



DIIS REPORT

WHITHER AID?
FINANCING DEVELOPMENT
IN MOZAMBIQUE

Sam Jones

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Abstract

Careful consideration of the appropriate level and composition of aggregate public spending is vital in low income countries, especially in the presence of large volumes of foreign aid. Not only can expansion of the public sector weaken economic growth, but also provision of public services may be difficult to re-trench. These issues are relevant to Mozambique as the share of government in GDP already is comparatively high and strategic management of aggregate public spending historically has been weak. A new long-term macroeconomic model quantifies the implications of alternative aggregate spending profiles. It shows that small increases in minimum levels of government spending correspond to large increases in the duration to aid independence. Sharp reductions in aid availability would necessitate significant fiscal and economic adjustments, including cuts in real public spending per capita. For this reason, there is no room for complacency as regards the future of development finance to Mozambique.

I. Introduction

For around a generation Mozambique has been heavily dependent on foreign aid. At the same time, it is widely considered to be a success story – lasting peace has been established and over the past 15 years it has recorded some of the highest rates of economic growth in the world. An outstanding question that motivates this paper is how development can be financed over the very long-term. Of course, presently there would hardly appear to be a financing shortage. Foreign aid continues to fund a large proportion of government spending, there are indications of a modest scaling-up of aid and domestic taxation is growing. However, one may question whether reliance on foreign savings is sustainable. Today's sources of external finance cannot be guaranteed *ad infinitum*, nor should the macroeconomic implications of different financing mixes be ignored. Thus, as Mozambique moves into a more mature post-stabilization phase of its development, the implications of different expenditure and financing profiles need to be analysed carefully.

The appropriate level and composition of public spending remains a thorny question for both developed and developing countries. However, it is even more acute where foreign aid allows developing country governments to supply a range of (social) services that could not be sustainably financed otherwise. This reflects the age-old tension between expanding access to core public goods, such as health and education, and maintaining a cautious fiscal position that limits vulnerability to financing shocks and seeks to promote increased spending efficiency. For Mozambique, the main message is that greater attention needs to be given to these aggregate public spending issues. The intention of this paper is not to suggest *what* the appropriate level of government spending should be, but rather to highlight the ongoing significance of this question and to quantify the macroeconomic implications of alternative choices. Long-term financing scenarios suggest that alternative public sector spending targets correspond to very large differences in both the estimated time to aid independence and the size of the public sector that can be sustained relative to the wider economy.

Careful analysis of aggregate spending issues is particularly important in Mozambique because there is a prevailing view that the country will grow out of its reliance on foreign aid through a 'natural' process of economic expansion. This standpoint is liable to breed complacency and is not supported by any rigorous analysis. Additionally, the government has demonstrated only weak capacity to un-

dertake strategic medium-term management of aggregate expenditure. Experience indicates that it is the availability of donor funds, rather than aggregate macro- or fiscal-objectives, that tend to dominate spending outcomes. Given these trends, failure to adopt a clear position regarding the desired long-term profile of public spending may expose the government to considerable risks. In particular, there is a danger of stumbling into an overweight and inefficient public spending profile that is socially and politically difficult to retrench and which, in turn, would make the country highly vulnerable to reductions in foreign aid.

By way of organisation, the paper is divided into three main parts. The first part, Section II, seeks to demonstrate the specific relevance of aggregate public spending questions to the case of Mozambique. This is undertaken via an identification of issues in the literature, followed by a discussion of how they relate to Mozambique's experience of development financing. The second part, Section III, substantiates the preceding discussion by quantifying the macroeconomic and fiscal implications of different future financing scenarios. These are developed using a new and expanded macroeconomic programming model, calibrated for Mozambique and presented in detail in Appendix A. The third part, Section IV, reflects on the policy implications of these results and suggests a set of emerging risks to which donors and the government would be minded to attend. Section V concludes.

II. The Question of Aggregate Public Spending

II.1. Literature review

Debates concerning the appropriate size and role of the public sector are age-old and ideologically charged. An appropriate entry point, however, is Wagner's hypothesis (law) of a positive covariance between national income and government expenditure, normally expressed as a share of GDP. Although empirical evidence for the hypothesis is mixed (see Chang, 2002; Ram, 1987), extended historical time series for industrial countries clearly indicate trend expansion in public spending as a percentage of GDP over the 20th century. This is demonstrated in Table 1, which shows that average government spending for a selection of OECD countries grew from around 10% of GDP in 1870 to over 40% in 2002. The question for low income countries (LICs) is whether the appropriate share of government in the economy is fundamentally associated with developmental conditions. If so, then persistent deviation from any long-term equilibrium relationship may be viewed with concern, particularly with respect to spending sustainability (see below). This is germane because many LICs currently display levels of public spending that are historically unprecedented (at least in a long view) in relation to their income levels. As can be seen from Table 2, which takes a selection of more successful low income sub-Saharan African (SSA) countries, average government spending has been above 25% for a decade and in many cases is on the rise, indicated by the increase in the government deficit before grants over the period shown. These weights of government spending approximate those observed in the mid-twentieth century in industrial countries (e.g., 1960s USA), but are occurring in LICs at real incomes that are many multiples lower. As illustrated in Figure 1, the selected SSA countries appear as outliers in relation to the historical record of OECD countries. According to the figures for these OECD countries (Table 1), one would expect the majority of SSA countries to have a government share of well under 10% given their income levels.

Arguments in favour of a significant economic role for the state in LICs fall into two main categories. The first is rights-based arguments which view access to health, education and other public services as (universal) social entitlements. While the meaning and content of such rights is widely debated (Gauri, 2004), many global development initiatives such as 'Education for All' are explicitly grounded on rights-based assertions¹. Notably, approaches of this kind would appear to

¹ See the EFA Fast Track Initiative (www.education-fast-track.org).

Table I: General government spending as % of GDP
selected OECD countries

	1870	1913	1920	1937	1960	1990	2002
Australia	18,3	16,5	19,3	14,8	21,2	34,7	35,6
Austria	10,5	..	14,7	20,6	35,7	48,6	51,3
Canada	..	..	16,7	25,0	28,6	46,0	41,4
France	12,6	17,0	27,6	29,0	34,6	49,8	53,6
Germany	10,0	14,8	25,0	34,1	32,4	45,1	48,5
Ireland	..	..	18,8	25,5	28,0	41,2	33,5
New Zealand	..	..	24,6	25,3	26,9	41,3	41,6
Norway	5,9	9,3	16,0	11,8	29,9	54,9	47,5
Sweden	5,7	10,4	10,9	16,5	31,0	59,1	58,3
Switzerland	16,5	14,0	17,0	24,1	17,2	33,5	34,3
United Kingdom	9,4	12,7	26,2	30,0	32,2	39,9	41,1
United States	7,3	7,5	12,1	19,7	27,0	33,3	34,1
Median	10,0	13,4	17,9	24,6	29,3	43,2	41,5
GDP per cap (median)	1.869	3.957	3.861	4.675	8.666	17.357	22.112

Note: Data for 1870 are based on closest available year.

Source: Government share taken from Tanzi & Schuknecht (1997), Tanzi (2005); GDP data calculated from historical series in Maddison (2007)

prioritise support to social development above broader economic concerns such as public expenditure sustainability or efficiency. As discussed in Piron (2002), concepts such as the ‘Right to Development’ declared by the United Nations General Assembly in 1982 even could be interpreted as introducing a legally binding obligation on the part of advanced countries to provide development assistance to poorer countries. In turn this could justify maintaining high-levels of external assistance to LIC governments for periods of many generations, regardless of growth outcomes.

Secondly, various economic arguments also can be used to justify a larger role for the public sector in LICs. Drawing on theories concerning poverty traps and the importance of investment in public goods to reduce transaction costs and augment human and physical capital stocks, ‘big push’ advocates hold that large volumes of (public) spending are necessary *upfront* to stimulate rapid private sector growth (e.g., Sachs et al., 2004). These views echo those of the classical

Table 2: Central government spending and revenue as % of GDP, selected African countries

	GDP pc	1997			2007		
		Gov.	Rev.	Balance	Gov.	Rev.	Balance
Burkina Faso	870	22,1	12,7	-9,4	26,5	13,3	-13,2
Ethiopia	593	18,0	13,6	-4,4	22,3	12,8	-9,5
Ghana	1.196	29,0	17,3	-11,7	34,3	22,7	-11,6
Malawi	636	23,0	14,4	-8,6	35,3	19,1	-16,2
Mozambique	1.188	21,6	10,4	-11,2	35,2	16,5	-18,7
Tanzania	511	12,8	10,8	-2,0	22,1	13,5	-8,6
Uganda	738	17,2	11,3	-5,9	21,9	13,4	-8,5
Median	738	21,6	12,7	-8,6	26,5	13,5	-11,6

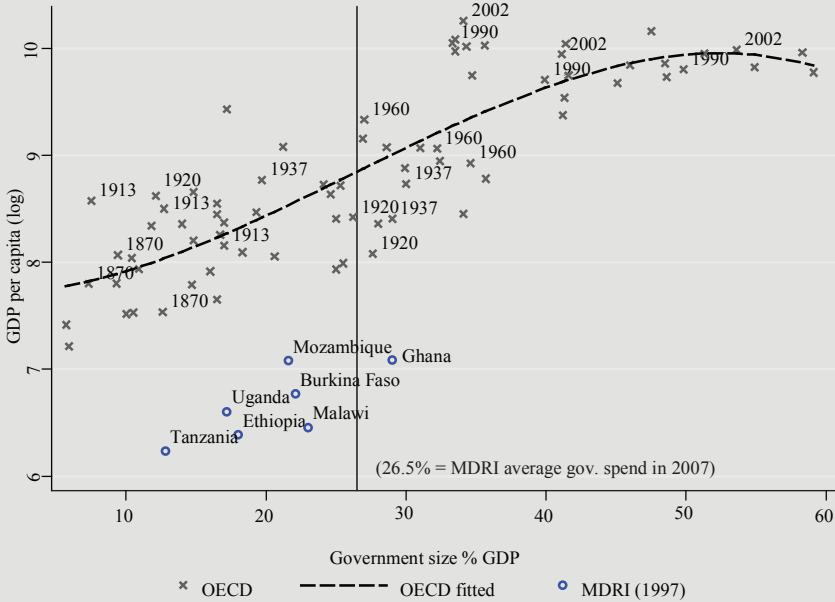
Note: Balance refers to the fiscal balance before grants; spending excludes non-interest financing costs (i.e., only 'above the line' items are included)

Source: IMF Africa Regional Economic Outlook April 2008 database taken from the IMF's Data Mapper, available at: <http://imf.org/external/datamapper/index.php>

development economists who understood development as being principally a problem of investment to be addressed via inflows of foreign savings – e.g., the classic two-gap model of Chenery and Strout (1966). As an extension, three-gap models (Bacha, 1990) posit a special role for foreign aid where domestic taxation is insufficient to meet investment financing needs. The issue is that external private capital may be unwilling to support public expenditure where there are few directly appropriable returns and/or the government's long-term ability to repay borrowing is uncertain.

