separate entries for such categories are not given. Technical assistance is the only subcategory for which commitments are reported.

Table DAC 3a. Destination of ODA – Commitments

Grants (301)
Loans and Other Long Term Capital (304)
Total Commitments (305)
of which:
Technical Cooperation (306)

deviation in percentage of GDP of committed and disbursed aid, is persistently large (Table 3, column 3). Take, for example, Rwanda, a highly aid-dependent country. The difference between aid disbursements and commitments (that is, the average value of periods of aid shortfalls or windfalls) exceeded 3% of GDP. Figures for some post-conflict cases such as Sierra Leone (9% of GDP) can be particularly staggering.

During 1990–2005, on average annual aid disbursements deviated by 3.4% of GDP from aid commitments in sub-Saharan Africa. However, there has been a decline in absolute deviations from 4.4% on average during 1990–7 to 2.8% during 1998–2005. Other regions also show deviations of disbursements and commitments in a range of 1.7–2.4% of GDP on average during 1990–2005.⁸

Even on average, aid disbursed can exceed commitments. This finding contrasts with the general belief that donors systematically disburse less than they commit in

⁸ Data on disbursements and commitments for technical cooperation suggests no clear pattern on whether technical cooperation aid is more predictable than other types of aid. The deviations from commitments as a share of disbursements are broadly comparable in magnitude for technical cooperation and overall aid; the deviations are smaller for technical cooperation in roughly half of the sample (details are available from an earlier version of this paper).

Table 3. Aid dependency and the deviations of gross ODA commitments from disbursements, averages, 1990–2005, in percentage of GDP

Net aid transfer	Annual commitments		Smoothed commitments	
	Commitments minus disbursements	Absolute value of commitments minus disbursements	Smoothed commitments minus disbursements	Absolute value of smoothed commitments minus disbursements
<i>Sub-Saharan Africa (SSA)</i>				
Angola	4.6	0.0	0.7	-0.3
Benin	10.8	-0.1	1.8	-0.3
Burkina Faso	14.5	-0.5	2.3	-1.2
Burundi	23.0	-2.2	5.4	-3.7
Cameroon	3.6	0.4	1.6	0.3
Central African Rep.	10.5	-1.4	2.8	-0.8
Chad	12.3	-0.2	3.0	-0.2
Congo Dem. Rep.	4.7	-1.2	1.5	-3.0
Congo, Rep.	4.8	-0.7	1.9	-2.1
Côte d'Ivoire	3.5	0.4	1.6	0.3
Eritrea	26.1	1.1	6.9	-1.2
Ethiopia	8.4	0.1	2.4	-0.4
Gambia	16.2	-2.0	6.7	-1.5
Ghana	9.3	-0.5	2.0	-0.9
Guinea	8.4	-1.3	2.3	-1.3
Guinea-Bissau	38.1	-5.5	10.0	-3.5
Kenya	5.5	-0.6	1.6	0.0
Lesotho	10.7	-0.8	3.1	-0.4
Liberia	40.8	-2.2	6.8	-3.4
Madagascar	10.1	-0.8	2.3	-1.4
Malawi	24.6	-0.4	3.4	-0.6
Mali	15.3	-1.0	2.0	-1.5
Mauritania	19.2	-1.0	4.3	-1.3
Mozambique	27.6	-3.0	4.7	-3.3
Niger	14.2	-1.6	3.1	-1.9
Rwanda	26.0	-0.2	3.1	-2.1
Senegal	9.7	-1.0	2.0	-0.8
Sierra Leone	21.9	-2.3	9.0	-5.6
Sudan	3.8	-0.6	1.0	-0.5
Tanzania	12.8	0.4	3.2	-0.2
Togo	7.3	-2.3	2.4	-1.6
Uganda	14.4	0.3	2.1	-0.5
Zambia	14.5	-3.0	6.5	-3.6
Zimbabwe	4.8	-0.5	1.3	-0.5
<i>South and East Asia (SEA)</i>				
Bangladesh	1.8	0.0	0.4	0.1
Cambodia	10.2	0.8	1.8	0.0
Laos	15.2	0.9	3.3	0.1
Nepal	8.2	-0.1	1.9	-0.1
Papua New Guinea	7.4	-0.4	2.7	0.4
Sri Lanka	3.6	0.3	0.8	0.2
Vietnam	3.4	2.3	2.8	1.5

Table 3. *Continued*

	Net aid transfer	Annual commitments		Smoothed commitments	
		Commitments minus disbursements	Absolute value of commitments minus disbursements	Smoothed commitments minus disbursements	Absolute value of smoothed commitments minus disbursements
<i>Middle East and North Africa (MENA)</i>					
Egypt	4.1	1.4	2.0	1.4	1.6
Iraq	0.9	3.3	3.8	-0.4	0.7
Jordan	7.2	0.2	1.6	0.6	1.8
Lebanon	2.1	0.4	0.9	0.2	0.6
Morocco	1.5	0.1	0.5	0.2	0.4
Palestinian adm.areas	16.5	-3.1	5.5	-4.5	5.9
Yemen	4.2	-0.7	1.6	-0.5	0.9
<i>Latin & Central America (LAC)</i>					
Bolivia	7.8	0.8	1.3	0.8	1.8
El Salvador	2.5	0.0	0.7	-0.1	1.1
Haiti	8.8	1.2	1.9	0.3	3.7
Honduras	7.5	0.9	2.1	0.7	2.4
Nicaragua	18.4	2.0	5.8	1.2	4.7
<i>Transition Economies (TE)</i>					
Albania	12.5	1.2	2.0	0.3	4.1
Armenia	9.4	1.2	2.9	0.3	2.9
Azerbaijan	2.7	0.7	1.9	0.5	1.4
Bosnia-Herzegovina	19.3	1.0	2.1	1.2	1.9
Macedonia	4.2	0.8	1.1	0.5	0.7
Georgia	5.9	0.2	1.5	-0.3	2.1
Kyrgyz Rep.	11.5	0.4	3.3	-0.1	3.0
Moldova	4.8	0.9	1.6	0.4	1.1
Mongolia	19.9	3.9	5.5	2.0	2.8
Serbia & Montenegro	2.0	1.1	1.3	-0.1	1.1
Tajikistan	9.0	1.2	2.2	0.0	1.8
<i>Regional averages</i>					
SSA	14.2	-1.0	3.4	-1.4	3.6
SEA	7.1	0.5	2.0	0.3	1.2
MENA	4.6	0.2	1.7	0.1	1.4
LAC	9.0	1.0	2.4	0.6	2.7
TE	9.0	1.1	2.4	0.4	2.1

Notes: All figures are in percentage of GDP. The sample covers countries that were IDA-eligible in 1990–2005 (with per capita income less than US\$1675 in 2005 US dollars), received more than 2% of GDP in net ODA and had average population exceeding one million in 1990–2005. Disbursements by donors that do not report commitments are excluded from the gap between commitments and disbursements, and the gap as a percentage of GDP is then scaled up by the ratio of total disbursements to reporting donors' disbursements. Deviations calculated on the basis of 'smoothed commitments' equal the three-year moving average of commitments (the average of the current and past two years) minus disbursements.

every year.⁹ In fact, Sub-Saharan African countries received 1% of GDP more in disbursements per year on average than had been committed by donors. By contrast, countries in the Middle East, Latin America and transition economies typically received less disbursements than were originally committed.

We test for the robustness of our findings to alternative assumptions about the link between reported commitments and disbursements. Some of the commitments reported to OECD-DAC by bilateral donors may relate to project aid to be disbursed over several years. As a result, one might suspect that commitments are more lumpy than disbursements, resulting in an upward bias for absolute deviations between annual commitments and disbursements. To verify the importance of this aspect, we assume, following Roodman (2006), that average project duration is three years and allocate one-third of commitments reported to OECD-DAC database to the year in which commitments are made and the two following years. Overall, the smoothing of commitments does not alter our summary findings on the magnitude of the predictability issue. As shown in Table 3 (columns 4 and 5), for all regional averages except South Asia, the absolute deviations of commitments from disbursements as a percent of GDP are within a range of 0.3% of GDP from previous findings. For sub-Saharan Africa it appears that absolute deviations increase slightly on average, indicating that smoothed commitments for a number of countries track disbursements less rather than more closely. Although for some countries absolute deviations change significantly in either direction (e.g., Congo DRC, Liberia and Sierra Leone), for the majority of sub-Saharan countries the changes are within a range of 0.6% of GDP or less.

3.2. In which circumstances is aid more predictable?

Using OECD-DAC data, we pursue the question whether certain country characteristics may be associated with more or less predictable aid. We also test, using country-specific variables, whether there is evidence that part of the loss in aid predictability is related to major shifts in country circumstances or other variables that could indicate aid effectiveness reasons for unpredictable donor behaviour.

3.2.1. Capturing common patterns of predictability. We use regression analysis to relate observable recipient country characteristics to predictability. Not all of these variables are necessarily independent from each other, and hence we do not attribute causal relations to our first set of regressions, an issue discussed in detail below. However, to the extent that these different variables capture what we consider to be good reasons

⁹ See, for instance, the discussion in Birdsall (2006). Our finding contrasts with results by Pallage and Robe (2001) and Bulir and Hamann (2003), who compare gross commitments with subsets of disbursements. Pallage and Robe (2001) document consistent disbursement shortfalls from commitments, but they compare *gross* official development aid commitments with *net* disbursements. Bulir and Hamann (2003), compare *total* debt commitments with disbursements of *long-term* debt reported by the World Bank's Global Development Finance database.

for aid to be unpredictable, we try to identify whether lack of predictability can indeed be associated with such factors.

We try to seek out indicators that may pick up fundamental shifts in country circumstances to see whether a relationship emerges to predictability. We do not include policy variables or macroeconomic outcomes among the explanatory variables as these are potentially endogenous to aid windfalls or shortfalls. In particular, we use the number of *consecutive* years under IMF-supported programmes as a proxy for country characteristics associated with both stable country-donor relations – including what one could characterize as trust – as well as sound macroeconomic policies.¹⁰ We would expect to observe higher values of this variable in countries that have stable relationships with donors. Since exiting or entering an IMF programme on its own may signal a fundamental policy change and determine aid disbursements, we also include an IMF programme indicator as a control variable.

We also test whether emergency aid significantly affects predictability. We would see a relatively large magnitude of emergency aid as an indicator that some lack of predictability arises from adjustments of aid levels to current events by donors. Similarly, we test whether predictability is affected by terms-of-trade shocks, in an attempt to identify sources of unpredictability from donor responses to unforeseen shocks, in line with arguments by Chauvet and Guillaumont (2007).

As a measure of country performance influencing donor perceptions of aid effectiveness, we include an index measuring the quality of governance derived from the International Country Risk Guide. In light of the possible negative reverse causality from aid shocks on the quality of governance, we include the governance variable for the previous year. Second, we use the share of net aid transfers in GDP as a control variable for the scale of aid.¹¹ Given the simultaneity between our predictability measure and net aid (defined as disbursements minus repayments of debt), we use the lag of net aid. Third, to control for time-varying factors that potentially affect predictability in all recipient countries in the same manner – such as the OECD business cycle or political cycles in major donor countries, we include time effects in all regressions.

Before we move to more formal regression analysis, Figure 3's panels visualize the impact of years in IMF programme, emergency aid, and terms of trade movements on predictability. Panel 1 shows that predictability – measured as the difference between commitments and disbursements – sharply increases with the number of years a

¹⁰ For instance, the number of consecutive years under an IMF programme has a negative and statistically significant correlation with the volatility of inflation in the past four years, supporting the notion that higher values of this variable capture a more stable macroeconomic environment and more consistent adherence to macroeconomic policy conditionalities. Countries with uneven policy implementation would tend to see their IMF programmes go off track often and therefore not exhibit high values of this variable, even if they spend many years under IMF programmes. Easterly (2005) also reports a negative relationship between the *fraction* of years spent in an IMF programme in 1980–99 and inflation, real interest rates, and the black market premium on the exchange rate.

¹¹ The net aid transfers data is from Roodman (2006) who estimates the amounts of forgiven non-concessional debt and interest payments and subtracts them from the OECD DAC measure of net official development aid to arrive at a net transfer (as opposed to net flow) concept. Our regression results are fully robust to using net official development aid instead of net aid transfers.

