INTERNATIONAL DEVELOPMENT ASSOCIATION AND
INTERNATIONAL MONETARY FUND

RWANDA

Joint World Bank/IMF Debt Sustainability Analysis

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

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Rwanda continues to be assessed as a moderate risk of external debt distress—unchanged from the previous Debt Sustainability Analysis (DSA).[30,31] *Like in previous assessments, the moderate risk rating is due to the vulnerability of Rwanda's external debt indicators to an adverse shock to exports—underscoring the need to implement policies aimed at lifting the country's low export base, such as those included in the recently adopted export development strategy. The results confirm that Rwanda has some room for nonconcessional borrowing without unduly affecting debt sustainability. Careful vetting, prioritization, and sequencing of projects remain essential to maintain debt sustainability over the near and medium term. Adopting a debt management strategy and embedding the DSA in the authorities' macroeconomic framework will be useful steps in building expertise and help inform the decision making process.*

[30] Based on the joint Low-Income Country Debt Sustainability Framework prepared by the IMF and World Bank staff in consultation with the authorities. This DSA replaces the one prepared at the time of the PSI request (see IMF Country Report No. 10/200, July 2010). The fiscal year for Rwanda is July–June; however, the DSA is on a calendar year basis.

[31] The DSA has been discussed with the Rwandan authorities. There was broad agreement with the findings.

VI. Background

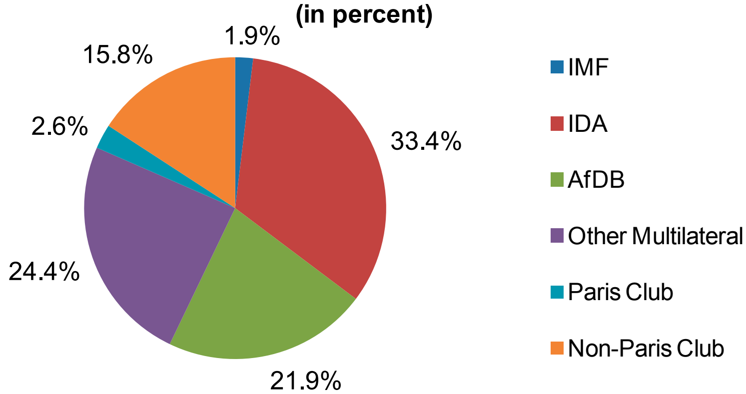
37. Rwanda's external debt of the central government at the end of 2010 was US$799 million (14.6 percent of GDP), including a small fraction which is guaranteed by the central government (0.4 percent of GDP).[32] Multilateral creditors hold more than 80 percent of all central government external debt, with the lion's share held by IDA and AfDB for a combined 55 percent (Figure 1). Domestic public debt (including the central government and the central bank) was RWf 288 billion (8.9 percent of GDP) at the end of 2010, of which nearly half (4.3 percent of GDP) were short-term maturities.

Table 1. Rwanda: Composition of Public Debt, end 2010

	Millions of US$	Percent of Total	Percent of GDP
Total (External + Domestic)	**1,284**	**100**	**23.4**
External Debt	**799**	**62**	**14.6**
Central Government	776	60	14.2
Multilateral	633	49	11.5
IMF	15	1	0.3
IDA	259	20	4.7
African Development Bank Group	170	13	3.1
Other Multilateral	189	15	3.5
Official Bilateral	143	11	2.6
Paris Club	20	2	0.4
Non-Paris Club	123	10	2.2
Guaranteed by the Central Government	23	2	0.4
Domestic Debt	**486**	**38**	**8.9**
In RWf billions	288	38	8.9
Of which: Short-term government and central bank	139	18	4.3

Source: Rwandan authorities, IMF and World Bank staff calculations.

Figure 1. Rwanda: Composition of External Debt of the Central Government, end 2010 (in percent)



Sources: Rwandan authorities, IMF and World Bank staff calculations.

[32] Before Rwanda reached the HIPC Completion Point in April 2005 and received further relief through the Multilateral Debt Relief Initiative in early 2006, debt ratios had been around 85 percent of GDP.

VII. UNDERLYING DSA ASSUMPTIONS

38. **Real GDP** growth is projected to be 7 percent in 2011—slowing from the rebound of 7.5 percent in 2010 as Rwanda came out of the 2008–09 global crises—and gradually settle at 6.5 percent over the long term (Table 2). Over the medium-term, growth is supported by infrastructure investments, the improving business environment, and a positive stimulus from regional integration. Projected growth is somewhat slower than Rwanda's observed growth rates over the past decade (though above the average for Sub-Saharan Africa), as the post-conflict growth acceleration tapers out.[33] **Growth in the GDP deflator** would gradually approach 5 percent over the long term, in line with inflation.

39. The **primary fiscal balance (excluding grants)** is projected to steadily improve partly on account of stronger revenue collection, capturing gains from the broadening tax base and increasing efficiency of tax administration. **Revenue** would increase by over 2 percentage points of GDP over 2010–16, to 15.4 percent of GDP, and continue to improve modestly thereafter. The improvements in revenue mobilization over the medium term are premised primarily on higher collection of income and VAT taxes, backed up by continued improvement in tax administration, reduction in the size of the informal sector and modest tax reforms aimed at simplifying the burden of taxation and broadening the tax base. **Primary expenditure** would gradually be reduced over the long term mainly because of the unwinding over the medium term of scaled-up spending on large infrastructure projects. **External grants** are projected to gradually decline to normalcy in the medium term and would continue to fall over the longer term as Rwanda reduces its aid dependency. External grants have been scaled up in the past few years to help Rwanda cope with the effects of adverse external shocks (such as the food and fuel crises). They peaked in 2010 at 13.6 percent of GDP.

40. Turning to the financing side of the fiscal sector, the baseline assumes the government's policy of no new **net domestic financing** in the medium term, except in 2012 to cover a shortfall in external financing. Over the longer term, modest domestic financing is included in the baseline, reflecting progress with developing and deepening of local and regional financial markets. Maturing domestic debt is projected to be rolled over at an interest rate of 8 percent. Baseline new **external borrowing** during 2011–13 takes into account the expected disbursement profile of loans that have already been signed, as well as new nonconcessional guarantees to finance large investment projects.[34] The relatively low

[33] Average annual real GDP growth was 8.3 percent in 2000–08.

[34] Projected nonconcessional external borrowing from the Bank of Kigali (BK) is included in the external DSA. Consistent with the authorities' program supported by the PSI, (nonconcessional) external borrowing from the Bank of Kigali is excluded from *public and publicly guaranteed* external debt on the grounds that such debt does not carry a government guarantee and the institution's operations pose a limited fiscal risk to the government.

grant element of new external borrowing in the medium-term projections stems largely from the disbursement profile of these nonconcessional borrowing amounts. After 2013, new external borrowing is expected to come largely on concessional terms, but is projected to be gradually reduced over the longer term. Initially about 70 percent of central government external borrowing would be on terms similar to those from IDA, another 5 percent from Paris Club bilateral creditors, 15 percent from non-Paris Club bilateral creditors, and the rest on less favorable terms. Over time the average terms of the external financing mix are expected to become less favorable, resulting in a falling grant element from external borrowing from about 40 percent in 2015 to some 25 percent over the longer term.