Investment-led arguments provide a clear rationale for why and how aggregate government spending in LICs might diverge from levels more consistent with Wagner's hypothesis. However, there is a distinct sense that this divergence should be time-limited. The desired outcome of a 'big push' is rapid convergence towards higher income levels. In turn this would be more coherent with an (already) expanded role for government that can be sustained via domestic sources of finance, making foreign savings redundant. In contrast to rights-based views, however, such arguments are more explicitly sensitive to growth concerns and it is here that many critiques of public sector expansion are directed. At least theoretically, the

Figure 1: Real income and government spending, selected OECD countries (1870-2002) and MDRI countries (1997)



Note: For clarity only a selection of dates for OECD countries are given.
 Source: as per Tables 1 and 2

negative effects of taxation on overall levels of investment as well as the potential for government expenditure to crowd-out private sector activity are well known (see Gemmill, 2004; Myles, 2000). However, the empirical evidence appears to be mixed and appear to be sensitive to the composition of government spending (Argimón et al., 1997; Easterly and Rebelo, 1993). Another theme in the literature emphasises the positive effects of increased economic freedom – that is, lower marginal tax rates and government intervention in the economy – for growth in both developed and developing countries (Gwartney et al., 1998). Similarly, Tanzi and Schuknecht (1997; 1998; 2000) and Tanzi (2005) argue there is little evidence to suggest that comparatively larger public sectors generate superior social outcomes. Moreover, this finding is not restricted to advanced countries – the same authors (1998) demonstrate that many newly industrialized countries such as Chile, Singapore, South Korea and China have been able to achieve impressive

social and economic results while maintaining aggregate government spending at under 20% of GDP².

Recent trends in the global economy also may increasingly limit the capacity of governments, particularly in developing countries, to raise sufficient domestic revenues to support large-scale government interventions. The growth of financial and trade liberalization means that 'easy to collect' border taxes often are no longer viable as principal revenue-raising instruments. Rather, globalization entails a shift in the structure of taxation towards domestic factors (value added, labour income) which can be more difficult to collect and, arguably, may have more acute growth effects. Evidence suggests that revenue lost through liberalization may be more difficult to recuperate, especially for lower income countries (Aizenman and Jinjarak, 2006; Baunsgaard and Keen, 2005). Notwithstanding these pressures, experience also demonstrates that developing country governments have had limited success in achieving large and sustained increases in domestic taxation revenue relative to GDP. For example, the IMF's Independent Evaluation Office (IEO) has shown that among both temporary and permanent low income users of IMF funds, sustained increases in the tax revenue to GDP ratio have not been seen over the long-term (IEO, 2003). Based on their figures, by the end of the 1990s tax revenue shares among these countries in fact were substantially lower on average compared to during the 1980s.

The potential for aggregate public spending to exhibit lock-in or cyclical ratcheting provides a further rationale for favouring lean government. Such tendencies are documented in Akitoby et al. (2006) for an extend sample of developing countries; Hercowitz and Strawczynski (2004) also find similar tendencies among OECD countries, although for their sample ratcheting appears to be counter-cyclical in nature. These results are best explained by political economy factors. As Tanzi puts it: "Levels of public spending at any one time tend to be set by past political trends and promises, rather than by informed decisions ... At any given moment the level of public spending depends substantially on the entitlements and claims on the government created in *past* periods." (2005: 625-6). This view accords with the history of public sector growth in advanced countries whereby the expansion of social spending often accompanied the extension of the franchise (Desai, 2003). Case study evidence in developing countries also provides some support to the notion that public (social) expenditures can

²Note this analysis does not cover public sector enterprises.

come to be seen as entitlements that would be politically costly to remove (e.g., Fjeldstad, 2004).

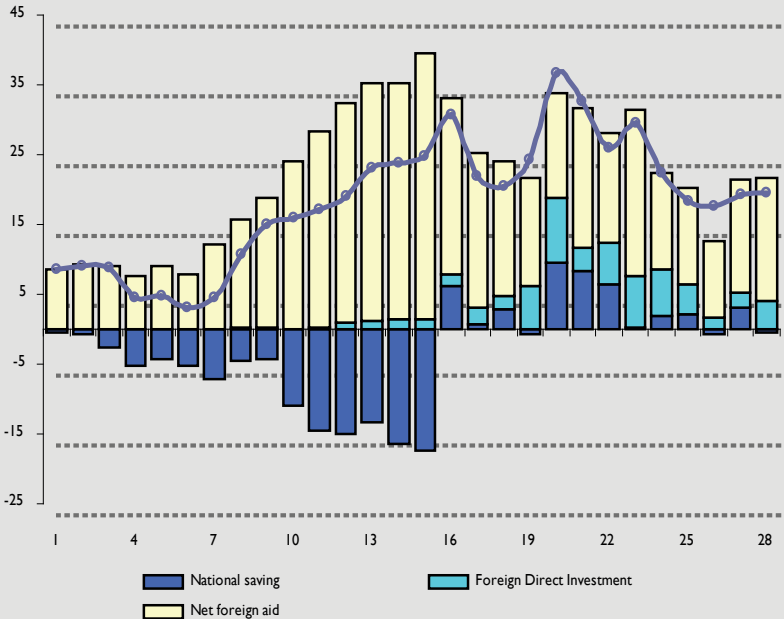
Arguments in favour of a more cautious level of government spending in LICs are bolstered when the possibility is acknowledged that foreign aid can undermine long-term growth prospects. Numerous scholars have argued that foreign aid can undermine growth (Easterly, 2003; 2002), particularly when it rises above a threshold level (Lensink and White, 2001). This can be due to the high costs of administering aid (Morss, 1984), Dutch disease challenges (Rajan and Subramanian, 2005) and various political economy and incentive effects that weaken the accountability of government to its citizens and undermine existing institutions (Moss et al., 2006). Additionally, evidence that aid may be more volatile than domestic sources of financing frequently has been used to warn against high-levels of aid dependence (Hudson and Mosley, 2008; Bulir and Hamann, 2006). This is also relevant to the risk of expenditure ratcheting – where aid is used to expand the range of social entitlements enjoyed by citizens, the political and economic effects of a sharp reduction in aid are likely to be more severe and, in extreme cases, may lead the government to increase its (domestic or external) indebtedness in order to maintain social spending. Indeed, in its discussion of aid scaling-up, the IMF (see Gupta et al., 2006) explicitly advises governments and donors to ensure that complementary aid exit strategies are in place. Thus, to the extent that these issues are considered material, careful control over the level and composition of aggregate expenditure may be warranted in order to ensure expenditure sustainability and to promote growth more generally.

II.2. Application to Mozambique

The main elements of Mozambique's recent economic history have been well documented and need not be rehearsed here (see Clement and Peiris, 2008; Arndt et al., 2007). In short, and following almost twenty years of conflict, since 1994 the country has sustained rapid increases in real income and achieved marked improvements in macroeconomic stability. Estimated real income (GDP) is now more than twice its level at Independence and inflation has been brought under control. Social indicators such as poverty rates, access to schooling and public infrastructure generally have moved in a positive direction.

Despite these successes, many of the challenges associated with public expenditure growth and its sustainability are starkly evident in Mozambique. In this respect three key trends can be highlighted. Firstly, the country has displayed persistently

Figure 2: Principal savings components of gross investment 2007-1980



Source: author's calculations based on figures used to produce Table 1

high levels of aid intensity enabling a relative large share of government spending in GDP even in comparison with OECD countries (see Tables 1 and 2). Even though data weaknesses are substantial (see below; also Arndt et al., 2007), it is clear that foreign aid has been the predominant source of investment funds over the last 25 years. As shown in Table 3, also illustrated in Figure 2, since 1992 on average net foreign aid has been equal in value to around 80% of gross investment. It also has been a crucial source of foreign exchange – balance of payments figures suggest that even since 2000, ODA has accounted for around 70% of the currency needed to finance non-mega project imports³. The persistent role of foreign aid should be noted even though positive trends are seen in other components of national savings. As the table shows, national savings (of the public and

³ Mega-projects refer to a small number of controversial capital intensive projects that prima facie have boosted Mozambique's balance of payments position. However, as all their financial operations remain off-shore there is only a small effect on the domestic monetary system. For this reason it is helpful to exclude them from analysis.

