INTERNATIONAL DEVELOPMENT ASSOCIATION AND
INTERNATIONAL MONETARY FUND

RWANDA

Joint World Bank/IMF Debt Sustainability Analysis

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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).[1] *The continued vulnerability of Rwanda's debt indicators to an export shock highlights the urgent need to expand the export base. The DSA suggests that there is room for some nonconcessional borrowing—to meet the country's large infrastructure investment needs—without unduly increasing Rwanda's risk of debt distress. Rwanda has a medium-term debt and Public Financial Management (PFM) strategy, conducts its own DSAs, and has some experience with nonconcessional borrowing. Nevertheless, careful vetting, prioritization, and sequencing of the implementation of investment projects by the Rwandan authorities, as well as strengthening implementation capacity, will be essential to maintain debt sustainability over the near and medium term.*

I. BACKGROUND

1. Rwanda's external debt of the central government (including guaranteed) at end-2009 was US$749.1 million (14.4 percent of GDP) (Table 1). More than four-fifths of external central government debt is owed to multilateral creditors. External debt has declined from 85 percent of GDP in 2000–04 to about 15 percent of GDP since 2006, thanks to substantial debt relief. Rwanda reached the HIPC Completion Point in April 2005 and also benefited from MDRI relief in January 2006. Domestic debt was RWf 228.3 billion (7.7 percent of GDP or about a third of total public debt at end-2009, down from 13 percent of GDP in 2005–07. Within domestic debt, the end-2009 stock of short-term debt (Treasury bills and central bank monetary instruments) was equivalent to 3.1 percent of GDP.

[1] 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 2008 Article IV Consultation (IMF Country Report No. 09/58) and the update done at the time of the 6th PRGF (now known as Extended Credit Facility (ECF)) Review (Box 2 in IMF Country Report No. 09/264). The fiscal year for Rwanda is July–June; however, the DSA has been produced on a calendar year basis.

Table 1. Rwanda: Composition of Public Debt, end 2009	Millions of US$	Percent of Total	Percent of GDP
Total (External + Domestic)	**1,149**	**100.0**	**22.1**
External Debt	**749**	**65.2**	**14.4**
Central Government	736	64.1	14.2
Multilateral	612	53.3	11.8
IMF	15	1.3	0.3
IDA	257	22.3	4.9
African Development Bank Group	155	13.5	3.0
Other Multilateral	185	16.1	3.6
Official Bilateral	124	10.8	2.4
Paris Club	21	1.8	0.4
Non-Paris Club	104	9.0	2.0
Guaranteed by the Central Government	13	1.1	0.3
Domestic Debt	**400**	**34.8**	**7.7**
In RWf billions	228	34.8	7.7
Of which: Treasury Bills & Monetary Instruments	93	14.1	3.1

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

II. Underlying DSA Assumptions

A. Macroeconomic Assumptions

2. **Real GDP is projected to rebound from the growth slowdown in 2009 to reach 6.9 percent in 2013 before settling at 6.5 percent over the longer term (Table 2)**. Projected growth, while above the SSA average, is somewhat conservative when compared to Rwanda's observed growth rates of the past decade (average annual real GDP growth was 8.3 percent in 2000–08). Growth is envisaged to be stimulated by infrastructure investment, the improving business environment, and a positive impulse from regional integration. Growth in the **GDP deflator** would gradually decline to 5 percent over the long term, in line with inflation.

3. The **primary fiscal balance (excluding grants)** is projected to steadily improve mainly on account of stronger **revenue collection**, capturing gains from the broadening tax base and increasing efficiency of tax administration. Revenues would increase by 2 percentage points of GDP over 2010–15, to 14.8 percent of GDP, and continue to improve modestly thereafter. Primary **current expenditures** would settle at 15 percent of GDP over the long term, similar to 2010–15. **Capital expenditures**, on the other hand, would gradually be reduced to almost 8 percent of GDP over the long term as scaled-up spending, including on large infrastructure projects (¶6–9), gradually unwinds. **External grants**, which 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) would peak in 2010 at 13.5 percent of GDP and gradually decline, reflecting both a gradual return to normalcy in the medium term and reducing aid dependency over the longer term.

Table 2. Rwanda: DSA Update: Key Variables

	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030
	(In percent of GDP, unless otherwise indicated)									
Nominal GDP (RWf billions)	2,964	3,333	3,746	4,210	4,725	5,285	5,912	10,339	18,078	31,612
Real GDP (percentage change)	4.1	5.4	5.9	6.4	6.9	6.5	6.5	6.5	6.5	6.5
GDP Deflator (percentage change)	11.0	6.7	6.1	5.6	5.0	5.0	5.0	5.0	5.0	5.0
Fiscal (central government)										
External Grants (incl. HIPC Relief)	11.7	13.5	11.3	10.7	9.5	8.7	7.8	5.2	4.7	4.5
Revenue (excl. External Grants)	12.8	12.8	13.3	13.8	14.2	14.6	14.8	15.5	16.1	16.7
Revenue (incl. external grants)	24.6	26.3	24.6	24.5	23.8	23.3	22.7	20.7	20.8	21.2
Primary Expenditures	25.1	26.9	25.7	25.1	23.9	23.4	22.7	22.9	22.9	22.9
Primary Current Expenditures	13.9	14.9	14.2	15.1	14.9	15.1	14.8	15.0	15.0	15.0
Capital Expenditure and Net Lending	11.1	12.0	11.5	10.0	9.0	8.3	7.9	7.9	7.9	7.9
Primary Balance, incl. External Grants	-0.5	-0.6	-1.1	-0.6	-0.1	-0.1	0.0	-2.2	-2.1	-1.7
Primary Balance, excl. External Grants	-12.2	-14.1	-12.4	-11.3	-9.6	-8.8	-7.8	-7.4	-6.8	-6.2
Net Domestic Financing	-0.8	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest Rate (percent)		0.0	0.0	0.0	0.0	8.0	8.0	8.0	8.0	8.0
New External Borrowing[1]		3.1	4.5	1.9	1.1	0.9	0.8	2.7	2.7	2.4
Grant Element of New External Borrowing (percent)		12.3	6.8	23.5	43.0	42.7	42.3	40.5	39.2	37.9
Balance of Payments										
Exports of Goods and Services	10.2	10.9	11.4	11.8	12.3	12.8	13.4	14.9	16.4	17.9
Imports of Goods and Services	28.3	30.6	30.2	26.7	25.3	24.6	24.4	24.1	23.9	23.6
Current Account, incl. Official Transfers	-7.3	-7.9	-8.8	-5.4	-4.4	-3.7	-3.5	-4.2	-2.4	-0.4
Foreign Direct Investment	2.3	1.8	1.4	1.6	1.8	1.8	1.9	2.4	2.4	2.4
Gross Oficial Reserves (months of imports of G&S)	5.1	4.8	4.7	4.7	4.4	4.3	4.2	4.2	4.2	4.2

Source: Rwandan authorities, IMF, and World Bank.

