Morrissey, Oliver

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Aid and Government Fiscal Behaviour

What Does the Evidence Say?

Oliver Morrissey*

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Abstract

Donors are concerned about how their aid is used, especially how it affects fiscal behaviour by recipient governments. This study reviews the recent evidence on the effects of aid on government spending and tax effort in recipient countries, concluding with a discussion of when (general) budget support is a fiscally efficient aid modality. Severe data limitations restrict inferences on the relationship between aid and spending, especially as the government is not aware of all the aid available to finance the provision of public goods. Three generalizations are permitted by the evidence: aid finances government spending; the extent to which aid is fungible is over-stated and even where it is fungible this does not appear to make the aid less effective; and there is no systematic effect of aid on tax effort. Beyond these conclusions the fiscal effects of aid are country-specific.

Keywords: Aid, fiscal effects, fungibility, government spending, taxation
JEL classification: E62, F35

*CREDIT and School of Economics, University of Nottingham, email: oliver.morrissey@nottingham.ac.uk

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UNU World Institute for Development Economics Research (UNU-WIDER)
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

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1 Introduction

Aid flows to developing countries represent significant inflows of money, especially in poorer recipients. Headline aid figures reported by donors do overstate the value actually spent in the recipient country, as significant amounts (typically between a fifth and a third) are effectively spent in the donor country on donor services (such as consultancy and technical services), but the magnitude remains large. As most of the aid that is spent in the country goes to or through the government, or finances services that would otherwise be a demand on the budget, it should impact on government spending, especially in the low-income countries that receive significant amounts of aid relative to GDP. Whilst it is not possible to demonstrate this easily from aid data, it can be inferred from the high share of aid in government spending. Using data for 1997, to illustrate, aid accounted for almost a third of government spending on average in low-income or sub-Saharan African (SSA) countries, and over 100 per cent in some countries (McGillivray and Morrissey 2004: 74). There is considerable variation over the past two decades: on average over the 1990s aid was equivalent to over 100 per cent of government spending in Burundi, Ethiopia and Sierra Leone; on average over 2001-07 it was over 100 per cent in Sierra Leone and Zambia, 70 per cent in Uganda, 50 per cent in Ghana and 20 per cent in Kenya. Obviously, when donor aid allocations to a country are equivalent to over two-thirds of government spending, much of the aid is not going through the budget (it may be in parallel, through donor operated projects, or may not even be spent in the recipient); the donor allocation overstates the amount of aid that affects government spending.

Nevertheless, aid should have a direct and significant impact on the level (relative to GDP), evolution (increases over time) and composition (the allocation of spending to different types of public goods and services) of government expenditure. Aid may also affect the level of tax revenue, either because it influences tax effort or because policy reforms associated with conditional lending affect tax rates or the tax base. The effect of aid on taxation and spending behaviour will be a determinant of aid effectiveness broadly defined, whether as the impact on growth or on human development. Indeed, aid is intended to increase government spending, in total and on particular areas; Gomanee et al. (2005a) provide evidence that aid increases spending on social sectors (health, education and sanitation) and this contributes to development through investment in human capital (see also Morrissey 2010). There are also some cross-country studies of aid effectiveness (the impact of aid on growth) that include the impact via government spending; Gomanee et al. (2005b) show that aid financed investment spending contributes to growth in SSA countries. Despite this, there is no readily available source for consolidated data on aid and government spending for a large sample of aid recipients over a reasonable period of time. By implication, there is relatively little evidence on the effects of aid on the level and evolution of government spending. Most studies on aid and government spending focus on allocation or fungibility, i.e. on whether aid is spent on the headings donors intend, and provide little analysis of the effect on total spending (McGillivray and Morrissey 2004). In particular, there is very little evidence on whether aid is fully additional, i.e. does government spending increase fully by the amount of aid received; the evidence is reviewed in Section 2.

Few studies have provided a comprehensive review of the evidence on the effect of aid on budget behaviour, i.e. on taxation and spending. Under the auspices of UNU-WIDER, McGillivray and Morrissey (2004) reviewed the evidence on the fiscal effects of aid, mostly based on country-studies or now rather old (and limited) cross-country analyses. This review paper provides an update with greater emphasis on effects on spending and taxation (specifically the tax/GDP ratio) to address four issues.

1) The effect of aid on the composition of government spending, specifically has spending in areas favoured by donors (such as social sector or pro-poor spending) increased as a share of spending?
2) The effect of aid on government spending, specifically the level of total spending (relative to GDP) and how it evolves over time. Does government spending increase fully by the amount of aid received?
3) The effect of aid on taxation, specifically how total aid, and whether it is given in the form of a grant or a loan, affects the tax/GDP ratio. Can aid and the associated policy reforms (conditionality) contribute to increasing domestic revenue mobilization?
4) How the combined effects of aid on taxation and spending affect budget behaviour and overall aid effectiveness.