Table 2. Rwanda: DSA Update: Key Variables

	2009	2010	2011	2012	2013	2014	2015	2016	2020	2025	2030
	(In percent of GDP, unless otherwise indicated)										
Nominal GDP (RWf billions)	2,964	3,253	3,643	4,128	4,652	5,224	5,839	6,526	10,205	17,844	31,203
Real GDP (percentage change)	4.1	7.5	7.0	6.8	7.0	6.8	6.5	6.5	6.5	6.5	6.5
GDP Deflator (percentage change)	11.0	2.1	4.7	6.1	5.3	5.2	4.9	4.9	5.0	5.0	5.0
Fiscal (central government)											
External Grants (incl. HIPC Relief)	11.7	13.6	13.1	8.5	10.0	8.9	7.7	6.8	4.7	4.2	4.0
Revenue (excl. External Grants)	12.8	13.2	14.1	14.1	14.5	14.7	15.1	15.4	15.9	16.6	17.2
Revenue (incl. external grants)	24.6	26.9	27.2	22.6	24.5	23.7	22.8	22.2	20.7	20.8	21.2
Primary Expenditures	25.1	26.8	27.2	25.9	24.7	23.6	22.8	22.1	22.6	22.6	22.6
Primary Current Expenditures	13.9	15.0	14.2	14.0	14.3	14.4	14.3	14.0	14.5	14.5	14.5
Capital Expenditure and Net Lending	11.1	11.8	13.0	11.9	10.4	9.2	8.5	8.1	8.1	8.1	8.1
Primary Balance, incl. External Grants	-0.5	0.0	0.0	-3.3	-0.2	0.1	0.0	0.1	-1.9	-1.8	-1.4
Primary Balance, excl. External Grants	-12.2	-13.6	-13.1	-11.8	-10.2	-8.8	-7.7	-6.7	-6.7	-6.0	-5.4
Net Domestic Financing	-0.8	0.1	-0.9	2.9	0.0	0.0	0.0	0.0	0.3	0.3	0.3
Interest Rate (percent)		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
New External Borrowing[1]		0.0	3.0	3.4	2.0	0.9	1.0	0.8	2.3	2.6	2.4
Grant Element of New External Borrowing (percent)			30.5	14.9	11.8	42.3	39.8	37.4	31.1	28.5	25.9
Balance of Payments											
Exports of Goods and Services	11.0	10.9	12.3	12.7	12.8	13.0	13.2	13.6	14.8	16.3	17.8
Imports of Goods and Services	29.2	29.4	31.8	29.1	26.9	26.1	25.5	25.1	24.9	24.7	24.4
Current Account, incl. Official Transfers	-7.3	-6.0	-5.2	-9.1	-5.5	-4.4	-4.5	-4.2	-4.8	-3.1	-1.1
Foreign Direct Investment	2.3	0.8	1.5	1.0	1.1	1.3	1.5	1.7	2.1	2.1	2.1
Gross Official Reserves (months of imports of G&S)	5.4	5.2	5.7	5.3	5.4	4.8	4.2	3.5	3.5	3.5	3.5

Source: Rwandan authorities, IMF, and World Bank.

[1] Includes publicly guaranteed external borrowing.

41. Rwanda is expected to become more open as regional integration continues, the business climate improves, and export sectors develop, supported by policies to develop Rwanda's export potential—the government approved in April 2011 a multi-year export strategy.[35] **Exports of goods and services** are projected to increase by about 2.5 percentage points of GDP in 2010–16, and to nearly 18 percent of GDP over the longer term. Export performance would benefit from investments in the tea sectors and from higher prices for coffee and minerals—in the short term, this assumes that mineral exporters meet new mineral

[35] Rwanda's export sector is largely confined to a limited number of export items, including coffee, tea, minerals, and tourism (especially gorilla tourism). The authorities are pursuing policies to increase the quality of export products and diversify into other high value exports (examples are horticulture, chili, and other forms of tourism such as business convention travelers). Key elements of the national export strategy are described in the previous DSA; see Box 1 in IMF Country Report No. 10/200, July 2010.

certification requirements (export volumes of mineral products in baseline projections are unchanged from 2010). **Imports** are expected to settle around 25 percent of GDP in the longer term; imports are expected to be higher (and lumpy) in the near term because of the implementation of large infrastructure investment projects and also because of higher costs for energy and food imports.[36] The **current account deficit** is projected to peak in 2012 as work begins on large infrastructure projects, but narrow gradually afterwards. It is expected to be financed by foreign direct investment, which would reach about 2.1 percent of GDP over the longer term. Reserves coverage would be comfortably above 4 months of (prospective) imports through 2016, and settle at 3.5 months over the longer term.

42. The baseline DSA includes US$240 million in new external loan guarantees for the *Kigali Convention Complex* (US$180 million) and *RwandAir* (US$60 million). Two new aircraft are expected to be delivered to *RwandAir* in 2011. The government is seeking international participation to secure full funding of the *Kigali Convention Complex*, which may require government guarantees for external borrowing.[37] The government believes these loan guarantees may be critical to crowd in foreign investors, given the shallow domestic capital market, limited availability of concessional financing, and the need to avoid crowding out the private sector. The government is also considering options to build a new airport in Bugesera and participate in the development of railroad infrastructure in EAC. Given the high uncertainty surrounding these projects—in terms of investment cost, timeline, and financing, which would likely involve public-private partnerships—the DSA does not yet include the possible implications of these projects for debt sustainability.

VIII. External DSA

A. Policy-Dependent Indicative Thresholds

43. The Debt Sustainability Framework defines policy-dependent indicative thresholds against which the external debt sustainability indicators are measured. These are based on a country's score on the World Bank's Country Policy and Institutional Assessment (CPIA). Rwanda's CPIA score was 3.77 in 2009 and 3.70 on average over 2007–09, putting it in the "Medium" performance category (the category that corresponds to a three-year average

[36] Food imports are expected to be nearly 50 percent larger in 2011 compared to 2009, while imports for energy products are expected to increase by 47 percent in 2011 alone and by nearly 75 percent when compared to 2009. World prices for food and fuel are expected to stay high in 2011 (in contrast to the 2008 episode when they fell quickly and substantially after peaking in the summer), necessitating additional vigilance in monitoring external developments.

[37] For details on the projected financing terms and the rates of returns of those projects, see footnotes 2 and 3 of the DSA prepared at the time of the PSI request (IMF Country Report No. 10/200, July 2010).