[1] Includes publicly guaranteed external borrowing.

4. As for the **financing side of the fiscal deficit**, the baseline assumes the government's policy of no new **net domestic financing** after 2010. Maturing domestic debt is rolled over at an interest rate of 8 percent. Baseline new external borrowing during 2010–12 assumes disbursements from loans that have already been signed, as well as new nonconcessional loan guarantees to finance strategic investment projects (see below for details). The latter explain much of the lower projected grant element of new external borrowing in those years. After 2013, new **external borrowing** is expected to come largely on concessional terms. Initially about 75 percent of central government external borrowing would be on terms similar to those from IDA, another 5 percent would be from Paris Club bilateral creditors, and the rest (20 percent) from non-Paris Club bilateral creditors. Over time the average terms of the external financing mix are expected to become less favorable, thus implying a falling grant element (from about 43 percent in 2013 to less than 38 percent over the longer term). This pattern for the external borrowing mix differs from the previous DSA update which assumed 100 percent borrowing on terms similar to those of IDA.

5. On the external front Rwanda is expected to become more open as regional integration continues (opening up regional markets further and reducing barriers to trade for the landlocked country), the business climate improves further, and export sectors—especially from agriculture, minerals, and tourism—develop. The authorities are developing and implementing policies to lift their export base (see Box 1). **Exports of goods and services** are projected to increase by 2.5 percent of GDP in 2010–15, and to rise further to nearly 18 percent of GDP in the long term. Imports are expected to settle around 24 percent of GDP in the long term; the erratic pattern of imports in the medium term is due to the lumpiness of imports of capital goods associated with large infrastructure investment projects. The **current account** deficit is projected to narrow gradually and would be financed in part by higher **foreign direct investment** (which would reach about 2.4 percent of GDP over the longer term), as the private sector steadily steps up its share in overall investment, including possibly through public-private partnerships.

Box 1. Rwanda: Export Promotion and Diversification

A key priority of the government is to exploit opportunities for higher export revenues. The Rwanda Development Board (RDB) is preparing a **comprehensive national export strategy and action plan** to help improve exports. The strategy focuses on increasing the value added of existing export sectors and developing new products and services centered around six clusters: (i) dairy processing; (ii) fruits and vegetables processing; (iii) silk; (iv) specialized tourism (including business travelers); (v) mining services; and (vi) information technologies. The strategy also addresses bottlenecks to make local products more competitive (both locally and for exports). The action plan will expand and coordinate efforts to support companies that export, through advocacy and training in management and accounting, and complements ongoing reforms to improve the business climate and access to credit. The authorities are also looking to hire an international consultant to help develop a master plan for export opportunities in the agribusiness and agro-processing sector, especially to regional markets.

A **new Mining Policy** (adopted in September 2009) is being implemented. The mining policy is based on five strategic pillars (including strengthening the regulatory environment, improving productivity, and improving value added) and a three-year action plan. The policy aims to: (i) increase mineral exports by 250 percent from $US 38 million in 2005 to $US 106 million by 2012; and (ii) increase employment in the sector from 25,000 to 37,000 over the same period. The authorities are also looking to restart the tin smelter, although reliable electricity supply would need to be secured first. Opportunities for product diversification are also being considered, notably for construction materials, energy substances, and precious stones.

B. Large Infrastructure Projects

6. The Rwandan authorities have an ambitious investment strategy, comprising six strategic, complementary projects which aim to alleviate critical infrastructure constraints to increasing and diversifying exports of goods and services and developing the country into a knowledge-based service economy (Box 2). These investments have the potential for spillovers to employment generation and poverty reduction, and, through their efforts to crowd in foreign investors, the authorities intend to protect priority spending in their budget. The authorities believe that the projects are expected to yield high net economic benefits.

Box 2. Rwanda: Strategic Investment Projects

Energy rollout: increase household grid connections from 6 percent at end-2008 to 16 percent by 2013, reach all public health centers and administrative offices, and connect half of all schools (per Economic Development and Poverty Reduction Strategy (EDPRS) objectives). The 2009–13 capital budget is estimated at US$377 million and would be fully financed with concessional resources.

Core ICT infrastructure: create infrastructure for high-speed broadband by: (i) building high-capacity fiber optic lines by May 2011 ("backbone" project); (ii) providing broadband wireless technology to up to 100,000 users by mid-2010 (Wibro/Wimax project); and (iii) connecting Rwanda to undersea fiber-optic cables by 2013, which could reduce broadband purchase costs by 90 percent. The total cost to the budget is estimated at US$107 million and financed with concessional resources.

Regional railway: rehabilitate/build railways linking Rwanda to Burundi and Tanzania. A Public Private Partnership (PPP) is being considered to overcome high investment costs and risks (alternative design standards are being considered which could reduce initial cost estimates (US$4.7 billion) by 25 percent. The Rwandan authorities plan to detail the public financing requirements for the project once the PPP framework has been designed.

Bugesera Airport: construct a new airport conforming to ICAO standards with sufficient capacity to meet future demand from high-value agro exports and business tourism, and make Rwanda into Central African hub/gateway. The first four-year phase (US$325 million) would be financed through a PPP.

RwandAir expansion: create strong air links to Rwanda to support service sectors and high-value exports and capture a share of the increasing regional and international air traffic. New management at RwandAir (which is 100 percent publicly owned) developed a business plan for 2010–14 with a US$116.3 million capital budget. The company purchased two short-range planes (US$14.5 million) in 2009, and a purchase agreement was signed in December 2009 (US$85 million) for two mid-range Boeing planes to be delivered in 2011. The government is considering guaranteeing nonconcessional external loans for the purchase of the mid-range planes. The government's objective is to transform RwandAir into a viable business by end-2014 and is committed to its divestment and privatization in the long term.

Kigali Convention Complex: develop business tourism by building a five-star hotel and convention center. Construction started in mid-2009 and is expected to be completed by end-2011at a cost of US$300 million. The development company (75 percent publicly owned) received a US$67 million government loan in 2009 and is negotiating a loan/equity mix with private investors, which would possibly include external financing of up to US$180.5 million.

7. The six projects are at different stages of implementation. The *ICT core infrastructure* project is well advanced and the *energy rollout* project is also progressing, though its finalization may extend beyond 2012. Construction on the *Kigali Convention Complex* has started and *RwandAir* has already acquired two small planes which it is using to serve short routes. The *regional railway* and *Bugesera airport* projects, on the other hand, are in the design phase—only feasibility studies have been budgeted for so far.