Table 3: Sources of investment finance in Mozambique 1980 -2007

	1980-89	1990-99	2000-03	2004-07
	US\$ per annum (current)			
GDP	4.894,5	2.908,5	4.568,5	6.664,6
Consumption	5.050,1	2.956,3	4.078,1	6.191,0
Gross Investment	415,5	703,0	1.262,1	1.247,0
Foreign savings	595,3	835,8	1.067,9	1.187,1
Net foreign aid	554,9	716,9	833,6	984,4
<i>(in US\$ per capita)</i>	45,3	49,9	47,0	49,3
Net private inflows	40,4	118,9	234,2	202,7
National savings	-179,8	-132,8	194,2	59,9
<i>(in US\$ per capita)</i>	-14,7	-9,2	11,0	3,0
	% GDP			
Absorption	111,7	125,8	116,9	111,6
Consumption	103,2	101,6	89,3	92,9
Gross Investment	8,5	24,2	27,6	18,7
Foreign savings	13,0	30,0	23,4	17,7
Net foreign aid	12,2	26,3	18,4	14,6
Net private inflows	0,8	4,1	5,1	3,0
National savings	-4,6	-5,8	4,2	1,0
	% Gross Investment			
Foreign savings	153,7	123,9	84,7	94,6
Net foreign aid	143,2	108,7	66,4	77,8
Net private inflows	9,7	16,9	18,6	16,3
National savings	-53,7	-23,9	15,3	5,4

Source: author's estimates from official statistics, principally Balance of Payments data (online from the Central Bank of Mozambique at www.bancomoc.mz) and national accounts data from INE (1995; various)

Table 4 : Recent fiscal trends in Mozambique, 2000 - 2007

	'00	'01	'02	'03	'04	'05	'06	'07e	'00-07
Domestic revenue	11,5	11,2	12,1	13,3	13,1	14,1	15,9	16,5	13,5
Government expenditure	-23,7	-29,1	-29,2	-27,2	-25,3	-22,9	-28,7	-35,2	-27,7
Fiscal balance before grants	-12,2	-17,9	-17,1	-13,9	-12,2	-8,8	-12,8	-18,7	-14,2
External grants	7,0	12,5	10,1	9,7	7,8	6,6	11,4	13,1	9,8
Fiscal balance after grants	-5,2	-5,4	-7,0	-4,2	-4,4	-2,2	-1,4	-5,6	-4,4
External credit	3,5	3,6	6,2	4,1	3,1	3,7	4,8	6,7	4,5
Net domestic financing	1,7	1,8	0,8	0,1	1,3	-1,5	-3,4	-1,1	0,0
<i>Aid as % gov. expend.</i>	<i>44,5</i>	<i>55,3</i>	<i>55,7</i>	<i>50,8</i>	<i>43,0</i>	<i>45,0</i>	<i>56,4</i>	<i>56,3</i>	<i>50,9</i>

Notes: All figures are stated as shares of GDP; external credit calculated as the balancing residual; the apparent spike in government spending since 2005 reflects greater coverage of aid in the budget and optimistic projections of aid utilization in 2007.

Source: net domestic financing taken from *Conta Geral do Estado* (GRM, various) for 2000-2004, for 2005-2008 source is IMF (2008). All other items taken from IMF Data Mapper available at: www.imf.org/external/datamapper/index.php

private sectors combined) have moved into positive territory over the post-war period. Inflows of private foreign savings also have been robust, averaging around 5.5% of GDP since 2000 mainly due to sustained (although lumpy) foreign direct investment⁴. However, not only is the contribution of these non-aid flows small relative to overall levels of investment, but also they appear to have a limited direct positive impact on available public funds as to be expected under a standard three-gap model (see above). The predominant role of aid also is reflected in the government accounts. As shown in Table 4 for recent years, official inflows play a major role in financing government spending. They continue to account for around 50% of total expenditure, being equal in value to around 100% of the reported investment budget; and, as suggested by historical trends in aid volumes, this is not a new phenomenon.

Secondly, there is evidence of a moderate scaling-up of aid to Mozambique, particularly in terms of the *net* availability of external funds to support domestic expenditure. This is indicated in both Tables 3 and 4, although the estimates for government spending in 2007 taken from the latter table may be exaggerated. While the source of any scaling-up is difficult to identify precisely, two main factors appear to be at play. On the one hand, external financing costs have been

⁴ Alternative private inflows, such as migrant remittances, as well as inflows from non-DAC donors have been relatively insignificant at an aggregate level in recent historical perspective.

falling due to a shift in prevailing financing modalities as well as to extensive debt relief. Over the last decade there has been a growing emphasis on grants rather than debt-inducing official assistance for many low income (well-performing) countries. Thus, not only has Mozambique received over US\$5 billion of debt relief under various bilateral and multilateral initiatives (HIPC and MDRI), the ratio of new borrowing to grants has reduced considerably from around 75% for the period 1985-1999 to under 50% on average since then. Although these changes may be predominantly book-keeping in nature, it is important to note that the overall reduction in debt repayments expands funds that are available for 'above the line' spending.

On the other hand, there is the emergence of new donors. These include the resurgence of non-DAC donors such as China, Brazil and India as well as the emergence of various 'vertical funds', which can be defined as international initiatives organised outside the UN system focussed on specific thematic objectives such as HIV/AIDS and education. Despite a dearth of reliable data regarding the real volume of *additional* funding that can be attributed to these newer donors (see below), there are indications that the volume of new financing may be significant. Recent figures suggest that in 2007 alone, Mozambique received US\$162 million of PEPFAR (President's Emergency Plan for AIDS Relief) funds, which is equal to around half the health sector's entire 2008 budget (GRM, 2007)⁵. Similarly, \$500m has been committed by the Millennium Challenge Account (MCA) to Mozambique over five years from 2008; and commitments from the Global Fund to fight against AIDS, Tuberculosis and Malaria (GFATM) in 2008 were equal to around US\$58 million. As can be gauged from Table 3 these are large sums in relative terms, particularly as they entail no (major) direct financing costs.

Thirdly, changes in the aid environment mean that external funds are increasingly integrated into the ongoing functioning of government. In keeping with the investment-based approaches described above, aid traditionally has been considered necessary to finance new investment rather than operations and maintenance costs. However, where domestic sources of financing are severely constrained relative to aid, this may generate perverse incentives such as favouring the building of new roads as opposed to maintaining existing ones. An explicit design feature of newer pooled funding instruments is to promote a 'better balance' between recurrent and capital costs, thereby increasing aid effectiveness (IDD and Associates, 2006).

⁵Source: http://maputo.usembassy.gov/presidents_emergency_plan_for_aids_relief_pepfar.html (retrieved 16/07/2008).

In Mozambique there has been a proliferation of these pooled aid instruments across all levels of government. Aside from the highest level of pooling, known as general budget support (GBS), numerous pooled funding arrangements exist at both the sector level and for specific (cross-cutting) initiatives such as public sector reform. Estimates suggest that these instruments have expanded from almost zero in the late 1990s to account for nearly 50% of all aid to Mozambique in 2006, with general budget support alone accounting for just under a third of on-budget aid⁶. For reasons described below, the effect of these changes on the composition of government expenditure is hard to ascertain. However, Batley et al. (2006) suggest that the expansion of general budget support in Mozambique has been associated with a trend increase in the share of recurrent spending in the budget; they also note that in 2003 alone approximately 66% of external financing to the health sector was used to finance recurrent costs.

In light of the discussion of the previous sub-section, these trends point to the need for careful consideration of the appropriate level and composition of aggregate government expenditure for Mozambique. The very high level and persistence of foreign aid combined with its close integration into government functioning suggests that a wide range of core public services could not be maintained in the absence of official assistance. This may not be problematic *per se*, particularly if the current scope of government activity is a temporary investment-led spike that will dwindle in due course. However, a number of other factors suggest that the challenge of establishing an appropriate aggregate public spending profile and ensuring its sustainable financing is especially serious. In particular there is a notable absence of effective medium-term limits over total government spending, a problem directly connected to weak strategic management of aggregate aid inflows⁷. In principle, aggregate expenditure coherency and consistency should be assured by corporate planning documents such as the government's Poverty Reduction Strategy Paper (PRSP). However, it is evident that macroeconomic plans contained therein are not seen as fixed targets, nor do they provide a basis for directing (limiting) aggregate aid inflows. For example, as requested by the donor community, the current PRSP asserts that: "... the volume of external aid in the State Budget is neither a ceiling nor a fixed limit. The country remains open to additional flows of foreign aid, provided such assistance is aligned with

⁶These are based on figures retrieved from ODAMOZ for financial year 2006 (see www.odamoz.org.mz). However, this data is not comprehensive and therefore only provides a partial picture of all aid flows.

⁷Note, the emphasis here is on medium- and long-term control over the expenditure path. This should be distinguished from short-term control enforced via annual budgets.

the government's activities and plans" (GRM, 2006: 40). Indeed, while projected government spending for 2008 contained in the same document is 28% of GDP, IMF estimates based on the state budget suggest this ratio will reach 37.6% in 2008 (IMF, 2008a). Not only has this expansion of the public sector been largely ignored in government and donor community analyses, but also commitments to promulgate 'basic principles to guide the use of extraordinary external resources' (GRM, 2006: 40) remain unfulfilled.

The above is symptomatic of a more general tendency, whereby individual sectors retain strong independence relative to central planning and finance ministries. This stems from the fact that sectors typically do not need to go through an intensive round of competition for budget resources, but rather significant funding is sourced directly from donors. As Hodges and Tibana (2005) note, funding allocations via the central budget to sectors is largely automatic (i.e., based on previous years) and there are few internal mechanisms to evaluate the efficiency and effectiveness of expenditure across sectors on a comparative basis. This combines to mean that aggregate (expenditure) plans tend to be driven by the availability of donor funds rather than pre-determined fiscal or macroeconomic objectives. Strategic considerations or long-term trade-offs have, at best, a limited influence over the aggregate profile of government spending. In turn, this inflates the risk of unmanaged expenditure creep by which the state engages in a range of additional ongoing (social) spending commitments that may be difficult to retrench.

Weaknesses in aggregate public expenditure management are not simply a question of fragile government institutions. Rather, they are exacerbated by entrenched donor practices. Aid budget allocations to countries such as Mozambique are undertaken individually by each donor according to rules formulated in their home country. Projected donor allocations also tend to have a short-term focus and, often, do not attend to the aggregate structure of future public sector spending commitments (such as other donor allocations) or potential long-term macroeconomic effects. As noted by Fischer et al. (2008), even donor country strategies are developed with little government input. These practices limit the capacity of the government to assert recipient-led (demand-led) control over extant aid relationships. Moreover, given both the country's perceived reliance on aid and the weak extent of parliamentary oversight (de Renzio and Hanlon, 2007), there are few incentives for the government to engage in pro-active screening of foreign aid for fear of undermining the 'good will' that has supported aid inflows in the past. Additionally, donor predictability continues to be a major concern. This is

especially the case for certain new donors which have a limited commitment to Paris Declaration principles (see OECD, 2008), exemplified by the unpredictability of disbursements of the GFATM to the health sector in 2007 (IMF, 2008b).

