Fiscal Composition and Aid Effectiveness: A Political Economy Model☆

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Summary. — In the long run tax effort, we argue, determines the effectiveness of aid, and this relationship operates simultaneously with the negative link in the opposite direction observed by Bräutigam and Knack (2004) and others. Tax effort and the ability of the state to diversify its taxation structure, we find, are significantly linked to growth and poverty indicators. The key message for policy is that a broadening of the tax structure in low-income countries is crucial in order to enable those countries to escape from the "weak-state–low-tax trap," and to make aid effective.
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Key words — overseas aid, aid effectiveness, political economy, fiscal policy, tax policy

1. INTRODUCTION

For all the idealism, and increased aid levels, aroused by the Millennium Goals and Make Poverty History campaigns, the literature on the effectiveness of aid flows has entered a gloomy phase. The most up-to-date and comprehensive recent study of aid effectiveness, the paper by Rajan and Subramaniam (2008) finds no significant association between aid and growth in any region, whatever the lag-structure that is used. This finding casts a shadow over the more optimistic results achieved by, for example, Hansen and Tarp (2001), Mosley et al. (2004) and Clemens et al. (2004, 2012), all of which suggest that long-term aid flows, at least since the 1990s, had a positive impact on the performance of developing economies. Explanations of this poor performance contain two major strands. One, favored by Rajan and Subramaniam (2009), invokes the purely economic mechanism of "Dutch disease": aid flows buoy up the exchange rates of recipient developing countries, in a manner which blunts their competitiveness and their growth. Another, associated with Bräutigam and Knack (2004) draws a contrast between short-term and long-term impacts, and suggests that the long-term institutional impact is a negative one, which over time cancels out any positive short-term impact. The reasons for this negative institutional impact are multiple, and include a tendency for aid flows to be used corruptly in some recipient countries (Knack & Rahman, 2007) and a tendency for aid flows to undermine tax effort (Gupta, Clemens, Pivovarsky, & Tiongson 2003; Moore, 1998), leading in turn to lower public expenditures and lower growth possibilities.

In this paper, we pursue the second of these two explanatory strands—i.e., the hypothesis that aid damages institutions—with particular reference to fiscal institutions. Initially, we return to the so-called "fiscal response" literature of the 1980s, which linked aid effectiveness to fiscal performance. We then build on this by showing that the composition of public expenditure and taxation, as well as their level, is an important determinant of aid effectiveness. Finally, we seek to understand the political economy underlying the state's choice of an inclusionary, rather than an exclusionary, fiscal strategy—which, we argue, plays an important part in determining the composition of taxation and expenditure. Throughout, our concern is to improve aid effectiveness if that is possible—with a focus on fiscal approaches to that objective—and only secondarily to measure the size and significance of the aid effectiveness coefficient.

2. THE ARGUMENT: FISCAL DETERMINANTS OF AID EFFECTIVENESS

Three decades ago, in Mosley (1980), we showed that fiscal performance was a key element in determining aid effectiveness over the previous two decades. We defined fiscal performance not only in terms of the level and productivity of public expenditure, but also in terms of the willingness of governments to finance that expenditure out of taxes rather than simply out of aid flows, on the grounds that this is a key determinant of the stability and effectiveness of public expenditure. In that paper, we defined willingness to finance public expenditure out of taxes as "incremental tax effort," or the degree to which public revenue as a share of taxation rises over time, and argued that it was a key element in making public expenditure and thence aid more effective. Incremental tax effort is not an easy thing to generate in a poor country with a weak state, as politically it is in the short term much less costly to finance additional expenditure by asking donors for more aid than by raising taxes. This poses the obvious risk of "bottom billion" countries being caught in a low-tax, weak-governance vicious circle, a dilemma explored in particular by Moore (1998).

However, for those states who manage to escape this vicious circle—including the countries of the Far East in the 1970s and 1980s, Russia and many countries of Eastern Europe in the 1990s and now the "proto-developmental states" of Africa, such as Uganda and Ghana, in the 2000s—there are important rewards to increasing public revenues in terms of state-building. One of them is that one source of potential political instability, which is volatility in aid disbursements [1] (Bulir & Hamann, 2008; Fielding & Mavrotas, 2005; Hudson & Mosley, 2008) is diminished in proportion as the ratio of tax revenue to aid revenue can be increased. However, a second

Table 1. *Tax Ratio Dynamics (1990 to Present). Numbers in Each Cell Represent the Absolute Number of Countries in Each Category*

	Low-income (average tax ratio = 13.2%)	Middle-income (average tax ratio = 19.3%)
Numbers with static or falling tax ratios	11 (Burundi, Cote d'Ivoire, DRC, Kyrgyz Republic, Madagascar, Nicaragua, Nigeria, Pakistan, Sri Lanka, Yemen, Zambia, Zimbabwe)	6 (Czech Republic, Hungary, Jordan, Indonesia, Panama, Venezuela)
Numbers with rising tax ratios	9 (Bangladesh, Cambodia, Ghana, Kenya, Nepal, Rwanda, Sierra Leone, Uganda, Vietnam)	35 (Argentina, Bolivia, Botswana, Brazil, Bulgaria, Chile, Colombia, China, Dominican Republic, Ecuador, Egypt, Fiji, Guatemala, India, Iran, Jamaica, Kazakhstan, Lesotho, Malaysia, Mexico, Morocco, Papua New Guinea, Papua New Guinea, Paraguay, Philippines, Poland, Romania, Russia, Senegal, South Africa, South Korea, Swaziland, Thailand, Tunisia, Uruguay)
Trade taxes share of tax revenue (average 1980–2009; %)	22.1	11.5
Aid/GDP% (average 1980–2009)	11.1	4.0