8. The baseline DSA incorporates financing for four of the six strategic investment projects, of which two are on nonconcessional terms—the *Kigali Convention Complex* and *RwandAir*. The *core ICT infrastructure* is fully financed from concessional sources. The *electricity rollout* project is also being financed from concessional sources; about 40 percent of the full cost of the project has been secured and the remainder of the project will be

implemented as and when the remaining funding is secured. As for the remaining two projects, *Bugesera Airport* and *regional railroad*, the allocation in the 2010/11 budget amounts to less than US$5 million which is intended to finance feasibility studies. These two projects will be included in future DSAs once the details on the required investment envelope and the type of financing are more concrete. The authorities are considering the use of private public partnerships for these investments to ease pressure on government financing and are strengthening the regulatory framework, which would also enable them to better assess potential contingent liabilities.

9. The baseline DSA assumes US$240 million in new external loan guarantees for *Kigali Convention Complex* (US$180.5 million) and *RwandAir* (US$59.5 million).[2] The government is seeking international participation to secure full funding for the *Kigali Convention Complex*, which may require government guarantees for external borrowing. The government considers these loan guarantees may be critical to jump start the strategic investment projects and crowd in foreign investors, given a shallow domestic capital market, limited availability of concessional financing, and the need to avoid crowding out the private sector.[3]

III. External DSA

A. Policy-Dependent Indicative Thresholds

10. 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 3.68 in 2008 and 3.66 on average over 2006–08, putting it in the "Medium" performance category (the category that corresponds to a three-year average CPIA score between 3.25 and 3.75). For a "Medium" performer like Rwanda the policy-dependent indicative thresholds are those in Table 3.

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[2] The assumed terms for the external loans that would be guaranteed are as follows: (i) *Kigali Convention Complex:* ten year maturity with one-year grace and interest rate of 8 percent; and (ii) *RwandAir:* maturity of ten years and interest rate of 6.75 percent. The bulk of the disbursements of the loans would be in 2011 (for the *Kigali Convention Complex*, some disbursements would be made in 2010 and 2012—in line with the rhythm of project execution). The baseline DSA also includes nonconcessional borrowing already contracted in 2009, specifically a loan contracted in March 2009 with Export-Import Bank of China to finance a road project, in an amount of 219 million Chinese yuan (about US$32 million), and a US$13.1 million nonconcessional loan guarantee for RwandAir for the purchase of two small planes which were delivered at end-2009.

[3] The feasibility study for the *Kigali Convention Complex*, prepared by an international consulting firm, found a rate of return of about 13.2 percent. The return on equity for *RwandAir* has been estimated at 11 percent (by 2014), based on the business plan.

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. Baseline Results of the External DSA

11. The external DSA results indicate that Rwanda's debt dynamics would be sustainable even if the assumed amount of nonconcessional external borrowing is contracted, while the stress tests confirm Rwanda's vulnerability arising from its low export base—unchanged from the previous DSA. Specifically:

- Under the baseline assumptions, all indicators of public and publicly guaranteed external debt stay well below their respective thresholds (Appendix Table 1, Appendix Figure 1).
- The indicative threshold for the ratio of present value (PV) of debt to exports is breached through 2015 when the standard bounds test for exports is applied (test B2 in Appendix Table 2).[4] In addition, the "combination bounds test" breaches the threshold for the PV of debt-to-exports ratio through 2013 (test B5 in Appendix Table 2).[5]

12. While the long-run results of the baseline external DSA are similar to those of the previous DSA update (Figure 1), a few factors appear to explain the observed difference with the previous DSA update in the short run (Table 4). First, the current DSA uses a discount rate of 4 percent, compared to 5 percent in the previous update. The one-percentage point reduction in the discount rate increases the PV of debt in 2011 by some US$78 million (1.3 percent of GDP). In addition, the additional nonconcessional borrowing adversely affects the sustainability ratios (including the debt service ratios). Finally, additional grants in 2010–11 are mitigating the impact on debt dynamics of the fiscal primary balance (even though projections for the primary balance *excluding* grants are lower than in the previous DSA). On balance, debt sustainability indicators in the short-to-medium term are projected to exceed those projected in the previous DSA. Nevertheless, the ratios are projected to decline rapidly over the medium term once the additional nonconcessional borrowing ceases and the lower projected primary balance including grants work in favor of the debt dynamics, especially because of higher projected grants over the medium term.

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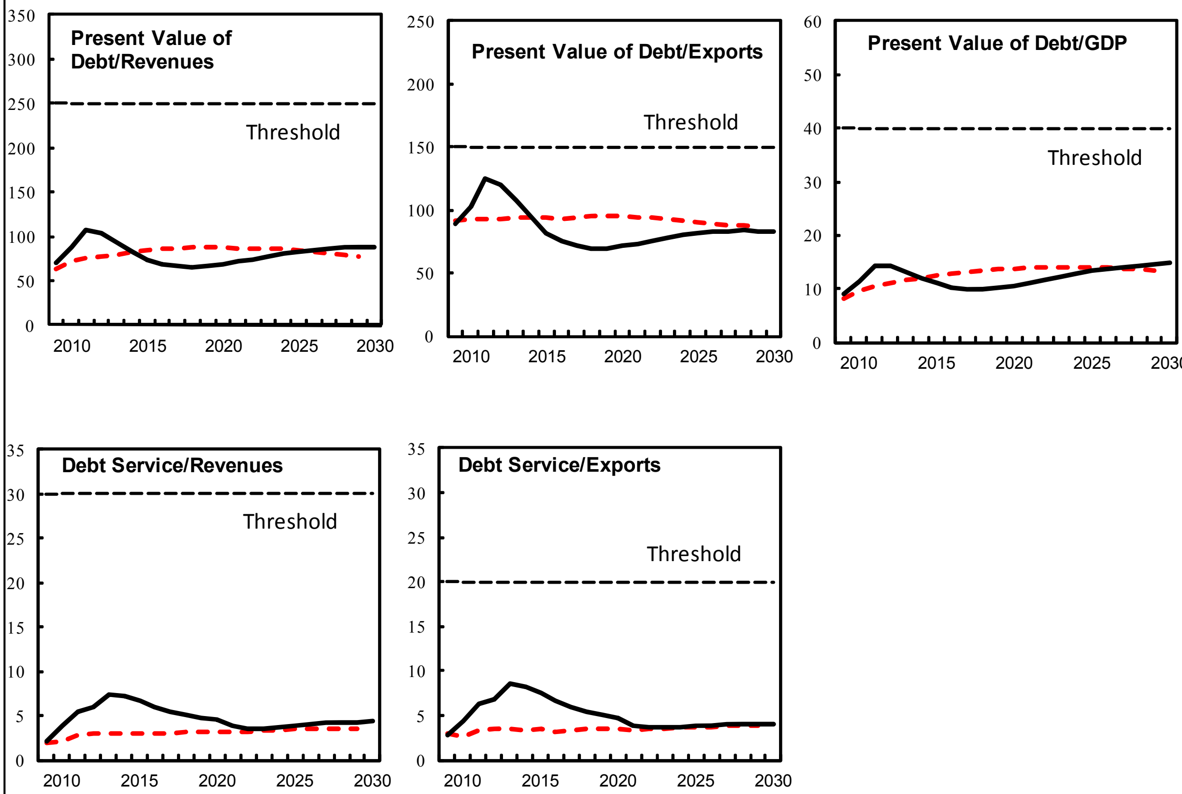
[4] The standard bounds test B2 for exports imposes a value growth for exports equal to the historical average minus one standard deviation in 2011–12. Afterwards, export growth returns to the assumed value growth path, implying permanently lower values.