CPIA score between 3.25 and 3.75). For a "Medium" performer like Rwanda the policy-dependent indicative thresholds are those in Table 3.[38]

Table 3. Rwanda: Indicative External Debt Thresholds[1]

Present Value of Debt in Percent of:			Debt Service in Percent of:	
Exports	GDP	Revenue	Exports	Revenue
150	40	250	20	30

[1] Applies to countries with a "medium" CPIA performance rating.

B. Results of the External DSA

44. The results of the external DSA confirm that Rwanda's debt dynamics are sustainable. The stress tests confirm that Rwanda continues to have vulnerabilities owing to its low export base—an assessment that is unchanged from the previous DSA. The main difference from the previous DSA lies in the rephasing of the execution of large infrastructure projects as the government is still working on closing the financing deals (see Table 4 and Figure 2)[39]. The findings also confirm that Rwanda's debt indicators are not unduly burdened by the US$240 million in nonconcessional borrowing through 2013 which has been built into the PSI program and baseline assumptions of the external DSA.[40]

- **Baseline scenario.** Under the baseline scenario, all indicators of public and publicly-guaranteed external debt stay below their respective thresholds (Appendix Table 1, Appendix Figure 1).
- **Alternative and stress test scenarios.** The indicative threshold for the ratio of present value (PV) of debt to exports is breached when the standard bounds test for exports is

[38] The thresholds used to assess Rwanda's (external) debt sustainability are those without explicitly taking into account the role of remittances. The observed surge in gross remittance inflows over the past few years, possibly because of better recording of remittances data, makes it hard to judge whether these flows are a stable source of foreign exchange inflows.

[39] For a description of the large infrastructure projects, see Box 2 in IMF Country Report No. 10/200, July 2010.

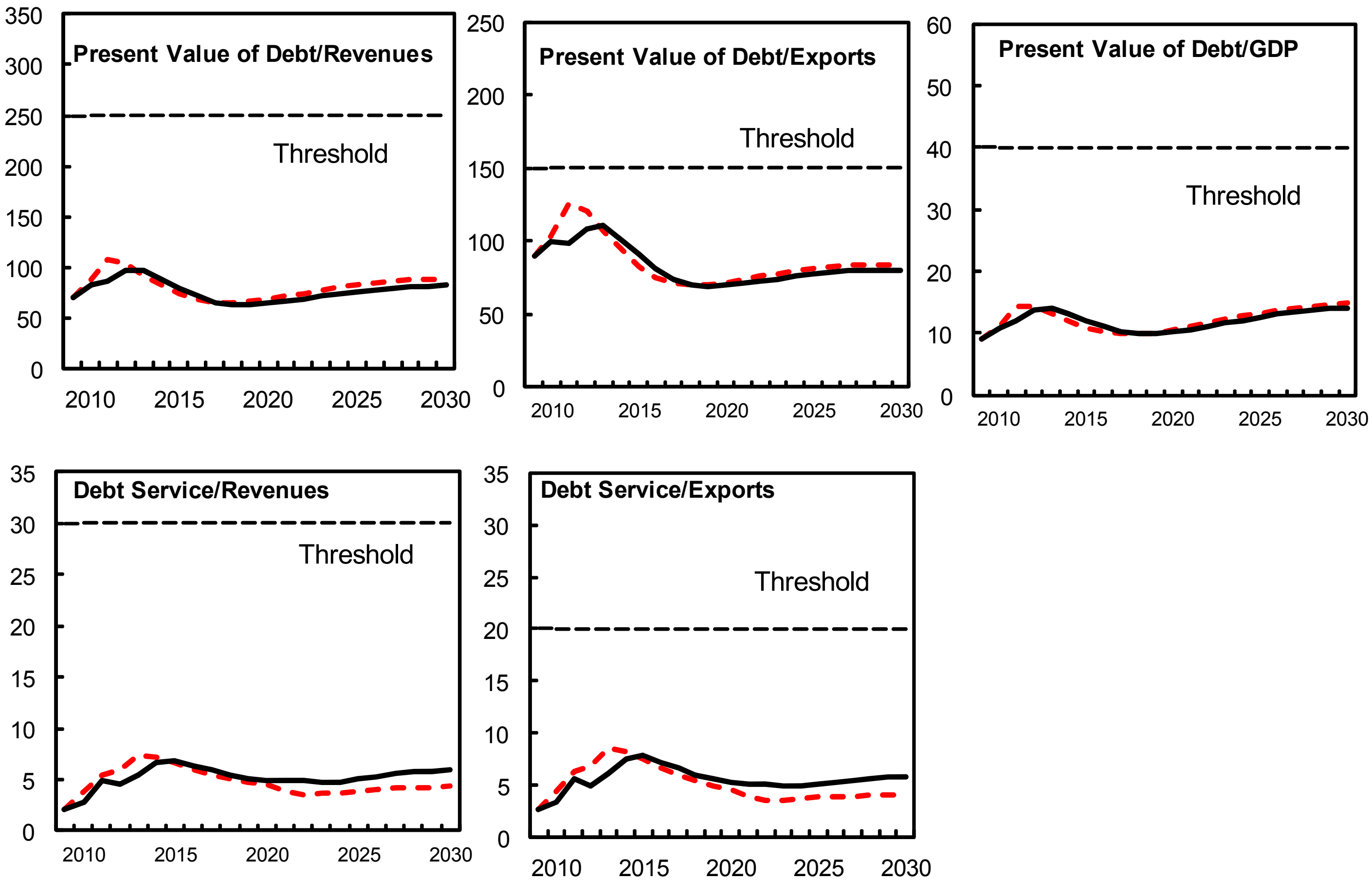
[40] In a separate scenario staff assessed the effect of additional nonconcessional external borrowing beyond the program period (2014–16). The results of such a scenario obviously depend on the amount and terms of the additional nonconcessional borrowing. Under reasonable assumptions for the amounts and terms of additional nonconcessional borrowing, the results suggest that the "moderate" debt rating would be maintained. However, the projections for the ratio of the PV of debt to exports come close to its respective thresholds in the baseline and the thresholds would be breached through 2026 under stress testing. In addition, the ratio of debt service to exports would risk breaching its respective threshold under stress testing.

applied (test B2 in Appendix Table 2).[41] Under this bounds test the ratio would peak in 2013 at 215 percent and take until 2017 to be back below its threshold of 150 percent. This result confirms that Rwanda's export base continues to be a source of vulnerability. The authorities are working to mitigate those vulnerabilities over the longer term, including through policies aimed at improving the business climate, build basic infrastructure, and lift the export base (such as the recently adopted export development strategy).

[41] The bounds test for exports (B2) assumes a temporarily slower growth rate for exports (specifically: exports grow at historical average minus one standard deviation in 2012–13).