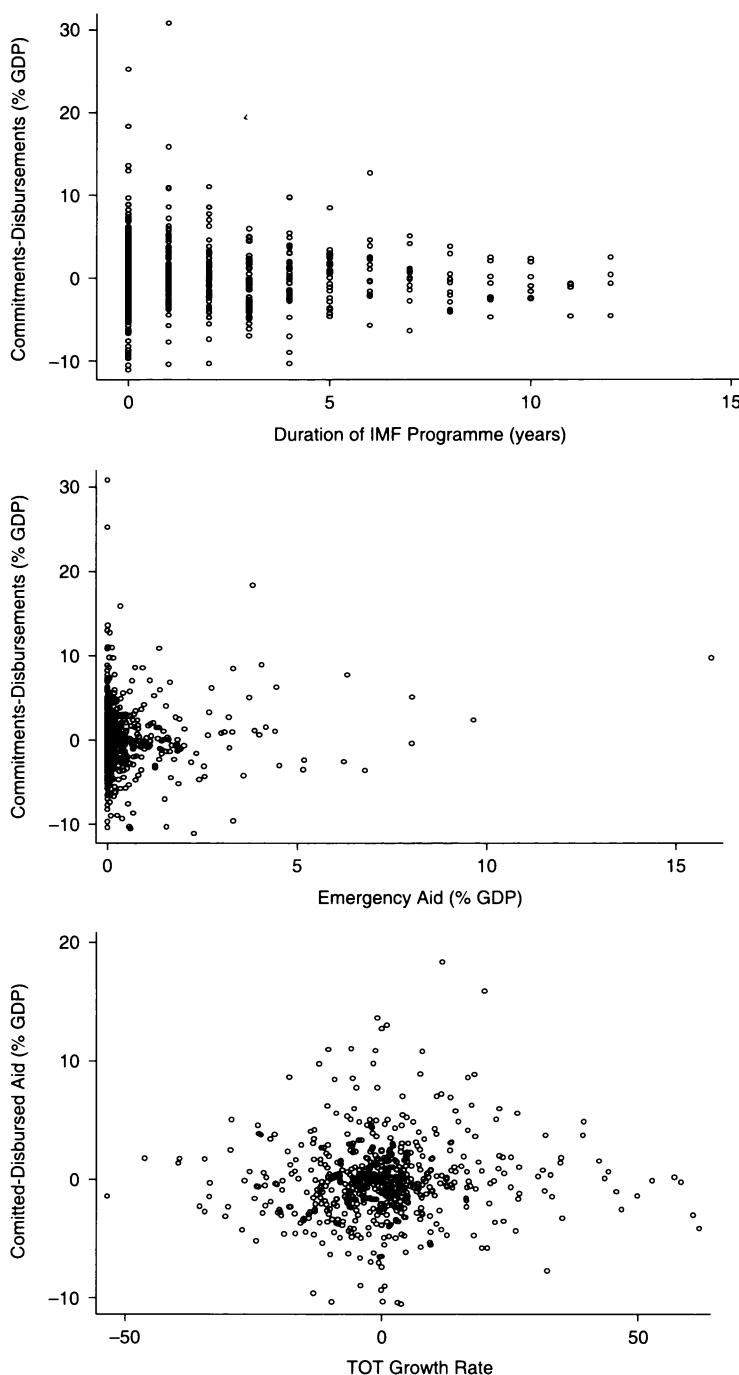


Figure 3. Lack of aid predictability, IMF programme participation, emergency aid, and the terms of trade

Notes: The sample includes IDA-eligible countries with net aid transfers between 2 and 25% of GDP, and population above 1 million in 1990–2005. The bottom panel excludes a small number of observations where the annual change in the terms of trade exceeded 100%. Data sources are listed in Appendix 1.

country has implemented an IMF-supported programme or successive programmes. This finding suggests that country factors signalled by a sustained track-record of implementing IMF-supported programmes, allow countries to receive more predictable aid. Panel 2 indicates that emergencies do not systematically lead to aid disbursements that exceed commitments – in fact, it appears to be more common that donors do not live up to their overall commitments in years when there are large disbursements of emergency aid. This finding possibly indicates that donors increase commitments more sharply in times of emergencies without later delivering on these promises.¹² Panel 3 indicates that terms of trade movements are not linked to excess disbursements or commitments in a systematic way.

In our regressions (Table 4), we first study the absolute value of the deviation of disbursements from commitments, normalized by GDP, as an indicator of predictability.¹³ In this case, a negative estimated coefficient indicates that the explanatory variable reduces the difference between commitments and disbursements, that is, it increases the predictability of aid flows. Likewise, a positive coefficient indicates a reduction in predictability. Table 4 summarizes the results for the full sample of countries. The results in column 1 suggest that predictability is higher in countries that have had a longer period under an IMF programme. However, being in an IMF programme on its own does not make a significant difference, indicating the importance of stable country circumstances and donor relations over the mere existence of an IMF programme. Predictability decreases when the overall aid transfer is larger (a scale effect – a larger potential gap between commitments and disbursements comes hand in hand with a higher base level of disbursements) and when disbursements of emergency aid are larger. Better governance and terms of trade movements, however, do not systematically affect our predictability variable.¹⁴ This first regression explains some 23% of the variation in predictability, suggesting that other unidentified explanatory factors outside of major shifts in country circumstances – such as technical factors of project implementation and specific donor conditions – do play an important role.

The second and third columns of Table 4 use the same regression analysis but split the sample into two separate subsets of aid shortfalls (column 2 – aid delivered is smaller than committed) and excess aid (column 3 – aid exceeds commitments), both defined as positive variables. The regressions show that a longer engagement with the IMF reduces aid windfalls ('surprise disbursements') but not aid shortfalls. This finding indicates that a more stable country-donor relationship results in better aid projections and less need for donors to step in unexpectedly with higher aid.

A higher level of emergency aid is associated with both excess commitments (donors overpromise) and excess disbursements (donors deliver more than they promise), but

¹² No disaggregated data is available on commitments of emergency aid.

¹³ All the regressions in the paper were run on annual data.

¹⁴ Since our dependent variable in this case is censored at 0, we verified the consistency of the regression against alternative Tobit analysis.

Table 4. Correlates of ODA disbursement shortfalls and excesses relative to commitments, 1990–2005

	Whole sample				Excluding extreme observations of emergency and net aid				Excluding multivariate outliers			
	Absolute deviation of commitments from disbursements (% GDP)	Absolute value of disbursement shortfalls (positive values of Com. minus Dis.) (% GDP)	Absolute value of excess disbursements (negative values of Com. minus Dis.) (% GDP)	Absolute deviation of commitments from disbursements (% Dis.)	Absolute deviation of commitments from disbursements (% GDP)	Absolute value of disbursement shortfalls (positive values of Com. minus Dis.) (% GDP)	Absolute value of excess disbursements (negative values of Com. minus Dis.) (% Dis.)	Absolute deviation of commitments from disbursements (% Dis.)	Absolute value of disbursement shortfalls (positive values of Com. minus Dis.) (% GDP)	Absolute value of excess disbursements (negative values of Com. minus Dis.) (% Dis.)	Absolute deviation of commitments from disbursements (% Dis.)	Absolute value of excess disbursements (negative values of Com. minus Dis.) (% Dis.)
Years in IMF Programme	-0.201** [0.082]	-0.173 [0.118]	-0.242*** [0.115]	-1.028** [0.482]	-0.131** [0.064]	-0.119* [0.102]	-0.809 [0.068]	-0.183** [0.554]	-0.128 [0.080]	-0.125** [0.102]	-0.128 [0.116]	-0.251** [0.472]
IMF Programme Dummy	0.066 [0.621]	0.18 [0.645]	0.003 [0.961]	0.586* [2.625]	0.419 [0.322]	0.664 [0.562]	1.064 [0.514]	0.772 [2.593]	0.34 [0.523]	1.238 [0.486]	0.175 [0.962]	-0.175 [2.205]
Governance (-1)	-0.164 [0.397]	-0.601 [0.408]	2.446 [2.381]	0.072 [0.344]	0.294 [0.425]	-0.091 [0.413]	3.269 [2.563]	-0.113 [0.423]	0.328 [0.405]	-0.607 [0.540]	2.921 [2.618]	-0.251** [0.214***]
Net Aid (% GDP) (-1)	0.139*** [0.029]	0.079* [0.042]	0.168*** [0.025]	-0.318 [0.220]	0.095*** [0.055]	0.076 [0.054]	0.127*** [0.043]	-0.536* [0.311]	0.162*** [0.040]	0.056* [0.029]	0.214*** [0.033]	-0.367 [0.264]
Emergency Aid (% GDP)	0.547*** [0.124]	0.782*** [0.236]	0.475*** [0.111]	0.720*** [0.634]	0.38 [0.249]	0.559*** [0.264]	0.165 [0.196]	0.129 [1.434]	0.085 [0.321]	0.085 [0.537]	-0.905 [2.466]	-0.905 [2.466]
Negative TOT Shocks	0.012 [0.024]	0.006 [0.024]	0.24 [0.024]	0.067 [0.032]	0.032 [0.014]	-0.002 [0.014]	0.388 [0.014]	0.006 [0.024]	0.024 [0.024]	-0.006 [0.029]	0.298 [0.289]	-0.006 [0.289]
Positive TOT Shocks	-0.022 [0.014]	-0.011 [0.027]	-0.015* [0.009]	0.052 [0.089]	-0.008 [0.010]	-0.001 [0.029]	-0.006 [0.007]	0.099 [0.108]	-0.015 [0.027]	-0.015 [0.025]	-0.061 [0.040]	0.094 [0.141]
Constant	1.558 [1.373]	-0.596 [1.845]	2.98 [1.771]	20.772*** [8.182]	0.81 [1.217]	-0.004 [1.217]	0.627 [1.276]	10.111 [10.559]	1.276 [1.396]	1.276 [1.396]	-0.661 [1.695]	19.68*** [12.186]
R-Squared	0.23 444	0.22 190	0.29 254	0.07 444	0.15 398	0.19 174	0.17 224	0.28 398	0.2 406	0.15 172	0.07 234	0.07 406

Notes: OLS regressions with time effects and robust standard errors. *, **, and *** denote significance at 10, 5, and 1%. The dependent variables in the regressions presented in columns 1–3, 5–7, 9–11 are the absolute values of the deviation of commitments from disbursements (columns 1, 5, and 9); disbursement shortfalls (columns 2, 6, 10); and excess disbursements (columns 3, 7, 11), respectively, all in percent of GDP. The dependent variable in columns 4, 8, 12 are the absolute deviation of commitments from disbursements as a percentage of disbursements. The samples include countries that were eligible for concessional IDA loans, had population exceeding one million, and received net aid in excess of 2% of GDP in 1990–2005. The regressions in columns 5–8 exclude observations where emergency aid exceeded 20% of GDP and net aid exceeded 25% of GDP. The regressions in columns 9–12 exclude Hadi (1994) outliers. Data definitions and sources are given in Appendix 1.

the effect on excess commitments is larger. A higher level of net disbursements as a share of GDP is associated with both larger shortfalls and excesses as a share of GDP. Finally, positive terms-of-trade shocks are weakly associated with smaller excess disbursements.

Some additional insights are offered by a second predictability indicator – the difference between commitments and disbursements as a percentage of disbursements – the unpredictability per a unit of aid dollar. This measure of aid predictability is independent of the scale of aid as a share of GDP. We test the relationship of this indicator to the explanatory variables outlined above, and the results are reported in column 4 of Table 4. Similar to earlier results, longer IMF involvement is associated with smaller percentage deviations, whereas emergency aid receipts are associated with larger percentage deviations of commitments from disbursements. When we scale the gap between commitments and disbursements by disbursements, we no longer find, as should be expected, that the level of net aid as a share of GDP is associated with less predictability.

We also verify the robustness of our findings against outliers (columns 5–12). In particular we omit observations where the net aid transfer exceeded 25% of GDP or emergency aid was in excess of 20% of GDP, which are typically associated with post-conflict emergencies that are not necessarily representative of the majority of the observations. We furthermore test specifications that omit the observations that are classified as being multivariate outliers by the Hadi (1994) procedure. These additional regressions confirm many of the previous results, but the effect of emergency aid on predictability is not robust to excluding outliers. Also, the number of IMF programme years is not robust to exclusion of outliers when aid predictability in the particular specification measuring predictability as a percent of disbursements.