[5] The standard "combination bounds test" B5 takes for 2011–12 a one-half standard deviation adverse shock to the historical averages of (i) real GDP growth; (ii) export value growth; (iii) U.S. GDP deflator; and (iv) non-debt creating flows.

Figure 1. External Debt Sustainability Indicators, 2009–30
(In percent)

Striped: Baseline DSA results from 6th ECF (formerly PRGF) Review. **Solid:** DSA update.



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

Table 4. Rwanda: Baseline External DSA Compared to Previous DSA Update, 2009–11

	Previous DSA Update[1]			DSA Update			DSA Update (5% Discount Rate)		
	2009 Proj.	2010 Proj.	2011 Proj.	2009 Est.	2010 Proj.	2011 Proj.	2009 Est.	2010 Proj.	2011 Proj.
External Debt Stock									
In millions of U.S. dollars	837	1,015	1,173	749	913	1,158			
In percent of GDP	17.2	19.6	20.9	14.4	16.4	19.3			
PV of External Debt									
In millions of U.S. dollars	414	512	589	470	623	861	416	560	782
In percent of GDP	8.3	9.7	10.4	9.1	11.2	14.3	8.0	10.1	13.0
PV of External Debt to Revenues (percent)	63.0	72.6	75.5	70.6	87.7	108.0	62.5	78.7	98.2
PV of External Debt to Exports (percent)	91.9	93.3	92.4	89.0	102.8	125.2	78.9	92.3	113.8
External Debt Service to Revenues (percent)	2.0	2.1	2.7	2.2	3.8	5.4			
External Debt Service to Exports (percent)	2.9	2.6	3.3	2.8	4.4	6.3			
Public Domestic Debt (in percent of GDP)	6.1	5.3	4.4	7.7	5.6	5.1			
Discount rate (percent)	5.0	5.0	5.0	4.0	4.0	4.0	5.0	5.0	5.0
	(In percent of GDP, unless indicated otherwise)								
Nominal GDP (RWf billions)	2,878	3,215	3,591	2,964	3,333	3,746			
Real GDP (percentage change)	5.3	5.2	6.0	4.1	5.4	5.9			
GDP Deflator (percentage change)	12.1	6.2	5.3	11.0	6.7	6.1			
Fiscal									
External Grants (incl. HIPC Relief)	12.6	9.8	8.6	11.7	13.5	11.3			
Revenue (excl. External Grants)	13.1	13.3	13.7	12.8	12.8	13.3			
Primary Expenditures	26.6	25.8	25.2	25.1	26.9	25.7			
Primary Balance, incl. External Grants	-0.8	-2.7	-2.9	-0.5	-0.6	-1.1			
Primary Balance, excl. External Grants	-13.4	-12.5	-11.4	-12.2	-14.1	-12.4			
Grant Element of New External Borrowing (percent)[2]	53.3	50.5	57.6	…	12.3	6.8	…	18.9	13.4
Balance of Payments									
Exports of Goods and Services	9.0	10.4	11.2	10.2	10.9	11.4			
In millions of U.S. dollars	450	549	637	534	621	701			
Imports of Goods and Services	27.1	27.4	26.7	28.3	30.6	30.2			
In millions of U.S. dollars	1,352	1,452	1,518	1,482	1,742	1,850			
Current Account, incl. Official Transfers	-6.6	-9.5	-9.0	-7.3	-7.9	-8.8			

Source: Rwandan authorities, IMF, and World Bank.

[1] Conducted at the time of the sixth PRGF review; see IMF Country Report No 09/264.

[2] Includes publicly guaranteed external borrowing.

13. The main lesson from this scenario is that while the external debt dynamics appear sustainable under the baseline, there are risks—especially in the short term—associated with the additional nonconcessional external borrowing. It would therefore be imperative to continue to carefully assess the economic viability of large investment projects, and continue to consider financing options that crowd in participation from the private sector. In addition, it would also be important to carefully phase such projects so as to manage capacity constraints for implementation and avoid undermining macroeconomic stability (directly and indirectly from debt sustainability). The latter will become even more relevant when considering the phasing, implementation, and financing of the *Bugesera Airport* and *regional railroad* projects—easily the largest two of the six strategic investment projects.

IV. Public Sector DSA

14. The results of the public sector DSA are similar to those of the external DSA. Given the assumption that there would be no net domestic borrowing beyond the near term, the public sector DSA indicators would gradually converge to those of the external DSA (see Appendix Tables 3–4 and Appendix Figure 2). Indeed, domestic debt would fall to 3.2 percent of GDP by 2015 and below 1 percent of GDP by 2030.

V. DEBT DISTRESS CLASSIFICATION AND CONCLUSIONS

15. It is the staffs' view that Rwanda should be considered at moderate risk of debt distress based on external debt burden indicators. The public sector DSA results suggest that Rwanda's overall public sector debt dynamics are sustainable in light of the current size and evolution of the domestic debt stock.

The "moderate" rather than "low" rating of risk of debt distress is based on the vulnerabilities associated with the PV of debt-to-exports ratio. Careful vetting, prioritization, and sequencing of the implementation of investment projects by the Rwandan authorities, as well as strengthening implementation capacity, will be essential to maintain debt sustainability over the near and medium term. The authorities are well aware of these vulnerabilities and have identified several measures to help lift the export base. A comprehensive strategy for export development, expected to be submitted to Cabinet for approval in 2010, will outline policies to increase and diversify exports that would help reduce vulnerabilities to debt sustainability. In addition, deepening debt management capacity and building up a reliable framework for public-private partnerships would help the authorities identify and assess potentially high-yielding projects and their risks, and further open up opportunities to crowd in the private sector. The authorities are also continuing to build capacity to conduct their own DSA's on a semi-annual basis.

