

## Appendix I. SACU and SACU Revenues

The Southern African Customs Union (SACU), the oldest customs union in the world, was established in 1910.<sup>1</sup> It aims to (1) facilitate trade between SACU members, (2) generate trade benefits for all member states, (3) promote fair competition and open investment opportunities, and (4) promote economic development and competitiveness through integration into the global economy. All customs and excise revenues collected in the member states are pooled into the Common Revenue Pool (with South Africa as custodian) and shared among the members according to a revenue-sharing formula (RSF) that was last revised in 2002.<sup>2</sup> The revenues are comprised of the following three components:

- The customs revenues are allocated according to members' share in intra-SACU trade.
- The excise component, 85 percent of the total excise pool, is allocated based on members' share in SACU's GDP.
- The development component, fixed at 15 percent of the total excise pool, is distributed to all SACU members according to the inverse of each country's per capita GDP.

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<sup>1</sup>This appendix is based on Im 2015 and Centre for International Economics 2011.

<sup>2</sup>The initial RSF established under the 1910 agreement was revised in 1969 and 2002. The 1969 revision included excise duties in the pool and provided for a multiplier that enhanced revenues by 42 percent annually. It also linked the customs revenues to not only extra-SACU imports but also intra-SACU imports. The 2002 revisions defined customs revenues in relation to intra-SACU imports, separated the excise pool into the excise and development components, and agreed on the administrative institutional structure of the RSF.

Pooled SACU revenues are shared according to the following formula:

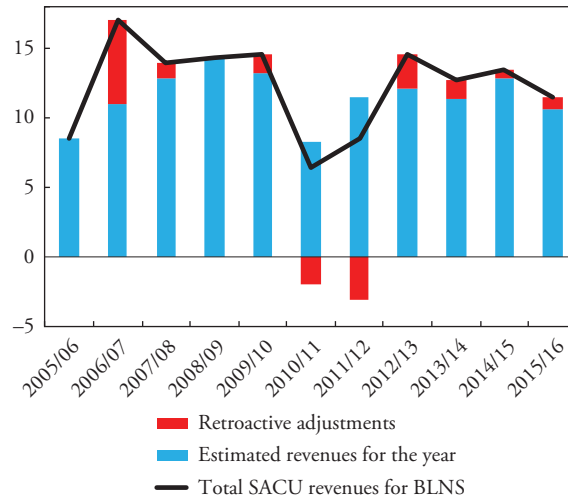
$$R_i = \frac{M_i^{int}}{\sum_i M_i^{int}} \times C + \frac{GDP_i}{\sum_i GDP_i} \times E \times 0.85 + \left[ 1 - \frac{GDP_i^{PC}}{\sum_i GDP_i^{PC/5}} \times \frac{1}{10} \right] \times \frac{1}{5} E \times 0.15$$

where  $R_i$  is the total revenue received by country  $i$ ,  $C$ , and  $E$  are total customs and excise revenue,  $GDP_i$  is country  $i$ 's GDP, and  $GDP_i^{PC}$  is country's  $i$  GDP per capita.

The customs revenue base tends to move procyclically and display wider swings than output. Moreover, a high share of the customs pool comprises duties on imported vehicles, which tend to be even more volatile than overall imports. Ex ante revenues are estimated based on projected imports and excise collections, and are adjusted ex post with a two-year lag to reflect actual collections. As suggested by Figure A1, a shock could impart sizable changes in the SACU pool, including through retroactive adjustments. In 2010–11 Lesotho and Swaziland were hit twice: (1) by a lower forecast of current SACU revenues, and (2) by the downward adjustment of past SACU revenues. The size of adjustment was particularly significant for Lesotho and Swaziland—two countries with high dependency in SACU revenues.

As Cuevas 2015 points out, the revenue transfer and adjustment mechanism embedded in the current SACU revenue sharing agreement can augment the variability of actual SACU transfers (forecast amount plus adjustment) in the

**Figure A1. Retroactive Adjustments for SACU Revenues for Botswana, Lesotho, Namibia, and Swaziland (BLNS)**  
(Percent of GDP)



presence of serial correlation in revenues that feed into the SACU Common Revenue Pool, with the variance of SACU transfers estimated to be 38 percent higher than the variance of the actual revenues that Botswana, Lesotho, Namibia, and Swaziland are entitled to receive.