3.2.2. Robustness of results to alternative regression analysis. The association of certain variables with predictability patterns does not imply these variables actually cause lower predictability of aid. Indeed, most of the different variables used in the regressions cannot be interpreted as having a causal impact on predictability on the basis of our ordinary least-square regressions, although they may point at recipient country characteristics that are associated with more or less predictable aid. Some of the variables could potentially be simultaneously determined with aid windfalls or shortfalls, or be subject to reverse causality, while some of the variables are likely to be correlated with largely time-invariant yet unobserved country characteristics that also have a bearing on aid predictability.

In particular, a surprise disbursement would not only automatically increase the excess disbursement measure, but it would also increase net aid. Likewise, the possibility of a negative link between aid predictability and the quality of governance cannot be ruled out. Serial correlation in aid prediction errors could lead to a negative bias on the coefficient on lagged governance or on the coefficient on net aid. Furthermore, the significance of the number of years in an IMF programme is likely to reflect a country's more stable implementation of donor conditionality and more

stable donor-recipient relations, which is largely a fixed country effect rather than a time varying effect.¹⁵

A first element of our strategy to reduce the potential endogeneity bias is to use lagged variables for net aid and governance. Since aid prediction errors do not appear to be serially correlated – regressing the absolute value of prediction errors on its lag produces an insignificant coefficient – lagging both variables would eliminate or significantly reduce contemporaneous effects of predictability on net aid and governance. Our earlier regressions already included lagged values for these variables.

A second element is to use instruments for the potentially endogenous variables. Following Acemoglu *et al.* (2001) we instrument the quality of governance by the logarithms of settler mortality and population density in former colonies. Following Alesina and Dollar (2000) we instrument net aid by the number of years the recipient country has been a colony in the 20th century and the correlation of votes cast in the UN General Assembly by the recipient country and major donor countries (United States, France, Germany, Japan and Italy).

The results of instrumental variables regressions on overall, positive, and negative values of deviations of commitments from disbursements are shown in columns 1, 3, and 5 of Table 5, respectively.¹⁶ The results largely confirm previous results on the significance of longer IMF engagement and the positive association between the size of net aid and the size of deviations. However, except for excess commitments, emergency aid is no longer significant. The quality of governance remains insignificant, as do most other variables.

A third element of our verification strategy is to include a fixed effect for each country in the instrumental variables regressions. Columns 2, 4 and 6 present the results of these regressions.¹⁷ As expected, the variable capturing the number of years in an IMF programme becomes insignificant, confirming that the variable largely captures fixed recipient country characteristics that come hand in hand with more predictable aid. The only other difference from previous findings is that we find some weak indication that better governance lowers excess commitments when country-fixed effects are taken into account.

Is predictability influenced by the economic conditions faced by bilateral donors? One may suspect that bilateral donors are more prone to cut disbursements when their economic conditions tighten, or increase their commitments when their economic conditions are favourable and the competition for budget funds is lower. If relevant, this factor could explain some of the residual variance in our previous regressions and is useful in understanding the sources of ‘fickle’ donor behaviour. We explore this question using our predictability measure of aid flows – the absolute deviation between commitments and

¹⁵ Mosley and Abrar (2006) have argued that the underlying relationship ('trust') is more important than actual compliance with conditions.

¹⁶ In the tables we report the two stages least squares regressions. Limited information maximum likelihood estimations and GMM regressions yielded very similar results.

¹⁷ For these regressions we omitted the time invariant instruments relating to settler mortality and colonial past, as they are redundant under the inclusion of fixed effects. Instead, we added the lagged four-year standard deviation of inflation as an instrument for the quality of governance.

Table 5. Correlates of ODA disbursement shortfalls and excesses relative to commitments, IV and fixed-effects regressions, 1990–2005

	Absolute deviation of commitments from disbursements (% GDP)	Absolute value of disbursement shortfalls (positive values of Com. minus Dis.) (% GDP)		Absolute value of excess disbursements (negative values of Com. minus Dis.) (% GDP)		
	IV	IV+FE	IV	IV+FE	IV	IV+FE
Years in IMF Programme	-0.337*** [0.122]	-0.137 [0.118]	-0.156 [0.160]	0.247 [0.222]	-0.438** [0.190]	-0.206 [0.145]
IMF Programme	0.607	0.785	0.538	-0.553	0.861	0.905
Dummy	[0.483]	[0.521]	[0.668]	[0.939]	[0.727]	[0.757]
Governance (-1)	1.276 [1.055]	-0.999 [1.012]	0.419 [1.007]	-3.381* [2.054]	1.616 [1.662]	-0.328 [3.655]
Net Aid (%GDP) (-1)	0.276*** [0.089]	-0.237 [0.229]	0.036 [0.114]	-0.365 [0.235]	0.397*** [0.144]	-0.063 [0.242]
Emergency Aid (% GDP)	0.355 [0.280]	0.972** [0.402]	1.089*** [0.409]	0.880* [0.491]	-0.05 [0.424]	0.821 [0.614]
Negative TOT	0.017	-0.01	0.018	0.019	0.001	-0.025
Shocks	[0.023]	[0.035]	[0.045]	[0.063]	[0.031]	[0.066]
Positive TOT	-0.012	-0.014	0.039	0.069	-0.014	-0.015
Shocks	[0.014]	[0.017]	[0.036]	[0.042]	[0.017]	[0.026]
Constant	-4.388 [4.230]	7.401 [4.990]	-1.23 [4.009]	17.011* [9.192]	-6.167 [7.075]	3.219 [15.654]
R-Squared	0.55	0.65	0.55	0.7	0.54	0.75
N	323	276	134	112	189	164
Hansen's Test (P-value)	0.398	0.812	0.982	0.404	0.434	0.166

Notes: Instrumental variables regressions with time effects. *, **, and *** denote significance at 10, 5, and 1%. Regressions in columns 2, 4, and 6 include country fixed effects. The dependent variables in the regressions are: the absolute deviation of commitments from disbursements (columns 1 and 2); commitment excesses (columns 3 and 4) and disbursement excesses (columns 5 and 6), respectively, all in percent of GDP. The samples include countries that were eligible for concessional IDA loans, had population exceeding one million, and received net aid in excess of 2% of GDP in 1990–2005. All regressions were run using the Stata command ivreg2 by Baum, Schaffer, and Stillman (2007). Data definitions and sources are given in Appendix 1.

disbursements – aggregated by bilateral donor. These have been the source of 50–70% of aid disbursements in 1990–2005 (with the rest disbursed by multilateral agencies). As explanatory variables we use donor-specific macroeconomic variables, such as the non-aid central government budget balance, non-aid current account balance, both in percentage of GDP, and output gap, in percentage of potential output. We do not find any significant effects of these donor-specific variables on predictability. Hence, neither common fluctuations, which are already included in our baseline regressions, nor donor-specific economic conditions appear to influence predictability in a significant manner.

3.3. Lessons from OECD-DAC data

Taken together, our analysis in this section suggests a few stylized facts that emerge from donor-reported aid commitments and disbursements. First, predictability issues

are prevalent, and discrepancies between donor-reported commitments and disbursements are large in absolute terms, albeit with some declining trends in recent years. Certainly, the magnitude remains important enough to have a negative impact on aid management by recipient countries. Deviations occur in both directions, resulting in both aid shortfalls and excess aid. Sub-Saharan Africa, in particular, tends to have excess disbursements exceeding disbursement shortfalls on average and over time. The magnitude and relevance of predictability leads us to explore in detail the consequences for fiscal management in the following section.

Second, an important share of predictability patterns can be associated with factors that are close proxies for major changes in a country's environment and therefore justify, if not necessitate, some degree of unpredictable donor behaviour. Predictability of aid is significantly higher in countries that have had IMF engagements of longer duration, which we take to be a proxy for the stability of the country environment and donor relations. Presence of emergency aid is related to lower predictability, driven largely by a few cases with large emergency aid disbursements. By contrast, terms of trade shocks do not significantly correlate with aid predictability. Adding country fixed effects to the baseline specification raises the share of explained variation to about 40%.¹⁸

Third, these findings leave important room for lack of predictability that cannot be directly linked to country characteristics and major shifts in country circumstances. We attribute these to some technical factors for projects, but also specific conditionality and administrative delays, as outlined in Table 2. Overall, these findings demonstrate that more work is needed in systematically collecting data that allows disentangling the factors associated with low predictability, including through separate information on project and budget aid.

4. THE CONSEQUENCES OF LOW AID PREDICTABILITY

In this section, we use more detailed data to investigate how recipient countries respond to low predictability. OECD data that comprehensively covers years and countries shows that lack of predictability is sizeable and widespread. We turn to a smaller but also more detailed dataset from IMF-supported programmes to investigate recipients' response to the forecasting errors of aid disbursements based on expectations formed with the information available at the time of fiscal budget preparation. These data already include some discounting by recipients of donor promises and thus better capture prediction errors than donor-reported aid flows recorded by the OECD-DAC.

Since lack of aid predictability signifies a gap between *ex-ante* expectations and *ex-post* outcomes of aid, a first look of its macroeconomic impact should ideally be based on the gaps between the projections and outcomes of related macroeconomic variables, in particular fiscal plans and outcomes. IMF-programme frameworks provide an

¹⁸ These regressions are available upon request, and they give very similar results to the fixed effects regressions with instrumental variables, for which the *R*-squared is not a meaningful statistic.

ideal dataset for such an exercise, as they allow identifying expectations and out-turns for disbursements of both project and budget aid within a consistent framework of fiscal and macroeconomic variables. They therefore permit identifying how countries adjust *ex-post* to incorrect projections.

A particularly important type of aid for the exploration of predictability issues is budget aid, an aid modality that represents about one-fifth of official development assistance. Unlike project aid, unpredictable budget aid has an immediate effect on the government's resources and requires adjustments to spending and/or financing. Moreover, budget support disbursements can be more easily traced to donor behaviour whereas project aid disbursements also depend on technical issues, such as the recipient's project implementation speed, a factor that cannot be empirically separated from predictability issues.

4.1. Using IMF programme data to measure predictability of budget aid

In order to gauge some empirical characteristics of aid predictability, and budget aid in particular, we study in detail aid and macro-fiscal projections and out-turns reported in IMF staff reports from 1992 to 2007 for a set of 13 countries.¹⁹ IMF staff reports document projected aid flows and outcomes within the macroeconomic framework of IMF-supported programmes, which reflect overall spending levels, tax targets, and financing needs in countries that receive large aid flows. The selected countries are characterized by: (1) long-term programme relations with the IMF, albeit not always without minor programme interruptions or delays; (2) relatively large external aid flows; and (3) receipt of World Bank budget support. Given this sample selection, regression analysis (not reported here) similar to the regressions on OECD-DAC data in Section 3 shows that the number of years under an IMF programme is not associated with higher predictability of budget in specifications both with and without country fixed effects. A significant part of the variance in predictability (about 65% for budget aid and 40% for project aid) in the sample remains unexplained even after including country fixed effects.

4.1.1. Recovering aid projections from programme data. In constructing the dataset, we took care to the largest extent possible to identify IMF projections that underpin decisions for the recipient government's policy-making of the following year. This choice has been made to simulate to the best extent possible the information set available to policy-makers and IMF staff at that time. Aid numbers reflect commitments made by donors as well as judgments by the recipient governments as regards the likelihood of disbursements. General budget aid receives fairly great attention in preparing projections.

¹⁹ Albania, Benin, Burkina Faso, Ghana, Kyrgyz Republic, Madagascar, Mali, Mozambique, Rwanda, Senegal, Sierra Leone, Tanzania, and Uganda. The vast majority of the IMF reports are publicly available on the IMF's external website.

In establishing our data for expected aid flows and other projected variables from IMF reports, we usually choose projections established between zero and six months before the beginning of the budget year. These original projections, which may be revisited in mid-year by the IMF, would usually drive original fiscal planning, even if not officially, whereas mid-year projections already reflect the need to make adjustments to new information.²⁰ See Appendix 2 for further discussion of data issues.