Appendix Table 1.: External Debt Sustainability Framework, Baseline Scenario, 2007-2030 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 0 Average	0 Standard Deviation	Projections											
	2007	2008	2009			2010	2011	2012	2013	2014	2015	2010-2015 Average	2016	2020	2025	2030	2016-2030 Average
External debt (nominal) 1/	**15.2**	**14.8**	**14.4**			**16.4**	**19.3**	**19.1**	**18.0**	**16.7**	**15.4**		**14.8**	**16.4**	**20.7**	**22.7**	
o/w public and publicly guaranteed (PPG)	15.2	14.8	14.4			16.4	19.3	19.1	18.0	16.7	15.4		14.8	16.4	20.7	22.7	
Change in external debt	-0.3	-0.5	-0.3			2.0	2.9	-0.2	-1.1	-1.3	-1.3		-0.7	1.0	0.8	0.2	
Identified net debt-creating flows	-2.6	-0.4	3.5			5.4	6.5	2.7	1.5	0.9	0.6		1.9	0.9	-1.2	-3.3	
Non-interest current account deficit	**2.1**	**4.8**	**7.1**	**2.1**	**2.9**	**7.7**	**8.5**	**5.0**	**4.0**	**3.4**	**3.2**		**4.6**	**4.1**	**2.2**	**0.2**	2.8
Deficit in balance of goods and services	14.1	15.2	18.1			19.7	18.8	14.9	13.0	11.8	11.0		10.7	9.3	7.5	5.8	
Exports	11.1	14.6	10.2			10.9	11.4	11.8	12.3	12.8	13.4		13.7	14.9	16.4	17.9	
Imports	25.2	29.9	28.3			30.6	30.2	26.7	25.3	24.6	24.4		24.3	24.1	23.9	23.6	
Net current transfers (negative = inflow)	-12.3	-11.0	-11.5	-12.3	1.4	-12.8	-11.2	-10.8	-9.8	-9.2	-8.6		-6.7	-5.9	-6.0	-6.3	-6.2
o/w official	-9.7	-9.5	-10.0			-11.4	-9.8	-9.4	-8.5	-7.8	-7.1		-5.2	-4.5	-4.6	-4.9	
Other current account flows (negative = net inflow)	0.3	0.6	0.6			0.8	1.0	0.9	0.8	0.8	0.7		0.6	0.7	0.7	0.7	
Net FDI (negative = inflow)	**-2.2**	**-2.2**	**-2.3**	**-1.0**	**0.9**	**-1.8**	**-1.4**	**-1.6**	**-1.8**	**-1.8**	**-1.9**		**-2.0**	**-2.4**	**-2.4**	**-2.4**	-2.3
Endogenous debt dynamics 2/	**-2.5**	**-2.9**	**-1.4**			**-0.5**	**-0.7**	**-0.7**	**-0.8**	**-0.7**	**-0.7**		**-0.7**	**-0.7**	**-1.0**	**-1.1**	
Contribution from nominal interest rate	0.2	0.1	0.1			0.3	0.2	0.4	0.4	0.3	0.3		0.3	0.2	0.2	0.2	
Contribution from real GDP growth	-0.7	-1.4	-0.5			-0.7	-0.9	-1.1	-1.2	-1.1	-1.0		-0.9	-0.9	-1.2	-1.3	
Contribution from price and exchange rate changes	-1.9	-1.7	-1.0			…	…	…	…	…	…		…	…	…	…	
Residual (3-4) 3/	**2.3**	**-0.1**	**-3.8**			**-3.4**	**-3.7**	**-2.9**	**-2.6**	**-2.1**	**-1.8**		**-2.6**	**0.1**	**1.9**	**3.5**	
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	
PV of external debt 4/	...	...	9.1			11.2	14.3	14.3	13.2	12.1	11.0		10.3	10.6	13.3	14.8	
In percent of exports	...	...	89.0			102.8	125.2	120.6	107.4	94.2	82.2		75.5	71.4	81.5	83.0	
PV of PPG external debt	**...**	**...**	**9.1**			**11.2**	**14.3**	**14.3**	**13.2**	**12.1**	**11.0**		**10.3**	**10.6**	**13.3**	**14.8**	
In percent of exports	**...**	**...**	**89.0**			**102.8**	**125.2**	**120.6**	**107.4**	**94.2**	**82.2**		**75.5**	**71.4**	**81.5**	**83.0**	
In percent of government revenues	**...**	**...**	**70.6**			**87.7**	**108.0**	**103.8**	**92.6**	**82.4**	**74.0**		**68.9**	**68.6**	**82.9**	**88.7**	
Debt service-to-exports ratio (in percent)	**3.5**	**2.1**	**2.8**			**4.4**	**6.3**	**6.9**	**8.6**	**8.2**	**7.5**		**6.6**	**4.7**	**3.8**	**4.1**	
PPG debt service-to-exports ratio (in percent)	**3.5**	**2.1**	**2.8**			**4.4**	**6.3**	**6.9**	**8.6**	**8.2**	**7.5**		**6.6**	**4.7**	**3.8**	**4.1**	
PPG debt service-to-revenue ratio (in percent)	**3.1**	**2.1**	**2.2**			**3.8**	**5.4**	**5.9**	**7.4**	**7.1**	**6.7**		**6.0**	**4.5**	**3.9**	**4.4**	
Total gross financing need (Billions of U.S. dollars)	0.0	0.1	0.3			0.4	0.5	0.3	0.2	0.2	0.2		0.3	0.3	0.1	-0.4	
Non-interest current account deficit that stabilizes debt ratio	2.4	5.2	7.5			5.7	5.7	5.2	5.2	4.7	4.5		5.3	3.1	1.5	0.0	
Key macroeconomic assumptions																	
Real GDP growth (in percent)	5.5	11.2	4.1	7.9	3.3	5.4	5.9	6.4	6.9	6.5	6.5	6.3	6.5	6.5	6.5	6.5	6.5
GDP deflator in US dollar terms (change in percent)	14.2	12.7	7.3	3.7	10.6	3.0	1.6	2.1	1.9	1.9	1.9	2.1	2.0	2.0	2.0	2.0	2.0
Effective interest rate (percent) 5/	1.3	1.2	1.1	1.1	0.2	1.9	1.6	2.2	2.3	2.1	1.9	2.0	1.8	1.2	1.1	1.2	1.3
Growth of exports of G&S (US dollar terms, in percent)	19.6	64.7	-22.4	16.5	24.6	16.4	12.9	12.2	13.0	13.3	13.3	13.5	11.1	10.9	10.7	10.5	10.8
Growth of imports of G&S (US dollar terms, in percent)	21.1	48.3	5.8	13.9	16.5	17.5	6.2	-4.0	3.0	5.9	7.5	6.0	8.4	8.4	8.4	8.4	8.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	12.3	6.8	23.5	43.0	42.7	42.3	28.4	42.0	40.5	39.2	37.9	39.8
Government revenues (excluding grants, in percent of GDP)	12.3	14.9	12.8			12.8	13.3	13.8	14.2	14.6	14.8		15.0	15.5	16.1	16.7	15.8
Aid flows (in Billions of US dollars) 7/	0.4	0.6	0.7			0.8	0.7	0.7	0.7	0.7	0.7		0.8	0.9	1.3	1.8	
o/w Grants	0.3	0.5	0.6			0.8	0.7	0.7	0.7	0.7	0.7		0.7	0.7	0.9	1.3	
o/w Concessional loans	0.1	0.1	0.1			0.0	0.1	0.0	0.1	0.0	0.0		0.1	0.2	0.3	0.4	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			13.8	11.5	11.1	9.9	9.0	8.1		7.7	6.3	5.8	5.4	6.2
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			83.6	73.3	88.6	94.1	94.9	94.9		91.7	79.8	77.8	78.1	80.9
Memorandum items:																	
Nominal GDP (Billions of US dollars)	3.7	4.7	5.2			5.7	6.1	6.6	7.2	7.9	8.5		9.3	12.9	19.6	29.6	
Nominal dollar GDP growth	20.5	25.3	11.8			8.5	7.6	8.6	9.0	8.6	8.6	8.5	8.6	8.6	8.6	8.6	8.6
PV of PPG external debt (in Billions of US dollars)			0.5			0.6	0.9	0.9	0.9	0.9	0.9		0.9	1.4	2.6	4.3	
(PVt-PVt-1)/GDPt-1 (in percent)						2.9	4.2	1.2	0.1	-0.1	-0.1	1.4	0.2	1.4	1.6	1.4	1.3
Gross remittances (Billions of US dollars)	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.2	0.2		0.2	0.3	0.4	0.6	
PV of PPG external debt (in percent of GDP + remittances)	...	...	8.9			11.0	14.0	14.0	12.9	11.8	10.8		10.1	10.4	13.1	14.5	
PV of PPG external debt (in percent of exports + remittances)	...	...	72.4			85.2	105.2	102.4	92.2	81.2	71.1		65.5	62.6	72.3	74.3	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.2			3.7	5.3	5.8	7.4	7.0	6.5		5.7	4.1	3.4	3.7	

