

INTERNATIONAL DEVELOPMENT ASSOCIATION
AND INTERNATIONAL MONETARY FUND

RWANDA

Joint World Bank/ IMF Debt Sustainability Analysis

Prepared by the Staffs of the International Development Association
and the International Monetary Fund

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This debt sustainability analysis (DSA) assesses the sustainability of Rwanda's external and domestic public debt. It was conducted jointly by the staffs of the World Bank and the IMF using the Bank-Fund framework for debt sustainability analysis for low-income countries.¹ On the basis of this DSA, the staffs conclude that Rwanda continues to be at high risk of debt distress.²

I. BACKGROUND

1. **The last joint DSA concluded that Rwanda is at high risk of debt distress.³** Rwanda reached the HIPC completion point in April 2005 and qualified for the MDRI in January 2006, which substantially improved its debt indicators.⁴ Nonetheless, given its small export base and vulnerability to shocks, the DSA concluded that continued high levels of

¹ The external debt data and domestic debt data underlying this DSA are to be confirmed by the Rwandan authorities.

² A country is considered at high risk of debt distress if the baseline scenario indicates a protracted breach of debt or debt-service thresholds, but the country does currently not face any payment difficulties (SM/07/131).

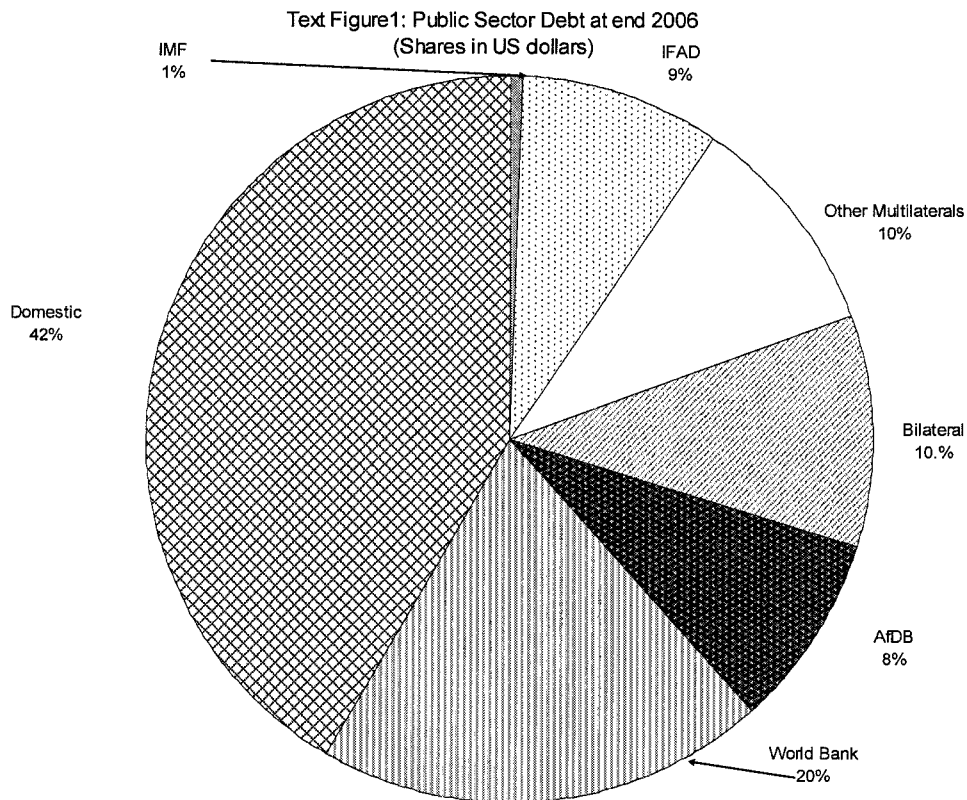
³ The last DSA was undertaken in May 2006 (Appendix VI in EBS/06/69, May 25, 2006 and Annex IX ISN/35331/RW, August 16, 2006).

⁴ The implementation of debt relief under the enhanced HIPC initiative is at an advanced stage. In addition to the IDA, IMF and AfDB, completion point and topping up assistance have been provided by BADEA and the OPEC Fund. IFAD, the Kuwait Fund, the Saudi Fund and the EU have already provided completion point assistance. Bilateral agreements have been signed with all Paris creditors. Regarding non-Paris Club creditors, China has canceled all outstanding loans, while Saudi Arabia and Kuwait noted the possibility of future debt relief. Debt owed to Libya and the Abu Dhabi Fund continues to be in technical arrears.

grants were needed to maintain the NPV of external debt-to-exports ratio at sustainable levels.

2. Total public sector debt declined in 2006 due to implementation of the MDRI.

External debt outstanding amounted to 16.7 percent of GDP at end-2006, down from 70.7 percent of GDP at end-2005. Domestic debt⁵, including pre-genocide debt, amounted to 12 percent of GDP at end-2006.⁶ In terms of the composition by creditor, about half of public debt at end-2006 was with multilaterals and 10 percent with official bilaterals, the remainder being domestic (Text Figure 1).



⁵ The last DSA did not include domestic debt because data on pre-genocide debt were not available.

⁶ Information on the stock of domestic debt at end-2005 is pending from the authorities. There is no information available on local government or public enterprise debt.

3. Rwanda's external debt situation in 2006 was more favorable than envisaged in the last DSA, due to stronger export performance:

- A substantial over performance in exports of tea and coffee as well as tourism services more than offset slightly higher borrowing in 2006⁷ (Text Table 1). As a result, the actual NPV of external debt-to-exports ratio was 55 percent at end-2006, compared with a ratio of 66 percent projected in the last DSA.⁸

Text Table 1. Projected Versus Actual NPV of External Debt-to-Exports Ratio at End-2006
(In percent)

NPV of debt-to -exports in 2006 as projected in previous DSA	65.6
Actual NPV of debt-to exports in 2006	54.8
Factors contributing to changes:	
New borrowing	(1.2)
Exports (higher than anticipated)	9.4
Residual 1/	2.5

Source: Staff estimates.