Source: International Monetary Fund (IMF), *Government Expenditure Statistics*, various issues; 61 observations, as listed. "Rising tax ratios" denotes that the regression coefficient of tax effort (tax revenue/GDP) on time is significantly positive over the period 1990–2008. For 13 countries in our sample, no significant trend is observable. A "middle-income" country is defined as a per capita income in excess of $1000 in current dollars in 2009, and a "low-income" country is defined as a country with a per capita income below that level.

and more fundamental advantage of building up the tax base to finance public expenditures is that, in proportion as citizens are free to express their wishes, governments are put under pressure to improve public services—a pressure which is absent in the case of aid-financed expenditures since taxpayers, unlike aid recipients, only get what they pay for (Bräutigam, Fjeldstad and Moore, 2008; Haggard & Kaufman, 2008, p. 356 [2]). Thus, our main story is that, because expenditure financed out of taxation is in the long run more effective than expenditure financed out of aid flows, aid becomes more effective in proportion as it incentivises, rather than substituting for, the creation of tax revenue, and if we can understand the political process by which this happens, we will better understand the macro-effectiveness of aid.

A first step in explaining this political economy is to see that achieving a long-term increase in tax revenue requires an evolution of tax structures. Many of the poorest countries have inherited, almost unaltered from colonial times, a structure of taxation which is highly dependent on foreign trade in primary commodities, and this is inhibitive of development, both because this category of expenditure does not grow so fast as world trade or expenditure as a whole, and because commodity trade is more subject to violent and unexpected fluctuation than other tax bases (Greenaway & Milner, 1991). Therefore, development of tax revenue, and of the economy as a whole, may depend on the elite being motivated to diversify the tax base. Uganda is a notable example. In 1986 85% of its public revenue was derived, not just from trade taxes, but from export taxes on coffee alone (Uganda, *Statistical Abstract*, 1987). As a consequence, most other commodity exports were wiped out, the ratio of taxation to income was only 5%, and public expenditure was heavily constrained and aid-reliant. By 1995, the export tax had been eliminated in favor of import duties, a value added tax (VAT) and various user charges had been brought in to augment revenue, the ratio of taxation to gross domestic product (GDP) had increased to 12%, and Uganda had become one of the fastest-growing economies in Africa. Table 1, which describes the dynamics of developing-country tax ratios between 1990 and the present, illustrates

both the fundamental problem and the possibility of escape from it. As illustrated by Moore in the 1990s, a majority of low-income countries have been unable to raise their tax ratios over this period—and have thereby been tightly constrained in terms of the volume and the effectiveness of their expenditure—whereas a majority of middle-income countries have been successful in escaping from this constraint. However, nine low-income countries—the "off-diagonal" cases listed in the bottom left-hand corner of Table 1—have managed to spring the trap. Since, on our hypothesis, being able to do this holds the key to aid effectiveness, it is of obvious interest to understand what distinguishes the political economy of the countries which have been able to escape from those who have not.

Thus, we see the likelihood of escape from the "low state capacity, low growth" trap as crucial to aid effectiveness, and this likelihood as being determined by the balance, within the recipient elite, between narrowly patrimonial (rent-seeking) elements whose focus is on short-term survival, and elements whose focus is on the long term and on the putting together of a broad-based, inclusive "developmental coalition." What determines the likelihood of the latter outcome? On this issue, our understanding consists more of case-studies and improvisations rather than a rigorous body of knowledge. However, basing ourselves mainly on case-study material such as that contained in Besley and Cord (2007) and Mosley (2012), we offer four hypotheses:

(1) Inclusiveness (specifically in the allocation of fiscal resources) often comes about because exclusiveness has repeatedly failed to deliver growth or political stability, and the fundamental institutional changes associated with its advent are often associated with a learning experience such as a period of chronic political instability which convinces the elite that "we cannot carry on like this if we are going to progress." We can return again to the example of Uganda, whose National Resistance Movement, from the early 1990s onward, decided that fundamental fiscal reforms were required to establish the state on a stable and inclusive basis, which it saw as a precondition for

economic growth over the long term,[3] and it did this because it became convinced from the bloody experience of the years 1972–85 that that experience would recur unless long-term reforms of state-building, of which an overhaul of both tax and expenditure were a part, were undertaken. However, Ghana, Mozambique and Rwanda in the 1990s, Sierra Leone at the turn of the millennium, and more recently Bolivia, Ecuador, Argentina, and Indonesia in the wake of the shocks inflicted by the "East Asian crisis" in the early 2000s, are all good examples of regimes which also learned from misery and fundamentally modified their political systems and specifically their fiscal regimes in a more inclusive direction to head off a return to political chaos. The first four of these, being low-income countries, are countries which escaped from the "tax trap," as can be seen from Figure 1. Although some of these cases, notably Bolivia since 2006, are quite recent and untried, it is at least a valid working hypothesis that one factor making for strong, inclusive states is a trauma which makes the practices which led to previous instability appear patently unsustainable.