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, 2010-2030
(In percent)

	Projections							
	2010	2011	2012	2013	2014	2015	**2020**	2030
PV of debt-to GDP ratio								
Baseline	11	14	14	13	12	11	**11**	15
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	11	9	8	6	5	4	**2**	19
A2. New public sector loans on less favorable terms in 2010-2030 2	11	15	16	15	14	13	**15**	24
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	11	14	14	13	12	11	**11**	15
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	11	16	18	17	16	14	**13**	15
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	11	15	17	16	14	13	**12**	17
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	11	15	16	15	14	13	**12**	15
B5. Combination of B1-B4 using one-half standard deviation shocks	11	16	18	17	16	14	**13**	16
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	11	20	20	18	17	15	**15**	21
PV of debt-to-exports ratio								
Baseline	103	125	121	107	94	82	**71**	83
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	103	82	65	49	37	29	**16**	107
A2. New public sector loans on less favorable terms in 2010-2030 2	103	132	134	124	112	101	**103**	133
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	103	123	119	106	93	81	**70**	82
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	103	167	231	207	183	162	**131**	130
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	103	123	119	106	93	81	**70**	82
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	103	133	136	122	107	94	**79**	84
B5. Combination of B1-B4 using one-half standard deviation shocks	103	144	169	151	133	117	**96**	99
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	103	123	119	106	93	81	**70**	82
PV of debt-to-revenue ratio								
Baseline	88	108	104	93	82	74	**69**	89
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	88	71	56	42	33	26	**16**	114
A2. New public sector loans on less favorable terms in 2010-2030 2	88	114	116	107	98	91	**99**	143
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	88	107	105	94	83	75	**69**	90
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	88	117	132	119	107	97	**84**	92
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	88	116	122	109	97	87	**81**	104
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	88	115	117	105	94	85	**75**	90
B5. Combination of B1-B4 using one-half standard deviation shocks	88	118	133	119	107	97	**85**	97
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	88	150	145	129	115	103	**96**	124

Appendix Table 2.Rwanda: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2010-2030 (continued)
(In percent)

Debt service-to-exports ratio

Baseline	4	6	7	9	8	7	**5**	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	4	6	6	7	6	6	**2**	3
A2. New public sector loans on less favorable terms in 2010-2030 2	4	6	6	6	6	8	**5**	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	4	6	7	9	8	7	**5**	4
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	4	8	11	14	13	12	**9**	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	4	6	7	9	8	7	**5**	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	4	6	7	9	8	8	**5**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	4	7	8	11	10	9	**6**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	4	6	7	9	8	7	**5**	4