The literature can be classified under two headings that will be addressed in turn. Section 2 covers fungibility, whether aid is spent as intended by donors, and analysis of the relationship between aid and spending, on specific areas and in total. Section 3 considers broader analysis of the fiscal effects of aid (on taxation and borrowing and spending) and specific studies of how aid affects tax effort (the tax/GDP ratio). Section 4 concludes by observing that there is no consistent relationship between aid and the level or composition of spending because this relationship is mediated by the broader fiscal dimension, and discusses implications for aid policy.

2 Aid and government spending[1]

Many studies on aid and government spending focus on fungibility, i.e. on whether aid is spent on the headings donors intend. Indeed, this was a specific focus in World Bank (1998) where fungibility, interpreted as the diversion of aid away from its intended uses for investment and development, was presented as a factor limiting aid effectiveness in promoting growth. However, the literature concentrating on whether aid is fungible provides little analysis of the effect on total spending. McGillivray and Morrissey (2004) review the literature and note three important distinctions—general fungibility, sector fungibility and additionality. Some studies focus on whether aid in general is fungible; on the assumption that aid is intended to finance public investment, the question asked is how much of the aid is 'diverted' to finance government consumption spending under the assumption that such diversion reduces the effectiveness of aid (e.g. World Bank 1998). This is misleading as government consumption includes expenditures to maintain and operate investment projects; public investment spending is mostly construction costs (such as building a hospital), whereas the recurrent costs essential for productive investment (such as medicines and wages for nurses and

1 This section is based on Morrissey et al. (2011).

doctors) are included as consumption. Thus, consumption (or recurrent) spending is a necessary complement to investment and may often be human capital investment. In this sense the argument that fungibility diminishes the effectiveness of aid is generally misguided (McGillivray and Morrissey 2000).

Even if the aid is spent on the intended sector (i.e. not fungible) it may not be fully additional, i.e. does government spending on the sector increase fully by the amount of aid received? McGillivray and Morrissey (2001) demonstrate that additionality is difficult to establish, which may be one reason for the lack of empirical evidence (McGillivray and Morrissey 2004). For example, donors could ensure the aid is spent as intended by undertaking the spending themselves, such as actually building a school or hospital through a donor project. However, the recipient may respond by reducing the amount of its own resources (tax or domestic revenue) allocated to spending in that sector, so sector spending does not increase fully by the amount of the aid (it may not increase at all). It is also possible that sector spending increases by more than the aid, even if some of the sector aid is fungible (e.g. a donor builds a hospital that creates a claim on future government recurrent spending). These concerns are addressed in studies of the fiscal effects of aid (see below) that address broader effects of aid and the dynamics of the fiscal relationship; even if aid in a particular year is not fully allocated as donors intend, spending in the areas favoured by donors may increase over time by at least the amount of aid.

2.1 Fungibility and sector spending

McGillivray and Morrissey (2004) discuss four limitations of the literature on aid fungibility. First, the underlying theoretical model posits two distinct types of (composite) expenditure headings, one to which aid is allocated and another to which aid is not allocated, and that these are separable in the government's utility function so that only fungible aid affects the spending allocation (Feyzioglu et al. 1998: 34). Thus the model does not allow aid to affect expenditure allocations across all headings. The second problem is lack of appropriate data to estimate the model as one must know how much aid the donors intended to be spent on each expenditure heading. Third, the econometric techniques used in most studies are deficient as they assume that the components of government spending are determined independently (related to assuming they are separable); in practice the components are jointly determined and this should be allowed for in the estimation. Fourth, and most importantly, no attempt is made to allow for the dynamics of the broader fiscal effects of aid, on taxation, borrowing and the evolution of spending on specific sectors. The second and third problems are addressed in the recent studies of sector aid discussed below, while the fourth concern is addressed in the fiscal response literature discussed in Section 3.1.

These limitations explain why studies provide such mixed evidence of the impact of aid on spending: in some cases total spending increases by more than the amount of aid, and often development spending increases by more (or falls by less) than non-developmental spending. Some unwarranted conclusions have been drawn, notably that fungibility 'helps explain why large amounts of aid have had no lasting effect in highly distorted environments' (World Bank 1998: 82). Aid ineffectiveness is as likely to be due to low productivity of aid-financed investment or public spending as to aid being diverted to unintended uses. As we show below, a number of studies find that even where aid is fungible this does not appear to diminish effectiveness.

McGillivray and Morrissey (2000) argue that fungibility simply reflects the reality that donors and recipients have different preferences regarding the allocation of public expenditure. Recipients want aid to be maintained and recognize donors' wishes for policy and expenditure allocation, even if these differ from what recipients consider appropriate. The spending allocation outcome will be somewhere between the two preferences, depending on respective bargaining powers and the ability of recipients to effectively implement expenditure plans. McGillivray and Morrissey (2001) argue that concern with fungibility is misleading; the relevant issue is how aid affects dynamic fiscal behaviour and how spending plans are implemented. They suggest 'aid illusion' such that officials implementing expenditure plans misperceive the intentions of the policy officials and donors who set expenditure plans. All that is necessary for such misperceptions to arise is that information flows and public expenditure management systems are weak. McGillivray and Morrissey (2001) show that even if recipients intend to use aid in a fungible way the result may not be that spending on the items donors want to support will increase by less than the value of the aid. They also illustrate cases of unintended fungibility or the appearance of fungibility (because only spending allocations rather than the budgetary process is observed). However, fungibility studies may be informative regarding the impact of aid on the composition of government spending, at least in the short-term, and we consider this in the context of recent studies assessing the effect of aid on sector spending.