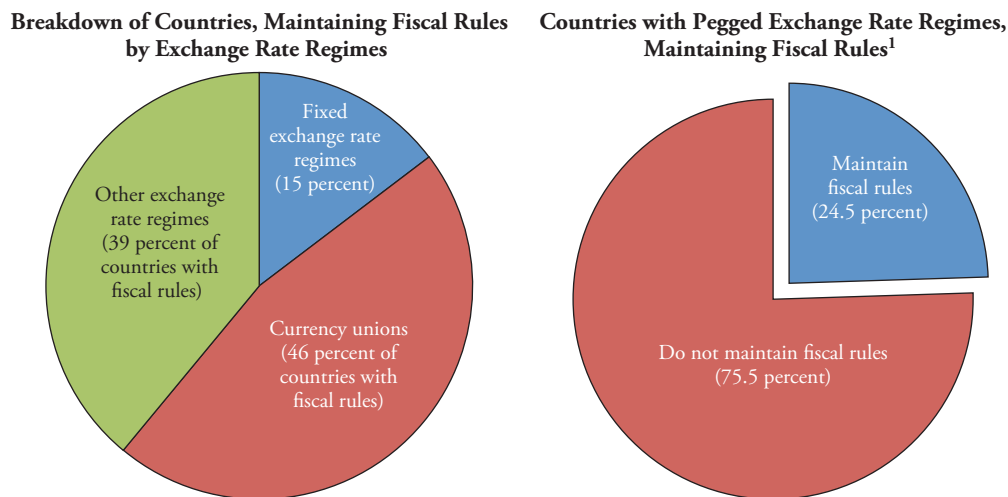
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## Appendix II. Fiscal Rules: International Experience

**Over the past two decades, a significant number of countries have adopted fiscal rules to deal with uncertain and highly volatile fiscal revenues.** Emerging market and developing economies comprised close to two-thirds of countries maintaining fiscal rules (Schaechter and others 2012). The most prevalent fiscal rules are expenditure rules (ERs), albeit with differences in features between those in advanced and developing/low-income economies. The ERs tend to be combined with balance budget and/or debt rules to provide a stronger anchor for debt sustainability. This appendix summarizes the experiences of countries relevant for Swaziland and Lesotho.

- *Resource-rich countries* often adopt fiscal rules to mitigate revenue volatility caused by commodity price fluctuations and to ensure intergenerational equity. These countries often target nonresource fiscal balances and choose price-based fiscal rules as fiscal policy anchors to mitigate boom-bust cycles and Dutch disease, and to address long-term vulnerabilities. These anchors allow the governments to smooth expenditures by delinking them from volatile revenues, helping to avoid procyclical policies. IMF 2012b points out that a price-based fiscal rule can mitigate the transmission of commodity price volatility in selected resource-rich countries.
- *Countries under pegged exchange rate regimes* also have adopted fiscal rules to ensure fiscal discipline, given the limited role of monetary policy in these countries. All members of currency unions (and about one-quarter of countries with no separate legal tender), currency boards, and fixed exchange rate regimes maintain fiscal rules, compared with only 17 percent of countries with more flexible exchange regimes (Figure A2). Countries under fixed exchange rate regimes need ample reserves to maintain the credibility of their peg. Furthermore, countries with limited or no access to international financial markets need even higher reserves to avoid abrupt

Figure A2. Fiscal Rules and Exchange Rate Regimes



Source: IMF, 2013 Fiscal Rule Dataset and staff estimates.

<sup>1</sup>Including countries with no separate legal tender, currency boards, and conventional pegs.

and costly adjustment during bad times. Several countries—Kosovo, Hong Kong SAR, Lithuania, and Cabo Verde—used rules-based fiscal policy to maintain external stability, including through adequate international reserves. The implementation of fiscal rules in countries with fixed exchange rate regimes has been uneven.<sup>1</sup> Hong Kong SAR, for instance, has been compliant with its fiscal rule, while Ecuador, Kosovo and Cabo Verde often deviated from them, as the rules were unclear and/or frequently modified. Countries with a stronger track record in implementing fiscal rules seem to have greater market access, more efficient markets, and stronger Personal Financial Management.<sup>2</sup>

**Many countries with volatile fiscal revenues established nonrenewable resource funds that complement fiscal rules.** Often these are stabilization funds, used as a mechanism for insulating the budget and the economy from revenue shocks. Experience to date has been mixed. Stabilization funds have contributed to enhancing the effectiveness of fiscal policy by making budget expenditure less driven by revenue availability and reducing fiscal policy procyclicality (Fasano 2000, 19). However, in some cases—Venezuela and

<sup>1</sup>Strong legal basis ensured the compliance of fiscal rules in Hong Kong SAR. Hong Kong SAR has been maintaining a balanced budget rule since 2002. The authorities have maintained countercyclical fiscal policy and actual performance exceeded the budget in most years.