1/ Includes exchange rate changes

4. Despite these favorable developments, the revised DSA concludes that Rwanda remains at high risk of debt distress because of its small export base. This DSA includes higher spending deemed critical for advancing more rapidly toward the MDGs and addressing Rwanda's severe infrastructure gap. While most of the spending would be covered by higher revenue and grants, an increase in external loan financing would also be required. Given these assumptions, trends in debt indicators remain similar to those estimated in the previous DSA.

⁷ Actual borrowing at US\$72 million in 2006 was higher than projected by US\$8 million due to higher IDA financing.

⁸ Including debt relief provided at the decision point, topping up under the HIPC Initiative and MDRI debt relief.

II. Medium-Term Macroeconomic Framework

5. **The macroeconomic framework is more favorable than the one presented in the last DSA (Box 1)**⁹. The main changes are:

- Public spending is higher by about 4 percent of GDP on average per year, reflecting increased investment spending in the social sectors.
- The revenue ratio is higher because of a higher base in 2007 (revenue in 2007 is projected at 15.5 percent of GDP compared with 14.8 percent of GDP projected in the last DSA) and the expectation of a stronger effort to finance higher spending.
- The proportion of loans in total financing increases from about 10 percent in 2008 to an annual average of about 32 percent in 2009-12, and returns to 33 percent thereafter. In 2008 World Bank budget support is in the form of grants and is assumed as loans from 2009-2012. External grant financing from 2009-2012, excluding World Bank budget support, is in line with the authorities' estimates of *committed grants* as contained in the Economic Development and Poverty Reduction Strategy (EDPRS). The remaining financing gap from 2008-2012 is assumed to be financed with loans at 56 percent concessionality.
- Export growth has been revised upwards by 1 percentage point to an annual average of about 10 percent. The commodity export growth projection is in line with that of the authorities from 2008-2012. Exports of services are also projected to grow at an annual average rate of about 10 percent.

⁹ The authorities rebased the GDP from 2001, improving the methodology, while using updated information contained in the 2005 household survey. The underlying macroeconomic framework is based on the revised GDP estimates. However the old GDP series is used in this section to compare the assumptions of the current and previous DSA.

Box 1. Macroeconomic Assumptions

The macroeconomic assumptions are as follows:

Real GDP growth is projected to stabilize at about 6 percent for the projection period as growth-enhancing sectoral strategies take effect and investment in human capital (health and education sectors) starts to pay off. In the short term, growth is expected to be generated by boosting productivity in the agriculture and export sectors (mostly tea, coffee and mining) through improving water management, controlling soil erosion, intensifying the use of fertilizer, integrating livestock development into crop farming, and enhancing extension services. Over the long term, measures to facilitate trade and reduce transaction costs as well as investments in infrastructure and human capital are expected to boost growth in the services and manufacturing sectors.

Per capita GDP growth is projected to remain at about 3.5 percent from 2008-2027. This assumes a reduction in the rate of population growth over time (from the current level of 2.7 percent to 2.1 percent) as government policies to promote family planning, increase the distribution of contraceptives and raise the education level begin to take effect

Exports of goods and services are assumed to grow at a nominal rate of about 12 percent until 2013 in U.S. dollar terms as the export promotion strategy takes effect and stabilize thereafter at about 9 percent. Export growth reflects interventions aimed at increasing yield and value added in the coffee and tea industry through increased utilization of fertilizers, improved harvesting methods and better seed quality. Services exports are likely to remain buoyant on account of improved marketing efforts and increased hotel room capacity.

Imports of goods and services are projected to increase by 6 percent on average over the period 2007-27, mostly due to growing demand for capital good imports from the private sector, which is partly offset by substantially lower transportation costs because of better infrastructure links both internally and with neighboring countries.

Table 2. Rwanda: Medium-Term Framework,
(period average, 2007-2012, in percent of GDP)

	Current DSA New GDP ¹	Current DSA Old GDP	Sixth PRGF Review
Economic growth and inflation			
Real GDP (percentage change)	5.7	5.4	4.9
Real GDP (per capita)	3.6	3.3	2.2
Average inflation (in percent)	6.1	6.1	5.0
Fiscal sector			
Government revenue			
Excluding grants	13.8	16.0	14.8
Government expenditure and net lending			
Current expenditure	16.7	19.2	17.5
Capital expenditure	10.2	11.7	9.0
Primary budget balance	-4.4	-5.1	-2.0
Balance of payments			
Exports of goods and services	9.8	11.3	12.6
Imports of goods and services	30.1	34.9	29.2
External current account balance			
Excluding official transfers	-18.0	-21.2	-16.7
Including official transfers	-9.9	-11.2	-7.9
NPV of debt to export ratio	85.7	85.7	116.1
<u>Gross official reservess (in months of imports)</u>	5.1	5.1	4.6

¹ GDP series was rebased using new data derived from the 2005 household survey. The rebased series is more comprehensive in coverage with improved methodology broadly in line with international standards.

II. EXTERNAL DEBT SUSTAINABILITY ANALYSIS

A. Baseline

6. **One critical debt burden indicator would exceed its policy-dependent threshold in the baseline (Figure 1).** Rwanda's NPV of debt-to-exports ratio is projected to rise above 150 percent by 2018 and decline thereafter to be slightly below the threshold by 2027. The NPV of external debt-to-GDP ratio and the NPV of debt-to-revenue ratios remain well below their thresholds throughout the forecast period, while debt service payments continue to be manageable at below 10 percent of exports. Despite about one third of financing stemming from highly concessional loans from 2012 onwards, the NPV of external debt-to-exports ratio would breach the policy-dependent threshold of 150 percent by 2018, peaking at about 154 percent in 2020, and declining to 143 percent in 2027.¹⁰

¹⁰ The World Bank's CPIA classifies Rwanda as a medium policy performer.

Text Table 3: Policy-Based External Debt Burden Indicators

	Thresholds 1/	Rwanda's ratios	
		2007	2008-27 2/
NPV of debt in percent of:			
Exports	150	62	132
GDP	40	6	15
Revenue	250	43	97
Debt service in percent of			
Exports	20	1	4
Revenue	30	1	3

1/ Policy indicative thresholds as used in the joint IMF-World Bank LIC DSA framework for medium policy performance. The quality of policies and institutions are measured by the World Bank's CPIA index.

2/ Simple average.