Recent fungibility studies consider if aid to a particular sector is actually spent on that sector. For example, if the donor intends that the aid be allocated to health or education, is this what actually happens? The challenge facing any studies on this topic is in constructing adequate data on sector aid. The basic source is the Creditor Reporting System (CRS) and other aid statistics provided by the Development Assistance Committee (DAC) of the OECD on sector aid for donor-recipient pairs. The longest series of sector aid allocation data relate to commitments; although the data are incomplete one can obtain a reasonable estimate of how much aid a particular donor committed to a given sector, such as health, in a recipient in a year (that can be aggregated to give total sector aid for the recipient). Unfortunately, one does not know in which year, if any, the aid was disbursed (nor does one know if the aid was disbursed through the government or through a donor project, of which the government may not necessarily be aware). Researchers have employed different approaches to estimate sector aid disbursements by complementing CRS with other data sources, from DAC and elsewhere, or focused on specific sectors in a country (often based on World Bank data), or on total sector aid (not distinguishing donors).

Pettersson (2007) provides a comprehensive analysis of sector aid fungibility using two sectors, social and other, assuming that total aid disbursements can be allocated to sectors according to the sector allocation of commitments. Analysis of the data for 57 recipients suggests that sector fungibility is quite high: on average two-thirds of aid to social sectors appears to be fungible (it is spent outside the sector). However, the estimates of fungibility are imprecise: for a fifth of the countries the confidence interval includes both full and no fungibility and only for half of the countries is the confidence interval within these extremes (although for these on average two-thirds of aid is fungible); in some countries sector spending increases by more than the aid and in others it decreases by more than the aid. Pettersson (2007) then includes fungibility as a variable in aid-growth and aid-welfare regressions and finds no evidence that fungibility is associated with reduced aid effectiveness. Wagstaff (2011) reaches a similar

conclusion examining two health projects in Vietnam: the sector (health) aid appears to be fungible but this does not noticeably reduce the impact of the projects. There may even be fungibility within projects or sectors; e.g. van de Walle and Mu (2007) find that some of the aid intended to finance road building in one province in Vietnam appeared to support roads in another province. Again, the implication is that fungibility may be present but need not reduce aid effectiveness. Although they do not address if aid is fungible, Michaelowa and Weber (2007) find some weak evidence that aid to the education sector is associated with increased primary school enrolment and completion rates; the aid is effective even if it is fungible.

In an even more detailed attempt to 'correct' CRS data to obtain good estimates of sector aid, van de Sijpe (2010) examines fungibility of aid to health and education for the period 1990-2004 when CRS sector disbursements data are available (but incomplete). To identify as completely as possible sector aid for education and health aid the sector disbursement data are complemented with other DAC data on total and sector donor disbursements. Sector programme aid provides the measure of on-budget aid (i.e. aid allocated through the budget), while technical cooperation to the sector is a proxy for off-budget aid (recipients are assumed aware of the sector projects, but do not have control of the aid). Technical cooperation accounts for a large share of total education and health aid, implying that donor projects are significant in these sectors. Failure to account for this would overestimate fungibility as even if all aid is used in the sector it is not all recorded as government sector expenditure.

With this relatively high quality data van de Sijpe (2010) applies robust econometric techniques to estimate the impact of sector aid on sector spending; although controls include variables that help to explain the tax/GDP ratio, revenue is not specifically included. There is 'little evidence to suggest that aid is fully fungible. In both sectors, even in the long run, technical cooperation leads to at most only a small displacement of a recipient's own public spending. [However] the effect of sector programme aid in both sectors becomes very imprecise, so that in the end no firm conclusions can be drawn with respect to the fungibility of sector programme aid' (van de Sijpe 2010: 35). Taking the literature overall there is limited evidence that aid is fungible but, even where it is, there is no evidence that this reduces the effectiveness of aid.

Lu et al. (2010) is one study arguing that there is significant fungibility in health, based largely on data from the World Health Organization (WHO) on aid allocated to health and WHO and IMF data on government health spending. They analyse data for 111 countries over 1995-2006 on development assistance to health (DAH, sector aid), expenditures on health by government as an agent (GHE-A, total sector health spending) and expenditures on health by government as the source (GHE-S, intended to capture own-financed health spending this is estimated as GHE-A minus DAH). The main findings are that sector aid appeared to reduce government as source health spending (i.e. DAH was associated on average with a reduction in GHE-S, implying that it is fungible) but health aid to NGOs increased government spending. This is a careful and important study that raises serious questions regarding the effectiveness of aid targeted at health.