<sup>2</sup>The legal basis for fiscal rules ranges from political commitment to coalition agreement, guidelines, statutory norms, national law, and the constitution. Often the special legislation, particularly in Organisation for Economic Co-operation and Development (OECD) countries, includes stringent procedural rules on accountability, transparency, and fiscal stability.

Oman—stabilization funds were less successful owing to frequent changes in the funds' rules and deviations from their intended purposes. While nonrenewable resource funds might enhance political acceptance for saving windfalls, they cannot substitute for sound fiscal management and may give rise to spending pressures (Davis and others 2001, 27).

**A stabilization fund or a special account may be needed to operationalize a fiscal rule.** The fund needs to be carefully designed to strengthen government incentives to save/invest windfall revenues, and to prevent excessive spending. Some key features of a well-designed fund include (1) effective integration with the budget, (2) an appropriate asset-management strategy, and (3) mechanisms to ensure transparency and accountability (Davis and others 2001, 28). An independent civil service and political stability may contribute to the success of a stabilization fund (Bagattini 2011).

**Stabilization funds—if properly designed and implemented—can facilitate fiscal objectives and support the implementation of fiscal rules.** Fiscal rules often determine the pace of accumulation of stabilization funds. For example, the replenishment of the Economic and Social Stabilization Fund in Chile is directly linked to budget performance. Similarly, the fiscal rule in Panama is consistent with the rate of resource accumulation in the Savings Fund. In Ecuador, the ceiling on government spending is supposed to secure resources for a partial transfer of oil revenues into the Oil Stabilization Fund, although this link is not direct. Some countries, like Costa Rica, do not have a stabilization fund because the fiscal rule (balanced budget rule) limits borrowing, without building a buffer.

**Table A1. Countries with Fiscal Rules and Managed Exchange Rate Regimes**

No separate legal tender (12)	Currency Board (7)	Currency unions (40)	Conventional peg (30)	Managed by central banks (52) <sup>1</sup>
Ecuador	Hong Kong SAR	Eastern Caribbean Currency	Maldives	Croatia
Kosovo	Bulgaria	Union (8)	Cabo Verde	(sub-national)
Panama	Estonia	West African Economic and	Denmark	Jamaica
	Lithuania	Monetary Union (8)	Latvia	Sri Lanka
		Central African Economic and	Namibia	Botswana
		Monetary Community (6)		Costa Rica
		Euro zone (18)		Liberia
				Singapore
				Nigeria
				Malaysia

Note. Numbers in parentheses indicate the number of countries maintaining a certain exchange rate regime.

<sup>1</sup> Managed by central banks with different degrees of flexibility.

Source: IMF, 2013 Fiscal Rule Dataset and staff estimates

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## Appendix III. Baseline Calibration: Parameter Setting

Structural Parameters		Value
<i>Preference</i>		
Degree of home bias	$\varphi$	0.54
Elasticity of substitution between traded and nontraded goods	$\chi$	1.5
Elasticity of substitution between variety	$\theta$	12
Elasticity of substitution between consumption and money demand	$\eta$	8.5
Frisch labor supply elasticity	$\psi$	2.5
<i>Production</i>		
Labor income share	$\alpha_T, \alpha_N$	0.7
Investment adjustment cost	$\kappa_T, \kappa_N$	25
Productivity of traded sector in the steady state	$\bar{z}^T$	1 (normalization)
Persistence of learning-by-doing (LBD) externality	$\rho_Z$	0.03
Depreciation of private capital	$\delta$	0.015
Depreciation of public capital	$\delta_g$	0.02

Steady-State Parameters		Lesotho	Swaziland
SACU revenue (in % GDP)	$\bar{A}^*$	27.4	18.4
Share of public investment (out of total public spending)	$\mu_s$	35.7	17.4
Capital mobility	$v$	500	500
Private consumption (in % GDP)		80	80.5
Private investment (in % GDP)		17	5
Public consumption (in % GDP)		28.1	21.1
Public investment (in % GDP)		12.6	4.5
Export (in % GDP)		42.2	56.1
International reserve (in % GDP; equivalent to five months of imports)		40.5	29.1

Note: Parameter setting follows the Gleneagles model established by Berg and others 2010.

## Appendix IV. Baseline Calibration: Policy Parameters

Policy Parameters		Balanced Budget Rule (BBR)	Structural Surplus Rule (SSR)
<i>Fiscal policy</i>			
Spending policy (deposit accumulation)	$\gamma$	0 (no saving)	1 (full saving)
Efficiency of public spending	$s$	0.4	0.4
Efficiency of aid-financed public spending	$A$	0.4	0.4
<i>Monetary/Exchange rate policy</i>			
Degree of sterilization	$g$	0	0
Inflation targeting coefficient	$\phi_{\pi}$	1.5	1.5

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