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FIFTH REVIEW UNDER THE POLICY SUPPORT INSTRUMENT AND REQUEST FOR EXTENSION, AND REQUEST FOR AN ARRANGEMENT UNDER THE STANDBY CREDIT FACILITY—DEBT SUSTAINABILITY ANALYSIS

Approved By
Roger Nord and Cathy Pattillo (IMF) and John Panzer (IDA)

The Debt Sustainability Analysis (DSA) was prepared jointly by IMF and World Bank staff, in consultation with the authorities.

The results of the debt sustainability analysis indicate that Rwanda continues to face a low risk of external debt distress, similar to the analysis prepared for the 4th Review under the PSI. [1, 2] *Under the baseline scenario all external debt burden indicators are projected to remain below the policy-dependent thresholds. Standard stress tests show temporary breaches of the debt service-to-exports and debt service-to-revenue ratios in 2023 when the Eurobond issued in 2013 matures. As these breaches are temporary, and it is assumed that Rwanda will be able to refinance the maturing Eurobond, the final assessment of a low risk of external debt distress is maintained. The ratio of the present value of public sector debt-to-GDP ratio remains below the policy dependent benchmark both under the baseline and standard stress tests. Until exports expand and are diversified further, Rwanda needs to remain prudent about the terms and amount of external debt it contracts/guarantees.*

[1] This debt sustainability analysis updates the DSA analysis contained in IMF Country Report No. 16/24 (January 2016). The fiscal year for Rwanda is from July–June; however, this DSA is prepared on a calendar year basis. The results of this DSA were discussed with the authorities and they are in broad agreement with its conclusions.

[2] The Country Policy and Institutional Assessment (CPIA) which assesses the quality of a country's present policy and institutional framework has classified Rwanda as a strong performer, with an average CPIA score of 3.92 over the last three years.

BACKGROUND

1. **The Rwandan economy grew strongly in 2015, but recent weak mineral exports have highlighted external vulnerabilities.** Real GDP grew by 6.9 percent in 2015. But while output has remained strong, the decline in mineral prices has resulted in a near halving of mining exports compared to the previous year. Along with weaker services balance, the current account deficit deteriorated to 13.5 percent of GDP in 2015, increasing strain on the foreign reserves, which now cover 3.6 months of prospective imports. Weak mineral prices are projected to lower mineral exports further in 2016, and this will dampen the growth in overall export receipts. Combined with aircraft purchases by RwandAir, the current account balance will deteriorate further to 16.5 percent of GDP, intensifying pressure on the foreign reserves. Real GDP growth is projected to be modestly lower at 6 percent in 2016 and 2017, as the fiscal and monetary stances are tightened, along with exchange rate adjustment, to slow the pace of import growth and address external imbalances. Requested IMF financing under the Standby Credit Facility would provide more buffer for foreign reserves.

2. **Rwanda's public sector debt remains low, but it is increasing.** At end-2015, total public sector debt was 35.4 percent of GDP—with the external debt of the public sector at 28.5 percent of GDP and mainly comprised of multilateral and commercial debt, and domestic debt at 6.9 percent of GDP. These debt ratios compare favorably with those of other countries in the region. The public debt-to-GDP ratio has increased steadily over the last three years, reflecting new borrowing, in particular large disbursements under multilateral concessional loans as Rwanda's low-risk rating of debt distress has shifted donor support towards more concessional lending rather than grants. Public external guaranteed debt has been rising mainly due to the expansion of RwandAir's fleet of aircraft.

Table 1. Rwanda: External Public Debt

	2013		2014		2015	
	Billions US$	Share	Billions US$	Share	Billions US$	Share
Multilateral creditors	0.9	58.6	1.1	60.6	1.4	61.5
Bilateral creditors	0.2	13.5	0.3	13.8	0.3	13.2
Commercial creditors	0.4	25.0	0.4	21.9	0.4	18.0
Total (excluding guarantees)	1.6	97.1	1.8	96.3	2.1	92.7
Publicly guaranteed debt	0.0	2.9	0.1	3.7	0.2	7.3
Total (including guarantees)	1.6	100.0	1.8	100.0	2.2	100.0

Source: Rwandan authorities and IMF staff.

UNDERLYING ASSUMPTIONS

3. **The medium and long-term macroeconomic framework underlying the DSA is consistent with the baseline scenario presented in the Staff Report for 5th review of the PSI-supported program.** The main assumptions and projections for key macroeconomic variables are summarized in Box 1 and Table 2. The main differences between the current assumptions and those underlying the last DSA update are: (i) GDP growth is lower in 2016 and 2017; (ii) additional IMF financing in 2016 and 2017 under the Standby Credit Facility and other additional potential financing is included; and (iii) an improved fiscal position and consequently lower net domestic financing over the long term. Table 3 shows the near-term differences in the underlying baseline assumptions between the current and previous DSAs.