However, there are a number of limitations to the study that caution against accepting the results as robust. First, missing data on GHE-A required them to impute some 40 per cent of observations. Although they employed 'best practice' multiple imputation

methods, these are suspect in the context of imputing values for the dependent variable as the algorithm is based on the maintained model (i.e. the model subsequently used to test the relationship is also used to impute missing values) and is likely to generate spurious results. Second, the measure of sector aid will include projects that do not go through the government budget, hence deducting DAH from GHE-A may underestimate GHE-S, i.e. the approach is likely to underestimate own-financed health spending by the government. Furthermore, errors in estimating GHE-S (the dependent variable) are compounded by errors in DAH (from coding DAC data) and in GHE-A (from imputed data); the data used is likely to be subject to considerable measurement error but limited sensitivity analysis is conducted. Third, revenue is omitted as a control in the estimation, i.e. domestic revenues are not accounted for so there is a very important omitted variable. Finally, estimates of the effect of DAH on GHE-S are not provided, i.e. they did not consider the effect of sector aid on total sector spending (and it is this that would determine any impact on health outcomes). Given the cumulative effect of these limitations on the estimates and the marked difference in results compared to the equally rigorous study of van de Sijpe (2010), the study is no more than indicative.

2.2 Aid and public expenditure

It may appear surprising that there is very little specific evidence for the effect of aid on spending. This largely because existing studies concentrated on different questions: fungibility studies focus on where the aid is spent whereas fiscal response studies consider the broader fiscal relationship. Where the latter do include the effect of aid on spending, it is generally positive though rarely fully additional (not because aid is fungible, although it may be, but because aid supports reductions in borrowing—see below). Remmer (2004) specifically addresses the effect of aid on government spending with cross-country data over 1970-99, in the context of the literature on growth of government size (measured as the government expenditure/GDP ratio) and finds that aid is a significant determinant of expenditure/GDP growth in low and middle income countries. Although the analysis is econometrically accomplished, as the focus is on the effect of aid on long-run changes in expenditure/GDP in a model including determinants of government size, there are limitations. First, her analysis does not fully allow for the fact that aid itself is included in government spending, i.e. in accounting terms a significant part of aid delivered to a country is included in the measure of government spending (the analysis should attempt to allow for this 'double counting'). Second, aid may affect or even be part of (in accounting measurement terms) some of the other explanatory variables, such as tax/GDP and import/GDP ratios, and these inter-related effects are not allowed for. Nevertheless, the analysis establishes the expected effect of aid on total spending over time.

Morrissey et al. (2011) analyse the effect of aid on spending for an unbalanced panel of annual data for 58 countries over 1990-2008; almost all countries had some missing annual observations (especially on government spending or revenue), and some countries had data for a sub-period such as the 1990s or 2000s only. For the full sample (58 countries), on average total spending is similar to the sum of tax revenue and aid but notably less than implied by summing total revenue and aid. This can be explained by noting that the donor aid measure overstates what is received by the recipient government, although it is also possible that total revenue may include elements not relevant to the measure of government spending (e.g. local government taxes or revenues associated with publicly owned businesses). For the full sample over the

whole period average government spending has been consistently between 22-27 per cent of GDP, with a slight but detectable upward trend (especially since the early 2000s). Tax revenue as a percentage of GDP was consistent at 15 per cent on average until the late 2000s (it increased to almost 20 per cent by 2008). Spending on education and health are quite low and education is more than twice the level of health spending on average (14.5 per cent and 6 per cent of total spending on average).

Aid as a percentage of recipient GDP for the sample has declined from an average of eight per cent over the 1990s to about six per cent after 2002. The measure of aid is equivalent to 30 per cent of total spending on average, but as with other variables there is considerable variability, across countries and over time (with a significant decline, from over 35 per cent initially to less than 25 per cent by the end). Relatively richer developing countries receive less aid, typically much less, than poor countries; for 14 of the 58 countries aid is less than 5 per cent of government spending in (almost) all years and for a further eight it falls below 5 per cent in the 2000s. Thus for only 36 countries is aid a significant proportion of spending (>5 per cent), although for some it is very high, over 100 per cent in nine countries for at least one decade.

As the data and sample are limited Morrissey et al. (2011) estimate a simple (parsimonious) specification (for country *i* ignoring time sub-scripts):

$$G_{is} = \alpha_0 + \alpha_1 R_i + \alpha_2 A_i + u_i \qquad (1)$$

All variables are measured as percentage shares of GDP: government spending [with *s* = total spending (*G*), spending on education (*GE*) and spending on health (*GH*)], domestic revenue (*R*) and aid (*A*). The data do not permit any sophisticated econometric techniques so a variety of simple approaches are adopted as a way of assessing robustness of the results. Table 1 presents results of Seemingly Unrelated Regression (SUR) estimation of all three measures of spending together (alternative estimations yielded similar results).