(2) More inclusive and durable political settlements (including those which make possible an escape from the "tax trap") are often facilitated by credible signals of equity and fair dealing emanating from the elite. One way of sending such a signal is to make an explicit redistributive linkage between taxes and expenditure,[4] as in the case of taxes on mineral exports linked to payments to over 60s and the unemployed in Latin America (as done for example in Argentina, Bolivia, and Ecuador). This model has now also been applied also in Africa, for example by means of windfall taxes in Zambia in 2008–9 (Cheeseman & Hinfelaar, 2009) and Ghana; for another African case, Mauritius, see Bräutigam et al. (2008, chap. 6).[5] Such institutional reforms may be useful in representing taxation as an element in a social contract with the public, in which the public is invited to participate in creating the common good of building up public services, rather than forced to participate in a coercive and unjust process (Bräutigam et al., 2008) and thereby widening the tax net and making feasible an escape from the tax trap, as has occurred in, among the "off-diagonal" countries of Table 1, Ghana, Bolivia and Zambia.[6] Another way of creating this kind

of signal is to reform the constitution with a view to its delivering greater social justice—as occurred in Ghana in the early 1990s, Argentina and Ecuador in the early 2000s, and Bolivia in the mid-2000s. Yet another is to alter the mix of public expenditure, as well as taxation, in a direction which achieves greater equity and reduces military centrality (i.e., not just the share of military expenditure but the role of the military in government); we call this the "social efficiency wage" approach, because it reduces social instability through the payment of a higher social wage, just as in labor economics, the payment of a higher private wage (known as an "efficiency wage") increases the stability and efficiency of the labor force (Hudson, Lenton, & Mosley, 2011; Stiglitz, 1976).

(3) Third, the social and political relationships that form between aid donors and recipients are crucial to determining possibilities for tax diversification and tax yield—and thence for determining expenditure and aid effectiveness. As acknowledged by Bräutigam and Knack (2004) these relationships can be both creative and destructive of long-term fiscal capacity, but the balance of their exposition is toward an emphasis on the destructive element in the story—through costs imposed by fragmentation of aid effort between donors, through leakages of aid flows into corruption, and through the moral hazard problem that, as they put it, "aid might make governments less likely to put in place the policy framework, local funds, and trained personnel needed for development" (Bräutigam & Knack, 2004, p. 263), which is in essence the problem already highlighted on page [1] above—that if recipient motivation is "wrong," aid flows may substitute for tax effort. This is particularly likely to be the case if the recipient, for geo-political or other reasons, knows that the donor's threat to withdraw aid is not credible.[7] However, the other side of this coin is that if recipient motivation is developmental, or becomes so as the result of an evolution of trust-relationships between donor and recipient (Mosley, 2012; Mosley & Suleiman, 2006, chap. 7) aid may be used to derive ideas which enable the recipient to diversify his tax base, and to hire personnel which enable those ideas to be implemented and the underlying problem of state weakness tackled at root, as occurred in (to discuss only cases in the bottom left quadrant of Table 1) Uganda, Rwanda, Sierra
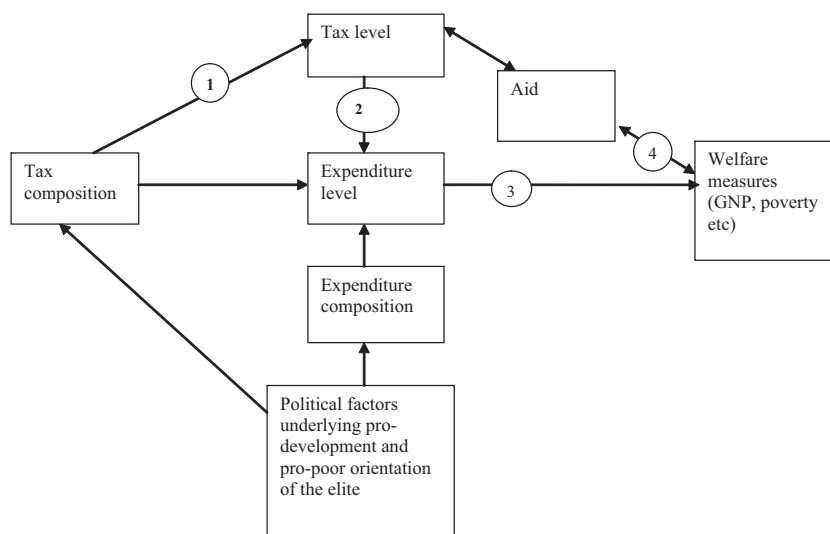

Figure 1. *Causal links in a model of aid, expenditure and taxation. Source: Author's illustration.*

Leone, and Ghana between 1990 and the present.[8] In all of these cases, it was by no means love at first sight, in the sense of the donor's desire to spend aid developmentally being immediately matched by a corresponding "long-run capacity-building" motivation among the recipient elite: the chemistry took time to evolve, in the cases mentioned, and of course in some cases it did not evolve at all.[9] The challenge which we confront in the next section is to represent the evolution of that chemistry empirically.

(4) Finally, the scope for varying tax and expenditure levels is of course influenced by the state of the macro-economy—when the fiscal balance becomes unsustainable, there is more pressure to raise taxes.

Thus the fundamental process which we are seeking to model is that the four political economy factors described above (at least) determine the ability of tax structures to achieve exit from the "low-income, weak-state trap", tax revenue contributes to the determination of public expenditure, and the pattern and level of public expenditure determine the impact of aid on growth. (To understand the impact of aid on poverty, we need also to factor in the poverty-leverage of public expenditure.) This sequence is portrayed graphically in Figure 1.