Figure 2. External Debt Sustainability Indicators, 2010–30
(In percent)

Striped: Baseline DSA results from PSI Request.[1] **Solid:** DSA update.



Source: Rwandan authorities, and IMF-World Bank staff estimates and projections.

[1] IMF Country Report No. 10/200, July 2010.

Table 4. Rwanda: Baseline External DSA Compared to Previous DSA Update, 2010–12

	Previous DSA Update[1]			DSA Update		
	2010 Est.	2011 Proj.	2012 Proj.	2010 Est.	2011 Proj.	2012 Proj.
Stock of Public and Publicly-Guaranteed (PPG) External Debt						
In millions of U.S. dollars	913	1,158	1,254	814	1,031	1,221
In percent of GDP	16.4	19.3	19.1	14.9	17.7	19.2
Present Value (PV) of PPG External Debt						
In millions of U.S. dollars	623	861	936	595	703	880
In percent of GDP	11.2	14.3	14.3	10.9	12.1	13.8
PV of PPG External Debt to Revenues (percent)	87.7	108.0	103.8	82.0	85.7	97.8
PV of PPG External Debt to Exports (percent)	102.8	125.2	120.6	99.7	98.1	108.7
PPG External Debt Service to Revenues (percent)	3.8	5.4	5.9	2.8	5.0	4.5
PPG External Debt Service to Exports (percent)	4.4	6.3	6.9	3.4	5.7	5.0
Discount rate (percent)	4.0	4.0	4.0	4.0	4.0	4.0
	(In percent of GDP, unless indicated otherwise)					
Nominal GDP (RWf billions)	3,333	3,746	4,210	3,253	3,643	4,128
Real GDP (percentage change)	5.4	5.9	6.4	7.5	7.0	6.8
GDP Deflator (percentage change)	6.7	6.1	5.6	2.1	4.7	6.1
Fiscal						
External Grants (incl. HIPC Relief)	13.5	11.3	10.7	13.6	13.1	8.5
Revenue (excl. External Grants)	12.8	13.3	13.8	13.2	14.1	14.1
Primary Expenditures	26.9	25.7	25.1	26.8	27.2	25.9
Primary Balance, incl. External Grants	-0.6	-1.1	-0.6	0.0	0.0	-3.3
Primary Balance, excl. External Grants	-14.1	-12.4	-11.3	-13.6	-13.1	-11.8
Grant Element of New External Borrowing (percent)[2]	12.3	6.8	23.5	…	30.5	14.9
Balance of Payments						
Exports of Goods and Services	10.9	11.4	11.8	10.9	12.3	12.7
In millions of U.S. dollars	621	701	787	608	736	823
Imports of Goods and Services	30.6	30.2	26.7	29.4	31.8	29.1
In millions of U.S. dollars	1,742	1,850	1,777	1,641	1,896	1,883
Current Account, incl. Official Transfers	-7.9	-8.8	-5.4	-6.0	-5.2	-9.1

Source: Rwandan authorities, IMF, and World Bank.

[1] Conducted at the time of the PSI Request; see IMF Country Report No. 10/200, July 2010.

[2] Includes publicly-guaranteed external borrowing.

IX. PUBLIC SECTOR DSA

45. The baseline results of the public DSA confirm the findings of those of the external DSA. As was the case in previous DSAs, the public-sector DSA indicators are expected to gradually converge to those of the external DSA because of the assumption that there would be no net domestic borrowing in the near term (except for 2012) and moderate amounts afterwards.

46. The alternative scenarios and stress tests confirm that public debt indicators appear sustainable. Only the most extreme stress test to the PV of debt-to-GDP ratio—a permanently lower GDP growth (stress test (A3))—would cause that ratio to rise continually over the long term. Under the low-growth stress scenario, annual real growth would be 5.8 percent compared with 6.5 percent in the baseline and, as such, this stress test confirms the importance of continuing to generate substantial growth over the near- and long-term. Risks

from this low-growth scenario appear contained given that the baseline annual growth rate is already substantially more conservative than the growth observed over the preceding decade.

47. The results of a *separate* scenario to assess the impact of higher domestic borrowing (replacing external borrowing) suggest that a financing mix tilted somewhat more towards domestic borrowing would not substantially change the results of the public DSA (see Appendix Table 5). Intuitively the results do not change much because the main difference with the baseline scenario lies in the somewhat higher interest cost from domestic borrowing compared to external borrowing. The separate scenario assumes new net domestic borrowing that is equal to 0.5 percent of GDP per year from 2013 onwards, in contrast to the baseline scenario which assumed zero net domestic borrowing in 2013–16 and 0.25 percent of GDP afterwards). This moderate increase in domestic borrowing takes into account Rwanda's relatively underdeveloped financial market. Like in the baseline, the interest rate on domestic borrowing is assumed to be 8 percent over the projection period.

X. Debt Management

48. The authorities are revising their Debt Policy and Medium-Term Debt Strategy (MTDS) and have requested technical assistance from the IMF before its adoption by the Cabinet, which is expected by fall 2011. The MTDS would be used in designing fiscal policy in 2012/13 and beyond. The authorities believe that building the capacity in performing debt sustainability analyses is crucial in assessing and monitoring debt sustainability, especially when large infrastructure projects with different financing options are being considered. To that end, they plan to strengthen the capacity in the macro unit at the Ministry of Economics and Finance (in close cooperation with the central bank) to conduct their own DSAs using the Bank-Fund DSA template. That DSA will be part of the unit's macroeconomic framework and used to assess policy options.

XI. Debt Distress Classification and Conclusions

It is the staffs' view that Rwanda should be considered at moderate risk of debt distress based on external debt burden indicators. The near-term increase in external debt indicators is temporary—due to infrastructure projects which are expected to be financed in part by (publicly-guaranteed) nonconcessional borrowing—and indictors rapidly return to low levels over the medium term. Under standard stress tests the ratio of PV of external debt to exports breaches the relevant threshold in the near term but returns below it by 2017. The public sector DSA suggest that Rwanda's overall public sector debt dynamics are sustainable in light of the current size and evolution of the domestic debt stock, and a separate scenario assuming some additional domestic borrowing suggests that this would not have a substantial impact on public debt indicators. The "moderate" rather than "low" rating of risk of debt distress is motivated by the vulnerabilities stemming from Rwanda's low export base. In that respect, the achievements to improve the business climate, and efforts to build basic infrastructure and lift the export base—including through implementation of the recently adopted export development strategy—are timely and would help mitigate those vulnerabilities over the longer term. Over the next year, the authorities plan to adopt a medium-term debt management strategy and integrate the Bank-Fund DSA template into their macroeconomic framework. Once in place, these tools will be of great value in the decision-making process and will further help manage risks to debt sustainability.