7. **Including additional borrowing to finance the planned energy and agriculture projects contracted at less than 50 percent concessionality does not significantly alter the baseline estimates.**¹¹ The NPV of debt to export threshold would be breached in 2013 and peak at 177 percent in 2018.

B. Alternative Scenarios and Stress Tests

8. **Rwanda's debt dynamics would deteriorate sharply if external financing were delivered on less favorable terms.** A 2 percentage point increase in interest rates on all new borrowing (reflecting borrowing at less concessional terms) starting in 2007 would substantially increase Rwanda's NPV of debt-to-exports ratio, which would breach the threshold by 2012 and remain above 225 percent from 2017 onward.¹² This indicates that Rwanda should rely to a large extent on grants to finance its development efforts.

9. **Shocks to the small export base would substantially worsen Rwanda's NPV of debt-to-exports ratio.**¹³ If exports were to grow at the historical average less one standard deviation in 2008 (equivalent to a 11.6 percent reduction in exports in 2008 relative to the baseline). Rwanda's NPV of debt-to-exports ratio would exceed 150 percent from 2012

¹¹ Concessionality of these loans is assumed at about 40 percent (20 year maturity, 5 year grace period and interest rate of 1.75 percent).

¹² The 2 percent increase in interest rates would be equivalent to lowering the grant element to under 35 percent from 2009 onward (which is below the grant element of 50 percent required under the Rwanda's PRGF).

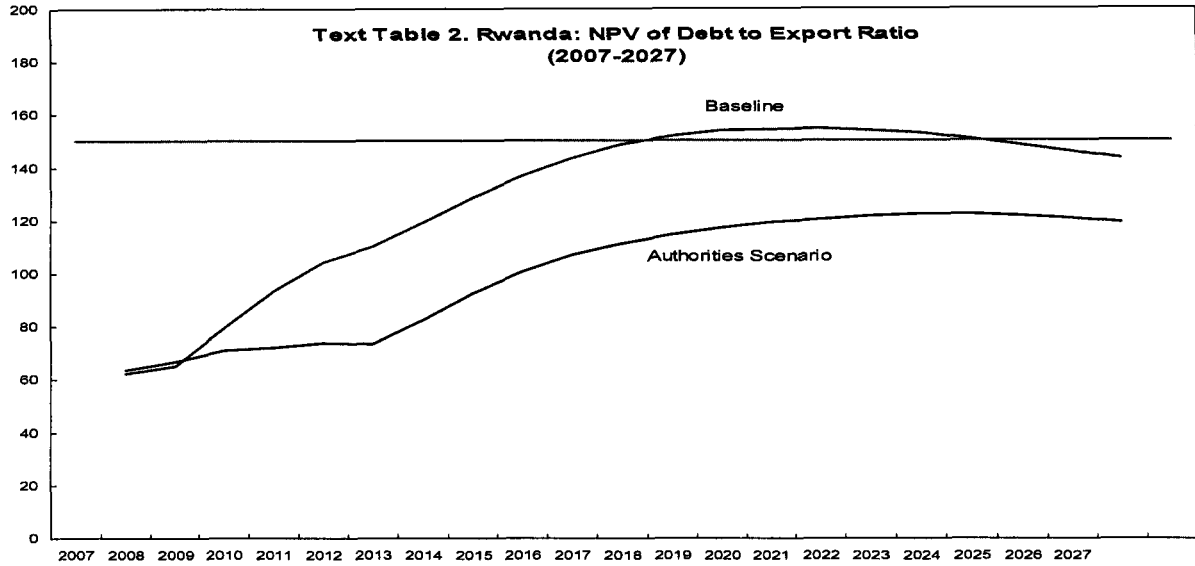
onward, peaking at over 202 percent in 2019.¹⁴ This scenario highlights the importance of effective export promotion to set Rwanda on a sustainable debt path.

10. Stress tests based on historical averages also indicate that Rwanda could experience an increased risk of debt distress. For instance, if key macroeconomic variables remained at historical values, the NPV of external debt-to-exports ratio would follow a persistent upward path reaching 166 percent in 2027.

11. Rwanda's risk of debt distress could be lower if the authorities are able to substantially raise the level of grant financing. Even with the inclusion of borrowing of about US\$180m to finance infrastructure projects (authorities' scenario, Text Figure 2)¹⁵, higher grant funding, in line with the authorities medium-term expectations, would improve Rwanda's debt dynamics. The authorities project lower debt financing than under the baseline scenario over the medium term, 2009-2012. In particular, they assume that (i) World Bank budget support funding will be in the form of grants, and (ii) 67 percent of the residual financing gap (after taking into account grants already committed) is funded through grants and the remainder with concessional loans with a grant element of 56 percent. Under this scenario the proportion of grants in total external financing would stand at about 90 percent from 2009-2012, highlighting the strong reliance on grant financing for budget support and development purposes and maintaining debt sustainability. From 2013 the proportion of grants in total financing is in line with the baseline (at 67 percent). As a result, the NPV of debt to export ratio, the only threshold breached in the baseline scenario, would remain below 150 percent throughout the forecast period, peaking at 124 percent in 2024 and declining thereafter.

¹⁴ The "historical" scenario is calculated on the basis of performance during 1997 to 2006.

¹⁵ The marginal growth impact of these projects is unknown and is assumed to be zero.



III. PUBLIC DEBT SUSTAINABILITY ANALYSIS

A. Baseline

12. **Rwanda's public debt burden (including domestic debt) is expected to stabilize over the projection period.**¹⁶ With moderate domestic financing over the long term, the NPV of domestic debt is expected to decline with the repayment of the pre genocide debt, stabilizing at about 5.8 percent of GDP from 2012 onward. This trend is partly offsetting the increase in external debt, so that the NPV of total public debt-to-GDP ratio would increase from 15 percent in 2007 and stabilize at about 20 percent in the long term. The debt service-to-revenue ratio would remain below 5 percent (Table 3).