Finally, deficiencies in government information systems further undermine the government's capacity to exert effective control over the volume and composition of aggregate spending. Firstly, it remains difficult to account for aid inflows both for individual sectors and at an aggregate level. This is not to ignore significant improvements in government systems over recent years, but rather reflects the growing complexity of the aid environment including rapid changes in the number and type of donors⁸. Consequently, robust and consistent estimates of the overall volume of aid to the government continue to be elusive. While official reports reveal a moderate increase in government spending relative to GDP (see Table 4) it is difficult to apportion this between paper changes in the coverage of government accounts and any real scaling-up of aid (e.g., via new donors and vertical funds). Secondly, the investment component of the government budget does not directly correspond to the economic concept of investment. In the past it has been convenient to account for aid-financed projects as investment activities, regardless of whether or not they incorporate recurrent spending. The upshot is that the 'real' split between new investment versus operations and maintenance in government spending remains ambiguous. As discussed above, this problem has become more relevant with the expansion of common funding instruments as these tend to allow for a greater share of recurrent spending.

The argument of sub-section II.1 was that developing country governments would be wise to pay careful attention to changes in the scope and nature of government spending over time. This section has demonstrated the relevance of this insight to Mozambique, given the comparatively large share of government in GDP as well as the country's persistent reliance on foreign aid. Of particular concern is the weakness of government institutions and systems to exert effective control over the volume and composition of aggregate spending over the medium-term. This makes the risks associated with an over-weight and ineffective public sector all the greater. It also suggests that it may prove difficult to transition to a more sustainable financing profile and it is to these long-term questions that this paper now turns.

⁸ The range of improvements in government systems cannot be detailed here. These include progress in the SISTAFE (*Sistema de Administração Financeira do Estado*) public financial reform project. See Lawson et al. (2008); also documents at www.paps.org.mz and www.utrafe.gov.mz

III. Future financing scenarios

The purpose of this section is to present future financing scenarios for Mozambique. In light of the above, specific interest lies in how alternative aggregate spending profiles are likely to affect the country's reliance on external sources of savings over the long-term as well as the health of the wider economy. In other words, this section quantifies the extent to which concerns over aggregate expenditure management and particularly the risks of unmanaged expenditure creep are warranted.

III.1. Macroeconomic model

Before proceeding, a brief description is given of how the macroeconomic projections are put together. Appendix A provides a formal presentation of the underlying economic model, constructed specifically for the purposes of this study. As may be evident, it represents an extension of the framework developed in Brixen and Tarp (1996) which itself is a practical implementation of the fusion of the IMF's (financial programming) and World Bank's analytical approaches as set out in Khan et al. (1990). The model combines a number of relatively simple behavioural assumptions which provide the dynamic link between standard (aggregate) monetary and national accounting identities. Changes over time are driven by exogenous changes in core macroeconomic and fiscal variables. In the present case these include domestic income, exports, net inflows of foreign capital and taxation. However, final movements in these aggregate variables typically are not *purely* exogenous and, as explained below, they incorporate a substantial endogenous dimension which adds coherence and plausibility to the model. The resulting framework is highly flexible and non-linear in nature. Where employed sensibly, it can generate meaningful insights into the time-series dynamics of relatively complex macro-relationships⁹.

Rather than go through the model in detail, it is useful to highlight the core assumptions at play as well as the principal departures from Brixen and Tarp's (1996) approach. Firstly, the model is addressed to a low income, aid dependent, post-stabilization economy such as Mozambique. Core assumptions, therefore, are that relative price stability and macroeconomic prudence will continue to prevail. Indeed, the current environment is characterised by relatively low external debt

⁹ The model can be implemented in numerous software modelling environments; for ease of exposition the present model has been developed in MS Excel 2007.

stocks, following substantial debt relief, and minimal recourse to domestic credit. Also, as noted above, a large portion of external aid is provided as grants and private capital inflows are characterised by a high proportion of foreign direct investment. For these reasons, it is assumed that *current* outstanding debt stocks are managed at sustainable levels and do not require explicit treatment. Similarly, domestic public debt is not modelled explicitly, which is the same as assuming that the government does not make recourse to domestic borrowing to any significant degree. Lastly, a further assumption that impinges on the plausibility of results is that national savings endogenously adjust to ensure investment needs are satisfied. As set out in equations (M1) and (M2) of Appendix A, the logical chain of relationships is that past economic performance affects growth expectations which, in turn, affect current investment demands. Also, national savings are calculated as a residual from available foreign savings. Consequently, the results from different scenarios present the minimum ‘required’ rate of national savings that are consistent with the postulated growth-investment dynamic.

The main departures from the Brixen and Tarp (1996) framework are motivated by the need to: (i) explicitly address the macroeconomic consequences of alternative government financing demands; and (ii) enhance the economic plausibility of the model’s dynamics over the very long term. With reference to the latter, for example, it is not feasible to hold that income growth will follow a strictly exogenous path over a 40 year period. Rather, growth dynamics must be sensitive to other macroeconomic trends including those of the current account deficit and credit growth. Indeed, if exports are growing at a faster rate than imports then from the standard national income accounting identity this must be reflected in the overall rate of income growth. Thus in the model, income growth (equation M1) is a ‘semi-endogenous’ specification combining an exogenous component with endogenous factors that act as adjustment mechanisms to ensure consistency with prevailing macroeconomic conditions. In similar fashion, and following the theoretical justification given in Shahe Emran and Shilpi (2007), a proxy for foreign exchange availability is introduced into the import demand functions (equations M7 and M9) thereby providing a stabilising mechanism in addition to the real exchange rate. The proxy applied is an index of international reserves relative to a (pre-specified) reserves target, the rationale being that economic agents will base their expectations of foreign exchange availability (and thus import demand) on the extent to which the reserve target is under threat.

In order to model the specific dynamics associated with public sector financing, the import demand functions of the private sector and the government are modelled separately. This reflects the point that government expenditure, particularly where heavily aid-financed, can be import intensive such that any significant reduction in aid may stimulate a fall in the government's overall expenditure and thus its demand for imports (*ceteris paribus*). The relationship between changes in components of national income, such as imports and consumption, on domestic tax collection also are modelled. Consequently, the level of taxation in GDP is a 'semi-endogenous' specification which allows for exogenous improvements in tax efficiency over time.

The model can be solved in a variety of ways, according to the modeller's preferences. Three main choices are available as follows:

- I. government expenditure can be fixed at a specific percentage of GDP (e.g., 30% or 35%) or can adjust in line with available financing. Under the former choice, external capital inflows (foreign aid) provide the necessary funds to top up domestic taxation revenues. Under the latter, the modeller imposes a path for external capital inflows and allows the level of government expenditure to adjust accordingly;
- II. the real exchange rate (RER) can be set to follow a fixed path or it can move (endogenously) in order to maintain a target level of international reserves. While in principle one can identify precise changes needed in the RER in each period to achieve the reserves target, in practice this tends to generate extreme swings in the model. Consequently, under the latter choice, an RER updating rule is adopted which allows for smoother adjustments based on the observed deviation of international reserves from its target level in the previous period (see equation R2a). In this case, the RER is adjusted only through changes to the nominal exchange rate rather than relative prices (reflecting a flexible exchange rate regime); and
- III. new external capital inflows to the public sector either can be free of repayment obligations or can include a variable borrowing component. The former option assumes that all inflows are free transfers (grants), which in turn means there is no difference between gross and net aid in the model (see equation M5). Where a debt component is allowed, then debt servicing obligations and amortization costs are calculated only for the new stock and are subtracted from gross aid to give net aid in the balance of payments. Note that total government expenditure as per Rule (I) above is not affected by this choice.

Calibration of the model is to Mozambique as at the end of 2006, for which we have a full set of official figures. Behavioural parameters are somewhat difficult to identify with precision due to the weakness of historical time series data and the depth of the structural changes that have characterised Mozambique's recent economic history. As a result, magnitudes are chosen that are both consistent with economic theory and generate plausible dynamics in the model. For example, the elasticity of import demand with respect to changes in the RER is set at -0.5 and -0.3 for the private and government sectors respectively. They are below (negative) unity to reflect the absence of domestic substitutes for key imports, which is reasonable given the very limited capacity of Mozambican industry¹⁰. However, the long-term real income elasticity of import demand is set at unity in conformity with theory and evidence for developing countries (Hong, 1999). The full set of parameters used in the scenarios is given in the tables to Appendix A. Finally, it is worth noting that the economic aspects of contemporary mega-projects are excluded from the model for the reasons mentioned above (see footnote 3). The starting value for total exports therefore is calculated as the value of non-mega-project exports in 2006 plus 20% of the value of *net* mega-project exports, being an estimate of the effective foreign exchange inflow into the domestic banking system (economy). No assumptions are made in any of the scenarios as to major natural resource discoveries that could fundamentally alter the (foreign exchange) earnings of the government.

Finally, one may question why a (complex) formal model is needed in place of more simple arithmetic. Although the latter can be helpful, the model allows for a much fuller consideration of the implications of alternative public financing paths. In other words, one is able to trace through effects on foreign exchange availability, international reserves, taxation and growth among other macroeconomic indicators. However, all economic models have their strengths and weaknesses. Behavioural relationships change over time and underlying assumptions may be questioned. Even so, a formal model makes explicit both the magnitude and direction of the assumptions at play. It also provides a means to deal with a complex array of interdependencies within a framework that is consistent with known macroeconomic identities. As a result, models of the sort used here provide a transparent and rigorous starting point for policy discussions; but they should not have the final word.

¹⁰While this means that Marshall-Lerner conditions are not strictly fulfilled, the specification of the import demand function allows for adjustment through additional mechanisms.

III.2. Scenarios

The model is used to develop three main scenarios, each of which corresponds to alternative fiscal paths. In addition, three sub-options are run for each main scenario in order to reflect different combinations of the other solution rules. They are as follows:

Main scenarios:

- (A) foreign aid is phased-out from 2015 at a rate of 10% per year in real terms;
- (B) government spending is maintained fixed at 30% of GDP; and
- (C) government spending is maintained fixed at 35% of GDP.