We contrast projections for a variety of variables with out-turn data for the same variables. Out-turn data are usually drawn from the latest staff reports reporting on that year in order to ensure that original preliminary data have been firmed up. The data include a consistent set of information on fiscal revenue, current and capital spending, as well as financing items, normalized with GDP out-turns. By drawing on these items from internally consistent fiscal accounts, we assure that we can identify how governments adapted to changes between projection and out-turns.²¹ Overall, we obtain 132 observations for the dataset.

4.1.2. Patterns of predictability in IMF programme data. Based on the aid projections and out-turns from IMF programme data, we are able to examine in some detail the predictability of budget aid. As shown in Figure 4, aid inflows in our data vary from 2–3% of GDP in recent years in Albania to more than 15% of GDP in Mozambique. Although budget support is an important aid modality and has become more important in some countries (Rwanda, Tanzania, Uganda), it has declined in importance elsewhere (Albania, Kyrgyz Republic, Senegal).

Table 6 shows in detail that even in this set of countries with long-term IMF engagement (which is correlated with higher predictability) both negative and positive errors in projecting budget aid disbursements are large. Although excess aid and aid shortfalls almost even out over time, so that disbursed aid on average differs from projected aid by about 0.2% of GDP (column 2), projection errors are large (column 3). In this respect, our data from IMF programmes are similar to the OECD-DAC data. On average, the mean absolute error in projecting budget aid has been about 1% of GDP during 1993–2005, indicating that on average disbursed aid differed by 1% of GDP from projections. This figure is striking as overall average budget aid is only 3.3% of GDP on average for these countries, indicating that slightly less than one-third of that number is unpredictable.

The share of unpredictable budget aid in total budget aid also varies widely (Figure 5), with almost half of budget aid being ‘at risk’ on average in Sierra Leone, Madagascar, and Senegal. Sierra Leone in particular is heavily dependent on budget

²⁰ The number of the originating staff report has been recorded in the database to be able to trace the origin of each projection.

²¹ For a few years, we were unable to derive projection and out-turn data for lack of sufficiently detailed fiscal data. Notably, for 1993–97 in Ghana and 1994–97 in Mozambique, the break-down between budget aid and project aid was not reported.

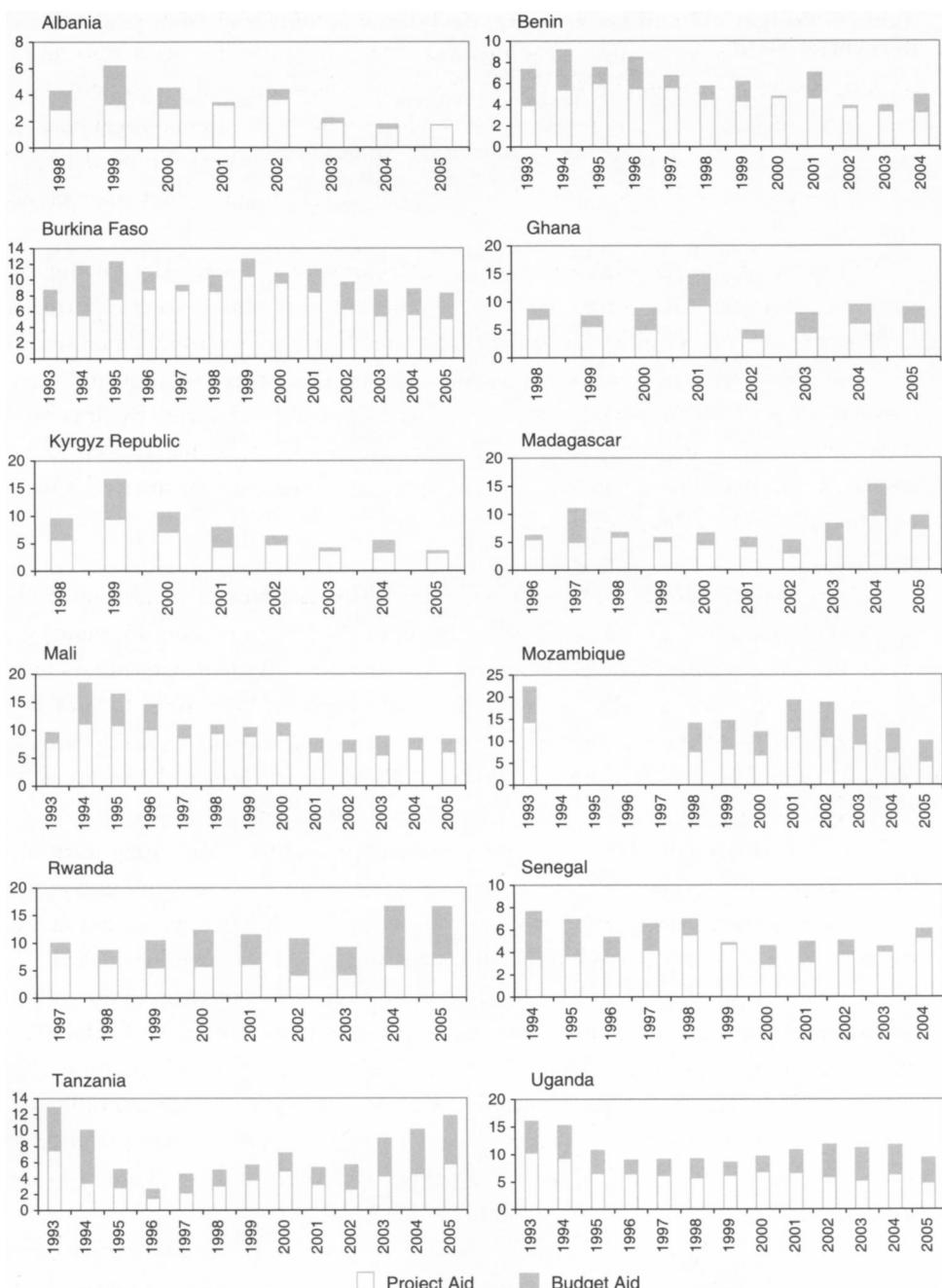


Figure 4. Budget and project aid, percentage of GDP

Source: Authors' calculations based on IMF Staff Reports, various issues.

Table 6. Budget aid and tax revenue, deviations of outturns from projections, percent of GDP

		Budget aid projections			Tax revenue projections		
		Average budget aid	Average deviation	Mean absolute deviation	Average tax revenue	Average deviation	Mean absolute deviation
Albania	1998–1999	2.15	0.66	1.15	12.54	-1.65	1.65
	2000–2005	0.51	-0.08	0.25	16.56	-0.58	0.70
	1998–2005	0.92	0.11	0.48	15.55	-0.85	0.94
Benin	1993–1999	2.27	-0.70	1.18	12.29	0.88	0.88
	2000–2004	0.97	0.00	0.47	14.59	-0.11	0.45
	1993–2004	1.73	-0.41	0.89	13.25	0.46	0.70
Burkina Faso	1993–1999	2.95	-1.08	1.40	10.25	-0.02	0.91
	2000–2005	2.88	0.06	0.44	11.00	-0.66	0.70
	1993–2005	2.92	-0.55	0.96	10.60	-0.31	0.81
Ghana	1998–1999	1.85	-0.28	0.28	15.31	-0.71	0.71
	2000–2005	3.44	0.35	0.84	18.93	0.78	1.26
	1998–2005	3.04	0.19	0.70	18.02	0.41	1.12
Kyrgyz Rep.	1998–1999	5.58	1.70	1.83	13.25	0.01	0.13
	2000–2005	1.96	-0.77	0.87	14.62	-0.09	2.01
	1998–2005	2.86	-0.15	1.11	14.28	-0.07	1.54
Madagascar	1996–1999	2.07	-1.54	1.54	9.64	-0.15	0.35
	2000–2005	2.85	0.18	0.95	9.94	-1.63	1.81
	1996–2005	2.54	-0.51	1.19	9.82	-1.04	1.23
Mali	1993–1999	3.52	0.12	1.06	12.30	-0.01	0.97
	2000–2005	2.38	0.53	1.15	14.25	-0.67	0.72
	1993–2005	2.99	0.31	1.10	13.20	-0.31	0.86
Mozambique	1993	6.93	0.54	2.93	13.37	1.14	1.27
	2000–2005	6.11	0.80	0.80	12.23	-0.24	0.58
	1993–2005	6.39	0.71	1.51	12.61	0.22	0.81
Rwanda	1997–1999	3.07	-2.21	2.21	9.68	-0.48	1.54
	2000–2005	7.20	1.10	1.22	11.71	0.49	0.91
	1997–2005	5.82	0.00	1.55	11.03	0.17	1.12
Senegal	1994–1999	2.18	0.05	0.87	15.19	-0.33	0.68
	2000–2004	1.20	-0.37	0.88	17.83	-0.04	0.59
	1994–2004	1.73	-0.14	0.87	16.39	-0.20	0.64
Sierra Leone	2001–2005	5.97	-1.46	2.66	11.19	0.44	0.70
	1993–1999	3.08	-0.51	0.58	12.67	-1.06	1.38
	2000–2005	3.92	-0.19	0.52	11.39	0.31	0.46
Uganda	1993–2005	3.46	-0.36	0.55	12.08	-0.43	0.96
	1993–1999	3.85	-0.27	0.84	9.90	-0.09	0.40
	2000–2005	4.76	-0.94	1.75	11.34	-0.20	0.46
Whole sample	1993–2005	4.27	-0.58	1.26	10.57	-0.14	0.43
	1993–1999	3.16	-0.42	1.21	11.98	-0.13	0.89
	2000–2005	3.42	-0.04	0.97	13.46	-0.18	0.89
	1993–2005	3.31	-0.20	1.07	12.82	-0.16	0.89

Note: Projections are usually established in the three to six month period before the start of the budget-year.

Source: Authors' calculations based on IMF Staff Reports, various issues.

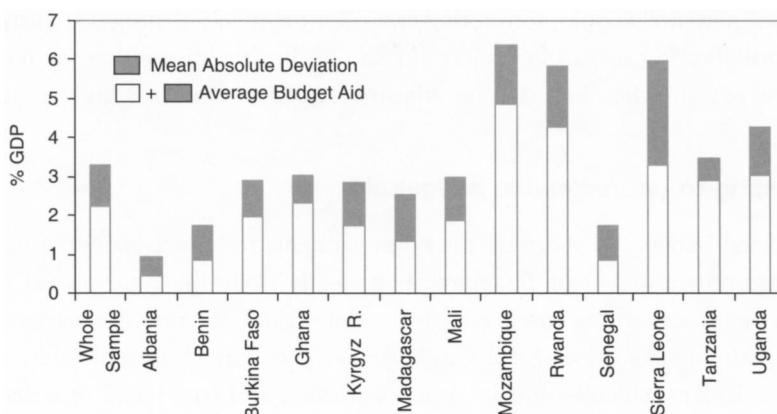


Figure 5. Budget aid projection errors and average budget aid, percentage of GDP

Source: Authors' calculations based on data collected from IMF Staff Reports, various issues.

aid (almost 6% of GDP). Such degree of uncertainty therefore greatly affects the recipient government's ability to plan and implement its budget.²²

Like OECD data, IMF data does not identify the reasons for the low predictability of budget support. However, according to SPA (2005), on average 81% of 2003 commitments were disbursed during 2003, with an additional 10% being disbursed in the following and 9% being permanently lost. Donors also responded that 40% of delayed or lost disbursements were due to unmet policy conditions, followed by administrative problems on the donor side (29%), recipient delay in meeting processing conditions (25%), and political problems on the donor side (4%).

We also find that tax revenues are more predictable than budget aid, which is a perfect substitute for tax revenue. Projection errors on average have been sizeable at 0.9% of GDP, but were smaller than errors in projecting budget aid. In fact, errors in projecting tax revenue as a share of GDP have been consistently smaller by about 20% than errors made in projecting budget aid, indicating a higher overall 'predictability' of tax revenue compared with budget aid in contrast to the argument put forth by Collier (1999). Average projection errors have remained stable for our sample of countries, but have declined as a share of tax revenue. Some countries (e.g., Albania, Benin, Burkina Faso, Rwanda, Tanzania) have made quite important progress in improving revenue forecasts, whereas others (e.g., Kyrgyz Republic, Madagascar) have had less predictable tax revenue in recent years.