B. Alternative Scenarios and Stress Tests

13. **Lower GDP growth would result in much less favorable debt dynamics.** Both growth-related stress tests (assuming growth at the historical average less one standard deviation in 2008-09 and permanently lower growth during 2009-27) imply a substantial worsening in all debt indicators (though all indicators stay below debt burden thresholds). This underscores the importance of selecting and investing only in infrastructure projects

¹⁶ The DSA excludes (1) contingent liabilities of the pension fund; and (2) possible take off government guarantees for the public power utility Electrogaz, which are not yet quantifiable because projects in the sector are still at an early stage.

with a high rate of return and undertaking structural reforms to set the stage for robust private sector growth.

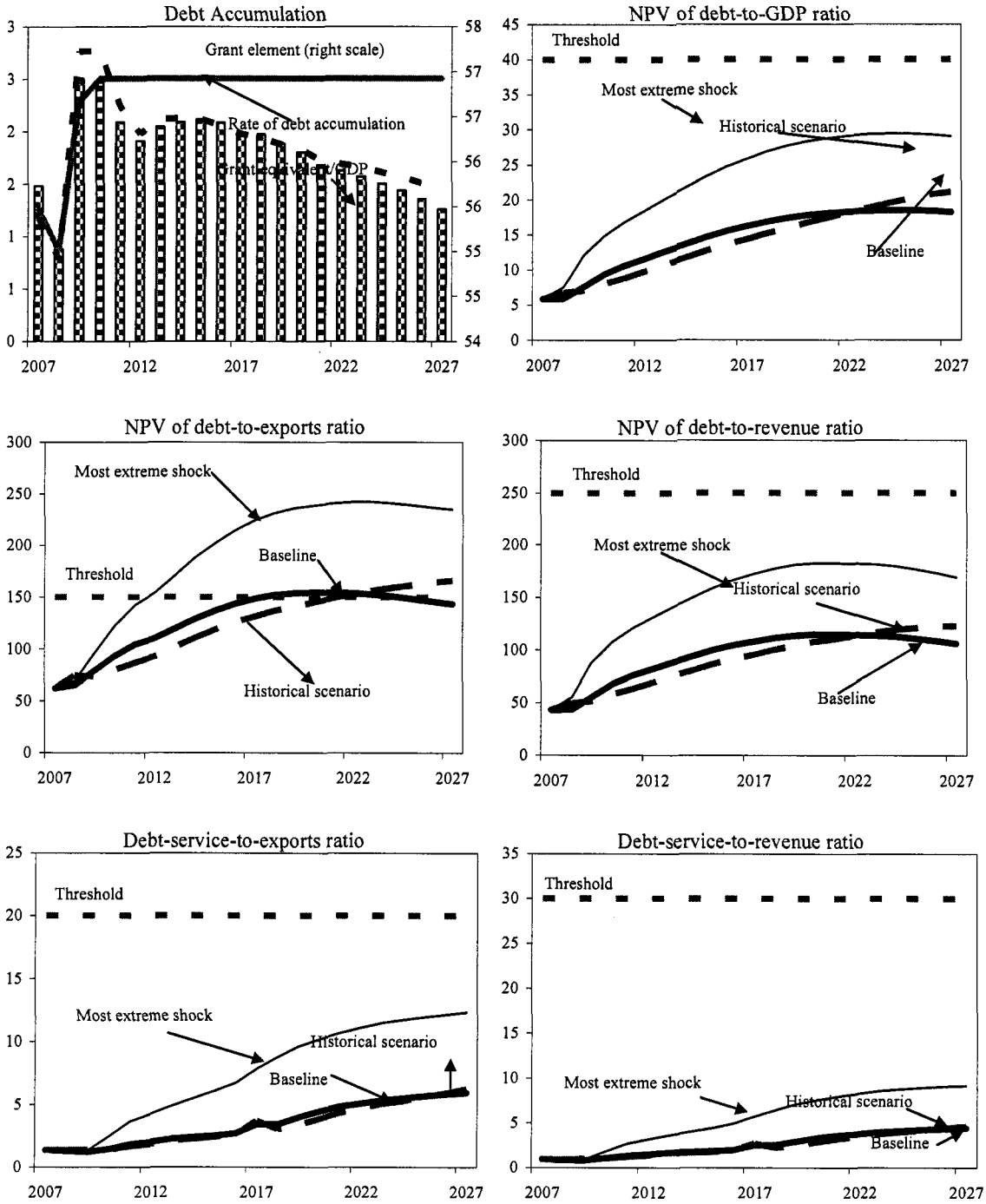
14. **Debt indicators would worsen under the no-reform scenario, where the revenue GDP ratio is unchanged from 2007 onward.** The NPV of debt-to-GDP ratio would climb to 80 percent by 2027. The NPV of debt to revenue ratio would follow an explosive path reaching 312 percent in 2027. This scenario highlights the importance of improving the revenue effort in order to reduce long-term aid dependence and attain debt sustainability.

IV. CONCLUSION

15. **Rwanda is at high risk of debt distress.** Despite reduced risk of near-term debt distress, owing to recent debt relief and favorable debt developments in the last year, exogenous shocks to exports or imprudent borrowing on nonconcessional terms could cause a rapid deterioration in the medium-term outlook. The alternative scenarios and stress test indicate that debt indicators are highly sensitive to less concessional financing and lower growth, particularly in exports.

16. **The DSA suggests that investment and structural reforms should focus on enhancing private-sector led growth and protecting Rwanda against shocks.** Reducing the cost of doing business, financial sector reform and infrastructure investments will be key. With support from both the EU and the World Bank, investments in road construction should help reduce the costs of transport as should regional projects through the Nile Basin Initiative, and a regional Bank project on transport. Rwanda is also consulting with donors on an energy sector strategy to systematically address its energy constraints in a sustainable manner. In addition, government is elaborating a strategy to develop vocational education and training, and ensure that the education system is producing the types of graduates that are most needed for employment and growth. These efforts, together with measures to promote exports, should not only raise overall growth, but also help improve the business and investment climate, and facilitate a strengthening and diversification of the export base. At the same time, the authorities are committed to reforms to improve expenditure and debt management and raise the revenue-to-GDP ratio for an eventual exit from donor flows.

Figure 1. Rwanda: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2007-2027



Source: Staff projections and simulations.