Morrissey et al. (2011) draw some general findings:

- Domestic revenue is clearly the driver of total spending (the same applies for tax revenue); it is always highly significant with a coefficient close to unity and the overall explanatory power is high.
- Revenue is also the driver of education and health spending; it is always highly significant. As revenue on average is almost seven times GE and 14 times GH, the coefficient is small.
- Aid is a significant determinant of total spending (whether contemporaneous or lagged aid is used). The coefficient is small, but consistent with aid being on average seven per cent of GDP and much less for middle income countries. Evaluated at the means, on average a 10 per cent increase in aid corresponds to a 3 per cent increase in spending, implying that a large proportion of the aid is not counted in spending (either because it does not enter the budget, or even the

Table 1: SUR estimation of aid and spending

	All years		
	G/GDP	GE/GDP	GH/GDP
R/GDP	0.969	0.174	0.097
	(47.58)***	(25.60)***	(25.76)***
A/GDP	0.072	-0.002	0.015
	(3.61)***	(0.30)	(4.25)***
Constant	2.190	-0.053	-0.569
	(4.94)***	(0.36)	(7.00)***
Obs	624	624	624
R^2	0.79	0.52	0.54
	1990-2003		
	G/GDP	GE/GDP	GH/GDP
R/GDP	0.948	0.176	0.084
	(38.19)***	(23.10)***	(19.39)***
A/GDP	0.093	-0.002	0.017
	(4.15)***	(0.34)	(4.33)***
Constant	2.285	-0.081	-0.389
	(4.36)***	(0.5)	(4.24)***
Obs	483	483	483
R^2	0.77	0.53	0.48
	2002-08		
	G/GDP	GE/GDP	GH/GDP
R/GDP	1.011	0.170	0.128
	(31.97)***	(10.94)***	(19.35)***
A/GDP	-0.038	-0.0004	0.021
	(0.87)	(0.02)	(2.31)**
Constant	2.310	0.042	-1.137
	(3.08)***	(0.12)	(7.27)***
Obs	141	141	141
R^2	0.88	0.46	0.74

Notes: Estimates for a sample of 58 aid recipients.

Source: Morrissey et al. (2011: Table 5).

recipient). Although aid is significant over the whole period this appears to be driven by effects in 1990-2003 period; aid is not significant for 2002-08. This may be because for many of the relatively higher income countries aid declined in the 2000s.

- Aid is consistently insignificant in explaining spending on education. A possible reason is that education, at 15 per cent on average, is a reasonably important

component of spending so is closely linked to domestic revenue. Furthermore, for the sample on average, GE remained quite constant whereas aid declined over the period.

- Aid does appear to be significant in explaining health spending, even in the most recent period (if contemporaneous aid is used). Controlling for the inter-related nature of revenues and spending, the significant effect of aid in 2002-08 is only on health spending. This is consistent with donors targeting health and including recurrent costs, especially financing medicines and vaccinations (there may also be a HIV/AIDS effect). This suggests that the growth of health spending from the mid-2000s can to some extent be attributed to aid (as for aid, health spending increased over the period, as a share of GDP and of total spending).

3 Fiscal effects of aid

The fundamental deficiency of the fungibility approach to the effect of aid on spending is that it does not allow for the broader fiscal impacts of aid over time, especially on tax revenue and borrowing. Furthermore, overt concern with fungibility may serve to distract attention away from the more fundamental issue of how aid impacts on recipient fiscal behaviour in general, including the interaction of expenditure and revenue variables. Studies that examine the fiscal effects of aid do address components of the budget by considering the relationship between aid, domestic revenue (taxes) and government spending (and sometimes borrowing).

3.1 Fiscal response

Lloyd et al. (2009) apply a common country-specific fiscal response analysis to a sample of 19 countries. The main finding is that aid is a significant element of the fiscal relationship for a variety of developing countries (including a number of middle income countries for which aid is a relatively small share of spending), i.e. they confirm that aid does influence budgetary behaviour. For the majority of countries aid is weakly exogenous (donors do not respond to fiscal imbalances in determining their allocation, but aid has effects on the other fiscal variables) and is positively associated with spending (both capital and recurrent). However, they do not elaborate on the effect of aid on spending, i.e. they do not provide estimates of the magnitude of the effect of aid on spending, nor do they provide any discussion of the effect of aid on the composition or dynamics of government spending.

There are a number of (mostly country) studies on the fiscal effects of aid but, although these show that effects differ on consumption (recurrent) as compared to investment spending, few estimate the magnitude of effects on total spending. McGillivray and Morrissey (2004) review early applications of fiscal response models (FRMs) using structural econometric (3SLS) estimation methods and note a number of limitations: they are notoriously difficult to estimate and highly sensitive to (and demanding of) the data, often yielding inconsistent estimates of core parameters; it is necessary to estimate budget targets but there is no accepted theory regarding how governments form revenue and expenditure targets; the theoretical framework does not provide a good representation of government behaviour (and is not directly derived from a utility optimizing framework); and the behavioural relationship being estimated is assumed fixed over the period (i.e. the models do not allow for dynamics).