IMF data also allow identifying the deviations of project aid disbursements from forecasts. In our data, on average, project aid deviated by 1.4% from forecasts, and these values increased in 2000–5 relative to 1993–9. However, as we note above, these

²² *ibid.* 2007

²² In view of difficulties in the run-up to the 2007 presidential elections to mobilize donor resources as macroeconomic conditions worsened, the government had to revert to cash budgeting.

deviations may well capture forecasting errors for the speed of project implementation, and shortfalls and excesses in project aid do not directly affect other fiscal outcomes. For these reasons, the discussion on adjustments below concerns budget aid only.

4.2. Adjusting to unpredictable budget aid

Unexpected budget aid shortfalls force governments to reduce spending in mid-year or to find other sources of financing. It is highly likely that unexpected additional disbursements cannot be used effectively since they are not subjected to regular budget planning. For these reasons, as laid out in Section 2, unpredictable budget aid poses particular challenges for fiscal policy-making and could lead to a distortion in the allocation of spending.

In order to assess how budget aid shortfalls or windfalls are absorbed by governments, we trace the response of governments to budget aid shortfalls and excess aid by dividing the sample into episodes of aid shortfalls and episodes of windfalls. In each of the cases we use the fiscal variables available from IMF programme documents to study the response of governments to projection errors (see Box 2).

We decompose the adjustment to aid surprises into changes in tax revenue, current spending, domestically financed investment spending (total public investment spending minus investment spending funded by project aid), domestic bank financing (financing by the central bank and commercial banks), and net amortization and other categories (Figure 6).²³ The ‘other’ category mostly reflects non-tax revenue and nonbank financing items. All categories are measured as deviations from projections, as a share of GDP, with positive items reflecting outturns that exceed projections. By accounting convention and as a result of the internally consistent macroeconomic and fiscal frameworks, any budget aid shortfall or windfall can be fully decomposed into these fiscal adjustments.

4.2.1. Adjusting to budget aid shortfalls. Aid shortfalls require substantial adjustments of budget spending and financing. When budget aid disbursements fall short of projections, those shortfalls are large and average 1.1% of GDP. We find that recipient governments compensate for these shortfalls, on average, by both additional financing and expenditure cuts (first panel of Figure 6 and Table 7).

Management of aid shortfalls is made more difficult by simultaneous tax revenue shortfalls (0.3% of GDP) and current expenditure overruns (0.3% of GDP). Recipients therefore typically need to address at the same time aid shortfalls, tax revenue shortfalls, and current expenditure overruns amounting to 1.7% of GDP. They do so largely, in order of magnitude, through higher domestic bank financing (0.7% of GDP), reducing debt service or running arrears (0.4% of GDP), cuts in domestically financed

²³ As an accounting convention, foreign financed investment spending corresponds to project aid disbursements. Thus, fluctuations in budget aid would be reflected in adjustments to domestically financed investment spending.

Box 2. Fiscal framework for IMF programme data

The data derived from IMF programmes is based on an internally consistent presentation of the fiscal accounts, both for original projections and out-turns. Item A represents the government's revenues (on a cash basis) and item B its expenditures (on a commitment basis). The difference between revenue and expenditure, the government's deficit on a commitment basis, needs to be financed by items C (arrears or delayed payment of expenditure), D (new external financing net of amortization but including debt relief and rescheduling), and E (domestic financing from banks and non-banks, including borrowing from the Central Bank and privatization receipts). Hence it always holds as an identity that $B - A = C + D + E$. As a convention, foreign financed capital expenditures (B.2.2) are the sum of project grants (A.3.2) and project loans (D.1). Hence, foreign-financed capital spending is by convention always fully financed and any adjustments made to foreign-financed investment would imply automatic and equivalent changes to project grants or loans. The level of foreign-financed investment is thus independent of the level of budget support. Information on domestic bank and non-bank financing, by way of internal consistency of monetary accounts and projections on broad money, also signifies underlying assumption about net reserve accumulation. That is, an IMF programme allowing for larger domestic financing in case of aid shortfalls would normally also include less ambitious targets for net foreign reserves.

A. Government revenue

- A.1. Tax revenue
- A.2. Nontax and other revenue
- A.3. Grants
 - A.3.1. Budget support grants
 - A.3.2. Project grants

B. Government expenditure

- B.1. Current expenditure
- B.2. Capital expenditure and net lending
 - B.2.1 Domestically financed investment
 - B.2.2 Foreign financed investment
 - B.2.3. Net lending

C. Change in payment arrears/treasury commitments

D. Net foreign financing

- D.1. Project loans
- D.2. Budget support loans
- D.3. Amortization net of rescheduled debt and debt relief

E. Domestic financing

- E.1. Bank financing
 - E.2. Non-bank financing
-

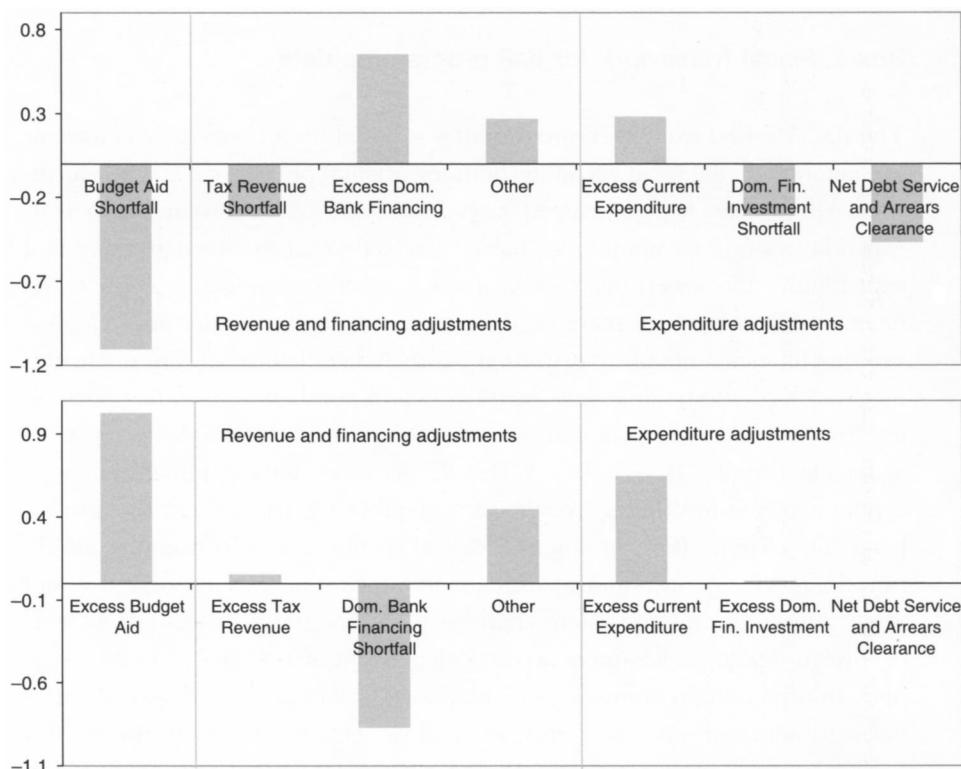


Figure 6. Adjustments to budget aid shortfalls and excesses, percentage of GDP, pooled average for all countries, 1993–2005

Source: Authors' calculations based on IMF Staff Reports, various issues.

investment spending (0.3% of GDP), and finding other financing sources outside regular channels, such as privatization or non-tax revenue (0.3% of GDP).

What emerges as a key adjustment pattern for aid shortfalls is a mix of additional domestic financing and a cut in investment spending. By contrast, current spending is on average higher than projected. The data thus confirms the earlier argument that recipients would normally not be able to reduce current spending (mostly salaries) but largely concentrate expenditure adjustments on budgetary investment spending, which may still be in a preparatory phase late in the fiscal year.

Structural differences in policy frameworks can result in different adjustment patterns for similar aid shortfalls. Member countries of the West African Economic and Monetary Union (WAEMU) do not have access to monetary policy instruments and their ability to borrow from the central bank faced statutory limits before being phased out beginning in 2000. WAEMU members in our sample therefore face stricter limits on compensating aid shortfalls with domestic financing (in particular from the central bank). As a result, they had to cut investment spending more deeply than non-WAEMU countries. On average WAEMU countries compensated for half

Table 7. Decomposition of budget aid shortfalls relative to projections into fiscal revenue and expenditure adjustments, percentage of GDP

	Average budget aid shortfall	Tax revenue	Current expenditure	Domestically financed investment expenditure	Domestic bank financing	Net debt service and arrears clearance	Other	Number of observations
Albania	1998–2005	-0.2	-0.9	-1.0	-0.2	0.1	-0.1	-0.3
Benin	1993–2004	-0.9	0.5	0.3	-0.5	0.2	0.5	0.5
Burkina Faso	1993–2005	-1.2	-0.7	0.2	-0.9	0.7	-0.3	0.3
Ghana	1998–2005	-0.5	-0.7	1.2	-0.6	0.7	0.0	1.1
Kyrgyz Rep.	1998–2005	-0.8	-0.2	1.2	0.2	0.6	-1.5	0.3
Madagascar	1996–2005	-1.2	-0.7	0.0	-0.3	0.8	-1.3	-0.5
Mali	1993–2005	-1.3	-1.0	0.3	-0.4	0.7	-0.7	0.8
Mozambique	1993–2005	-3.6	3.4	-1.1	1.3	2.3	0.9	-1.0
Rwanda	1997–2005	-1.8	0.2	1.2	0.1	-0.6	-2.8	0.4
Senegal	1994–2004	-0.8	-0.4	-0.3	0.0	-0.3	-0.5	0.8
Sierra Leone	2001–2005	-3.4	0.8	1.7	-0.2	0.7	-1.3	0.4
Tanzania	1993–2005	-0.6	-0.5	1.0	-0.6	1.4	0.0	0.2
Uganda	1993–2005	-1.7	-0.4	-0.2	-0.1	1.4	-0.2	0.2
Non-WAEMU	1993–2005	-1.2	-0.3	0.4	-0.2	0.9	-0.7	0.1
WAEMU	1993–2005	-1.0	-0.3	0.1	-0.5	0.3	-0.1	0.5
Whole sample	1993–2005	-1.1	-0.3	0.3	-0.3	0.7	-0.4	0.3

Note: A positive signifies that the out-turn exceeds the projection, a negative signifies a shortfall of the out-turn compared to the projection. Shortfalls in budget aid equal the sum of shortfalls in current expenditure (total investment expenditure-project aid), domestically financed investment expenditure, amortization and arrears clearance (excluding debt relief and rescheduling), minus shortfalls in tax revenue, domestic bank financing, and deviations in other categories (comprising non-tax revenue, non-bank domestic financing, and net lending by the government).

Source: Authors' calculations based on IMF Staff Reports, various issues.

of the aid shortfall with a cut in investment spending, financing less than a third of the shortfall through the domestic banking system. Non-WAEMU countries cut investment expenditure by one-sixth of the aid shortfall, financing three-quarters with domestic bank lending.

The timing of aid disbursement within the recipient government's fiscal year also explains the 'investment bias' of expenditure adjustments. Governments that operate in an environment of uncertain budget aid may restrain their budgetary expenditures if they do not receive aid early in the budget cycle. Box 3 gives two examples for such behaviour. Given the impossibility to reverse commitments for domestic investments and their often long execution cycle it is imprudent to commit investment expenditure before aid inflows are reasonably certain. This is another reason why investments are under-executed in years of aid shortfalls or late budget aid disbursements. By the same token windfalls late in the budget year could not realistically be used to engage new investment spending and therefore would either lead to increases in current spending or be saved.

4.2.2. Adjusting to budget aid windfalls. We find that additional budget aid finances the repayment of debt or additional government consumption. Disbursements of budget aid in excess of expected levels occur almost as frequently as shortfalls, and average 1% of GDP for our dataset (panel 2 of Figure 6 and Table 8). Our data shows that, on average, none of the excess aid and revenue goes toward additional domestic investment spending. Instead, recipients reduce domestic bank debt (0.9% of GDP) and increase current expenditure (0.6% of GDP), benefiting from the fact that on average countries collect more non-tax revenues in periods of aid windfalls. In line with previous arguments, an aid windfall typically comes too late in the budget year to spend it on items other than current expenditures.