Table 1. Country: External Debt Sustainability Framework, Baseline Scenario, 2007-2027 1/
(In percent of GDP, unless otherwise indicated)

	Actual		Historical Average 6/	Standard Deviation 6/	Projections													
	2005	2006			2007	2008	2009	2010	2011	2012	2007-12 Average							
External debt (nominal) 1/	70.7	16.7			16.4	15.8	19.1	22.5	24.8	26.4		28.2	29.8	31.3	35.3	35.2	34.8	34.3
o/w public and publicly guaranteed (PPG)	70.7	16.7			16.4	15.8	19.1	22.5	24.8	26.4		28.2	29.8	31.3	35.3	35.2	34.8	34.3
Change in external debt	-14.3	-54.0			-0.2	-0.6	3.3	3.5	2.3	1.6		1.7	1.6	1.5	0.4	-0.2	-0.4	-0.5
Identified net debt-creating flows	-14.6	-14.0			-2.8	1.0	3.7	2.2	1.8	1.2		1.3	1.6	1.4	0.6	0.0	-0.2	0.2
Non-interest current account deficit	4.2	6.6	6.6	2.0	4.8	9.4	12.6	11.7	11.6	8.7		8.6	8.8	8.7	7.3	4.8	4.2	4.0
Deficit in balance of goods and services	18.4	17.2			18.3	22.4	21.9	20.3	21.1	17.7		17.6	17.5	17.1	14.4	10.9	10.3	10.1
Exports	9.5	10.1			9.4	9.1	9.6	10.0	10.2	10.6		10.6	10.6	10.7	11.6	12.5	12.6	12.7
Imports	27.9	27.4			27.7	31.5	31.4	30.3	31.2	28.3		28.2	28.2	27.8	25.9	23.4	22.9	22.8
Net current transfers (negative = inflow)	-15.1	-10.1	-11.1	2.2	-13.9	-13.1	-9.5	-8.8	-9.5	-9.0		-9.0	-8.7	-8.4	-7.0	-6.0	-6.0	-5.9
o/w official	-13.1	-8.6			-11.1	-10.5	-7.0	-6.3	-7.0	-6.6		-6.5	-6.2	-6.0	-4.5	-3.3	-3.3	-3.2
Other current account flows (negative = net inflow)	1.0	-0.6			0.4	0.1	0.3	0.2	0.1	0.0		0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2
Net FDI (negative = inflow)	-4.6	-8.8	-4.3	2.0	-6.8	-7.7	-8.2	-8.7	-8.7	-6.3		-6.1	-5.9	-5.9	-5.0	-3.2	-2.8	-2.2
Endogenous debt dynamics 2/	-14.3	-11.8			-0.8	-0.8	-0.7	-0.9	-1.1	-1.2		-1.2	-1.3	-1.4	-1.6	-1.6	-1.6	-1.6
Contribution from nominal interest rate	0.2	0.1			0.1	0.1	0.1	0.1	0.1	0.1		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Contribution from real GDP growth	-5.0	-3.2			-0.9	-0.9	-0.8	-1.0	-1.2	-1.3		-1.4	-1.5	-1.6	-1.9	-1.9	-1.9	-1.9
Contribution from price and exchange rate changes	-9.5	-8.6			...	...	...	...	...	...		...	...	...	...	...	...	...
Residual (3-4) 3/	0.3	-40.0			2.5	-1.6	-0.5	1.3	0.4	0.4		0.5	0.1	0.1	-0.2	-0.2	-0.2	-0.7
o/w exceptional financing	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
NPV of external debt 4/	...	5.6			5.9	5.9	7.6	9.4	10.6	11.6		12.7	13.7	14.7	17.9	18.6	18.6	18.4
In percent of exports	...	54.8			62.1	65.0	79.3	93.4	104.4	110.3		119.6	129.2	137.2	154.8	149.5	146.9	144.5
NPV of PPG external debt	...	5.6			5.9	5.9	7.6	9.4	10.6	11.6		12.7	13.7	14.7	17.9	18.6	18.6	18.4
In percent of exports	...	54.8			62.1	65.0	79.3	93.4	104.4	110.3		119.6	129.2	137.2	154.8	149.5	146.9	144.5
In percent of government revenues	...	42.2			43.3	43.3	54.8	66.9	75.2	81.4		87.7	93.7	99.4	114.2	110.8	108.7	106.0
Debt service-to-exports ratio (in percent)	6.3	2.1			1.3	1.3	1.2	1.5	1.8	2.0		2.3	2.4	2.5	4.5	5.7	5.8	6.0
PPG debt service-to-exports ratio (in percent)	6.3	2.1			1.3	1.3	1.2	1.5	1.8	2.0		2.3	2.4	2.5	4.5	5.7	5.8	6.0
PPG debt service-to-revenue ratio (in percent)	4.5	1.6			0.9	0.9	0.8	1.0	1.3	1.5		1.7	1.7	1.8	3.3	4.2	4.3	4.4
Total gross financing need (billions of U.S. dollars)	5.6	-58.0			-61.6	70.8	191.0	144.7	149.1	136.1		156.3	191.4	201.5	263.6	326.2	321.7	415.7
Non-interest current account deficit that stabilizes debt ratio	18.5	60.6			5.0	10.0	9.4	8.2	9.3	7.1		6.9	7.2	7.2	6.8	5.1	4.5	4.5
Key macroeconomic assumptions																		
Real GDP growth (in percent)	7.1	5.5	10.1	7.0	6.0	6.0	5.6	5.5	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
GDP deflator in US dollar terms (change in percent)	12.6	13.9	-1.1	14.7	9.2	7.3	5.1	2.1	2.0	2.0	4.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Effective interest rate (percent) 5/	0.3	0.1	0.6	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.8	0.8
Growth of exports of G&S (US dollar terms, in percent)	20.2	27.7	16.2	27.8	7.5	9.9	16.7	12.7	9.5	11.7	11.3	8.6	7.8	8.8	10.0	9.5	9.3	8.6
Growth of imports of G&S (US dollar terms, in percent)	27.1	17.9	8.7	13.0	17.2	29.3	10.7	3.9	11.0	-2.4	11.6	7.6	7.5	6.5	4.5	5.8	5.6	7.2
Grant element of new public sector borrowing (in percent)	...	...	...	...	55.5	55.0	56.7	56.9	56.9	56.9	56.3	56.9	56.9	56.9	56.9	56.9	56.9	56.9
Aid flows (in billions of US dollars) 7/	...	0.5			0.5	0.6	0.7	0.6	0.7	0.7		0.7	0.8	0.8	1.0	1.2	1.2	1.2
o/w Grants	0.3	0.3			0.4	0.5	0.4	0.4	0.5	0.5		0.5	0.5	0.5	0.6	0.8	0.8	0.8
o/w Concessional loans	0.1	0.1			0.1	0.0	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.3	0.4	0.4	0.4
Grant-equivalent financing (in percent of GDP) 8/	...	...			1.2	0.8	2.8	2.8	2.3	2.0		2.1	2.1	2.1	1.8	1.6	1.5	1.4
Grant-equivalent financing (in percent of external financing) 8/	...	...			55.7	55.4	56.8	57.0	57.0	57.0		57.0	57.0	57.0	57.0	57.0	57.0	57.0
Memorandum items:																		
Nominal GDP (billions of US dollars)	2387.2	2867.3			3320.0	3776.4	4188.5	4508.9	4860.1	5238.8		5647.1	6087.2	6561.7	9551.2	13906.1	14991.6	16162.0
(NPVt-NPVt-1)/GDPt-1 (in percent)	...	...			1.2	0.9	2.5	2.5	2.1	1.9	1.9	2.1	2.1	2.1	1.8	1.5	1.4	1.3