We can now embed these ideas within the enormous, and still growing, literature on aid effectiveness. This literature, in the 1980s, quickly became aware that the effectiveness of aid depended on the use which the public sector as a whole, and not just aid-financed activities, made of it (Boone, 1996; Mosley, Hudson, & Horrell, 1987; Mosley, Hudson, & Verschoor, 2004). However the main axis of this research quickly became fixated on public *expenditure* rather than on the financing of the public sector as a whole, and in particular, of course, on the problem of fungibility—of whether aid flows tended to encourage or to restrain a movement of that expenditure into more productive uses (McGillivray & Morrissey, 2001). The issue of whether public expenditure was being properly spent by aid recipients then became interlocked with the controversy over whether policies of globalization and openness were crucial to effective resource allocation in the public and private sector and thence to aid effectiveness, as contended by Burnside and Dollar (2000) and refuted by Hansen and Tarp (2001). In the excitement of discovering—sadly only for a short time—that a secular improvement in aid effectiveness was taking place, the analytical spotlight became focussed on annual growth data and on the short-term influence of policy on these; and some of the long-term processes which underpinned that improvement, in particular the hesitant emergence of "developmental states" in some parts of the developing world, were in our judgment overlooked. This is natural if one's focus is on the short term, since an increase in taxation, all else held constant, automatically and tautologically lowers income. However, in a longer term perspective where state expenditures are seen as dependent on the structure of institutions, including revenue collection, which supports those expenditures, those institutions cannot be overlooked.[10] The purpose of this paper is to explore whether the performance of the fiscal system in this long-term sense, incorporating the role of revenue-collecting institutions, contributes to long-term aid effectiveness.

3. EMPIRICAL STRATEGY

The essential story presented above (as Figure 1) contains three basic steps: the political economy variables discussed above determine tax structure and the ability of tax revenue to grow; tax revenue plus other causes determine expenditure;

and these fiscal variables condition the state's ability to deliver, and thence the effectiveness of overseas aid. The model to be estimated consists of these three basic steps, plus a fourth equation in which aid is endogenous; these correspond to the links represented as (1) through (4) on Figure 1. Our specification of these building-blocks is:

(a) *Tax revenue*

In essence, the ability of the state to develop its tax revenue, as discussed above, is determined by its ability to diversify out of the strait-jacket of taxes on trade, and more broadly by its ability to confront rather than be bought off by powerful rent-seekers who pay no tax. We specified above three elements in the process by which elites may be motivated to escape from the tax trap: a political trigger motivating them to find a long-term way out of the trap, a relational environment which provides them with the technical means for doing so, and an atmosphere of justice which provides a climate in which social contracts can be built and an institutional gateway for doing this. Thus:

$$T/Y = f(D(M, GI, S)) \qquad (1a)$$

where D is a measure of tax diversification, representing the potential for escaping from the low-tax/weak-state trap, and M, I and S are the political economy factors which, as discussed above, make such escape possible by providing incentives to the diversification and inclusivity of the tax system. We specify these factors as:

M = "learning from misery variable" = 1 if political instability in previous year, 0 otherwise—representing the ability of "traumas" as described above to induce a broadening of the revenue base,

I = "inclusiveness variable" denoting proxies for public trust in tax system, namely:

GI = Gini coefficient of (vertical) inequality

HI = indicator of (measures for overcoming) horizontal inequality

L = indicator of links from taxes to public expenditure

S = social capital—the relational environment between aid donors and recipients, which influences the size and stability of aid flows. This is influenced by:

IMF = the volume of IMF and World Bank loans, whose technical assistance acts as a vehicle for providing recipient governments with administrative capacity and ideas, and in particular ideas about how to broaden the tax base,[11] and also

TR ("trust")—a measure of the level of trust, or effective working relationships, between aid donors and recipients. We proxy this in two alternative ways: a measure of the frequency of *interruption* of program lending (budget support loans) by Bank and Fund to recipient countries (TR_1), and a measure of *forgiveness* by the Bank of slippage on performance criteria imposed by those institutions (TR_2).

Thus the complete tax equation is:

$$T/Y = \text{constant} + b_1 D + b_2 M + b_3 I(G, HI, L)$$
$$+ b_4 S(IMF, TR_1, TR_2). \qquad (1)$$

(b) *Public expenditure*

By the argument presented above and in Haggard and Kaufman(2008), the ability of the state to expand its expenditure is heavily dependent on the tax base. Expenditure is also constrained by cyclical factors, as the world economy is dis-