To address these limitations in estimating FRMs, some recent studies adopt time series econometric methods that have two specific benefits in this context. First, having established that fiscal aggregates (revenue, spending and borrowing) exhibit a long run equilibrium (cointegrating) relationship (and that aid is part of this) the data can then be allowed to estimate which of the variables drive the relationship and how the variables respond to each other; it is not necessary to impose a structural relationship or estimate targets. Second, the method permits a distinction in estimating the long run (equilibrium) and short run (adjustment to the equilibrium) relationships between the variables, including aid. The first study adopting this approach was Osei et al. (2005) for Ghana; they illustrate how the fungibility and fiscal response approaches can yield conflicting inferences and demonstrate that the fiscal approach is more reliable. In particular, they show that aid to Ghana from the 1980s was associated with reduced domestic borrowing (because reducing domestic borrowing was a requirement imposed by the IMF) and increased tax revenue (because of reforms in the cocoa sector promoted by the World Bank).[2] As borrowing is more closely linked to investment spending, whereas tax revenue is allocated to recurrent spending, recurrent spending rose more than investment spending following the increases in aid. This suggests *prima facie* that aid was fungible (investment spending rose by less than the aid and by less than recurrent spending) but is actually because the aid was used to reduce borrowing. Thus, although the econometric analysis shows that aid did not directly determine spending growth, the increase in aid combined with increasing tax revenue permitted spending to rise while borrowing was reduced. Thus aid facilitated improved fiscal management, even if it appeared fungible.

Ouattara (2006) obtains a similar result for Senegal (using a structural FRM rather than time series approach): aid had no significant effect on total spending but did reduce borrowing. Although not explicitly stated it is likely that multilateral donors (the IMF) required reductions in borrowing as a *quid pro quo* for increased aid so that the aid could not (all) be used to support spending. As noted above, fungibility studies omit controls for revenue and borrowing and assume that the aid is intended to finance (specific) expenditures; this may lead to incorrect inferences on whether aid is fungible. The case studies of Ghana and Senegal show that donors linked aid to reducing borrowing so that additionality could not be achieved (in the Ghana case total spending increased because tax revenue rose). More importantly, these FRM studies show that simply looking at aid and spending can miss the big picture—spending decisions are made within a fiscal (budget) framework in which aid is only one component.

Morrissey et al. (2007) extend the time series FRM approach with official Kenyan data for 1964-2004 (i.e. the aid was as reported by the government, which is much less than declared by donors to Kenya), to distinguish fiscal effects of aid grants and loans and consider the impact of aid on growth (within a fiscal framework). The results differed for the two types of aid: grants were associated with increased spending and that government spending had a positive effect on growth (grants also had a small positive association with growth); loans, however, were a response to unanticipated deficits, i.e. if spending exceeded revenue (tax and grants) the government sought loans to finance the deficit (in periods of a budget surplus the loans were repaid). Fiscal deficits, hence

2 It is not the amount of aid that generates effects on borrowing or tax revenue but specific policies (that were implemented) associated with the aid, i.e. the effects can be interpreted as due to conditionality rather than the aid itself.

aid loans, had a negative association with output. Another interesting result is that tax revenue was weakly exogenous, i.e. the government was not able to increase tax revenue in the short-term to adjust to budget disequilibrium (deficits). It follows that because tax revenue and grants were not amenable to short-term change by government (in effect they were not policy instruments), borrowing (loans) adjusted to spending disequilibrium.

In a recent application of the time series approach, Martins (2010) provides a comprehensive analysis of the fiscal effects of aid in Ethiopia using a unique quarterly data set for the period 1993-2008. In contrast to the studies of Ghana and Kenya, aid grants adjust to the level of development spending, i.e. donors to Ethiopia appear to provide more grants if development spending is increasing. Furthermore, there is evidence for a long run positive relationship between aid and development spending, but not between aid and recurrent spending (hence no evidence that aid is fungible). As in the other cases, domestic borrowing increases in response to shortfalls in revenue (tax and grants) and there is no evidence of a long run relationship between aid and tax revenue (i.e. no evidence that aid affects tax effort).

3.2 Aid and taxation

Within the research tradition on determinants of cross-country variations in tax/GDP ratios, where the ratio is essentially explained by a tax structure equation (to proxy the tax base times the tax rate), the few studies including aid provide no solid evidence that aid is a systematic determinant of tax ratios, i.e. no evidence that aid has a behavioural effect on tax effort. Teera and Hudson (2004) find the coefficient on aid to be insignificant in their estimates of tax performance in developing countries. Empirical studies of the fiscal effects of aid do not support the conclusion that aid reduces tax effort, but these are country-specific (Section 3.1). Recent studies provide some evidence that in the past 15-20 years low-income aid recipients have managed to increase tax ratios; this positive association between aid and tax ratios suggests that in many aid recipients the policies associated with aid have supported increasing tax/GDP ratios (Clist and Morrissey 2011). There is also evidence that this link between aid and increased tax ratios may be related to aspects of governance (Brun et al. 2009).