Source: Staff simulations.

1/ Includes both public and private sector external debt.

2/ Derived as $[r - g - \rho(1+g)] / (1+g+\rho+g)$ times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

3/ Includes exceptional financing (i.e., changes in arrears and debt relief), changes in gross foreign assets, and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

4/ Assumes that NPV of private sector debt is equivalent to its face value.

5/ Current-year interest payments divided by previous period debt stock.

6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

7/ Defined as grants, concessional loans, and debt relief.

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the NPV of new debt).

Table 2. Country: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2007-27
(in percent)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
NPV of debt-to-GDP ratio																					
Baseline	6	6	8	9	11	12	13	14	15	16	16	17	18	18	18	18	19	19	19	19	18
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-27 1/	6	6	7	9	10	11	12	13	13	14	15	15	16	16	17	17	17	17	17	18	18
A2. New public sector loans on less favorable terms in 2008-27 2/	6	6	9	12	15	16	18	20	22	23	25	26	27	28	28	29	29	30	30	30	30
B. Baseline Trends																					
B1. Real GDP growth at historical average minus one standard deviation in 2008-09 3/	6	6	8	10	11	12	13	14	15	16	17	18	18	19	19	19	20	20	20	20	19
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	6	7	9	11	12	13	14	15	16	17	17	18	18	19	19	19	19	19	19	19	19
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09 3/	6	8	12	15	17	19	20	22	23	24	25	26	27	28	29	29	30	30	30	30	29
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	6	10	15	17	19	20	21	22	24	25	26	26	27	27	27	27	27	27	27	26	26
B5. Combination of B1-B4 using one-half standard deviation shocks	6	8	11	13	15	16	18	19	20	22	23	24	24	25	25	26	26	26	26	26	26
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	6	8	11	13	15	16	18	19	20	22	23	24	24	25	25	26	26	26	26	26	26
NPV of debt-to-exports ratio																					
Baseline	62	65	79	93	104	110	120	129	137	144	149	152	154	155	155	155	154	152	149	147	145
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2007-26 1/	62	71	77	88	97	103	111	119	125	130	133	137	138	140	142	143	145	145	145	146	145
A2. New public sector loans on less favorable terms in 2007-26 2/	62	69	97	123	143	155	171	188	203	215	225	232	237	240	242	243	244	243	241	239	237
B. Baseline Trends																					
B1. Real GDP growth at historical average minus one standard deviation in 2008-09 3/	62	65	79	93	104	110	120	129	137	144	149	152	154	155	155	155	154	152	149	147	145
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	62	92	119	135	148	154	165	176	185	193	199	201	203	202	202	200	198	195	192	188	184
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09 3/	62	112	151	169	168	169	176	184	190	194	195	194	192	189	186	182	178	174	169	165	160
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	62	97	146	159	170	175	185	193	203	210	214	215	214	212	211	208	205	201	196	192	188
B5. Combination of B1-B4 using one-half standard deviation shocks	62	65	79	93	104	110	120	129	137	144	149	152	154	155	155	155	154	152	149	147	145
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	62	65	79	93	104	110	120	129	137	144	149	152	154	155	155	155	154	152	149	147	145
Debt service-to-exports ratio																					
Baseline	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	5	5	6	6	6	6
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-27 1/	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
A2. New public sector loans on less favorable terms in 2008-27 2/	1	1	1	2	4	4	5	6	6	7	8	9	10	10	11	11	12	12	12	12	12
B. Baseline Trends																					
B1. Real GDP growth at historical average minus one standard deviation in 2008-09 3/	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	6	6	6	6
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	1	1	1	1	2	2	2	2	2	3	3	3	4	4	4	5	5	6	6	6	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09 3/	1	1	1	1	2	2	2	2	2	3	3	3	4	4	4	5	5	6	6	6	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	1	1	1	2	3	3	3	3	3	3	3	5	6	7	7	7	7	7	7	7	7
B5. Combination of B1-B4 using one-half standard deviation shocks	1	1	1	2	2	2	2	2	3	3	3	4	4	4	4	5	5	6	6	6	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	6	6	6	6
Debt service-to-revenue ratio																					
Baseline	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	4	4	4
A. Alternative Scenarios																					
A1. Key variables at their historical averages in 2008-27 1/	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3
A2. New public sector loans on less favorable terms in 2008-27 2/	1	1	1	2	3	3	4	4	4	5	4	6	7	8	8	8	9	9	9	9	9
B. Baseline Trends																					
B1. Real GDP growth at historical average minus one standard deviation in 2008-09 3/	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	4	4	4
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	4	4	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09 3/	1	1	1	1	2	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	1	1	1	1	2	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4
B5. Combination of B1-B4 using one-half standard deviation shocks	1	1	1	1	2	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	4	4	4
Monoculture loan																					
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56