Table 2. *Notation*

Symbol	Meaning	Specification	Data source
G	Public expenditure	Total government spending by public and private authorities	IMF, *Government Expenditure Statistics Yearbook*
T	Tax revenue	Government revenue, from both national and local taxation	World Bank, *World Development Indicators*
Y	Gross domestic product	GDP at constant prices	World Bank, *World Development Indicators*
N	Population (hence Y/N = per capita income)		World Bank, *World Development Indicators*
M	"Learning from misery variable," representing ability of shocks to trigger diversification of tax system	Dummy variable: 1 if political instability in previous year, 0 otherwise	ucdp_loc dataset
GI	Vertical inequality	Gini coefficient of inequality	World Bank, *World Development Indicators*
HI	Proactive government signals to reduce horizontal inequality (eg. anti–discrimination legislation, establishment of ombudsmen and other agents of social justice):		
L	Indicator of links from tax to public expenditure	Dummy variable: 1 in years in which export taxation or conditional cash transfers are used to finance pro-poor expenditure, 0 otherwise	
TR_1	"Trust indicator 1" = flows of expenditure from IMF and World Bank group to individual developing countries	Budget support expenditure (Enhanced Structural Adjustment Facility (of the IMF) (ESAFs) and Poverty Reduction and Growth Facility (of the IMF) (PRGFs)) to countries indicated, in current $	World Bank and IMF, *Annual Reports*
TR_2	"Trust indicator 2" = frequency of interruptions to IMF/WB aid disbursements	Dummy variable: 1 in years when disbursement of ESAFs and PRGFs was interrupted, 0 otherwise	World Bank and IMF, *Annual Reports* (for period before 1999, data are presented by Mecagni, 1999, chap. 9)
BD	Budget deficit or surplus as percentage of GDP	Total expenditure (general government + local government) − total revenue	World Bank, *World Development Indicators*
Openness	Measure of openness of markets	Average openness in eight markets (foreign exchange, labor, interest rates, *inter al.*)	Sachs–Warner openness indicator, as contained in Penn World Tables
Polity	Measure of democratic accountability		Polity4 index (www.systemicpeace.org)
SEW	"Social efficiency wage"	(Education + health + housing + social protection, less military expenditure) as a share of total public expenditure (G)	IMF, *Government Expenditure Statistics Yearbook*
A	Aid flows	Grant element of overseas aid flows to developing countries from OECD donors	World Bank, *World Development Indicators*

Table 3. *Regression Analysis: Governance, Fiscal Variables and Aid Effectiveness*

Dependent variable	(1) Tax effort		(2) Public expenditure		(3) Growth	(3a) Poverty (measured as infant mortality)	(4) Aid	
Constant	**9.10***** **(4.95)**	8.63*** (4.65)	**9.30***** **(9.38)**	9.04*** (9.13)	13.9*** (4.00)	111.1*** (15.97)	**0.97** **(1.43)**	8.12*** (16.79)
Political economy determinants of tax effort								
Tax diversification 1: trade taxes/total taxes	**−0.11**** **(1.97)**	−0.13** (2.21)						
World Bank/IMF disbursements (£million)	**0.054***** **(6.08)**	0.053*** (5.98)						
"Donor social capital index"								
Interruption in disbursements from IMF/World Bank	**−6.13***** **(4.10)**	−6.00*** (3.97)						
End of conflict dummy	**0.73** **(0.76)**	1.06 (1.09)						
Determinants of government expenditure								
Tax/GDP ratio			**0.44***** **(4.11)**	0.45*** (4.23)				
Budget surplus/deficit			**−0.61**** **(6.57)**	−0.64** (6.66)				
Openness to trade			**0.034**** **(2.27)**	0.034** (2.28)	**0.071*** **(2.36)**	−0.13** (2.11)		
Polity			**0.056** **(1.18)**	0.004 (0.07)				
Determinants of growth								
Aid					**0.44*** **(1.86)**	−3.29*** (−5.20)		
Total government expenditure					**1.15***** **(4.02)**	−0.92 (1.56)		
1988 per capita income					**−0.001** **(0.64)**	0.0001 (0.01)		
"Social efficiency wage"					**0.22** **(0.84)**	−1.90*** (3.32)		
Secondary school enrollments					**0.10**** **(2.50)**	−0.93*** (9.53)		
Instruments for aid								
Population size							**−0.003***** **(4.04)**	−0.006*** (7.62)
GNP per capita								−0.002*** (7.88)
Infant mortality							**0.083***** **(8.08)**	
Observations		77		77	77	77	77	
"r^2"	0.34	0.34	0.70	0.71	0.54	0.83	0.54	0.52
Sargan test for overidentification		0.14		0.82	0.43	0.43	0.34	

Sources: All data from World Bank, *World Development Indicators* Compact Disk- Read Only Memory (CD-ROM), plus additional sources noted in Table 2.
Sample: the 61 countries listed in Table 1, measured over the period 1990–2009.
Variable definitions are in Table 2.
Notes: coefficients in bold relate to model with growth as dependent variable; coefficients in roman refer to model with poverty indicator (infant mortality) as dependent variable.
Regional fixed effects are included in all equations but not reported.
* Denotes significance of a coefficient at the 10% level.
** Denotes significance of a coefficient at the 5% level.
*** Denotes significance of a coefficient at the 1% level.

covering at the moment—when budget deficits are high, public borrowing cannot be increased without increasing the costs of borrowing and putting credit ratings at risk. Haggard and Kaufman also suggest that the expenditure ratio—especially the ratio of social expenditure to gross national product (GNP)—will be determined by the degree of openness of the economy and by the degree of voice and accountability in the political system. Thus the complete expenditure equation is

$$G/Y = f(T/Y,\ BD,\ polity,\ openness) \tag{2}$$

where G/Y and T/Y are as defined above and:

Table 4. *Regression Analysis (Two-Step System Generalised Method of Moments (SGMM)): Governance, Fiscal Variables and Aid Effectiveness*