Scenario sub-options:

- (1) the RER is flexible & no new debt is allowed;
- (2) the RER is fixed at the observed 2006 level & no new debt is allowed;
and
- (3) the RER is allowed to adjust & new debt is accumulated from 2015¹¹.

Scenario (A) captures the possibility that donors make gradual cuts to their aid allocation to Mozambique. This is plausible as the Millennium Development Goals agenda will wrap-up in 2015 and (as assumed) Mozambique will have continued to sustain robust developmental momentum. The motivation behind scenarios (B) and (C), however, is to think through the implications of the emergence of a minimum level of relative expenditure which the government cannot retrench for fear of serious political, economic and/or social upheaval. Public salaries, pensions and subsidies are obvious components of such a spending floor, but other items such as infrastructure maintenance and coverage of health services (e.g., ARVs) might also feature. These scenarios therefore quantify the long-term financing demands arising from a fixed public spending target and its corresponding fiscal/macroeconomic effects.

The difference between sub-options (1) and (2) brings out the impact on macroeconomic outcomes of a fixed versus flexible RER regime. Sub-option (3), on the other hand, emphasises the impact of a change in the government's debt strategy, allowing for new borrowing in addition to today's remaining debt stock which is not modelled explicitly. While the focus is on external capital flows to

¹¹ New debt is accumulated from 2015 starting at a share of 15% of gross aid and rising by five percentage points per year to a maximum share of 80%.

the public sector, this new debt need not be highly concessional in nature. To put it another way, this option indicates how changes in the mix of external public financing, such as recourse to private capital markets or (more expensive) non-DAC creditors, may affect macroeconomic and fiscal outcomes. For this reason the financing cost parameters require amortization at an average rate of 7.5% per annum, roughly representing a fifty year repayment schedule, with an interest rate of 5% on the outstanding principal.

Aside from differences in solution rules, all scenarios incorporate the same set of optimistic assumptions. Indeed, the objective is to investigate different scenarios *assuming* exogenous dynamics remain positive. In other words large negative climatic, productivity or governance shocks are ruled-out by assumption. As shown in Appendix Table A.3.3, exogenous growth components of real income, exports and net foreign private capital inflows are set at 6%, 5.5% and 5.5% respectively. Efficiency gains in tax administration are assumed to add 0.15 percentage points per year to the effective rate at which consumption is taxed, and 0.20 percentage points to the effective rate at which income is taxed (profits and wages are treated jointly). Although outcomes vary with each scenario, on average these assumptions combine to yield an increase of around 0.30 percentage points per year in the ratio of domestic taxation to GDP. In light of past performance and cross-country experiences (Jones and Arndt, 2007), this hardly is conservative. Finally, in order to capture current donor support to the Millennium Development Goals as well as recent moderate scaling-up of aid through new funding instruments, in all scenarios available foreign aid is assumed to be *not less than* 110% of its real 2006 value over the period 2006-2014¹².

III.3. Results

Results for scenarios (A) to (C) are given in Tables 5 to 7 respectively. These report macroeconomic and fiscal indicators for selected years, as well as more specific measures relating to the extent of dependence on external capital inflows (foreign aid). A few of the measures deserve clarification. Effective government spending represents total public expenditure as a percentage of GDP after debt financing costs. Thus, under scenarios (B3) and (C3) the divergence from the fixed government spending ratio simply represents the ratio of financing costs to GDP. Similarly, the net aid index is calculated as gross aid minus the same debt financing costs.

¹²This also is consistent with the informal projections made by donors as communicated to the author during interviews. In corroboration, a recent OECD forward-planning survey (OECD, 2008) suggests that in 2010 Mozambique can expect to receive around 113% of its 2005 aid inflow.

**Table 5: Results for scenario (A)
phasing out of foreign aid from 2015**

	Scenario:	Base	(A1)		(A2)		(A3)	
	Year :	2006	2020	2040	2020	2040	2020	2040
Macroeconomic health:								
Real income (index)		100,0	190,8	456,1	198,0	491,5	191,1	494,3
Effective gov. spend (%Y)		29,9	24,7	25,0	22,8	26,9	23,5	23,7
Government deficit (%Y)		-14,4	-5,1	-0,3	-4,2	-0,2	-5,1	-0,3
Import coverage (months)		5,6	2,9	10,9	1,3	5,3	2,6	11,6
Reqd. national saving (%Y)		-0,2	4,0	26,8	8,6	15,4	5,0	32,4
External dependence:								
Years to aid redundancy		-	3	-17	2	-18	4	-16
Net aid (index)		100,0	58,5	7,1	58,5	7,1	45,7	-12,3
Gross aid as % imports		36,8	14,9	0,6	15,4	1,4	15,2	0,6
Gross aid as % gov. spend		48,2	20,8	1,1	18,6	0,8	21,0	1,1

Source: author's calculations as described in the text

Finally, 'years to aid redundancy' indicates when the government deficit (before loans and grants) is expected to fall below 3.5% of GDP. Following the Stability and Growth Pact (SGP) between European Union member states, this threshold is taken to be indicative of budget sustainability and, therefore, independence from external support¹³.

Five main findings can be highlighted from the tables. First, it is evident that no easy transition out of the country's current dependency on foreign savings can be envisaged. This is illustrated in Figure 3, which plots the path of foreign aid stated in real US\$ terms for sub-option (1) of each scenario. As can be seen, where government spending is fixed at 30% of GDP or above, aid will need to be sustained at least at current real levels for a further 30 years; to maintain spending at 35% of GDP real aid will need to increase to almost two and a half times its 2006 real level (equivalent to around US\$2,500 million at today's prices). The model demonstrates that small increments in the minimum government spending threshold translate into considerable increases in *both* the number of years to aid redundancy and the required increase in real aid over the long-term. Of course, the assumption of robust income growth means that the relative economic importance of aid slowly diminishes under these fixed expenditure scenarios. However, even under

¹³ The SGP also includes a threshold for gross government debt at 60% of GDP. While this is not considered in the 'aid redundancy' indicator, the accumulation of debt is discussed further below.

**Table 6: Results for scenario (B)
government spending fixed at 30% of GDP**

Scenario:	Base	(B1)		(B2)		(B3)	
Year :	2006	2020	2040	2020	2040	2020	2040
Macroeconomic health:							
Real income (index)	100,0	190,3	414,3	193,5	437,4	190,3	387,2
Effective gov. spend (%Y)	29,9	30,0	30,0	30,0	30,0	28,2	25,1
Government deficit (%Y)	-14,4	-10,0	-3,8	-10,2	-4,1	-10,0	-4,3
Import coverage (months)	5,6	3,3	4,8	2,7	2,5	2,9	9,3
Reqd. national saving (%Y)	-0,2	0,6	7,5	1,1	6,1	1,2	19,5
External dependence:							
Years to aid redundancy	-	21	1	22	2	26	6
Net aid (index)	100,0	127,3	106,4	138,6	130,1	99,1	-15,0
Gross aid as % imports	36,8	28,5	10,8	30,9	13,9	28,3	9,6
Gross aid as % gov. spend	48,2	33,5	12,9	34,4	14,3	33,6	14,1

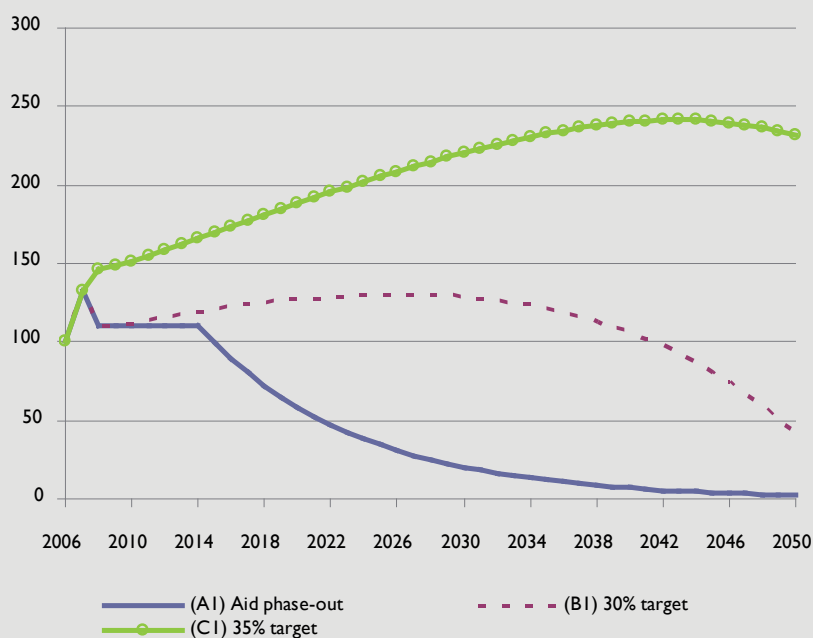
Source: author's calculations as described in the text

**Table 7: Results for scenario (C)
government spending fixed at 35% of GDP**

Scenario:	Base	(C1)		(C2)		(C3)	
Year :	2006	2020	2040	2020	2040	2020	2040
Macroeconomic health:							
Real income (index)	100,0	190,2	418,2	191,0	420,7	190,7	365,6
Effective gov. spend (%Y)	29,9	35,0	35,0	35,0	35,0	32,5	25,6
Government deficit (%Y)	-14,4	-14,4	-8,1	-14,4	-8,2	-14,6	-8,8
Import coverage (months)	5,6	4,1	4,4	3,9	3,9	3,2	9,5
Reqd. national saving (%Y)	-0,2	-2,9	2,8	-2,9	2,3	-1,4	19,5
External dependence:							
Years to aid redundancy	-	41	16	41	16	45	20
Net aid (index)	100,0	188,7	240,5	192,7	247,8	159,3	-16,2
Gross aid as % imports	36,8	38,2	23,1	38,9	24,1	40,3	17,9
Gross aid as % gov. spend	48,2	41,3	24,0	41,5	24,2	42,0	24,4

Source: author's calculations as described in the text

Figure 3: Real aid index (2006=100) for Scenarios (A1), (B1) and (C1)