Source: Staff projections and assumptions.
 1/ Variables include real GDP growth, growth of GDP deflator (ex U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flow.
 2/ Exports values are assumed to remain permanently at the lowest level, but the current account is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
 3/ Exports values are assumed to remain permanently at the lowest level, but the current account is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
 4/ Includes official and private transfers and FDI.
 5/ Applies to all items scenario except for A2 (one favorable financing) in which the terms on all new financing are as specified in footnote 2.
 6/ Applies to all items scenario except for A2 (one favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 3. Rwanda: Public Sector Debt Sustainability Framework, Baseline Scenario, 2005-2027
(In percent of GDP, unless otherwise indicated)

	Actual		Historical Average 5/	Standard Deviation 5/	Estimate						Projections			
	2005	2006			2007	2008	2009	2010	2011	2012	2007-12 Average	2017	2027	2013-27 Average
Public sector debt 1/	84.0	28.5			26.3	25.2	27.5	30.0	31.5	32.7		39.6	40.4	
o/w foreign-currency denominated	70.4	16.6			16.5	15.5	19.3	22.8	25.1	26.7		33.9	34.5	
Change in public sector debt	0.2	-55.5			-2.3	-1.1	2.3	2.5	1.5	1.1		1.0	-0.5	
Identified debt-creating flows	-15.5	-56.2			-3.6	-2.3	1.8	2.1	1.4	1.0		0.8	-0.8	
Primary deficit	-1.4	-0.5	0.5	1.6	-0.1	0.7	3.5	4.0	3.4	3.2	2.4	3.3	1.7	2.8
Revenue and grants	26.3	23.8			24.8	27.0	23.8	22.8	23.6	23.1		22.1	22.3	
of which: grants	12.7	10.6			11.3	13.3	9.9	8.9	9.4	8.8		7.0	5.0	
Primary (noninterest) expenditure	24.9	23.2			24.7	27.6	27.3	26.8	27.0	26.3		25.4	24.0	
Automatic debt dynamics	-13.2	-13.2			-3.2	-2.8	-1.6	-1.7	-2.0	-2.1		-2.5	-2.5	
Contribution from interest rate/growth differential	-6.9	-5.6			-2.2	-1.6	-1.5	-1.7	-2.0	-2.1		-2.5	-2.5	
of which: contribution from average real interest rate	-1.3	-1.3			-0.6	-0.2	-0.2	-0.3	-0.4	-0.4		-0.4	-0.3	
of which: contribution from real GDP growth	-5.5	-4.3			-1.6	-1.5	-1.3	-1.4	-1.6	-1.7		-2.1	-2.2	
Contribution from real exchange rate depreciation	-6.3	-7.6			-1.0	-1.1	0.0	0.0	0.0	0.0		...	...
Other identified debt-creating flows	-0.9	-42.5			-0.2	-0.2	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Privatization receipts (negative)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	-0.9	-42.5			-0.2	-0.2	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	15.7	0.7			1.3	1.3	0.5	0.3	0.2	0.1		0.2	0.3	
NPV of public sector debt	13.6	16.6			14.9	16.1	16.2	16.4	16.8	17.4		21.1	20.2	
o/w foreign-currency denominated	0.0	4.6			5.1	6.4	8.0	9.3	10.4	11.4		15.3	14.4	
o/w external	...	4.6			5.1	6.4	8.0	9.3	10.4	11.4		15.3	14.4	
NPV of contingent liabilities (not included in public sector debt)	...	...			...	...	...	...	...	...		...	...
Gross financing need 2/	1.5	1.6			3.3	4.6	6.7	6.4	5.5	5.2		6.4	7.0	
NPV of public sector debt-to-revenue and grants ratio (in percent)	51.9	70.0			60.1	59.8	68.1	72.0	71.4	75.1		95.2	90.5	
NPV of public sector debt-to-revenue ratio (in percent)	100.5	126.4			110.4	118.2	117.1	117.6	119.1	121.4		139.0	116.5	
o/w external 3/	...	35.3			37.8	47.3	57.7	66.3	73.6	80.0		100.8	82.7	
Debt service-to-revenue and grants ratio (in percent) 4/	9.1	7.1			4.8	4.4	4.6	4.0	3.5	3.5		3.2	4.7	
Debt service-to-revenue ratio (in percent) 4/	17.5	12.8			8.9	8.8	7.8	6.6	5.8	5.6		4.6	6.0	
Primary deficit that stabilizes the debt-to-GDP ratio	-1.6	55.0			2.1	1.7	1.2	1.5	1.9	2.0		2.3	2.1	
Key macroeconomic and fiscal assumptions														
Nominal GDP (local currency)	1327	1583			1826	2052	2275	2523	2801	3110		5247	14946	
Real GDP growth (in percent)	7.1	5.5	10.1	7.0	6.0	6.0	5.6	5.5	5.7	5.7	5.8	5.7	5.7	5.7
Average nominal interest rate on forex debt (in percent)	0.6	0.7	0.8	0.1	0.7	0.6	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.8
Average real interest rate on domestic currency debt (in percent)	...	-7.4	-7.4		-4.2	-0.7	-0.7	-1.1	-1.2	-1.2	-1.5	-0.3	1.6	0.3
Real exchange rate depreciation (in percent, + indicates depreciation)	-8.2	-11.4	5.5	19.0	-6.3	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	8.9	13.1	4.5	12.3	8.8	6.0	5.0	5.1	5.0	5.0	5.8	5.0	5.0	5.0
Growth of real primary spending (deflated by GDP deflator, in percent)	15.4	-1.6	11.5	10.2	12.7	18.7	4.3	3.5	6.4	3.1	8.1	4.6	4.7	5.1
Grant element of new external borrowing (in percent)	0.6	0.6	0.6	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	...

Sources: Country authorities; and Fund staff estimates and projections.

1/ [Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.]

2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.

3/ Revenues excluding grants.

4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.