Appendix Table 1.: External Debt Sustainability Framework, Baseline Scenario, 2008–31 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 0 Average 0	Standard Deviation	Projections									
	2008	2009	2010			2011	2012	2013	2014	2015	2016	2011-2016 Average	2021	2031	2017-203 Average
External debt (nominal) 1/	**15.0**	**14.8**	**18.0**			**21.4**	**22.7**	**22.3**	**20.6**	**19.1**	**17.6**		**16.5**	**21.9**	
o/w public and publicly guaranteed (PPG)	15.0	14.8	14.9			17.7	19.2	19.0	17.7	16.5	15.2		15.1	19.9	
Change in external debt	-0.5	-0.2	3.2			3.4	1.3	-0.4	-1.8	-1.5	-1.5		0.5	0.3	
Identified net debt-creating flows	-0.4	3.6	4.3			2.5	6.7	2.9	1.8	1.8	1.4		1.4	-2.7	
Non-interest current account deficit	**4.8**	**7.2**	**5.8**	**2.4**	**3.1**	**4.8**	**8.7**	**5.0**	**3.9**	**4.0**	**3.8**		**4.1**	**0.3**	2.9
Deficit in balance of goods and services	15.2	18.1	18.5			19.4	16.4	14.1	13.0	12.3	11.5		9.7	6.2	
Exports	14.6	11.0	10.9			12.3	12.7	12.8	13.0	13.2	13.6		15.1	18.1	
Imports	29.9	29.2	29.4			31.8	29.1	26.9	26.1	25.5	25.1		24.9	24.4	
Net current transfers (negative = inflow)	-11.0	-11.5	-13.4	-12.3	1.4	-15.3	-8.5	-9.9	-9.8	-8.8	-8.1		-6.1	-6.5	-6.3
o/w official	-9.5	-10.0	-11.7			-12.9	-6.6	-8.4	-8.2	-7.2	-6.5		-4.4	-4.8	
Other current account flows (negative = net inflow)	0.6	0.6	0.6			0.7	0.8	0.8	0.7	0.6	0.5		0.5	0.5	
Net FDI (negative = inflow)	**-2.2**	**-2.3**	**-0.8**	**-1.0**	**0.9**	**-1.5**	**-1.0**	**-1.1**	**-1.3**	**-1.5**	**-1.7**		**-2.1**	**-2.1**	-2.1
Endogenous debt dynamics 2/	**-3.0**	**-1.4**	**-0.7**			**-0.8**	**-0.9**	**-1.0**	**-0.9**	**-0.8**	**-0.7**		**-0.7**	**-0.8**	
Contribution from nominal interest rate	0.1	0.1	0.2			0.3	0.4	0.5	0.5	0.5	0.4		0.3	0.5	
Contribution from real GDP growth	-1.4	-0.6	-1.0			-1.2	-1.3	-1.5	-1.4	-1.2	-1.1		-1.0	-1.3	
Contribution from price and exchange rate changes	-1.7	-0.9	0.1			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**0.0**	**-3.8**	**-1.1**			**0.9**	**-5.4**	**-3.2**	**-3.5**	**-3.3**	**-2.9**		**-0.9**	**3.0**	
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	
PV of external debt 4/	...	...	14.0			15.7	17.3	17.4	15.9	14.7	13.4		12.1	16.3	
In percent of exports	...	...	128.2			127.6	136.2	136.4	122.2	110.9	98.5		79.8	89.8	
PV of PPG external debt	**...**	**...**	**10.9**			**12.1**	**13.8**	**14.2**	**13.1**	**12.1**	**11.1**		**10.7**	**14.3**	
In percent of exports	**...**	**...**	**99.7**			**98.1**	**108.7**	**110.7**	**100.3**	**91.3**	**81.2**		**70.8**	**78.7**	
In percent of government revenues	**...**	**...**	**82.0**			**85.7**	**97.8**	**97.7**	**88.7**	**79.6**	**71.7**		**66.7**	**83.1**	
Debt service-to-exports ratio (in percent)	**2.1**	**2.6**	**5.2**			**8.3**	**9.5**	**10.4**	**11.7**	**11.3**	**10.2**		**6.1**	**6.5**	
PPG debt service-to-exports ratio (in percent)	**2.1**	**2.6**	**3.4**			**5.7**	**5.0**	**6.1**	**7.5**	**7.8**	**7.2**		**5.1**	**5.8**	
PPG debt service-to-revenue ratio (in percent)	**2.1**	**2.2**	**2.8**			**5.0**	**4.5**	**5.4**	**6.6**	**6.8**	**6.3**		**4.8**	**6.2**	
Total gross financing need (Billions of U.S. dollars)	0.1	0.3	0.3			0.3	0.6	0.4	0.3	0.4	0.3		0.5	0.2	
Non-interest current account deficit that stabilizes debt ratio	5.2	7.4	2.6			1.4	7.4	5.3	5.7	5.5	5.3		3.6	0.0	
Key macroeconomic assumptions															
Real GDP growth (in percent)	11.2	4.1	7.5	7.8	3.3	7.0	6.8	7.0	6.8	6.5	6.5	6.8	6.5	6.5	6.5
GDP deflator in US dollar terms (change in percent)	12.7	6.7	-0.5	4.8	9.3	0.0	1.5	2.0	2.1	1.9	1.9	1.6	2.0	2.0	2.0
Effective interest rate (percent) 5/	1.2	1.1	1.6	1.1	0.2	2.1	2.1	2.4	2.6	2.5	2.4	2.4	2.0	2.4	2.2
Growth of exports of G&S (US dollar terms, in percent)	64.7	-16.2	5.5	15.7	23.9	21.1	11.8	9.9	11.1	10.0	11.9	12.6	10.8	10.5	10.7
Growth of imports of G&S (US dollar terms, in percent)	48.3	8.6	7.8	15.3	15.4	15.6	-0.7	1.1	5.6	6.3	6.7	5.8	8.4	8.4	8.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	30.5	14.9	11.8	42.3	39.8	37.4	29.4	30.6	25.9	29.5
Government revenues (excluding grants, in percent of GDP)	14.9	12.8	13.2			14.1	14.1	14.5	14.7	15.1	15.4		16.1	17.2	16.4
Aid flows (in Billions of US dollars) 7/	0.6	0.7	0.8			0.9	0.6	0.7	0.7	0.7	0.7		0.8	1.6	
o/w Grants	0.5	0.6	0.8			0.8	0.5	0.7	0.7	0.6	0.6		0.6	1.2	
o/w Concessional loans	0.1	0.1	0.1			0.1	0.1	0.0	0.1	0.1	0.0		0.2	0.3	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			13.9	8.9	10.2	9.3	8.0	7.0		5.3	4.6	5.2
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			87.0	75.3	85.0	94.4	93.3	93.5		76.9	71.8	76.4
Memorandum items:															
Nominal GDP (Billions of US dollars)	4.7	5.2	5.6			6.0	6.5	7.1	7.7	8.4	9.1		13.7	31.4	
Nominal dollar GDP growth	25.3	11.1	7.0			7.0	8.5	9.2	9.0	8.5	8.5	8.4	8.6	8.6	8.6
PV of PPG external debt (in Billions of US dollars)			0.6			0.7	0.9	1.0	1.0	1.0	1.0		1.4	4.4	
(PVt-PVt-1)/GDPt-1 (in percent)						1.9	2.9	1.6	0.1	0.0	-0.1	1.1	1.3	1.4	1.2
Gross workers' remittances (Billions of US dollars)	0.1	0.1	0.1			0.2	0.2	0.2	0.2	0.2	0.2		0.3	0.7	
PV of PPG external debt (in percent of GDP + remittances)	...	...	10.6			11.7	13.5	13.8	12.8	11.8	10.8		10.5	14.0	
PV of PPG external debt (in percent of exports + remittances)	...	...	81.7			78.2	89.7	93.6	85.3	77.8	69.6		61.5	70.0	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.8			4.5	4.1	5.1	6.3	6.7	6.1		4.5	5.2	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) 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 PV 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 PV of new debt).