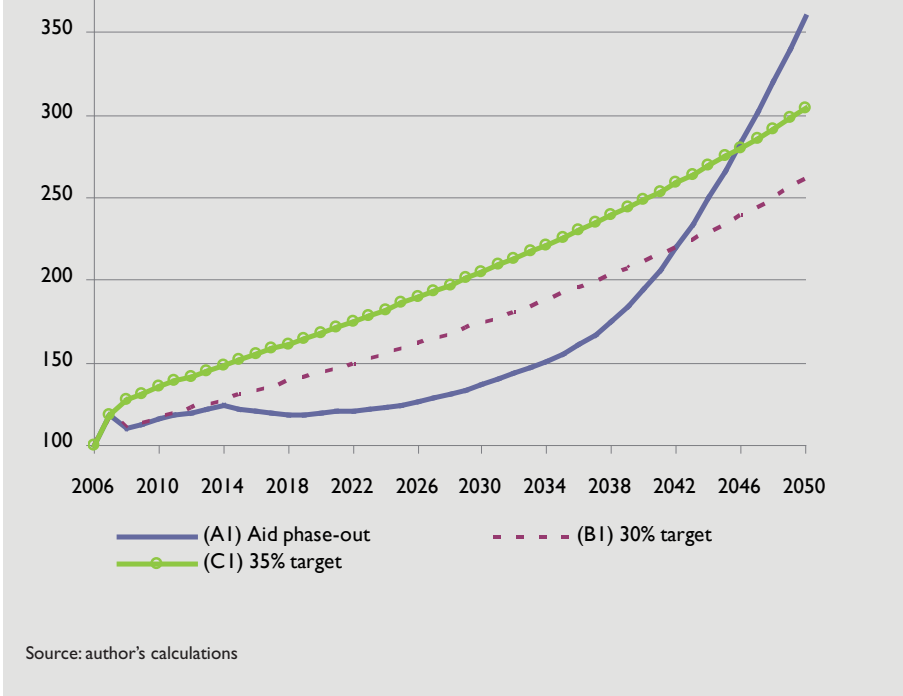


Source: author's calculations

Scenario (B1), net foreign aid would be financing 33% of the government budget in 2020, and 13% in 2040 (under optimistic tax growth assumptions).

Alternatively, if aid is actively phased-out then substantial belt-tightening will be required from 2015 (at least). Scenario (A1) suggests that government spending would need to fall to a low of 23.8% of GDP in 2026, compared to a high of 33.8% in 2007 (maintaining a flexible RER regime). Crucially, and as illustrated in Figure 4, this would oblige modest contraction and prolonged stagnation in real public spending for a decade starting from 2015 (although at no point would real spending per capita fall below its 2006 level). To get a sense of the magnitude of this tightening, government spending per capita in 2025 is almost 50% higher under Scenario (C1) versus (A1). The insight here is that a fundamental strategic choice exists between: (i) substantial reliance on external inflows for at least another generation; and (ii) a transition process that requires significant control over the size of government in the economy. In short, today's dependence on foreign

Figure 4: Real government spending per capita index (2006=100) for Scenarios (A1), (B1) and (C1)



savings will not automatically peter into insignificance in anything approaching the extended medium-term.

Secondly, a more upbeat take on the previous point is that an end to aid dependency in Mozambique is feasible within half a generation (by 2023). The model indicates that a gradual phase-out of aid is compatible with the maintenance of a stable and healthy macroeconomic environment. Admittedly, in comparison with the fixed expenditure scenarios, such a phase-out does engender a moderately lower rate of income growth and a larger fall in the coverage of international reserves during the transition period (2015-2025). However, as is evident in Figure 4, the same transition appears to place the economy on a more positive long-term path. Comparing across the flexible RER (no debt) scenarios, real income is in fact highest under Scenario (A1) by 2040. Much of the explanation for this can be traced to changes in the real exchange rate. In addition to gradual increases

in exports, the continued influx of aid under Scenarios (B1) and (C1) is broadly sufficient to meet demands for foreign exchange, placing minimal pressure on the real exchange rate. Thus, in both of these scenarios the model solves for negligible alterations in the real exchange rate (less than 5% depreciation) over the entire period to 2050. In contrast, under Scenario (A1) the model solves for a cumulative real depreciation of 17.6% over the period 2006-2025 alone. This serves to restrain import demand and boost (traditional) exports, which has a positive effect on income growth over time¹⁴.

This leads to the third point. Under all scenarios it is evident that allowing the real exchange rate to adjust (in an upward direction) provides support to macroeconomic indicators over the long-term. In so doing, this should place the country in a more robust position to withstand changes in the availability of foreign savings over time. This is evident in the trajectory of international reserves. Under Scenario (A2), for example, if the RER is held fixed then international reserves are projected to fall below zero indicating an economic crisis would ensue. In other words, the estimated level of the real exchange rate as observed in 2006 is *only* sustainable assuming aid inflows remain at their present level (or above) over the very long-term. This is not to argue that Mozambique presently is suffering from Dutch Disease, which is a deeper question concerning the structure of incentives in the economy. The more straightforward message is that careful management of the real exchange rate will be critical to sustain the current account at sustainable levels. Also, and in accordance with economic theory (e.g., see Isard, 2007), the model confirms that the equilibrium RER crucially depends on the expected availability of foreign savings over the long-term.

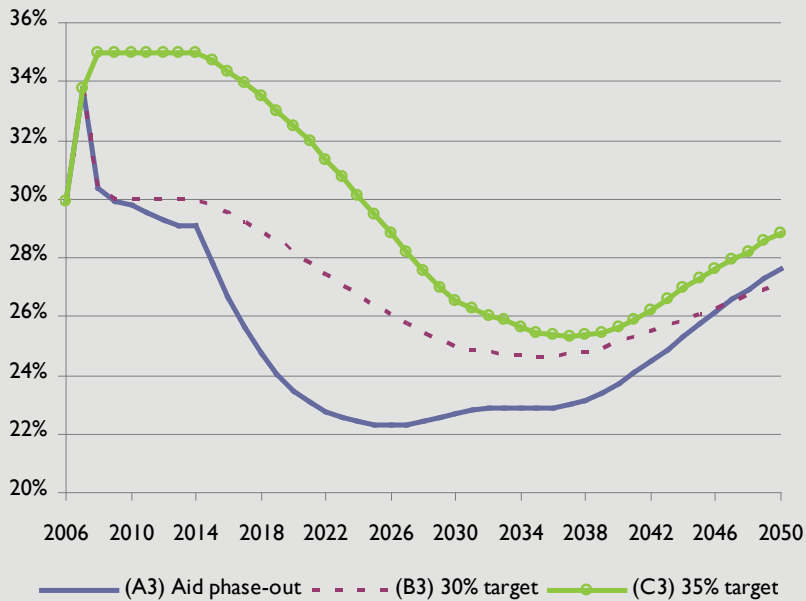
Fourthly, the debt accumulation scenarios (A3, B3 and C3) dramatically alter the interpretation of future financing possibilities. This is clearly seen in the path of effective government spending, shown in Figure 5, which indicates expenditure available for goods and services after external financing costs (ignoring internal debt costs). One sees that even where total government spending remains fixed at either 30% or 35% of GDP, effective government spending as a percentage of GDP must decline rapidly from 2015 due to the escalating costs of new debt. For example, effective government spending in 2040 is predicted to fall to 25.1%

¹⁴ Of course, the expectation that exports are elastic with respect to RER movements may be questioned; however, in principle a more competitive exchange rate would boost incentives to invest in exporting sectors. Moreover, evidence from numerous developing countries suggests that stable, credible under-valued exchange rates have played an important role in sustaining growth (e.g., Bhalla, 2008).

and 25.6% under Scenarios (B3) and (C3) respectively, which is comparable to the relative size of government under Scenario (A1) where aid is phased-out. On a per capita basis these findings are even more emphatic – in 2040 the index of effective real government spending per capita is expected to reach 160 under Scenario (C3), versus 199 in Scenario (A3) or 194 under Scenario (A1). The stock of new debt required to compensate for grant-based aid under the fixed expenditure scenarios also is very substantial – peaking at 43% and 77% of GDP under Scenarios (B3) and (C3) respectively. The point is that any future financing strategy which aims to maintain a fixed level of spending *and* adopts a more aggressive debt strategy would appear to yield few benefits relative to a pro-active reduction in grant-based aid. This is only underlined by the real income measures which also are depressed under the ‘fixed expenditure plus debt’ scenarios relative to the feasible aid-reduction scenarios (A1 and A3).

Finally, the role of national savings should not be ignored. The model strongly that any transition away from today’s current dependence on net inflows of grant-based

Figure 5: Effective real government spending as % GDP under debt accumulation Scenarios (A3), (B3) and (C3)



Source: author's calculations

foreign savings would require a very substantial increase in the rate of national savings. Scenario (A1), for example, requires national savings to increase to 26.8% of GDP by 2040 from current single digit levels. With debt accumulation, the need for savings only increases due to the fall in net aid caused by debt financing costs. Thus, even under Scenario (C3) where gross inflows of foreign savings remain robust, national savings would need to increase to 19.5% of GDP by 2040. Notably, these magnitudes of savings are broadly equivalent to (if not slightly lower than) those that have been sustained by successful Asian developers such as China and India over recent decades. On the other hand, where aid continues to top up government spending, there is little demand for similar increases in national saving precisely because investment can be funded through foreign inflows (private and public). This finding reinforces the key insight that no simple or automatic transition out of aid dependence can be assumed.

IV. Policy implications

The above analysis shows there are major trade-offs to consider under alternative spending and financing paths. At one extreme, a reduction of aid would necessitate (*inter alia*) a rapid increase in national savings and prolonged restraint on public expenditure growth once aid inflows begin to decline. At the other extreme, foreign aid to Mozambique would need to be sustained at least at current real levels or above over the (very) long-term in order to maintain real public expenditure in GDP at around today's levels. Providing this was not combined with a more aggressive debt strategy, the latter would present fewer challenges in terms of macroeconomic adjustment; however, it would also place the economy on a less dynamic long-term path as pressures for structural changes would be much reduced.