Dependent variable	(1) Tax effort	(2) Public expenditure	(3) Growth	(4) Aid
Constant	11.17 (5.62)	6.89 (2.37)	−13.6 (0.32)	−7.64 (2.07)
Political economy determinants of tax effort				
Tax diversification 1: Trade taxes/total taxes	−0.037 (0.77)			
World Bank/IMF disbursements (£million)	0.023[*] (1.80)			
"*Donor social capital index*"				
Interruption in disbursements from IMF/World Bank	−0.71 (0.72)			
End of conflict dummy	−2.82 (0.71)			
Determinants of government expenditure				
Tax/GDP ratio		0.93[***] (5.33)		
Budget surplus/deficit		−0.65[***] (5.69)		
Openness to trade			−0.10 (1.10)	
Determinants of growth				
Aid			0.29[**] (1.79)	
Total government expenditure			0.11[***] (2.88)	
Investment/income ratio			0.91[***] (3.64)	
Log foreign direct investment			0.009 (0.01)	
Log 1988 per capita income			−2.52 (0.54)	
Log inflation			−2.76 (1.50)	
"Social efficiency wage"			0.00 (0.00)	
Log secondary school enrollments			8.68 (0.92)	
Instruments for aid				
Population size				−0.01[**] (1.85)
GNP per capita		0.072[**] (2.18)		−
Infant mortality				0.24[***] (3.98)
Time fixed effects				
Year 1		−2.06 (1.43)		
Year 2		−1.33 (1.74)		
Observations	338	596	578	1405
Instruments	70	59	55	55
Sargan–Hansen test	1.00	0.75	0.961	0.305

Sources: All data from World Bank, *World Development Indicators* CD-ROM plus additional sources noted in Table 2.
Sample: The 61 countries listed in Table 1, measured over the period 1990–2009.
Variable definitions are in Table 2.
Notes: In the tax effort Eqn.(1) regional and time fixed effects are included in the regression but not reported.
[*] Denotes significance of a coefficient at the 10% level.
[**] Denotes significance of a coefficient at the 5% level.
[***] Denotes significance of a coefficient at the 1% level.

BD = budget deficit or surplus as a percentage of GNP
Openness = Penn World Tables measure of openness of economic system
Polity = Polity 4 measure of democratic accountability.

(c) *Aid, growth and other measures of well-being*

Aid effectiveness now enters the story directly. Aid is included in the growth equation (3) as an independent variable in a fairly standard new growth theory equation, including in particular, for ease of comparison, the standard controls used by Rajan and Subramaniam (2008) and other recent contributors to the aid effectiveness literature, including initial income, openness and political shocks. (A variable lag operator appears against the aid term, since the length of the lag from aid to growth is one of the key issues of contention related to whether "aid works.") The one innovation in (3) is a compositional variable which we refer to as the *social efficiency wage*—the proportion of public expenditures that is devoted to mitigating social tensions, and thereby protecting the state, as discussed on page (3) above. We define this (Hudson et al., 2011) as the share of public expenditure committed to functions which increase social equity—education, health, housing and social

protection, less military expenditure. The social efficiency wage is thus a mechanism somewhat analogous to the social justice term in the tax equation (1)—it sends a signal of the interests with which the government is identified, and of the degree of justice, or otherwise, with which the elite intends to arbitrate between those interests. Our hypothesis is that a higher social efficiency wage will induce a greater sense of social justice, and by thereby moderating the likelihood of political instability (Alesina & Perotti, 1996) increase investment and growth:

$$\text{Growth} = f(A/Y_{(t-n)},\ G/Y,\ \text{openness, SEW,}$$
$$Y_{1980},\ \text{political shocks}) \tag{3}$$

Other measures of well-being (for example poverty) can be incorporated by expressing them as functions of growth and other variables seen as influencing the poverty elasticity, such as measures of social equity:

$$\text{Poverty} = f(\text{growth},\ G/Y,\ Y/N), \tag{3a}$$

Finally, aid is itself endogenous—in particular to income levels—(Y/N), as most donors seek to concentrate aid on the poorest people—and country size. Other standard instruments such as population (N) are also included.

Table 5. *Effect of Aid on Growth (GMM Estimation)—Robustness Tests (Student's t-Statistics in Brackets)*

	One-step SGMM			Two-step SGMM		
Dependent variable: GDP growth (column 3 of Table 4)	(1)	(2)	(3)	(1)	(2)	(3)
Log initial income	−0.37 (0.07)	−2.48 (0.63)	−2.13 (0.58)	−0.01 (0.003)	−0.94 (0.01)	−2.52 (0.54)
Aid	0.26** (2.02)	0.21* (1.71)	0.20* (1.66)	0.36*** (2.74)	0.24 (0.25)	0.29** (1.79)
Investment	0.81*** (3.62)	0.79*** (4.31)	0.79*** (4.15)	0.93*** (4.94)	0.81 (0.50)	0.91*** (3.64)
Log schooling	4.05 (0.45)	7.82 (1.03)	6.89 (0.99)	3.63 (0.61)	5.36 (0.04)	8.68 (0.92)
Log inflation	−4.05*** (3.37)	−3.31*** (2.92)	−3.32*** (2.96)	−3.72** (2.01)	−2.70 (0.87)	−2.76 (1.50)
Trade openness	−0.095** (1.98)	−0.10** (1.91)	−0.10** (1.92)	−0.12** (1.87)	−0.10 (2.12)	−0.10 (1.10)
Social efficiency wage	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Government expenditure		−0.08 (0.33)	0.09** (2.12)		−0.15 (0.18)	0.11*** (2.88)
FDI			0.118 (0.29)			0.009 (0.01)
Constant	−10.29 (0.08)	−10.88 (0.85)	−9.13 (0.78)	1.01 (0.04)	4.97 (0.01)	−13.6 (0.31)
Observations	616	578	578	616	578	578
Instruments	49	52	55	49	52	55
Countries	52	52	52	52	52	52
Sargan–Hansen test	0.617	0.785	0.884	0.832	0.876	0.961
AR (1) test	0.004	0.006	0.005	0.004	0.079	0.076
AR (2) test	0.131	0.128	0.115	0.182	0.300	0.432