Appendix Table 2. Rwanda: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–31
(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	**2021**	2031
PV of debt-to GDP ratio								
Baseline	12	14	14	13	12	11	**11**	14
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	12	8	6	5	3	2	**0**	18
A2. New public sector loans on less favorable terms in 2011-2031 2	12	14	15	15	14	13	**15**	24
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	12	14	15	13	12	11	**11**	14
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	12	15	19	18	16	15	**13**	15
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	12	14	16	15	13	12	**12**	16
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	12	12	13	12	11	10	**10**	14
B5. Combination of B1-B4 using one-half standard deviation shocks	12	13	14	13	12	11	**11**	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	12	19	20	18	17	15	**15**	20
PV of debt-to-exports ratio								
Baseline	98	109	111	100	91	81	**71**	79
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	98	63	50	35	22	12	**-1**	101
A2. New public sector loans on less favorable terms in 2011-2031 2	98	111	118	111	104	95	**99**	131
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	98	107	109	99	90	80	**69**	76
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	98	147	215	196	180	162	**130**	119
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	98	107	109	99	90	80	**69**	76
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	98	97	100	91	82	73	**65**	75
B5. Combination of B1-B4 using one-half standard deviation shocks	98	105	121	110	100	89	**78**	87
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	98	107	109	99	90	80	**69**	76
PV of debt-to-revenue ratio								
Baseline	86	98	98	89	80	72	**67**	83
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	86	57	45	31	19	11	**-1**	107
A2. New public sector loans on less favorable terms in 2011-2031 2	86	100	104	98	91	84	**93**	138
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	86	98	100	91	82	74	**68**	84
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	86	109	130	119	108	98	**84**	86
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	86	102	109	99	89	80	**74**	92
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	86	88	89	80	72	64	**61**	79
B5. Combination of B1-B4 using one-half standard deviation shocks	86	89	98	89	80	72	**67**	84
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	86	136	136	124	111	100	**93**	114

Appendix Table 2. Rwanda: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–31 (continued)
(In percent)

Debt service-to-exports ratio

Baseline	6	5	6	7	8	7	**5**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	6	5	5	5	5	5	**1**	4
A2. New public sector loans on less favorable terms in 2011-2031 2	6	5	5	6	6	5	**5**	8
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	6	5	6	7	8	7	**5**	6
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	6	6	9	12	13	12	**10**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	6	5	6	7	8	7	**5**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	6	5	6	7	8	7	**5**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	6	5	7	8	9	8	**6**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	6	5	6	7	8	7	**5**	6