Saving aid windfalls allows building up space for future aid shortfalls and could be part of a rational strategy to manage unpredictable and volatile aid. However, it is surprising that countries with several consecutive years of excess aid (Mali, Mozambique) appear to also use most if not all of excess aid for debt reduction, not to make up for aid shortfalls.

Important differences between WAEMU and non-WAEMU countries reveal the importance of monetary and financial market arrangements for dealing with aid shocks. With almost identical budget aid windfalls (and revenue windfalls), WAEMU countries expand current expenditure by much less (0.4% of GDP) and save more (0.5% of GDP) by paying down bank debt than their non-WAEMU counterparts. These reflect a larger degree of self insurance by WAEMU countries given the tighter domestic borrowing limits. In both WAEMU and non-WAEMU countries, little if any additional investment spending takes place in response to aid windfalls.

4.2.3. Predictability of budget aid. The decomposition of average adjustments to aid shortfalls and windfalls shows that lack of predictability hurts investment outlays,

Box 3. Intra-year predictability: A tale of two neighbours

Governments need to manage their cash-flows within any given budget year. Domestic financing constraints may make it difficult to smooth fluctuations on disbursements during any given year, especially if budget aid is large relative to tax revenue. Unfortunately, IMF staff reports only offer an incomplete look at this issue as they do not systematically report quarterly projections and out-turns. However, in the case of Burkina Faso and Mali, performance criteria tables permitted to reconstruct relevant quarterly data.

Figure 7 illustrates to which extent budget aid disbursement were back loaded and how disbursement patterns changed over time in Mali and Burkina Faso. Until 2001, Burkina Faso received 80–90% of its annual budget aid during the last quarter of the year. Since then, as budget aid has increased in predictability, donors also have made an effort to more evenly spread disbursements over the budget year. Still, only in 2004 did the bulk of disbursements move from the fourth to the third quarter. For Mali, by contrast, a rather smooth disbursement pattern of budget aid in the mid-1990s has been replaced since 2000 by a pattern under which 90% or more of disbursements are made in the last quarter. These developments can be largely attributed to the diverging paradigm of budget aid in both countries, with a reluctance of donors to move to regular and predictable budget support in Mali due to concerns about recurrent structural weaknesses in the cotton sector.

To the extent that disbursement of budget aid within the budget year remains uncertain, drawing on domestic bank financing or accumulating payment backlogs while awaiting aid carries large risks of undermining macroeconomic stability. Comparing projections of quarterly budget aid disbursements and actual out-turns reveals that in both countries – even when for the year as a whole out-turns exceeded projections – in most cases disbursements during the first three quarters fell significantly short of projections (often between 30 and 100%), and thus made it very difficult to assure smooth execution of the budget without accessing other financing sources. Fiscal accounts reveal that shortfalls in budget aid often resulted in slow-downs in budget execution, notably for domestically financed investment spending. Additional gains for managing the budget could therefore be achieved by further limiting the intra-year variability of budget aid disbursements.

Table 8. Decomposition of excess budget aid into fiscal revenue and expenditure adjustments, percentage of GDP

	Average excess budget aid	Tax revenue	Current expenditure	Domestically financed investment expenditure	Domestic bank financing	Nct debt service and arrears clearance	Other	Number of observations
Albania	1998–2005	1.2	-0.8	0.1	0.0	-0.7	-0.1	0.4
Benin	1993–2004	1.0	0.4	-0.7	0.1	-2.2	0.5	2
Burkina Faso	1993–2005	0.5	0.2	0.4	0.4	-0.6	-0.5	3
Ghana	1998–2005	0.9	1.5	3.7	0.3	1.4	1.1	5
Kyrgyz Rep.	1998–2005	1.9	0.4	2.5	0.4	-3.1	-1.1	4
Madagascar	1996–2005	1.1	-1.9	0.1	-0.5	-0.1	0.1	2
Mali	1993–2005	1.0	0.0	0.7	0.1	-0.8	-0.1	3
Mozambique	1993–2005	1.2	-0.2	-0.2	-0.2	-1.0	-0.1	9
Rwanda	1997–2005	1.4	0.2	1.2	0.1	-0.6	0.1	8
Senegal	1994–2004	1.0	0.2	0.4	0.0	-1.8	-0.1	5
Sierra Leone	2001–2005	1.5	-0.1	1.1	-0.2	-1.4	0.2	4
Tanzania	1993–2005	0.4	-0.1	0.0	0.0	-0.6	0.0	2
Uganda	1993–2005	0.7	0.2	0.2	-0.2	-1.2	0.0	35
Non-WAEMU	1993–2005	1.1	0.0	0.8	-0.1	-0.7	0.1	21
WAEMU	1993–2005	0.9	0.1	0.4	0.1	-1.1	-0.1	56
Whole sample	1993–2005	1.0	0.1	0.6	0.0	-0.9	0.0	56

Note: A positive signifies a shortfall of the out-turn compared to the projection. Excesses in budget aid equal the sum of excesses in current expenditure, domestically financed investment expenditure (project aid), amortization and arrears clearance (excluding debt relief and rescheduling), minus excesses in tax revenue, domestic bank financing, and deviations in other categories (comprising non-tax revenue, non-bank domestic financing, and net lending by the government).

Source: Authors' calculations based on IMF Staff Reports, various issues.

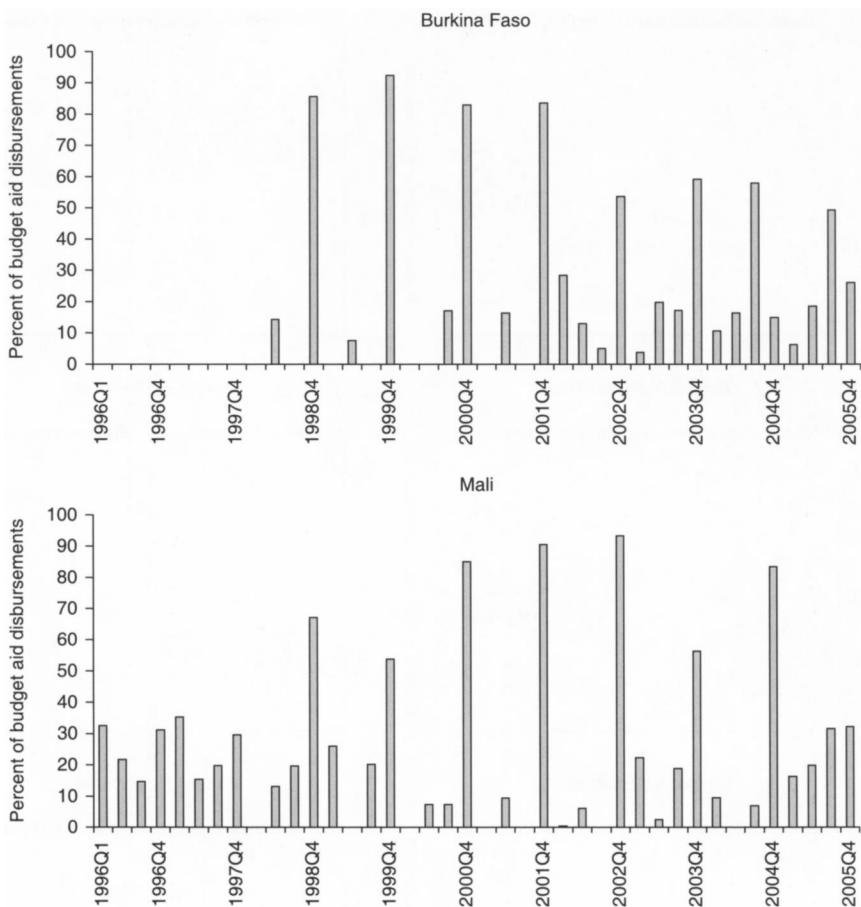


Figure 7. Burkina Faso and Mali: quarterly disbursements, percentage of annual disbursements

Source: Authors' calculations based on IMF Staff Reports, various issues.

which are cut in periods of aid shortfalls and not adjusted upward during aid windfalls. By contrast, government consumption rises during aid windfalls. This finding, based on a full decomposition of the data, is further supported by a review of the bilateral relationship between key variables, as displayed in Figure 8:

- Aid shortfalls are associated with a significant downward adjustment of investment spending (with a slope of 0.12 and 0.15 after excluding one outlier) whereas investment spending does not rise with aid windfalls.
- Government consumption does not fall during aid shortfalls, but aid windfalls are associated with a significant rise in consumption (with a slope of 0.64).
- Domestic bank financing is used to absorb aid shortfalls and windfalls, but to a different degree. Aid shortfalls are associated with additional domestic bank financing (slope of -0.46). Aid windfalls are associated with a reduction of domestic

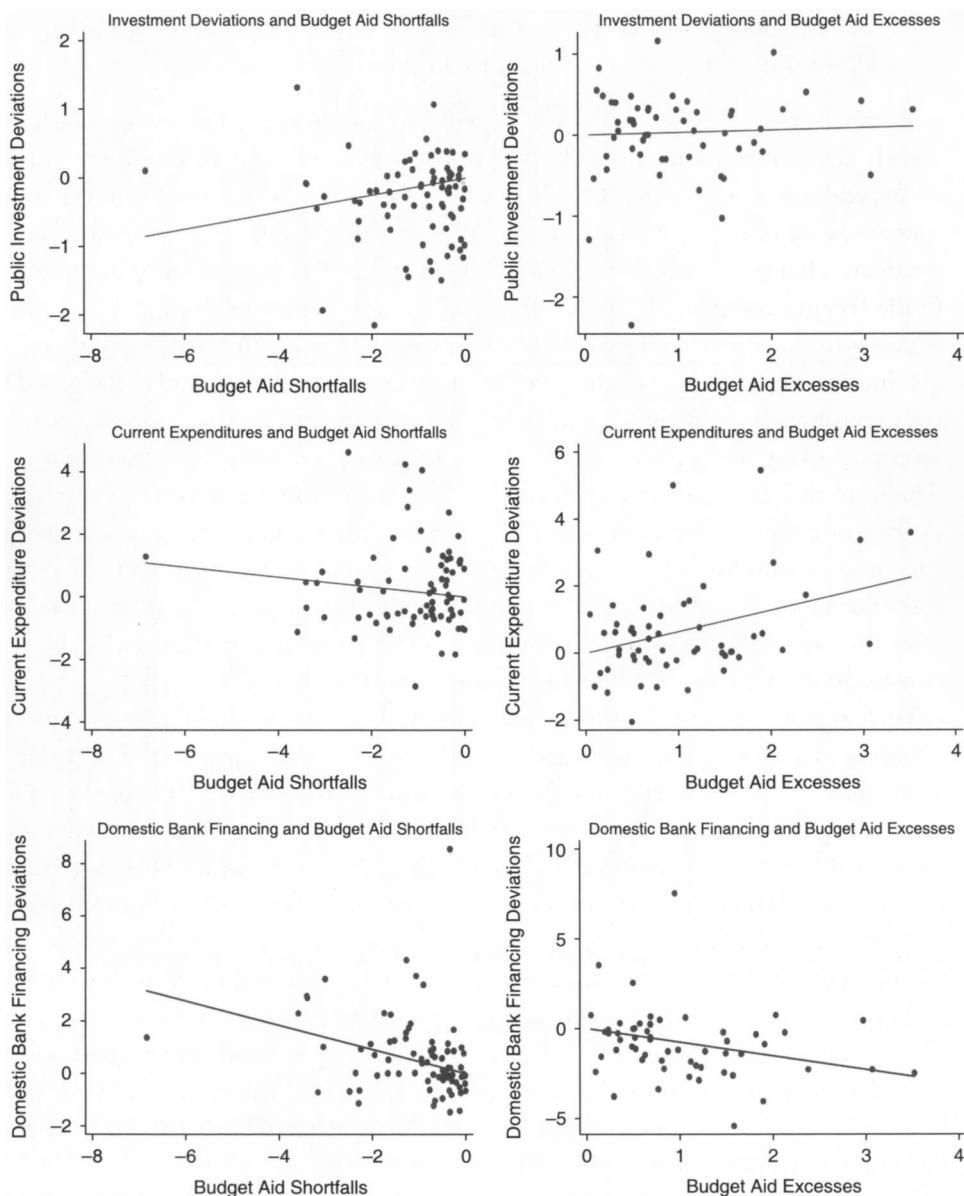


Figure 8. Adjustments to budget aid excesses and shortfalls, percentage of GDP

Notes: The three panels on the left show adjustments to budget aid shortfalls (76 observations); the panels on the right show adjustments to budget aid excesses (56 observations). The panels in the top row show adjustments of public investment spending; the regression represented by the straight line of the left panel yields a *t*-statistic of 2.61, the regression line in the right panel yields a *t*-statistic of 0.53. The panels in the middle row show adjustments of public investment spending; the regression in the left panel yields a *t*-statistic of -1.57, the regression line in the right panel yields a *t*-statistic of 4.54. The panels in the bottom row show adjustments of domestic bank financing; the regression in the left panel yields a *t*-statistic of -4.23, the regression line in the right panel yields a *t*-statistic of -3.91.