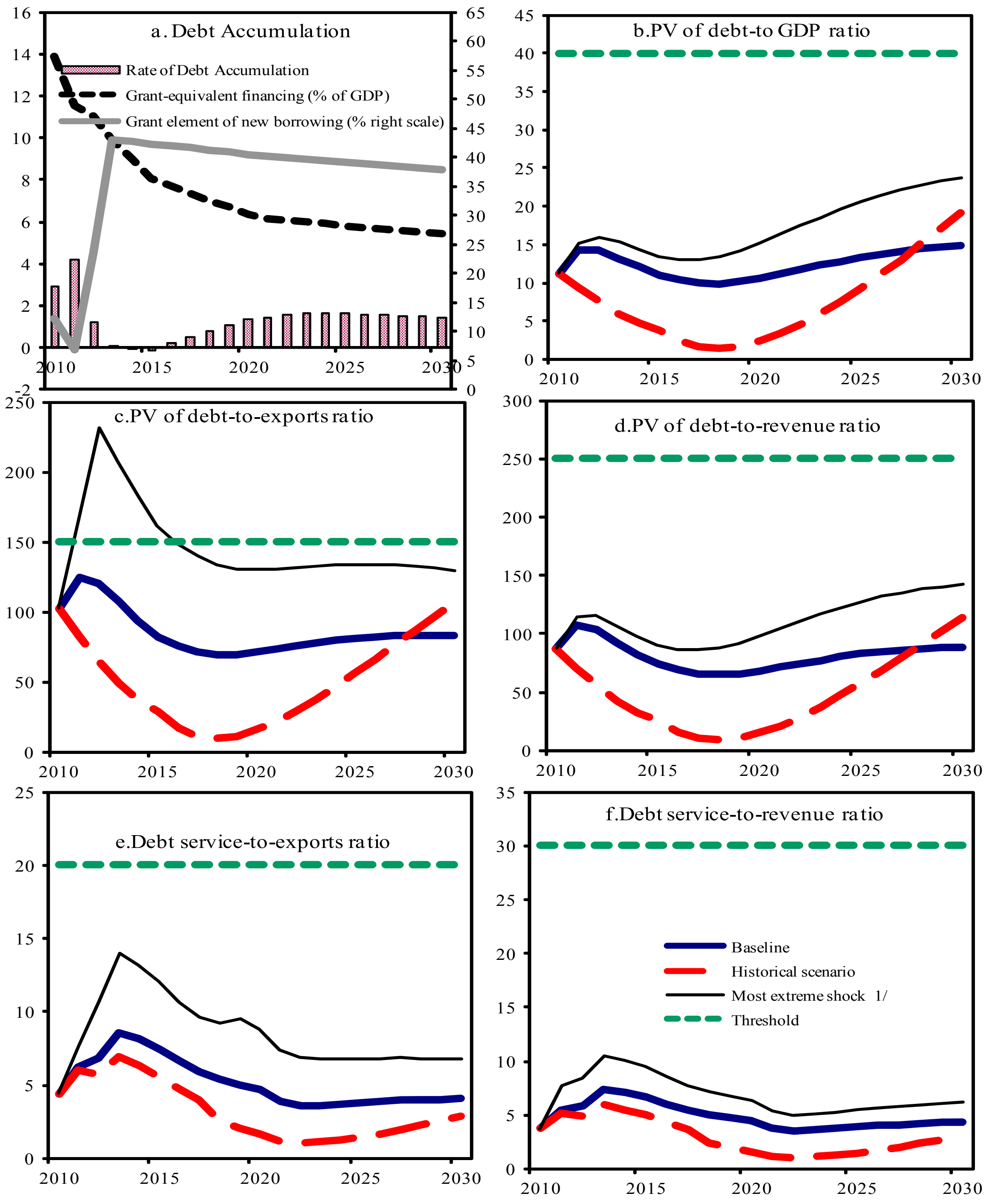
Debt service-to-revenue ratio

Baseline	4	5	6	7	7	7	**4**	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	4	5	5	6	5	5	**2**	3
A2. New public sector loans on less favorable terms in 2010-2030 2	4	5	5	5	5	7	**5**	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	4	5	6	8	7	7	**5**	4
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	4	5	6	8	8	7	**6**	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	4	6	7	9	9	8	**5**	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	4	5	6	8	7	7	**5**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	4	6	7	8	8	8	**6**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	4	8	8	11	10	10	**6**	6
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	30	30	30	30	30	30	**30**	30

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 (implicitly assuming 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 Alternative Scenarios, 2010-2030 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2020. 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, 2007-2030
(In percent of GDP, unless otherwise indicated)

	Actual			Average	Standard Deviation	Estimate	Projections								
	2007	2008	2009			2010	2011	2012	2013	2014	2015	2010-15 Average	2020	2030	2016-30 Average
Public sector debt 1/	27.1	21.6	22.1			22.1	24.3	23.6	22.0	20.3	18.6		18.2	23.3	
o/w foreign-currency denominated	15.2	14.8	14.4			16.4	19.3	19.1	18.0	16.7	15.4		16.4	22.7	
Change in public sector debt	0.5	-5.5	0.6			-0.1	2.3	-0.7	-1.6	-1.7	-1.7		0.8	0.1	
Identified debt-creating flows	-2.7	-5.2	-1.4			-0.7	-0.1	-1.0	-1.4	-1.3	-1.3		0.9	0.1	
Primary deficit	0.9	-0.8	0.6	0.7	1.6	0.5	1.1	0.4	0.0	-0.1	-0.1	0.3	2.1	1.7	1.8
Revenue and grants	21.2	25.6	24.4			26.3	24.5	24.4	23.7	23.3	22.6		20.7	21.2	
of which: grants	8.8	10.8	11.6			13.5	11.2	10.6	9.5	8.6	7.8		5.2	4.5	
Primary (noninterest) expenditure	22.1	24.8	25.1			26.8	25.6	24.8	23.7	23.2	22.5		22.8	22.9	
Automatic debt dynamics	-3.8	-4.6	-2.2			-1.3	-1.4	-1.6	-1.5	-1.3	-1.3		-1.2	-1.6	
Contribution from interest rate/growth differential	-2.4	-3.7	-1.3			-1.2	-1.3	-1.5	-1.5	-1.3	-1.3		-1.2	-1.6	
of which: contribution from average real interest rate	-1.0	-1.0	-0.4			-0.1	-0.1	0.0	0.1	0.0	0.0		-0.1	-0.2	
of which: contribution from real GDP growth	-1.4	-2.7	-0.9			-1.1	-1.2	-1.5	-1.5	-1.3	-1.2		-1.1	-1.4	
Contribution from real exchange rate depreciation	-1.4	-0.9	-1.0			-0.1	-0.1	-0.1	0.0	0.0	0.0		...	...	
Other identified debt-creating flows	0.3	0.2	0.3			0.1	0.1	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	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	-0.1			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.4	0.3	0.4			0.2	0.2	0.2	0.2	0.2	0.1		0.0	0.0	
Residual, including asset changes	3.2	-0.3	1.9			0.6	2.4	0.3	-0.2	-0.3	-0.3		-0.2	0.0	
Other Sustainability Indicators															
PV of public sector debt	11.8	6.8	16.8			16.9	19.4	18.8	17.2	15.6	14.2		12.4	15.4	
o/w foreign-currency denominated	0.0	0.0	9.1			11.2	14.3	14.3	13.2	12.1	11.0		10.6	14.8	
o/w external	...	...	9.1			11.2	14.3	14.3	13.2	12.1	11.0		10.6	14.8	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	1.7	-0.1	1.1			4.0	3.8	3.2	3.0	2.9	2.7		4.3	2.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	55.8	26.5	68.6			64.2	79.2	77.0	72.5	67.3	62.8		60.1	72.7	
PV of public sector debt-to-revenue ratio (in percent)	95.8	45.8	130.6			131.7	146.1	136.5	120.7	106.9	95.6		80.5	92.3	
o/w external 3/	…	…	70.6			87.7	108.0	103.8	92.6	82.4	74.0		68.6	88.7	
Debt service-to-revenue and grants ratio (in percent) 4/	3.8	2.5	2.2			2.8	3.9	4.2	5.3	5.1	5.0		3.8	3.6	
Debt service-to-revenue ratio (in percent) 4/	6.6	4.4	4.1			5.7	7.2	7.4	8.9	8.2	7.7		5.0	4.5	
Primary deficit that stabilizes the debt-to-GDP ratio	0.4	4.7	0.0			0.6	-1.2	1.1	1.6	1.6	1.5		1.4	1.6	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	5.5	11.2	4.1	7.9	3.3	5.4	5.9	6.4	6.9	6.5	6.5	6.3	6.5	6.5	6.5
Average nominal interest rate on forex debt (in percent)	1.3	1.2	1.1	1.1	0.2	1.9	1.6	2.2	2.3	2.1	1.9	2.0	1.2	1.2	1.3
Average real interest rate on domestic debt (in percent)	-7.6	-7.9	-6.1	-6.4	1.8	-2.9	-1.2	-1.1	0.1	-0.7	-0.5	-1.1	-0.5	-0.3	-0.4
Real exchange rate depreciation (in percent, + indicates depreciation)	-9.8	-6.8	-6.8	-0.4	12.3	-0.8	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	13.2	12.6	11.0	8.9	7.5	6.7	6.1	5.6	5.0	5.0	5.0	5.6	5.0	5.0	5.0
Growth of real primary spending (deflated by GDP deflator, in percent)	0.1	0.3	0.1	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)	...	...	...	…	…	12.3	6.8	23.5	43.0	42.7	42.3	28.4	40.5	37.9	...