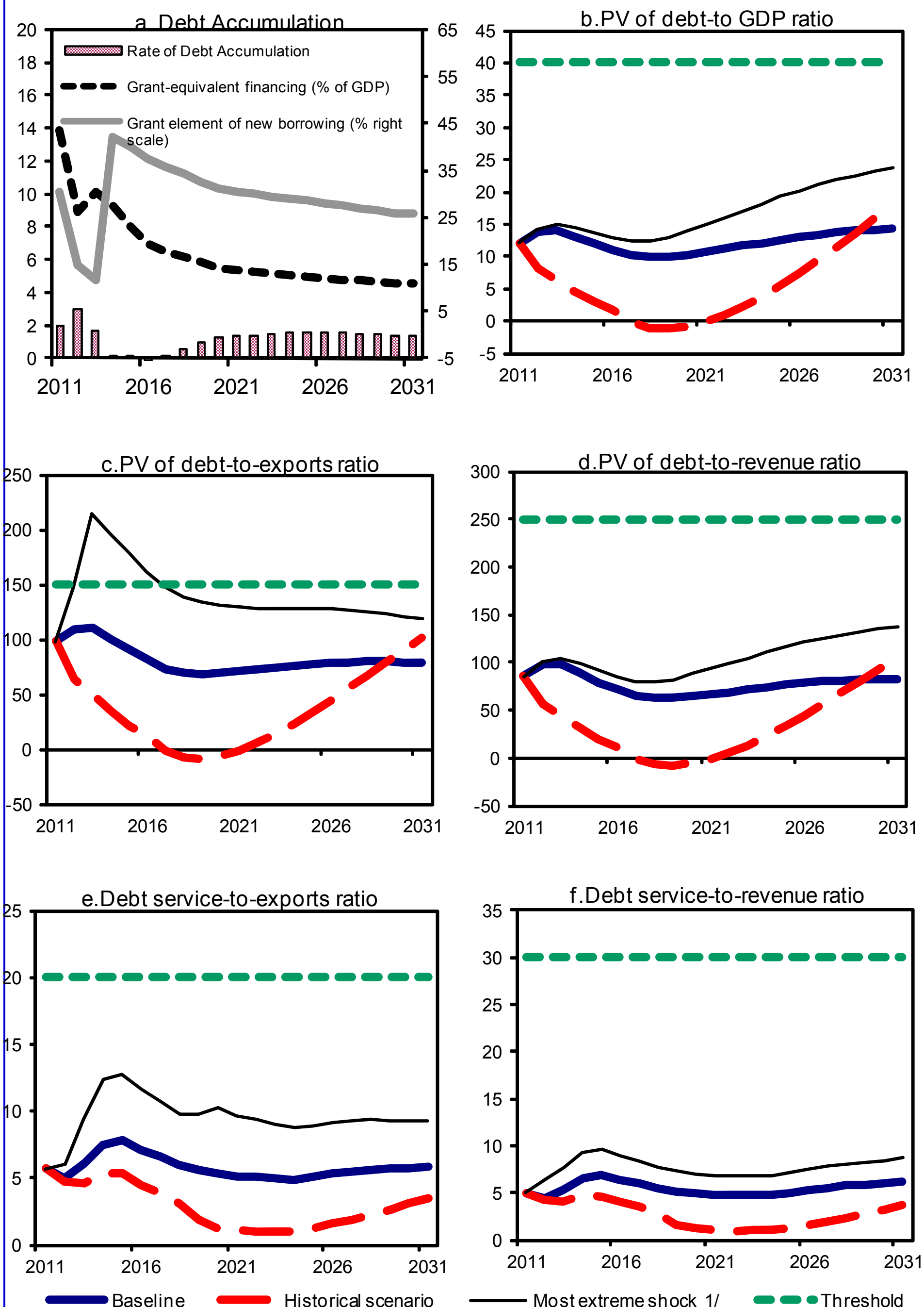
Debt service-to-revenue ratio

Baseline	5	4	5	7	7	6	**5**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2011-2031 1/	5	4	4	5	5	4	**1**	4
A2. New public sector loans on less favorable terms in 2011-2031 2	5	4	5	5	5	5	**5**	9
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	5	5	6	7	7	7	**5**	6
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	5	4	6	8	8	7	**6**	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	5	5	6	7	8	7	**5**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	5	4	5	6	7	6	**5**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	5	5	5	7	7	7	**5**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	5	6	8	9	10	9	**7**	9
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	19	19	19	19	19	19	**19**	19

Sources: Country authorities; and staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline., while grace and maturity periods are the same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitl an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Appendix Figure 1. Rwanda: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2011–31 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2021. In figure b. it corresponds to a Terms shock; in c. to a Exports shock; in d. to a Terms shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock

Appendix Table 3. Rwanda: Public Sector Debt Sustainability Framework, Baseline Scenario, 2008–31
(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2008	2009	2010	Average	Standard Deviation	2011	2012	2013	2014	2015	2016	2011-16 Average	2021	2031	2017-31 Average
Public sector debt 1/	21.6	23.3	23.7			24.5	27.6	26.7	24.0	21.1	19.4		18.5	22.6	
o/w foreign-currency denominated	15.0	14.8	14.9			17.7	19.2	19.0	17.7	16.5	15.2		15.1	19.9	
Change in public sector debt	-5.5	1.7	0.4			0.8	3.1	-1.0	-2.7	-2.9	-1.7		0.5	0.1	
Identified debt-creating flows	-5.2	-1.4	-0.7			-2.1	1.3	-1.9	-1.8	-1.5	-1.3		0.7	0.1	
Primary deficit	-0.8	0.6	-0.1	0.2	0.6	0.0	3.3	0.1	-0.2	-0.2	-0.2	0.5	1.9	1.5	1.6
Revenue and grants	25.6	24.4	26.9			27.1	22.5	24.4	23.6	22.8	22.1		20.7	21.1	
of which: grants	10.8	11.6	13.6			13.0	8.4	9.9	8.9	7.6	6.7		4.6	4.0	
Primary (noninterest) expenditure	24.8	25.1	26.8			27.1	25.8	24.5	23.4	22.6	21.9		22.6	22.6	
Automatic debt dynamics	-4.6	-2.2	-1.1			-1.3	-1.9	-2.1	-1.7	-1.3	-1.1		-1.1	-1.3	
Contribution from interest rate/growth differential	-3.7	-1.2	-1.4			-1.6	-1.7	-1.9	-1.6	-1.3	-1.1		-1.1	-1.3	
of which: contribution from average real interest rate	-1.0	-0.4	0.2			-0.1	-0.1	-0.1	0.1	0.1	0.2		0.0	0.0	
of which: contribution from real GDP growth	-2.7	-0.9	-1.6			-1.6	-1.6	-1.8	-1.7	-1.5	-1.3		-1.1	-1.4	
Contribution from real exchange rate depreciation	-0.9	-1.0	0.4			0.3	-0.2	-0.2	-0.1	0.0	0.0		...	...	
Other identified debt-creating flows	0.2	0.3	0.4			-0.8	-0.2	0.1	0.1	0.1	0.1		0.0	0.0	
Privatization receipts (negative)	...	...	0.0			-0.9	-0.3	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	0.0	
Debt relief (HIPC and other)	-0.1	-0.1	0.0			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.3	0.4	0.4			0.2	0.2	0.2	0.1	0.1	0.1		0.0	0.0	
Residual, including asset changes	-0.3	3.1	1.1			2.9	1.8	0.9	-0.9	-1.4	-0.4		-0.3	0.0	
Other Sustainability Indicators															
PV of public sector debt	...	...	19.7			18.9	22.3	21.8	19.4	16.7	15.2		14.1	17.0	
o/w foreign-currency denominated	...	...	10.9			12.1	13.8	14.2	13.1	12.1	11.1		10.7	14.3	
o/w external	...	...	10.9			12.1	13.8	14.2	13.1	12.1	11.1		10.7	14.3	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	-0.1	1.1	3.5			4.8	6.8	5.8	5.6	4.9	3.7		5.2	4.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	…	…	73.4			69.7	98.9	89.2	82.0	73.3	68.7		68.2	80.3	
PV of public sector debt-to-revenue ratio (in percent)	…	…	148.9			133.9	157.6	150.3	131.2	110.2	98.5		87.7	98.8	
o/w external 3/	…	…	82.0			85.7	97.8	97.7	88.7	79.6	71.7		66.7	83.1	
Debt service-to-revenue and grants ratio (in percent) 4/	2.5	2.2	2.5			3.6	3.8	4.0	5.7	6.1	6.0		4.6	5.8	
Debt service-to-revenue ratio (in percent) 4/	4.4	4.1	5.1			7.0	6.1	6.8	9.1	9.2	8.6		5.9	7.2	
Primary deficit that stabilizes the debt-to-GDP ratio	4.7	-1.1	-0.5			-0.8	0.2	1.1	2.5	2.7	1.5		1.4	1.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	11.2	4.1	7.5	7.8	3.3	7.0	6.8	7.0	6.8	6.5	6.5	6.8	6.5	6.5	6.5
Average nominal interest rate on forex debt (in percent)	1.2	1.1	1.2	1.0	0.2	1.5	1.5	1.9	2.2	2.1	2.0	1.9	1.7	1.9	1.8
Average real interest rate on domestic debt (in percent)	-7.9	-6.0	1.8	-4.7	3.9	-1.1	-2.2	-2.5	0.2	1.4	3.5	-0.1	0.5	2.2	1.0
Real exchange rate depreciation (in percent, + indicates depreciation)	-6.8	-7.0	2.8	-2.3	9.6	2.0	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	12.6	11.0	2.1	8.8	7.6	4.7	6.1	5.3	5.2	4.9	4.9	5.2	5.0	5.0	5.0
Growth of real primary spending (deflated by GDP deflator, in percent)	0.3	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	…	…	30.5	14.9	11.8	42.3	39.8	37.4	29.4	30.6	25.9	...