Source: Authors' calculations based on IMF Staff Reports, various issues.

financing (domestic debt repayment) that is larger (slope of 0.76%) than the additional bank financing during aid shortfalls.

Recipient governments have some freedom to use domestic financing in order to absorb aid surprises and windfalls, but these are not sufficient to avoid any impact on expenditure composition. Consider a situation under which two identical countries are being promised budget aid equivalent to 1% of GDP. However, as a surprise, the donor changes the aid allocation and shifts the aid from one country to the other. In the country receiving the aid windfall, this is associated with about 0.6% of GDP higher government consumption and a repayment of debt. In the country losing its aid, investment spending is being cut by somewhere between 0.1 and 0.2% of GDP with consumption remaining unaltered, financed by drawing on domestic banks. Overall, looking at the two countries together, a surprise aid reallocation induces a significant shift from investment to consumption in government spending. Also, since the consumption related to the windfall is unplanned, it is not likely to involve goods and services with longer planning cycles (such as supplies and new staff for health and education). These efficiency losses of low predictability are in addition to the costs that are likely to arise from higher interest payments on domestic debt and crowding out of private investment in countries with aid shortfalls.

We find that also in OECD-DAC data investment-consumption ratios for government spending are significantly correlated with the degree of aid predictability. Table 9 shows three different regressions using the investment-consumption ratio of the public sector (in percent) as a dependent variable. The simplest specification (column 1) shows that lack of aid predictability has a statistically significant negative association with the investment-consumption ratio, with the latter being 17 percentage points lower in a country with a degree of aid predictability set to the level of the sample mean. This association is somewhat weaker (but still significant) in aid recipients with higher access to external financing or deeper local financial markets, where governments can more effectively buffer against shocks. Hence, in the broader cross-country data, there is strong evidence that lower predictability is associated with a bias toward more government consumption and less investment, suggesting that lack of aid predictability hurts long-term growth.²⁴

5. CONCLUSIONS AND POLICY IMPLICATIONS

Despite the frequently voiced concerns about aid predictability and international commitments to improve aid predictability, the literature offers very little systematic treatment of this issue. Much of the limited previous literature has been concerned with aid volatility, and often the terms predictability and volatility have been used

²⁴ Easterly and Rebelo (1993) find that long-term growth is positively affected by public sector investment, but not by public consumption.

Table 9. The public investment-consumption ratio and lack of aid predictability

	(I)	(II)	(III)
Lack of predictability	-0.395* [0.229]	-0.704* [0.380]	-1.101*** [0.260]
Lack of predictability * Access to international debt markets		0.014* [0.007]	
Access to international debt markets		-0.785*** [0.281]	
Lack of predictability *			0.014***
Domestic financial development			[0.004]
Domestic financial development			-0.513** [0.200]
Constant	65.821*** [9.251]	79.043*** [12.324]	87.737*** [12.246]
R-Squared	0.04	0.10	0.11
Number of observations	128	119	125

Notes: OLS regressions, *, **, and *** denote significance at 10, 5, and 1%. The dependent variable is the public sector investment/consumption ratio. Lack of aid predictability is measured as the absolute deviation between commitments and disbursements as a share of disbursements. Access to international debt markets is proxied by the share of private creditor debt in total public external debt. Domestic financial development is proxied by broad money in percentage of GDP. All variables are country averages for 1990–2005. Data sources are listed in Appendix 1.

interchangeably by policy-makers and researchers. We show that the concepts are distinct and that predictability is the more interesting concept when looking at aid effectiveness. In fact, we find a weak negative correlation between measures of lack of predictability and volatility.

Our study fills a gap in the previous literature and pursues two main objectives: (1) identifying the magnitude of the predictability problem and possible explanatory factors; and (2) tracing out the consequences of unpredictable budget aid, with a special focus on the level and composition of government spending.

5.1. Summary findings

One of the firmly held beliefs is that low predictability results always from donors not delivering on their original promises, the ‘donors never live up to their commitments’ view. We show that, in fact, low predictability is a result of disbursements exceeding and falling short of promises. This finding, which holds for both donor-reported and IMF-programme level data, implies that managing low predictability involves managing both aid shortfalls and windfalls.

Second, we show that regression analysis can pick up some fundamental reasons for lack of predictability. In OECD-DAC data predictability of all aid increases with the length of continuous coverage under IMF programmes, a factor that we interpret as a sign for significant trust between donors and recipients, including macroeconomic stability. This variable is absorbed by country-fixed effects in alternative regression analysis. We also find that emergency aid is associated with less predictable aid. Both

the length of IMF programme years and emergency aid reflect fundamental elements of country circumstances. They thus appear to be justifiably associated with predictability measures (i.e., effective emergency aid should not be predictable). At the same time, this analysis leaves significant parts of low predictability unexplained by a range of variables commonly associated with more effective use of aid, such as governance. We suggest that the residual reflects a mix of technical aspects, donor conditionality, and administrative delays.

Third, we highlight that even in countries with relatively stable environments, aid is unpredictable. Predictability of budget aid in this dataset is still strikingly low, with budget aid disbursements deviating by about 1% of GDP from projections, representing about 30% of budget aid promised on average.

Fourth, we demonstrate quite large costs of low predictability even in otherwise relatively stable environments. In our data drawn from IMF programmes, governments need to absorb budget aid shortfalls of more than 1% of GDP on average, and they largely do so by accumulating more internal debt and by reducing investment spending. Investment spending losses are not reversed in good times – when budget aid exceeds expectations – and instead aid windfalls are associated with higher government consumption as well as reimbursement of domestic debt. Thus, any losses to domestic investment resulting from times of disbursement shortfalls are permanent, whereas aid windfalls appear to encourage additional government consumption.

5.2. Implications for policy and further work

Our findings summarized above imply a number of areas for further consideration in the debate on aid effectiveness and improving donor practices. First, we believe that it is necessary to link the predictability debate more closely to the original question of aid effectiveness. As we have shown, the ‘fickle donor’ is not the only reason for unpredictable aid – there are cases when donors are justified in being unpredictable. Answering the question under which circumstances donors are not expected to be predictable (i.e., in case of major changes in country-donor relations and emergencies) would help better operationalize the aid effectiveness targets of the Paris declaration.

Second, to better measure the true impact of low predictability, data collection to measure the Paris declaration commitments should be improved. Data should be collected separately for project and budget aid. The latter should allow identifying technical aspects of predictability of project aid – linked to disbursement projections and avoid intermingling slow project implementation with donor-induced delays. In addition, it is critical to record not only donor declarations but also the mutual expectations of donors and recipients arising from these declarations to capture aid flows expected by recipients. Better data would help isolating a residual of predictability caused by conditionality, administrative delays and sudden adjustments by donors. Information on the latter could be further refined if, as is the case for the SPA surveys, reasons for delays of aid cancellations are also recorded.

Finally, the persistence of the predictability problem, especially for budget support, would suggest reconsidering some of the mechanisms of aid delivery to these countries. One possible way, discussed by Eifert and Gelb (2006) is to lengthen aid allocation periods and tie them to slower-moving country indicators (reflecting ‘trust’) rather than reconsidering fast-disbursing aid volumes annually within annual conditionality frameworks. They suggest committing to annual budget aid disbursements over a longer-term period as long as an indicator for the broad country framework, such as the country policy and institutional assessment (CPIA) of the World Bank, remains stable within a given range. Such a mechanism would remove the discretion over aid disbursements, but allow donors to rapidly cut aid if the country environment deteriorates sharply. Eifert and Gelb (2006) show that the theoretical costs associated with abandoning short-term control over aid disbursements would be small. The implication for the international aid architecture would be important since longer-term commitments to budget aid, say over a 10-year horizon, would also imply that aid funding mechanisms, including for multilateral institutions, would have to be reconsidered. Currently many aid budgets are set annually, and multilateral institutions need to replenish their resources for low-income countries every three years.

Discussion

José Tavares

Universidade Nova de Lisboa

The economic fortunes of developing countries, as well as the motivations and personal imperatives of citizens of rich countries will maintain aid in the political and economic agenda for decades to come. The challenge is to keep the research agenda apace with the public debate and an important influence on its content.

In recent years, research in economics has focused its attention on the possible futility of aid flows. The belief that aid flows do not always aid countries and individuals is, I believe, as consensual in the economics profession but almost residual in the public opinion. The result seems driven by both the discretionary criteria and behaviour of donor countries, and as the dissociation of aid from sensible public policies in the recipient country. Collier and Dollar (2002) found that the current allocation of aid in the world is about half as efficient in raising citizens of developing countries out of poverty as the best possible allocation. With the same amount of funds, much more can be done if poverty levels and local public policies are taken into account in aid disbursement. Alesina and Dollar (2000) confirm that aid flows have been dictated more by political and strategic considerations, such as the colonial past and strategic and military alliances between countries, relegating need and merit to a secondary role. This contrasts with the determinants of foreign direct investment flows, more ‘economic’ in nature, and aligned with their ‘objective’ consequences.

Aid has been associated in the public mind with corruption, but Tavares (2003) has used instrumental variables estimation and uncovered that aid *per se* decreases corruption. This result does not invalidate a positive correlation between aid flows and local corruption levels, suggested in Alesina and Weder (2002).

In sum, while many of the dice have not yet been cast and a definitive diagnostic not been made, the relation between aid flows, policy choices and governance in the recipient countries remains an open issue of great interest. The predictability of aid relates directly to the current debate on aid effectiveness. Predictability increases the ability of recipients to plan ahead and pursue better policies, while low predictability harms economic growth – as in Lensink and Morrissey (2000) – and increases the volatility of GDP fluctuations. This paper proposes an exercise with three inter-related goals: to discuss the impact of predictability on aid effectiveness, to review the pattern of aid predictability, and to estimate the economic consequences of predictability. Its main conclusion is that low predictability does undermine aid effectiveness.

The conceptual link between low predictability of aid flows and aid effectiveness is simply put: ‘it reduces a government’s ability to pursue the objectives attached to the spending of aid resources in an efficient manner’. According to the Development Assistance Committee of the OECD, ‘partner countries [cannot] be confident about the amount and timing of aid disbursements’. We should distinguish, as exemplified in the two quotes above, the ‘direct’ cost of low predictability on aid effectiveness, associated with the uncertainty over the timing and amount of aid flows, and the ‘indirect’ cost stemming from the disruption that low predictability inflicts on aid related and other public policy initiatives. It is hard – but important – to distinguish the two.

Aid may arrive in, at least, two shapes: budget aid and project aid. The former gives cabinets in the recipient countries discretion as to the application of funds, whereas the latter is associated with specific initiatives and projects. While project aid has the disadvantage of earmarked funds, this form of aid is easier to monitor and less vulnerable to volatile behaviour on the part of donors and recipients. Budget aid is substantially more vulnerable to institutional shortcomings on the part of the recipient country, as well as more prone to manipulation from the donor side, either ‘benevolent’ manipulation in the form of conditionality or other, less healthy, behaviour.