A particular concern is that aid may discourage tax effort, especially if given as a pure grant that creates no repayment obligation, but there is little evidence of this. Gupta et al. (2004) find that aid grants have a negative effect on tax effort, but that loans are positively related to tax revenue; they infer that loans encourage tax effort to meet repayments but grants induce lower tax effort. Morrissey et al. (2007), in an analysis for Kenya that distinguishes loans and grants, find no evidence for an effect of aid on tax effort. In fact, the overall results suggest that Kenya has limited ability to alter tax revenue (an example of the more general argument in Keen and Simone 2004). Clist and Morrissey (2011) address the effect of aid loans and grants on tax effort using data for 82 developing countries over 1970-2005 and find no robust evidence for a negative effect of aid grants on the tax/GDP ratio. They suggest one should expect a contemporaneous correlation because the poorest countries have lower tax/GDP ratios and, partly for this reason, tend to receive more aid in the form of grants. Allowing for this with moderately long lags on aid (five years in a panel context) eliminates the aid effect.

Clist and Morrissey (2011) also find that aid loans have a fairly consistent positive impact, especially in the medium-term. Grants are insignificant over the full period but positive and significant over the medium-term. The significant negative short-term effect of contemporaneous grants over the whole period is consistent with poor countries with lower tax revenue receiving more grants; this effect disappears in the 1985-2005 period. The results suggest that aid does help countries to increase their tax revenue over the medium-term. It may be that the aid is associated with conditions including measures to increase tax revenue, which could be interpreted as a positive impact of conditionality. Tax effort represents a structural relationship, the tax/GDP ratio is determined by the tax rate applied to the tax base (aggregated over all taxes), given tax collection efficiency. Aid itself is not part of this structural relationship: aid may have a behavioural effect (on rates or collection efficiency) or policies associated with aid (conditionality) may have effects (on rates, bases or collection). The controls included to proxy for the tax base (such as agriculture and industry shares in the economy, GDP, imports and exports) can only partly capture indirect behavioural or policy effects.

Addressing the tax effect of policy reforms associated with conditionality is more difficult as there can be many effects in opposing direction. Some policies associated with aid tend to reduce tax revenue; economic liberalization has typically been a component of conditional lending (aid increases) and such reform episodes are generally associated with tax revenue reductions. Aizenman and Jinjarak (2006, 2009) show that reforms such as trade liberalization erode the revenue from 'easy to collect' taxes such as tariffs (which tend to be most important for poorer countries). Poor countries have difficulty replacing the lost revenue through 'hard to collect' taxes, such as VAT or income taxes, which need significant investment in tax collection and resources for monitoring and enforcement, while the relatively small size of the formal sector implies a low tax base. Thus, periods of economic policy reform in developing countries tend to be associated with reductions in the tax/GDP ratio, especially for the poorest countries (Baunsgaard and Keen 2005), but they also tend to be associated with aid episodes. In this way, aid conditionality may actually generate a negative association between aid/GDP and tax/GDP ratios in the short-run. This helps to explain why one observes a negative correlation between aid and tax ratios, but it is not due to a behavioural effect of aid reducing tax effort.

It is the poorest countries (also likely to be major aid recipients) that face the greatest difficulty in increasing tax revenue (Keen and Simone 2004; Teera and Hudson 2004), i.e. the low tax/GDP is due to features associated with low income rather than implying low tax effort. Given the tax base these countries are collecting as much as can be expected; Mkandawire (2010) argues that the nature of their colonial experience established institutional features that continue to help explain why some African countries have higher tax revenue than others. Altering tax/GDP ratios is a slow process. Some of the policy conditions will have the aim of increasing incomes (the tax base) and tax collection efficiency, and perhaps even increasing tax rates (such as consumption taxes); these effects may only be observed over the medium-term, and there is evidence to support this positive relationship since the mid 1980s.

4 Conclusions and discussion

Donors are concerned about how their aid is used, especially how it affects fiscal behaviour by recipient governments. Analysis of the fiscal effects of aid is motivated by the observation that most aid spent in a country either goes through the budget or has an indirect effect on the budget by financing the provision of public goods and services. This study reviews the recent evidence on the effects of aid on government spending and tax revenue in recipient countries. Severe data limitations restrict inferences on the relationship between aid and spending. Spending may not increase by the full amount of aid, either because the aid is used to reduce borrowing or is not actually reflected in the budget (when making budget decisions the government is not aware of all the aid available to finance the provision of public goods). The core conclusion from the evidence on aid and government spending can be simply stated: it should not be assumed or expected that a given amount of aid will result in an equivalent increase in the amount of recipient government spending, i.e. there is no particular reason why US$1m in aid should increase spending by US$1m. Even if all the aid goes into the government budget, spending may increase by more or less than the amount of aid and the increase in spending as a ratio of the aid is not inherently informative about the impact of aid. In other words, observing what happens to the level of public spending, in total or in particular sectors, following receipt of aid does not tell us very much about how the aid was used. Understanding why this is so, as it may appear counter-intuitive, is informative regarding how aid affects government spending.