5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 4. Rwanda: Sensitivity Analysis for Key Indicators of Public Debt 2007-2027

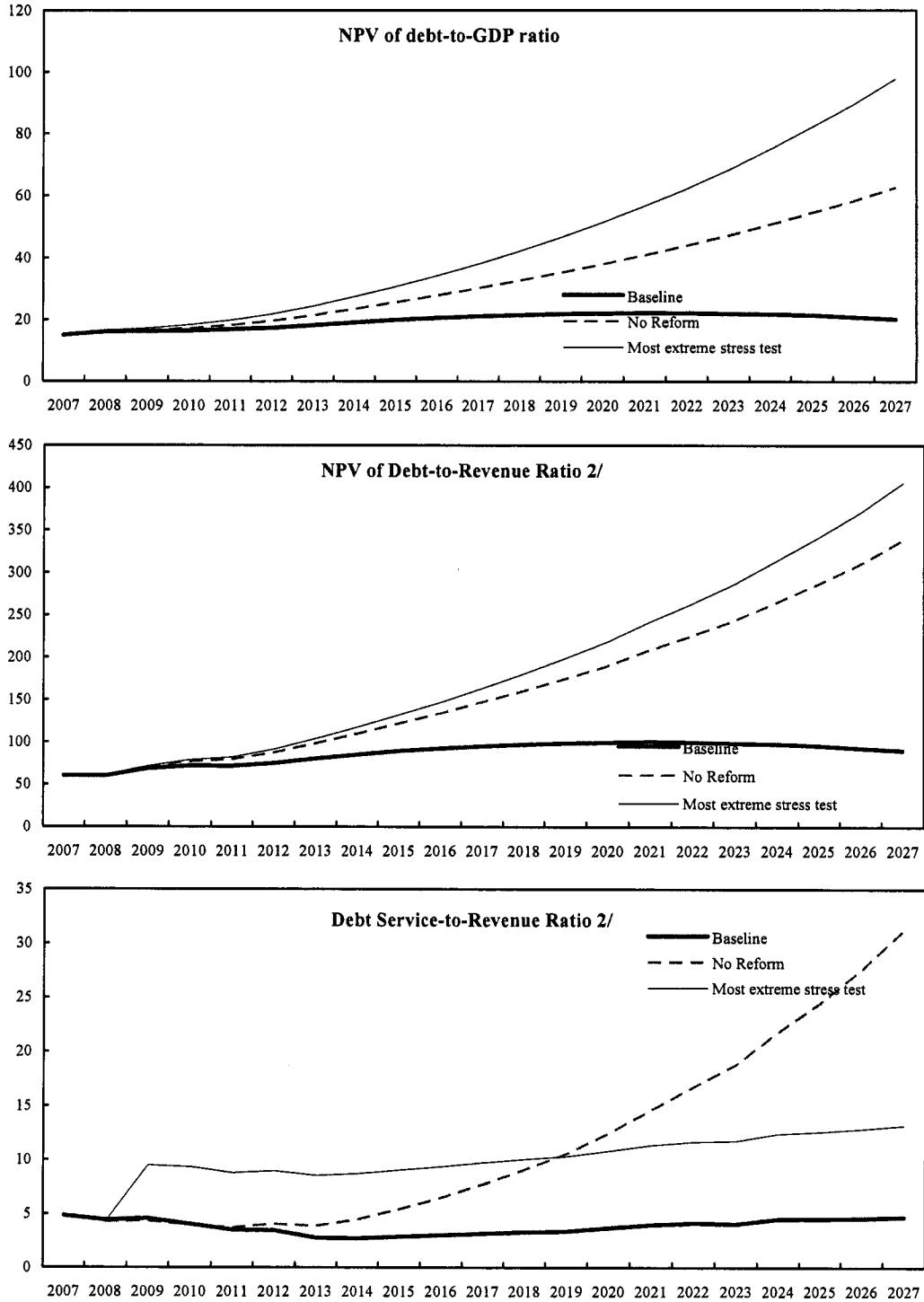
	Projections							
	2007	2008	2009	2010	2011	2012	2017	2027
NPV of Debt-to-GDP Ratio								
Baseline	15	16	16	16	17	17	21	20
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	15	15	12	8	6	4	-6	-17
A2. Revenue is unchanged from 2007	15	16	17	17	18	19	30	63
A3. Permanently lower GDP growth 1/	15	17	17	18	20	22	38	98
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	15	17	18	19	20	21	30	41
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	15	17	16	16	16	17	20	19
B3. Combination of B1-B2 using one half standard deviation shocks	15	17	14	14	15	16	20	20
B4. One-time 30 percent real depreciation in 2008	15	18	17	16	16	16	18	17
B5. 10 percent of GDP increase in other debt-creating flows in 2008	15	26	26	27	27	28	33	36
NPV of Debt-to-Revenue Ratio 2/								
Baseline	60	60	68	72	71	75	95	90
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	60	58	52	38	26	17	-30	-85
A2. Revenue is unchanged from 2007	60	60	71	77	79	87	147	339
A3. Permanently lower GDP growth 1/	60	61	71	79	82	91	163	406
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	60	62	74	82	84	91	132	180
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	60	65	67	71	70	73	92	85
B3. Combination of B1-B2 using one half standard deviation shocks	60	62	60	64	64	68	89	88
B4. One-time 30 percent real depreciation in 2008	60	68	71	70	66	68	80	76
B5. 10 percent of GDP increase in other debt-creating flows in 2008	60	97	111	117	116	122	150	160
Debt Service-to-Revenue Ratio 2/								
Baseline	5	4	5	4	4	3	3	5
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	5	4	4	2	0	-2	-9	-14
A2. Revenue is unchanged from 2007	5	4	4	4	4	4	8	31
A3. Permanently lower GDP growth 1/	5	4	4	4	4	4	9	39
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	5	4	5	4	4	5	7	15
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	5	4	5	4	3	3	3	4
B3. Combination of B1-B2 using one half standard deviation shocks	5	4	4	3	2	2	2	4
B4. One-time 30 percent real depreciation in 2008	5	4	4	4	3	3	3	6
B5. 10 percent of GDP increase in other debt-creating flows in 2008	5	4	9	9	9	9	10	13

Sources: Country authorities; and Fund staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of 20 (i.e., the length of the projection period).

2/ Revenues are defined inclusive of grants.

Figure 2. Rwanda: Indicators of Public Debt Under Alternative Scenarios, 2007-2027 1/



Source: Staff projections and simulations.
 1/ Most extreme stress test is test that yields highest ratio in 2017.
 2/ Revenue including grants.