While low predictability – high conditional variance – of aid flows is a problem, there may be differences in the response to negative and positive aid ‘surprises’ which warrant a separate examination of the two types of flows. Notice, however, that low predictability can harm aid effectiveness even when associated with a positive surprise – a higher than expected amount is received. In this case, a ‘voracity effect’ may take hold, as the sudden and temporary abundance of resources leads interest groups within and outside government to actively vie for access to resources in a way that encourages rent-seeking behaviour rather than the efficient use of funds. This effect may be strong enough so that positive aid surprises lead to bursts in consumption but harm production, efficiency and the targeting of the needy.

It is key to distinguish between 'bad' and 'good' predictability. As is well known, donor countries and institutions usually attempt to use conditionality as a way to promote aid effectiveness. Countries with poor policy performance – at the economic level or in terms of human and civil rights – may see their aid flows suddenly and drastically diminished. Here, bad policies would be the cause and not the consequence of a high 'local' variance of aid flows. An endogeneity issue arises: the main interest is in identifying the empirical effect of predictability on effectiveness, not the opposite. An exogenous shock, such as a natural disaster, may be associated with both high volatility of aid flows – which probably will increase in response to the catastrophe – and poor economic performance due to the disaster itself, raising yet again the issue of endogeneity.

The empirical approach adopted in the current paper suggests a few specific comments. When analysing the factors affecting predictability, the number of years that a country in the sample has been part of an International Monetary Fund (IMF) sponsored programme is taken as *prima facie* evidence of sound macroeconomic policy-making. One is sensible to doubt this interpretation. There are at least three relevant groups of countries in this respect. The first is made up of countries with bad policies that are not granted access to corrective action through the IMF or just do not seek it; in the second group, countries have access to the corrective course of action proposed by the IMF; finally, a third group pursues good enough policies so that there is no access to IMF assistance and no need for it. The group of countries with IMF assistance that is highlighted in the paper is an intermediate group and thus hard to locate in a 'good' to 'bad' policies range.

A second issue is the use of the amount of 'emergency aid' as a determinant of aid effectiveness. Instead, one might easily use objective indicators of natural disasters and other catastrophic events as control variables, or use these to distinguish between the amount of aid that is 'justified' by objective reasons and additional amounts which may have poor motivations on either the recipient or the donor side.

One should also ask whether there is a relation between the amount and the predictability of aid. It is quite possible that smaller relative inflows of aid are associated with lower predictability of those flows, so that what might be identified as the effect of low predictability is actually the compounded effect of low aid flows and low predictability of those flows. With this in view, one would expect that the volume of aid be instrumented with variables related to geography – size of country, whether an island, etc. – and social structure – age structure, ethnic fractionalization, etc.

In general, it would be very useful to combine more information across different datasets as a way to overcome the incompleteness of the available two datasets that the authors rely on. The country size restriction, for example, seems problematic as smaller countries are probably more dependent on aid flows, more vulnerable to volatility, and unnecessarily excluded from the analysis.

Finally, as to the overall empirical strategy, one might strongly argue for the definition of aid unpredictability as what is left over after one estimates the 'share' of aid volatility that is associated with a set of economic, geographic and social control

variables. This also suggests the importance of using ‘second moment’ control variables rather than ‘level variables’ – an example: changes in governance indicators, as opposed to their levels, as a determinant of aid volatility.

In sum, aid volatility is an important issue, and this is a first step to uncovering its determinants and its economic consequences. The definition of predictability, its relation to the amount of aid and its exogenous determinants are the three fronts where we can envision progress being made in the future, for the benefit of policymakers in the aid sector and, one expects, the individuals one would like to aid.

Luigi Guiso

European University Institute and Ente Luigi Einaudi

Aid to developing countries has become a matter of debate in policy and academic circles, with opinions differing considerably between those who think that much of the aid to developing countries is wasted and ends up hampering incentives and thus hurting developing countries, and those who think that too little money accrues to poor countries and that, when aid is properly designed, it helps escaping poverty. This debate is about the size of aid. This paper takes aid size as given and focuses instead on one dimension of aid: its predictability. This is a feature of transfers that can be potentially important in affecting outcomes in aid destination countries while at the same time being susceptible to policy intervention. The implicit idea is that deviations of aid transfers from initial commitments can impose significant costs on developing countries. I think that Oya Celasun and Jan Walliser do a good job of documenting empirically the potential importance of deviation of actual aid from that originally committed by the donor countries and of providing interesting correlations about some of the possible effects that a lack of predictability may have on developing countries’ budgetary decisions. Implicit in the title is the idea that deviations from committed money are just the result of random behaviour in donor countries when it comes to delivering the promised money. However, there are reasons to doubt this is actually the case. First, the way fickle donors’ behaviour is measured – as the residual of regression of absolute deviations of transfers from commitments on a number of observables – is bound to reflect what is put in the regressions as explanatory variables. The conditioning variables are the ones that the econometrician can observe, while what is relevant is what the recipient countries know about the money they are going to receive. The information set they condition upon may be much larger as, for instance, they may have ‘soft’ information (through the embassies or foreign ministers) about the timing and size of the actual transfers in the given year. Hence, the size of the unpredictability may be grossly overstated. Second, deviations of disbursements from commitments may reflect not just donors’ ‘fickle’ behaviour, but conscious strategies that donors implement to provide incentives to recipient countries. On a more general level, while the focus is on predictability – i.e., the

ability to tell in advance how much of the committed money will be actually available – for developing countries, what may matter is rather the viability of aid. If they have limited access to the loans market, knowing in advance that next year they will be able to receive half of the committed transfers may be of little help; they would have to adjust on some margin by cutting expenditure even if the shortfall is fully predictable. Actually, cross country correlations between aid shortfalls and bank financing seem to suggest the countries in the sample studied by Celasun and Walliser do relatively well at smoothing variability in aid. In fact, using the same data used in the paper one can show that the correlation between aid shortfall and government consumption on one hand, and aid shortfall and government investment (once Mozambique, being an outlier, is dummed out) on the other, are essentially zero instead of being positive as one should find if shortfalls did indeed matter. So even if aid disbursements seem to depart from commitments on a year-by-year basis, reasonable access to financial markets appears to allow developing countries to smooth out their effect. My conclusion is that variability of aid disbursements is probably not a first order problem for the well-being of developing countries; insofar as it is, it seems that setting up mechanisms to ease their access to external finance is the most natural policy to pursue.

Panel discussion

Jorge Braga de Macedo stressed that the scope of the analysis was restricted to the predictability and effectiveness of some types of aid only. The analysis does not account for private donors and non-member countries, such as China, both important and fungible sources of aid especially for Africa. Next, John Temple argued that some donors are more fickle than others; for instance, there could be differences between the provisions of aid by the World Bank and by national governments. Omer Moav pointed out that it is hard to identify the growth effects of aid; it may well be linked to the volatility of aid rather than to their predictability. Hans-Werner Sinn was seriously concerned by the behavioural consequences of making aid predictable and he suggested that some insights may be derived by looking at the literature on the optimality of predictability in taxation.

APPENDIX 1. DATA DEFINITIONS AND SOURCES FOR OECD-DAC DATA AND THE EXPLANATORY VARIABLES

In measuring aid predictability as the gap between commitments and disbursements using OECD DAC data, we correct the raw data by identifying those donors that never report commitments to OECD-DAC. Rather than subtracting disbursements for these donors from overall disbursements, which would treat them implicitly as being fully

predictable, we assume that aid disbursements by these donors are as predictable as disbursements of the other donors in that country and year (e.g., if 30% of committed aid is not disbursed by other donors in a country, we would impute that 30% of disbursements from these donors come as a surprise as well). The underlying hypothesis is that donors that never report commitments are simply not reporting commitments to the OECD.²⁵ Overall, this adjustment does not affect our results as it concerns annual aid flows in the magnitude of typically 0.1% of GDP or less for each of the countries in our sample.

- **ODA Commitments:** Gross Commitments of Official Development Aid. Source: Table 2a of the OECD DAC Statistics.
- **ODA Disbursements:** Gross Disbursements of Official Development Aid, sum of ODA Grants and ODA Loans extended. Source: Table 2a of the OECD DAC Statistics.
- **Net ODA:** Net Disbursements of Official Development Aid, given by Gross ODA – ODA loans received. Source: Table 2a of the OECD DAC Statistics.
- **Net Aid Transfer:** Aid transfer net of non-concessional debt relief, and interest and principal received, given by Gross ODA-debt forgiveness grants-rescheduled debt-ODA loans received-(interest received-interest forgiven). Source: Roodman (2006).
- **GDP:** Gross Domestic Product in current US dollars. Source: World Development Indicators, the World Bank.
- **Population:** Source: World Development Indicators, the World Bank.
- **Governance:** Simple average of indices measuring bureaucratic quality, corruption, and the rule of law, from the *International Country Risk Guide*. Source: Political Risk Services (2006).
- **IMF Programme Dummy:** Dummy variable indicating whether a country was implementing a programme supported by the Poverty Reduction and Growth Facility of the International Monetary Fund. Source: <http://www.imf.org>.
- **Years in IMF Programme:** Number of contiguous years a country has been implementing an IMF-supported programme. Source: <http://www.imf.org>.
- **Emergency Aid:** Net disbursements of emergency aid. Source: Table 2a of the OECD DAC Statistics.
- **Terms of Trade:** Index of net barter terms of trade. Positive terms of trade shocks are given by the percentage increases of the terms of trade, negative terms of trade shocks are given by the percentage declines in the terms of trade. Source: World Development Indicators, the World Bank.
- **Real GDP Growth:** Growth rate of GDP in constant 2000 US dollars. Source: World Development Indicators, the World Bank.
- **Consumer Price Inflation:** Percent change in the consumer price index. Source: World Development Indicators, the World Bank.

²⁵ By contrast, for donors that only occasionally fail to report commitments, we continue to treat their disbursements as not predictable.

- **Logarithm of settler mortality:** for former colonies. Source: Acemoglu *et al.* (2001).
- **Logarithm of population density in the 1500s:** for former colonies. Source: Acemoglu *et al.* (2001).
- **Years as a colony:** number of years as colony of any colonizer since 1900. Central Intelligence Agency (1996).
- **UN voting patterns:** Five variables measuring the percentage of times in which the recipient has voted in the United Nations General Assembly as the US, France, Germany, Italy, and Japan, respectively. Calculated based on data compiled on UN voting records by Voeten (2005).
- **Public Investment:** Public Gross Fixed Capital Formation. Source: World Economic Outlook database, the International Monetary Fund.
- **Public Consumption:** Public Consumption Expenditure. Source: World Economic Outlook database, the International Monetary Fund.
- **Access to International Debt Markets:** Share of private creditor debt in total public external debt. Source: The Global Development Finance database, the World Bank.
- **Domestic Financial Development:** The share of broad money in GDP. Source: World Development Indicators, the World Bank.

APPENDIX 2. DATA COMPILATION ISSUES FOR IMF PROGRAMME DATA

All data have been drawn from IMF programme projections and IMF programme out-turns of selected staff reports for 13 countries. These staff reports have been recorded in the dataset. The data have been put together in an internally consistent format, in line with the conventions for fiscal account that are explained in more detail in Box 2. In addition, we corrected and adapted the raw data from the IMF staff reports (recorded in the database) as follows:

- In a few cases, a financing gap was reported in the projection without direct indication how it would be filled. In these cases, we first lowered the gap by expected debt relief that could be obtained from other external financing tables or the text of the report and then distributed the remainder among budgetary grants and loans in accordance with historical patterns.
- In some cases, project grant information had to be derived from other variables, such as foreign-financed investment spending and project lending contained in fiscal and balance of payment data.
- We reclassified certain expenditure and financing categories to derive a fairly small set of consistent fiscal accounts across countries and time. For example, privatization was consistently classified as non-bank financing, arrears fluctuations were treated separately from domestic or external financing, and debt relief, including all relief under the HIPC Initiative, was treated as external financing item.
- Large commercial bank restructuring spending, which entered fiscal accounts simultaneously as expenditure and financing item, was omitted.

- Obvious arithmetic errors in fiscal accounts were corrected, if needed by including discrepancies in the non-bank financing item.

For fiscal accounts reporting a discrepancy between above and below the line items, we included this discrepancy in non-bank financing.

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