Sources: All data from World Bank, *World Development Indicators* CD-ROM, plus additional sources noted in Table 2.
Sample: The 61 countries listed in Table 1, measured over the period 1990–2009.
Notes: Figures in brackets underneath coefficients are Student's *t*-statistics; *t*-statistics derived from Huber–White standard errors are reported in the case of the one-step SGMM, and Windmeijer-corrected *t*-statistics in the case of the two-step SGMM, AR (1) and AR (2) respectively. AR (1) and AR (2) are respectively Arellano–Bond's first- and second-order autocorrelation tests. The Hansen *J*-statistic reports the *p*-values for the null of instrument validity. Regional and time fixed effects are included in the regression but not reported.
* Denotes significance at the 10% level respectively.
** Denotes significance at the 5% level respectively.
*** Denotes significance at the 1% level respectively.

$$A/Y = f(Y/N, N) \qquad (4)$$

A list of all the variables in the model and their sources is set out in Table 2.

Although this model is portrayed as a linear sequence, there are numerous linkages going in the opposite direction—i.e., tax receipts and aid itself are both endogenous to growth. Hence, as normal, we estimate the system (1)–(4) by instrumental variables methods, using both three-stage least squares (3SLS) (in order to portray the separate interactions within the model) and, for ease of comparison, the same Generalised Method of Moments (GMM) specification as used by Rajan and Subramaniam (2008) to estimate their model.

Table 3 presents the results from the three-stage least squares specification, which has the merit of portraying all of the causal relationships in the system as separate equations. This suggests (Eqn. (1)) that tax structure (the share of trade taxes in total tax revenue), the dummy variable for interruptions in the flow of loans from the IMF and World Bank (considered as a measure of the quality of trust-relationships between donor and recipient institutions) and, most of all, the flow of loans from the IMF and World Bank itself, considered as a proxy for technical assistance in the provision of both ideas for tax design and in laying the groundwork for the administration of new taxes,[12] exercise a significant influence on the level of tax effort (measured here as the tax/GDP ratio). Tax effort in turn (Eqn. (2)) exercises significant influence on the ratio of expenditure to GDP, and within this system of relationships, aid has a weakly significant (at the 10% level) influence on growth (Eqn. (3)) and a stronger "positive" influence[13] on the infant mortality measure of poverty (Eqn. (4)). In the light of the emphasis of recent literature on capturing the lags in the system, it is necessary to examine the

relationship between growth and lagged aid, as well as current aid. Here the news is less good: when aid is lagged, the positive correlation between aid and growth, although still present, loses its significance.[14]

It is important to understand how robust these results are, and in order to achieve this, an obvious way to progress is to estimate the system of equations by the "system GMM" method, which has been commended on econometric grounds by Roodman (2006) and is also that used by Rajan and Subramaniam (2008) to generate their rather skeptical results on aid effectiveness and also by Arndt, Jones, and Tarp (2009) and Minoiu and Reddy (2010) to generate their more sanguine results. Table 4 illustrates the results from estimating equations (1)–(3), (3a) and (4) by system GMM methods.

Both the Sargan–Hansen test and the autoregressive (AR) (2) test for over-identification are comfortably passed in these runs of the model. The results do not significantly vary from those reported in Table 3: in particular, the link from tax structure to tax yield to government expenditure to aid effectiveness remains in position, albeit it must be emphasized that the coefficient of aid on growth remains only weakly significant, at just under the 10% level. In Table 5, we check the robustness of this growth equation by estimating it, in alternative specifications, both in a one-step formulation in which the error term is homoscedastic, as well as a two-step formulation in which, as in Table 4, heteroscedasticity is allowed and controlled for.

Except in one run of the model, in which government expenditure but not foreign direct investment appears on the left-hand side, aid continues to be a weakly significant determinant of growth.

4. CONCLUSIONS

We have examined aid effectiveness through the lens of the link from tax structure, to tax effort, to expenditure possibilities, to growth. Our interpretation remains essentially the one put forward thirty years ago as Mosley (1980)—namely that, for poorer developing countries, tax effort, as an important indicator of institutional structure, is an important element in determining the ability of a country to transform itself into a developmental state, and thence in determining that country's capacity for growth; and that it is therefore vital, if one is to understand the *relative* effectiveness of aid in relation to growth, to examine the linkage going from tax structures to growth to aid, as well as the linkage going in the reverse direction from aid to tax structures, as examined for example by Bräutigam and Knack (2004). In our view, the impact of aid on tax is much more complex than the simple crowding out effect visualized by Bräutigam and Knack when they say (2004, p. 256) "large amounts of aid and the way it is delivered make it more difficult for good governance to develop... because of the way aid affects institutions in weak states." Our view is that sometimes this is true and sometimes it is not, depending on the underlying political economy of the recipient state and the chemistry that develops between the donor and the recipient, but especially in the case of the IMF we have econometric support for our view that technical assistance in laying the administrative base for an expansion of the tax ratio may be in many cases critical for an expansion of tax capacity. The relationship, in other words, is a two-way, interactive one, and its outcome is determined not only by the Knack-Brautigam "crowding-out" effect, but also by the magnitude of two more positive impacts, namely the direct effect of technical assistance by donors into tax design and the indirect effect of aid on tax revenues via growth.