Sources: Country authorities; and staff estimates and projections.
1/ Covers public and publicly-guaranteed debt of the central government and the central bank.
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.

Appendix Table 4. Rwanda: Sensitivity Analysis for Key Indicators of Public Debt 2011–31

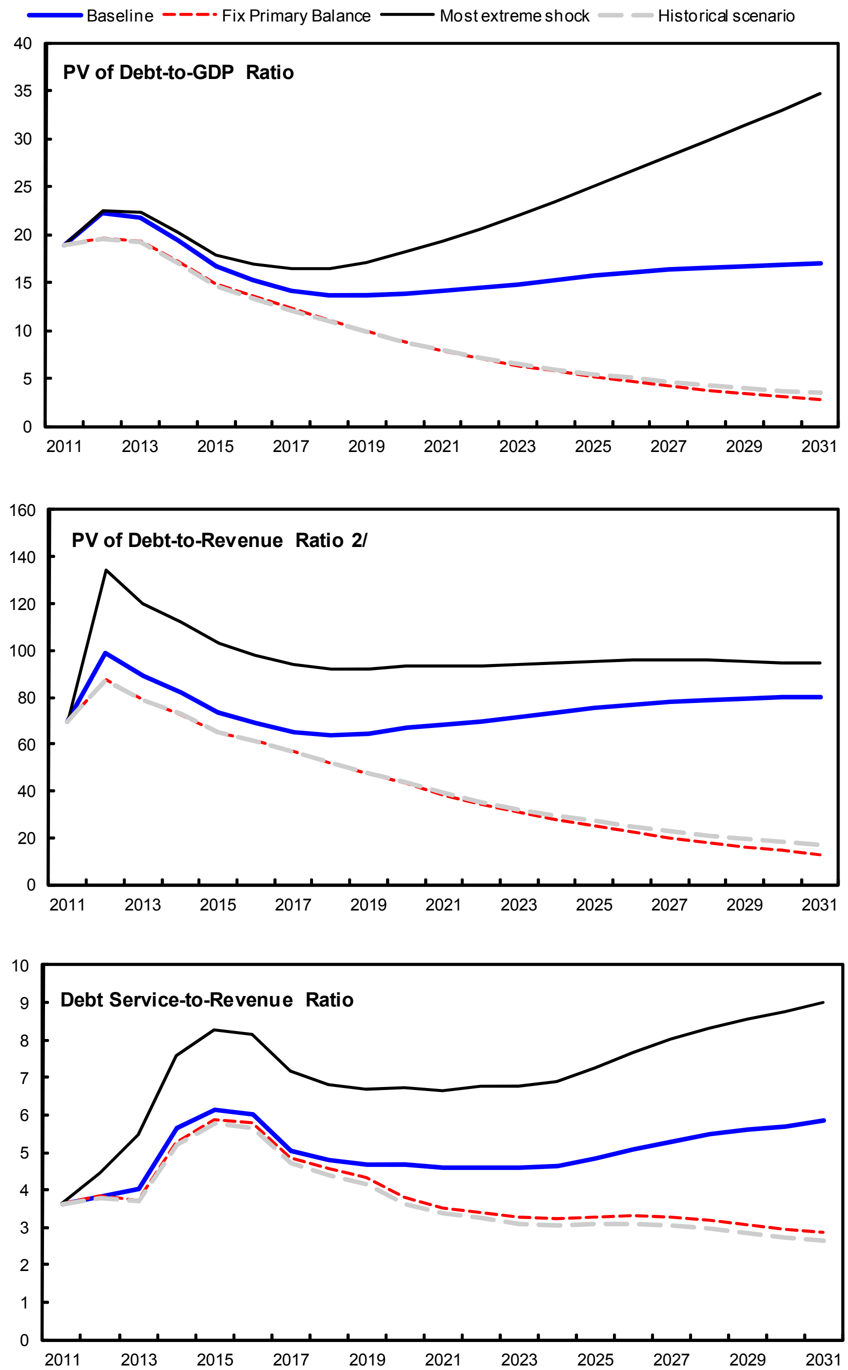
	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
PV of Debt-to-GDP Ratio								
Baseline	19	22	22	19	17	15	14	17
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	19	20	19	17	15	13	8	3
A2. Primary balance is unchanged from 2011	19	20	19	17	15	14	8	3
A3. Permanently lower GDP growth 1/	19	22	22	20	18	17	19	35
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	19	23	24	21	19	18	19	25
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	19	20	20	18	15	14	13	16
B3. Combination of B1-B2 using one half standard deviation shocks	19	20	20	18	16	14	14	19
B4. One-time 30 percent real depreciation in 2012	19	27	27	24	21	19	17	19
B5. 10 percent of GDP increase in other debt-creating flows in 2012	19	30	29	26	23	22	19	20
PV of Debt-to-Revenue Ratio 2/								
Baseline	70	99	89	82	73	69	68	80
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	70	87	79	73	65	61	39	17
A2. Primary balance is unchanged from 2011	70	87	79	73	65	61	38	13
A3. Permanently lower GDP growth 1/	70	100	91	85	78	75	92	160
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	70	101	95	89	83	81	91	118
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	70	90	84	77	68	63	64	78
B3. Combination of B1-B2 using one half standard deviation shocks	70	89	82	76	68	64	68	88
B4. One-time 30 percent real depreciation in 2012	70	121	109	101	92	86	81	89
B5. 10 percent of GDP increase in other debt-creating flows in 2012	70	134	120	112	103	98	93	94
Debt Service-to-Revenue Ratio 2/								
Baseline	4	4	4	6	6	6	5	6
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	4	4	4	5	6	6	3	3
A2. Primary balance is unchanged from 2011	4	4	4	5	6	6	4	3
A3. Permanently lower GDP growth 1/	4	4	4	6	6	6	5	9
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012-2013	4	4	4	6	6	6	5	8
B2. Primary balance is at historical average minus one standard deviations in 2012-2013	4	4	4	5	6	6	4	6
B3. Combination of B1-B2 using one half standard deviation shocks	4	4	4	5	6	6	4	6
B4. One-time 30 percent real depreciation in 2012	4	4	5	8	8	8	7	9
B5. 10 percent of GDP increase in other debt-creating flows in 2012	4	4	5	7	7	7	6	7

Sources: Country authorities; and staff estimates and projections.

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

2/ Revenues are defined inclusive of grants.

Appendix Figure 2. Rwanda: Indicators of Public Debt Under Alternative Scenarios, 2011–31 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2021. In the top panel this corresponds to permanent lower growth (A3); in the middle panel to a 10 percent of GDP increse in other debt-creating flows in 2012 (B5); and in the bottom panel to a one-time 30 percent real depreciation in 2012 (B4).

2/ Revenues are defined inclusive of grants.