It is not within the scope of this paper to identify the appropriate path to follow. Fundamentally this must be determined by government objectives *and* evaluations of the likely availability of foreign savings over the longer-term. The relevant challenge for policy-makers, however, is to confront these strategic questions as well as enhance capacity to establish, maintain and monitor a defined long-term aggregate spending path. As such, a principal recommendation is to develop a long-term public financing and expenditure strategy that defines the aggregate spending path to follow and sets out corresponding fiscal and monetary targets (or rules). An intermediate step towards this must be to undertake a more detailed analysis of the minimum level of government expenditure in GDP (i.e., core recurrent spending, maintenance needs and spending on social entitlements) as well as its expected rate of growth. Strengthening of aggregate expenditure management also must be assured through development of tools to (pre-)evaluate the extent to which new aid-financed initiatives cohere with long-term spending limits.

Actions on the side of donors will also be critical. In particular, greater coordination between donors around aggregate aid volumes as well as support to government-led aid allocation processes should be emphasised. Additionally, and in order to support a sustainable spending profile, it would be prudent to ensure that (new) aid-financed interventions incorporate credible and enforceable fixed time horizons where support to recurrent spending is included. This is relevant as 'competition' amongst donors presently means that even where one donor wishes to scale-back

support to a given project, other donors fill the gap. Thus, coordination among donors around aid exit strategies will be necessary.

It should be stressed that many of these challenges are within the government's grasp. At least for the major sectors, coherent spending plans which address long-term sustainability issues are largely in place. However, an outstanding challenge is to translate these into a consistent aggregate plan which takes into account the wider fiscal and macroeconomic effects of different spending choices. Progress in public financial management (see footnote 8), is putting the government in a stronger position to accurately identify the division between recurrent and investment spending. Thus, in contrast to contemporary use of the current budget deficit as an indicator of budget sustainability, the development of more meaningful alternatives should be possible.

Continued capacity building in central ministries will be necessary to bolster aggregate economic analysis and management, particularly in macroeconomic and fiscal policy. The modelling exercise has demonstrated that macroeconomic and fiscal plans must be sensitive to the competitiveness of the exchange rate in light of expected future aid inflows. Strong price incentives to (traditional) exporters will be vital for macroeconomic sustainability and can help deal with potential negative shocks to foreign capital inflows. Additionally, robust and effective public debt management will be critical, particularly as concessional loans that have been agreed over the last decade will become due for repayment during the potential transition period away from aid (2015-2025). Capacity to address aggregate macroeconomic issues is becoming all the more essential with the reduced role of the IMF. Mozambique no longer has a formal financing programme with the IMF but rather operates under the auspices of a Policy Support Instrument (PSI)¹⁵. Not only does this entail 'lighter touch' monitoring, but also indicates the Fund may have a lower degree of leverage over domestic policy compared to budget support donors. However, reflecting the past dominance of the Fund, to date the latter group has developed limited in-country capacity in macroeconomic and aggregate fiscal analysis. This may well need to change.

Three more general policy suggestions also arise from the analysis. Firstly, greater emphasis on efficiency and value-for-money in public spending not only is important *per se*, but also will be critical to support future 'belt-tightening' if or when aid

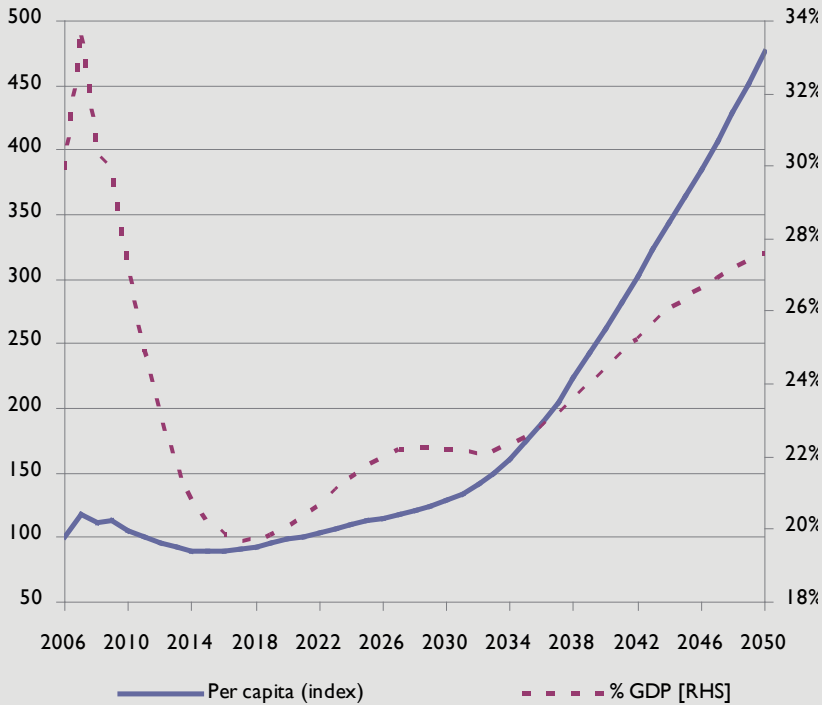
¹⁵ For more details see: <http://www.imf.org/external/np/exr/facts/psi.htm>

inflows decline. Secondly, relevant measures to support higher national savings should be identified as a matter of priority. Thirdly, it goes without saying that continued strengthening of domestic taxation will be critical to achieve greater financial independence. How best this can be achieved, however, remains a moot point (for discussion see Jones and Arndt, 2007). In the minimum, long-term revenue sustainability rather than short-term gains must be emphasised. In this regard one should be aware that changes to macroeconomic balances have taxation effects. There is some evidence, both for Mozambique (e.g., Peiris, 2008) and elsewhere (Gupta, 2007; Gupta et al., 2004), that high-levels of foreign aid may boost domestic tax inflows. Also, changes to national saving rates can be expected to affect taxation due to their effect on consumption. While these relationships have not been modelled fully here, they warn against over-interpreting short-term fluctuations in tax revenues as evidence of more sustainable gains.

Finally, it is helpful to highlight some of the main risks or threats that might undermine Mozambique's ability to achieve greater independence from (cheap) foreign savings. First is the risk of unmanaged expenditure creep, particularly where this engages the public sector in long-term spending commitments that cannot be retrenched. This goes much further than central government salaries, which have been a focus of attention in the past. A more comprehensive view needs to be taken, encompassing expenditures that currently may be found in the investment budget, including subsidies, support to decentralization and expansion of health services provision. In the present climate of significant pressure on spending to cope with global price rises and the 'new' agenda of agricultural development, careful control of aggregate public sector spending commitments will be essential¹⁶. A second related risk is that weak aggregate fiscal and macroeconomic policy coordination, associated with dominance of the sectors and their direct access to aid financing, facilitates the emergence of macroeconomic distortions such as an overvalued real exchange rate or other Dutch Disease effects. Third, accumulation of significant new debt, especially where this is not highly concessional in nature, would also create substantial macroeconomic challenges where effective government spending remains high.

¹⁶ In this regard one notes the government's recent commitment to increase agricultural spending from 4% to around 10% of total government spending over the next three years (<http://allafrica.com/stories/200806200111.html>). How this is to be achieved remains vague, especially as there has been no discussion of budget cuts to transfer funds from one sector to another. Additionally, there also have been suggestions of making significant increases in public sector salaries, although once again how this can be funded is unclear.

Figure 6: Real government spending in per capita and as % GDP under aid shock scenario (excludes debt accumulation)



Source: author's calculations

These points suggest a broader issue – the government must be watchful of further increasing its vulnerability to a negative aid shock. This is critical as many donors recently have expressed their increasing preoccupation over unchecked corruption and weaknesses in the justice sector (GRM and PAPs, 2008). Indeed, the model clearly shows that the macroeconomic implications of any large-scale reduction of aid would be considerable. Figure 6, for example, illustrates that if aid were to be reduced by 20% per annum starting in 2010 (i.e., an aid shock), government spending would need to fall dramatically in absolute (real) and relative terms over a sustained period. As shown by Scenario (A), even a gradual phase-out of aid will require substantial fiscal and macroeconomic tightening.

V. Conclusion

This study has emphasised the importance of addressing aggregate expenditure questions in low income, aid dependent countries. In the context of (potentially) increased levels of aid to meet the MDGs, governments must be wary of potential distortions and inefficiencies arising from larger government intervention as well as lock-in effects that would make retrenchment of public spending towards more sustainable levels both socially and politically difficult. Quantifying these issues for Mozambique via a new macroeconomic model shows that alternative spending paths imply very significant differences for key macroeconomic and fiscal variables. In particular, no automatic graduation from aid dependency is foreseeable over the medium- or long-term. In the absence of significant macroeconomic changes, such as to the real exchange rate, national savings or government spending growth, real aid will need to continue to expand for another generation. However, this is not to argue that aid independence is not feasible. On the contrary, simulations also suggest Mozambique would be able to achieve full domestic budget sustainability alongside macroeconomic health within 20 years; but this will depend on making (potentially tough) fiscal and macroeconomic adjustments during a period of at least a decade.

Considering the current context in Mozambique, the main policy message is that much greater attention needs to be given to aggregate macroeconomic and fiscal dynamics as opposed to sector-specific aid management processes. Both (budget support) donors and the government should focus on improving aggregate aid coordination and pay closer attention to the full range of long-term public spending commitments which are being made. If these cannot be controlled, the country's vulnerability to an aid shock will increase and the severity of adjustments required to transit towards enhanced fiscal sustainability will rise. Moreover, simply substituting grant-based aid for new non-concessional borrowing is unlikely to yield long-term benefits relative to managing a gradual phase-out of these grants. Strategic financing trade-offs do exist, complacency is not an option.

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Appendix A: Macroeconomic projections model

A.1 Solution rules

As discussed in the text (Section 4), three different solution rules determine some of the fundamental dynamics of the model. Rules I and III are relatively straightforward.