If all of the aid provided is actually spent by the government, so that the full value of aid goes to government spending, total spending may not increase by the amount of aid if other sources of financing are affected. Recipient spending is financed by three basic sources of revenue: aid (strictly, the proportion of aid that actually goes to the government); revenue, mostly tax revenue (although non-tax revenue is important for some countries, such as those with resource rents); and borrowing or deficit financing. Aid, and especially the policy conditions associated with aid, could affect either of the other sources of revenue positively or negatively. Available evidence suggests that aid has no consistent effect on tax revenue, although since the late 1980s there is a tendency for aid to be associated with increases in tax revenue over time. The most plausible explanation is that policy reforms under aid conditionality are beginning to increase the tax base and revenue collection efficiency. Fiscal response studies show that increases in aid are often associated with reductions in borrowing, usually because reducing domestic borrowing is a requirement of multilateral agencies (in particular the IMF). As governments in low-income countries have limited ability to affect tax revenue in the short-term but can readily alter borrowing, the observed association between the change in aid and spending in any year is largely determined by changes in borrowing behaviour. Thus, if borrowing is reduced, as often required, total spending will not increase by the amount of aid within a year even if all aid is allocated to spending.

A further complication arises because in practice not all aid goes to the government; more precisely, when making budget decisions the government is not aware of all the aid available to finance the provision of public goods. Donor data on the aid allocated to a particular recipient includes some that is not even spent in the recipient country (most technical cooperation and assistance is effectively spent in the donor) and some that is spent under control of the donor rather than by the recipient or directly through the budget (donors retain control over project aid and the recipients may not be fully

informed about how much project aid is spent in a given year). Allowing that individual donors may operate with different financial years, from each other and compared to the recipient budget year, it is even difficult to determine how much aid was received during a budget year for a given recipient. This explains why econometric analysis of aid effects on spending yields such weak results, and calls into question the true validity of any empirical attempt to address if aid is fungible.

To assess the effect of aid on spending it is necessary to examine the evolution of spending, in total and across particular headings or sectors. Such analysis, as revealed by fiscal response studies, shows that aid does contribute to increased expenditure in total and in the sectors favoured by donors. Aid affects the evolution and composition of government spending; this is supported by the limited analysis of the cross-country effect of aid on spending.

The few studies that specifically account for the effect of aid through government spending find positive aid effectiveness. Gomanee et al. (2005b) show that aid-financed investment contributes to growth in SSA, and Gomanee et al. (2005a) show that aid financing of government social sector spending contributes to increases in aggregate welfare (see also Mosley et al. 2004). This literature implies that both the type of aid and the sectors to which it is allocated, rather than simply the amount of aid, determines the effect on government spending and hence the impact of aid. Aid financing has the potential to leverage increased social spending (specifically health, education and sanitation) which generates benefits (Morrissey 2010). First, social spending finances the provision of public goods that contribute to human development. Second, it is the type of government expenditure most likely to increase aggregate welfare and benefit the poor. Other components of aid can be targeted on investment to contribute to growth. In combination, aid can support complementary elements of spending to contribute to both growth and human development, hence to sustainable poverty reduction.

Although donors are often concerned that aid is fungible or discourages tax effort, this review of the evidence suggests that such concerns are unwarranted. Often the observations that give rise to concern are misinterpretations. For example, a donor may allocate aid to education but see no increase in government sector spending because the aid is delivered through donor projects (that the recipient is not fully aware of) while government education spending is determined by tax revenue (that is largely independent of aid). The example can be extended to aid and total spending (where borrowing effects also come into play). The best way for donors to make the link between aid and spending clear is to make aid more transparent—recipients need to know what aid is available to finance spending, whether through donor projects or government budgets. A specific option that is attracting attention is to provide aid as General Budget Support (GBS); such aid goes directly through the budget and is linked to expenditure allocation and public sector management reforms. If donors choose this they reveal sufficient trust in the recipient to at least allocate aid to finance spending in an appropriate way. This reduces the transaction costs of aid, and therefore confers a benefit.

Morrissey (2006) argues that donors will only grant GBS if they believe that the recipient's allocation of spending is broadly desirable, that is, in line with what the donor desires. This is why GBS is often explicitly linked to poverty-reduction strategies

(policies and expenditures) agreed between donors and recipients, so the aid is aligned with how it will be used. Clist et al. (2012) find that whether a country has a poverty reduction strategy in place and indicators of government effectiveness are good predictors of which countries received GBS from the World Bank and EU during 1998-2009. However, effective GBS requires coordination of donor aid delivery systems and a transparent aid relationship with recipients; governments can only be accountable for funds that can be observed to flow through a transparent process. The evidence reviewed in this study suggests that conditions are in place for more effective aid: aid is broadly associated with increases in desired areas of spending (social sectors); where aid is fungible this does not seem to reduce impact; aid has no consistent negative effect on tax effort; and the range of policies implemented since the 1990s have improved fiscal processes. Donor aid strategies for the future should be based on the most recent evidence, which is more encouraging than studies based on earlier data; many positive effects of aid can be identified in areas of government spending, revenue mobilization and fiscal processes. Donors can avail of these improvements in recipient systems to provide aid in a more transparent manner, thereby enhancing the fiscal and overall effectiveness of aid.

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