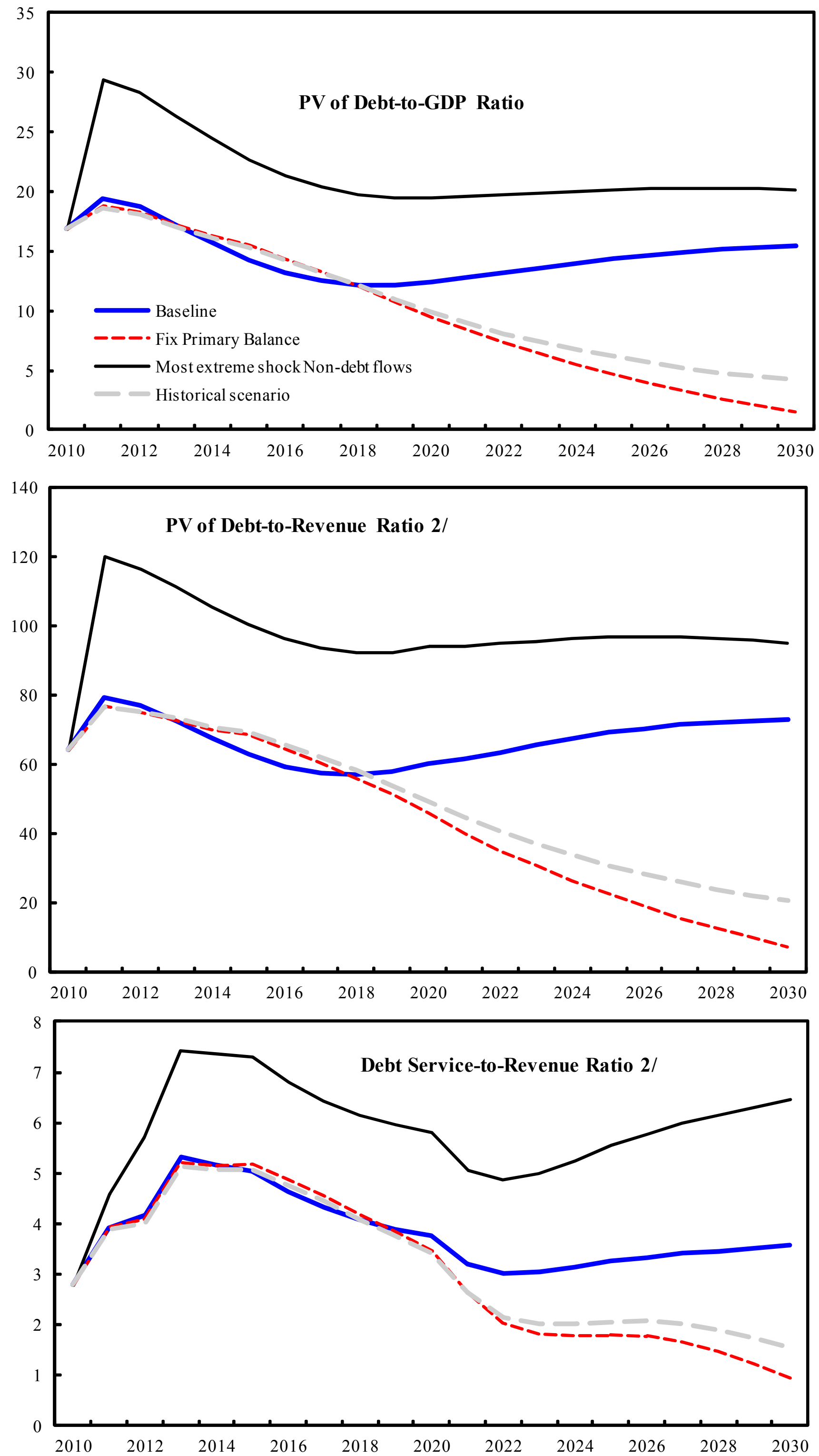
Sources: Country authorities; and staff estimates and projections.
1/ [Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.]
2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term 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.

Appendix Table 4.Rwanda: Sensitivity Analysis for Key Indicators of Public Debt 2010-2030

	Projections							
	2010	2011	2012	2013	2014	2015	2020	2030
PV of Debt-to-GDP Ratio								
Baseline	17	19	19	17	16	14	12	15
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	17	19	18	17	16	15	10	4
A2. Primary balance is unchanged from 2010	17	19	18	17	16	15	9	2
A3. Permanently lower GDP growth 1/	17	20	19	18	17	16	18	37
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	17	20	20	19	17	16	16	22
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	17	21	22	20	18	17	15	17
B3. Combination of B1-B2 using one half standard deviation shocks	17	20	20	18	17	15	13	15
B4. One-time 30 percent real depreciation in 2011	17	24	23	21	20	18	15	17
B5. 10 percent of GDP increase in other debt-creating flows in 2011	17	29	28	26	24	23	19	20
PV of Debt-to-Revenue Ratio 2/								
Baseline	64	79	77	73	67	63	60	73
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	64	77	75	73	71	69	49	21
A2. Primary balance is unchanged from 2010	64	77	75	73	70	68	46	7
A3. Permanently lower GDP growth 1/	64	80	79	76	72	70	88	168
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	64	80	80	78	74	71	78	103
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	64	84	89	84	79	74	70	79
B3. Combination of B1-B2 using one half standard deviation shocks	64	80	83	78	72	68	63	73
B4. One-time 30 percent real depreciation in 2011	64	99	96	90	85	80	72	81
B5. 10 percent of GDP increase in other debt-creating flows in 2011	64	120	116	111	105	100	94	95
Debt Service-to-Revenue Ratio 2/								
Baseline	3	4	4	5	5	5	4	4
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	3	4	4	5	5	5	3	2
A2. Primary balance is unchanged from 2010	3	4	4	5	5	5	3	1
A3. Permanently lower GDP growth 1/	3	4	4	5	5	5	5	8
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	3	4	4	6	5	5	4	5
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	3	4	4	6	6	5	4	4
B3. Combination of B1-B2 using one half standard deviation shocks	3	4	4	6	5	5	4	4
B4. One-time 30 percent real depreciation in 2011	3	5	6	7	7	7	6	6
B5. 10 percent of GDP increase in other debt-creating flows in 2011	3	4	6	7	7	7	5	6

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, 2010-2030 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2020.

2/ Revenues are defined inclusive of grants.