The RER updating mechanism of Rule II, given by equation (R2a), can be understood as a sequential decision based on the return values from equations (R2b) and (R2c). The first of these decides whether there has been sufficient movement in the reserve coverage measure in the previous period (RVC_{t-1}) to warrant a change in the real exchange rate. If so (i.e., the return in equation (R2b) is null), then either a real depreciation or appreciation is determined according to the sign of the deviation of actual reserve coverage from its target (φ_4). The size of RER movement depends on the magnitude of the deviation, up to a maximum change equivalent to 5% of the previous period's RER. For example, a worsening of the reserve coverage measure may lead to a relative depreciation equal to the difference between the reserve coverage measure and the target multiplied by a third of a percentage point (or 5%, whichever is smaller).

Note that target parameters are denoted by the Greek character phi (φ), as described in sub-section B.3 below.

Rule I: fiscal path

$$(R1) \quad GAID_t = \begin{cases} \varphi_1 GAID_{t-1} & \text{if aid is to be phased-out} \\ P_t(\varphi_2 Y_t - REV_t)/(KPI_t \cdot E_t) & \text{otherwise} \end{cases}$$

Rule II: real exchange rate regime

$$(R2a) \quad E_t = \begin{cases} [(1 + \varphi_3)RER_{t-1}]/(MPI_t/DPI_t) & \text{if a fixed RER regime is chosen} \\ [ERULE_t \cdot RER_{t-1}]/(MPI_t/DPI_t) & \text{otherwise} \end{cases}$$

$$(R2b) \quad \psi_t^{RVC} = \begin{cases} 1 & \text{if } \{ |RVC_{t-1} - RVC_{t-2}| < 1/3 \} \ \& \ \{ RVC_{t-1} > \varphi_4/3 \} \\ 0 & \text{otherwise} \end{cases}$$

$$(R2c) \quad ERULE_t = \begin{cases} 1 & \text{if } \psi_t^{RVC} \\ \max[(0.95), (1 - (RVC_{t-1} - \varphi_4)/300)] & \text{if } \psi_t^{RVC} \ \& \ (RVC_{t-1} - \varphi_4) > 0 \\ \min[(1.05), (1 - (RVC_{t-1} - \varphi_4)/300)] & \text{otherwise} \end{cases}$$

Rule III: debt accumulation strategy

$$(R3) \quad DEBT_0 = \begin{cases} 0 & \text{if no new debt accumulation will occur} \\ \varphi_5 & \text{otherwise} \end{cases}$$

A.2 Core equations

As is typical of models of this genre the core equations can be subdivided between relevant economic domains. Reading of the model is assisted by the following notation conventions:

- all variables are stated in block capitals;
- all parameters are in lower case Greek characters;
- target parameters are denoted by the Greek character phi (φ);
- exogenous growth rates are denoted by the Greek character pi (π);
- dot accents are used to indicate proportional changes (growth rates);
- delta operators (Δ) indicate absolute changes between adjacent periods;
- and
- $E[\cdot]$ is the expectations operations for which Ω_t represents the information set at time t .

Real sector

$$(M1) \quad \dot{y}_t = E[\dot{y}_t | \Omega_{t-1}] \\ = \lambda_1 \dot{y}_{t-1} + (1 - \lambda_1) \left\{ \pi_{1t} + \theta_{t-1} (\lambda_2 RVS_{t-1}) + (1 - \theta_{t-1}) \left(\lambda_3 \frac{\Delta DC_{t-1}}{Y_{t-1} P_{t-1}} \right) \right\}$$

$$(M2) \quad I_t / Y_t = v_1 + v_{2t} E[\dot{y}_{t+1} | \Omega_t] = S_t / Y_t$$

Government sector

$$(M3) \quad REV_{t+1} = \{\tau_{1t} M_t + \tau_{2t} Y_t + \tau_{3t} (Y_t - S_t)\} \cdot \{Y_{t+1} / Y_t\}$$

$$(M4) \quad DEBT_t = (1 - \delta_1) DEBT_{t-1} + \delta_{2t} GAID_t$$

$$(M5) \quad NAID_t = GAID_t - (\delta_1 + \delta_3) DEBT_t$$

$$(M6) \quad G_t P_t = REV_t P_t + NAID_t \cdot KPI_t \cdot E_t$$

$$(M7) \quad \log(M_t^g) = \beta_1 + \beta_2 \log(G_t) + \beta_3 \log(RVI_{t-1}) + \beta_4 \log(RER_t)$$

External sector

$$(M8) \quad \log(X_t) = \log(1 + \pi_{2t}) + \log(X_{t-1}) + \chi_1 \log(RER_t)$$

$$(M9) \quad \log(M_t^p) = \alpha_1 + \alpha_2 \log(Y_t - REV_t) + \alpha_3 \log(RVI_{t-1}) + \alpha_4 \log(RER_t)$$

- (M10) $M_t = M_t^p + M_t^g$
(M11) $CURBAL_t = X_t \cdot XPI_t - M_t \cdot MPI_t$
(M12) $K_t = K_{t-1} [1 + \kappa_1 \pi_{3t} + \kappa_2 \dot{y}_{t-1} + (1 - \kappa_1 - \kappa_2) R\acute{E}R_t]$
(M13) $\Delta R_t = CURBAL_t + KPI_t (K_t + NAID_t)$
(M14) $RVC_t = (12 \cdot R_t) / (M_t \cdot MPI_t)$
(M15) $RVI_t = RVC_t / \varphi_4$
(M16) $RVS_t = E_t(R_t - \varphi_1 \cdot M_t \cdot MPI_t) / (12 \cdot Y_t P_t)$

Monetary sector

- (M17) $L_t^s = L_t^d = 1/\eta Y_t P_t$
(M18) $\Delta L_t^s = \Delta(R_t E_t) + \Delta DC_t$

Prices and exchange rates

- (M19) $XPI_t = XPI_{t-1} (1 + \rho_1)$
(M20) $MPI_t = MPI_{t-1} (1 + \rho_2)$
(M21) $DPI_t = DPI_{t-1} (1 + \rho_3)$
(M22) $KPI_t = KPI_{t-1} (1 + \rho_4)$

A.3 Variable and parameter descriptions

The following tables provide a complete reference of all variables, targets and parameters used in the model including the values applied throughout the different scenarios.

Table A.3.1: Model variables

Var.	Description	Units
CURBAL	Current account balance	Nominal US\$
DC	Net domestic credit (public and private sectors)	Nominal LCU
DEBT	Stock of new public sector debt	Real US\$
DPI	Domestic price index (non-tradables)	2006 = 1
G	Government expenditure	Real LCU
GAID	Gross aid	Real US\$
KPI	Foreign capital price index	2006 = 1
L ^d	Money demand	Nominal LCU
L ^s	Money supply	Nominal LCU
M ^g	Government sector imports	Real US\$
M ^p	Private sector imports	Real US\$
MPI	Import price index	2006 = 1
NAID	Net aid	Real US\$
P	General price index	2006 = 1
R	International reserves	Nominal US\$
RER	Real exchange rate	Real LCU
REV	Public sector domestic revenue (tax + non-tax)	Real LCU
RVC	Coverage of imports by international reserves	Months
RVI	Index of RVC against international reserve target	$RVC / \varphi_4 = 1$
RVS	Ratio of surplus of international reserves above target value	% GDP
S	National savings	Real LCU
X	Exports	Real US\$
XPI	Export price index	2006 = 1
Y	Gross domestic product	Real LCU
θ	Share of imports in total spending (absorption)	Weight

Table A.3.2: Model targets (rule-/scenario- dependent)

Target	Description	Value by scenario		
		(A)	(B)	(C)
φ_1	Rate of aid phase-out	10%	-	-
φ_2	Fixed government expenditure target	-	30%	35%
φ_3	Fixed real exchange rate path (Rule II)	0%	0%	0%
φ_4	Coverage of imports by international reserves (in months)	8.5	8.5	8.5
φ_5	Starting proportion of new debt in gross aid (Rule III)	10%	10%	10%

Table A.3.3: Time dependent parameters

Var.	Description	Start value	Trend
π_{1t}	Exogenous growth in national income	6.0%	$\pi_{1t} = \pi_{1t-1}$
π_{2t}	Exogenous growth in exports	5.5%	$\pi_{2t} = \pi_{2t-1}$
π_{3t}	Exogenous growth in private capital inflows	5.5%	$\pi_{3t} = \pi_{3t-1}$
v_{2t}	Inverse of marginal productivity of capital	$(4.82)^{-1}$	$v_{2t} = 1.01 v_{2t-1}$
τ_{1t}	Effective rate of taxation on imports	10%	$\tau_{1t} = \tau_{1t-1}$
τ_{2t}	Effective rate of taxation on income	4.5%	$\tau_{2t} = 0.20\% + \tau_{2t-1}$
τ_{3t}	Effective rate of taxation on consumption	7.5%	$\tau_{3t} = 0.15\% + \tau_{3t-1}$
δ_{2t}	Proportion of new debt in gross aid (max = 80%)	ϕ_5	$\delta_{2t} = 5\% + \delta_{2t-1}$

Table A.3.4: Fixed parameters

Parameter	Equation	Description	Value
λ_1	M1	Weight of past period growth	0.50
λ_2	M1	Weight of foreign currency availability proxy	0.50
λ_3	M1	Weight of domestic credit growth	0.50
v_1	M2	Fixed component of investment requirement	3.00
δ_1	M4, M5	Amortization rate on new debt stock	7.5%
δ_3	M5	Interest cost of new debt	5%
β_1	M7	Government import demand intercept	-4.15
β_2	M7	Spending elasticity of government imports	1.00
β_3	M7	Elasticity of government imports to FX availability	0.20
β_4	M7	RER elasticity of government imports	-0.30
χ_1	M8	RER elasticity of exports	0.10
α_1	M9	Private sector import demand intercept	-4.2
α_2	M9	Real post-tax income elasticity of private sector imports	1.00
α_3	M9	Elasticity of private sector imports to FX availability	0.20
α_4	M9	RER elasticity of private sector imports	-0.50
κ_1	M12	Weight of exogenous growth component	0.80
κ_2	M12	Weight of past period growth	0.15
η	M17	Velocity of money	3.5
ρ_1	M19	Annual export price inflation	3.0%
ρ_2	M20	Annual import price inflation	3.5%
ρ_3	M21	Annual domestic price inflation	5.0%
ρ_4	M22	Annual foreign capital price inflation	3.0%