Our findings further suggest that the linkage from aid to growth is modestly significant (at the 10% level), and better in the case where poverty is taken as the relevant well-being indicator), thereby supporting the findings of Arndt et al. and Minoiu and Reddy against the more skeptical position of Rajan and Subramaniam. These are only preliminary results, and experimentation with a wider range of specifications is emphatically required. But the findings so far provide firm support for the idea that if we are to improve aid effectiveness, serious study of the strategies used by those countries so far used by poor countries who have been successful in escaping from the "low-tax trap" (as listed for example in Table 1) is strongly recommended.

NOTES

1. Across a sample of all developing countries for which data are available, instability of aid disbursements is significantly greater than instability of public expenditure as a whole (Bulir and Hamann, 2008).

2. Bräutigam et al. (2008, chap. 6) describe this process by which a relationship is forged between taxpayers and organs of public expenditure in democratic states as a "social contract."

3. See Lindemann (2008, 2011) and Mosley (2012, chap. 5). Note that Lindemann sees the inclusiveness of the Ugandan political bargain as being limited to those in the west, southwest and centre of the country.

4. Addison et al. are on this same wavelength when they write (2006, p. 6) "When analysing the effect of fiscal policy on poverty, it is tempting to look solely at the expenditure side. But (their study of fiscal policy for poverty reduction) emphasises the importance of viewing fiscal policy in its totality."

5. Other cases of export taxation used to increase equity and broaden political participation are provided by Ghana (Mosley, 2012, chap. 5) and Mauritius (Bräutigam et al., 2008). In Bolivia, the shift to an "equitable" pattern of taxation was particularly powerful because previous attempts to broaden the tax net (such as that attempted by the IMF in 2002) had taken place against a background of extreme inequity where multinational mineral companies paid next to no corporation tax, and many high income-earners paid no tax at all (Mosley, 2012, chap. 10).

6. In Zambia, the new mineral tax regime only came in 2008 (and was rescinded in 2009, and partially restored in 2011); therefore it has not had any opportunity to have a big effect on tax ratios yet, and Zambia appears in Table 1 as a country where no significant upward trend in tax ratios is yet observable. Since 2011 Zambian tax ratios have increased to over 23 per cent, but too late to make an impact on those data.

7. A currently highly topical case of moral hazard is Pakistan, where for geopolitical reasons donors cannot credibly threaten to cut off aid, but where tax effort has always been weak and this weakness is part of the state's fragility. At the time of writing (March 2011), another attempt is being made to tackle this problem by earmarking much of a large increase in aid to Pakistan to girls' education and at the same time instructing the Pakistani government to address the underlying weakness of its tax system. See "Pakistan told to make wealthy pay more tax: terrorism fight at heart of Cameron trip to Pakistan," *Guardian*, April 6, 2011.

8. For a valuable case study of Tanzania which also illustrates the interaction between aid, administrative capacity and tax structure see Morrissey (1995).

9. Critical elements in the evolution of this chemistry of trust-relationships are (1) the willingness and ability of recipients to send signals of willingness to implement "fundamentals," in particular a coherent Poverty Reduction Strategy Programme, (2) the willingness of donors to indulge slippage on some performance criteria as long as these "fundamentals" were complied with, and (3) the quality of the underlying personal relationships and networks of communication, which helped to determine (1) and (2). For the basic argument underlying the argument about trust presented here, supported purely by African illustrations, see Mosley and Suleiman (2006) and Mosley (2012, chap. 7). For a Latin American discussion of the social and cultural factors underlying the decision to pay tax, including trust in the tax system, see Bergman (2009).

10. Addison, Roe, and Smith (2006, p. 1) argue that "Large-scale aid and debt relief cannot work without a good fiscal system."

11. Note that budget support provided by the IMF and World Bank is also aid—thus (1) provides us with a means of incorporating into the story the idea of Bräutigam et al., that tax collection is endogenous to aid flows.

12. For example, very substantial survey and legal work is required in order to bring into being a new tax on a base for which insufficient data currently exist. In order to tax land or any other form of capital, for example, a register of the valuation of each taxable piece of wealth has to

be constructed, and in assembling these data and constructing the legal framework needed to bring the tax into being, external technical assistance, from the Fund and from other donors, has often been needed.

13. Aid, in Eqn. (3a), is negatively correlated with infant mortality, and therefore its influence is "positive" in the sense that it improves well-being.

14. Within an equation structure identical to (1) through (4) above, the growth Eqn. (3) becomes the following when aid is lagged five years:

$$\text{GDP growth} = \underset{(3.83)}{12.54^{***}} - \underset{(1.03)}{0.20}\,(\text{aid lagged 5 years})$$

$$- \underset{(3.24)}{0.84^{***}}(\text{total government expenditure/GDP})$$

$$+ \underset{(1.83)}{0.055^{*}}\,(\text{openness to trade}) - \underset{(0.60)}{0.0009}\,(1988\ \text{GNP/capita})$$

$$+ \underset{(0.74)}{0.19}\,(\text{social efficiency wage}) + \underset{(2.13)}{0.071^{**}}\text{secondary enrolment rate},$$

$$\text{observations} = 78,\ \ p = 0.0000,\ \ \text{"r-squared"} = 0.18.$$

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