Table 2. Key Assumptions

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2026	2027	2031	2036
	(Percent of GDP, unless otherwise indicated)												
Nominal GDP (RF billions)	4,864	5,394	5,837	6,459	7,164	8,031	9,041	10,180	11,460	20,424	23,055	37,426	68,511
Real GDP (percentage change)	4.7	7.0	6.9	6.0	6.0	7.0	7.2	7.5	7.5	7.5	7.5	7.5	7.5
GDP deflator (percentage change)	4.7	3.7	1.2	4.4	4.6	4.8	5.0	4.7	4.7	5.0	5.0	5.0	5.0
Fiscal (central government)													
External grants (incl. HIPC relief)	8.6	7.4	6.4	5.6	5.2	5.2	3.2	3.0	2.9	1.6	1.4	0.9	0.5
Revenue (excl. external grants)	16.5	16.7	18.6	18.2	18.1	18.3	18.9	19.2	19.5	20.6	20.8	21.5	22.5
Revenue (incl. external grants)	25.1	24.0	25.0	23.8	23.3	23.5	22.1	22.2	22.3	22.2	22.2	22.4	22.9
Primary expenditures	28.8	28.2	29.1	27.6	25.7	25.5	25.1	24.9	24.8	24.1	24.0	23.6	23.4
Primary current expenditures	13.8	14.3	14.0	13.4	13.8	13.2	12.7	12.7	12.7	12.5	12.5	12.3	12.2
Capital expenditure and net lending	15.0	13.9	15.1	14.2	11.9	12.4	12.3	12.2	12.1	11.7	11.6	11.3	11.1
Primary balance, incl. external grants	-3.7	-4.2	-4.1	-3.8	-2.4	-2.0	-3.0	-2.7	-2.4	-1.9	-1.8	-1.2	-0.1
Primary balance, excl. external grants	-12.4	-11.5	-10.5	-9.4	-7.6	-7.2	-6.2	-5.7	-5.3	-3.5	-3.2	-2.1	-0.6
Net domestic financing	0.0	3.2	1.6	0.8	0.8	-1.3	0.2	0.9	0.6	0.5	0.5	0.5	0.5
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]	1.9	3.2	2.6	4.6	3.2	5.3	4.8	3.6	3.3	2.6	2.6	2.2	0.4
Grant element of new external borrowing (percent)				29.5	48.5	52.9	47.2	47.5	51.9	38.3	35.8	24.4	17.8
Balance of payments													
Exports of goods and services	15.6	16.9	17.3	16.7	17.6	18.4	18.7	18.9	20.4	20.4	20.4	20.4	20.4
Imports of goods and services	32.5	33.5	34.9	37.3	33.3	32.2	31.9	32.1	32.3	32.3	32.3	32.3	32.3
Current account, incl. official transfers	-7.4	-10.5	-13.5	-16.5	-12.0	-10.2	-11.1	-11.1	-11.0	-9.3	-9.0	-9.3	-9.5
Foreign Direct Investment	3.4	3.4	3.9	3.9	4.0	4.2	4.5	4.8	5.1	4.5	4.5	4.5	4.5

Source: Rwandan authorities, IMF and World Bank staff.

[1] Includes publicly guaranteed external borrowing.

Table 3. Baseline External DSA Compared to the Previous DSA Update, 2016-18

	Previous DSA[1]			Current DSA		
	2016 Proj.	2017 Proj.	2018 Proj.	2016 Proj.	2017 Proj.	2018 Proj.
Stock of public and publicly-guaranteed (PPG) external debt						
Millions of U.S. dollars	2,956	3,363	3,716	3,027	3,431	3,851
Percent of GDP	36.0	37.6	38.2	37.8	41.7	44.7
Present value (PV) of PPG external debt						
Millions of U.S. dollars	1,936	2,114	2,293	1,980	2,196	2,393
Percent of GDP	23.6	23.7	23.6	24.8	26.7	27.8
PV of PPG external debt to revenues (percent)	109.0	120.6	113.7	116.1	128.3	132.3
PV of PPG external debt to exports (percent)	140.1	138.7	134.1	148.1	151.6	151.0
PPG external debt service to revenues (percent)	6.1	8.0	8.6	3.5	5.7	7.8
PPG external debt service to exports (percent)	7.9	9.2	10.2	4.5	6.7	8.9
Discount rate (percent)	5.0	5.0	5.0	5.0	5.0	5.0
	(Percent of GDP, unless indicated otherwise)					
Nominal GDP (RF billions)	6,589	7,389	8,287	6,459	7,164	8,031
Real GDP (percentage change)	6.3	6.7	6.8	6.0	6.0	7.0
GDP Deflator (percentage change)	4.1	5.1	5.0	4.4	4.6	4.8
Fiscal						
External grants (incl. HIPC relief)	5.4	3.7	4.3	5.6	5.2	5.2
Revenue (excl. external grants)	18.6	18.2	18.7	18.2	18.1	18.3
Primary expenditures	28.1	25.6	26.0	27.6	25.7	25.5
Primary balance, incl. external grants	-3.9	-3.6	-2.9	-3.8	-2.4	-2.0
Primary balance, excl. external grants	-9.5	-7.4	-7.2	-9.4	-7.6	-7.2
Grant element of new external borrowing (percent)[2]	34.2	54.6	47.2	29.5	48.5	52.9
Balance of payments						
Exports of goods and services	16.8	17.1	17.6	16.7	17.6	18.4
Millions of U.S. dollars	1,431	1,547	1,735	1,389	1,504	1,638
Imports of goods and services	36.2	33.6	32.1	37.3	33.3	32.2
Millions of U.S. dollars	3,081	3,045	3,167	3,100	2,844	2,868
Current account, incl. official transfers	-15.4	-14.0	-11.5	-16.5	-12.0	-10.2

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

[1] See IMF Country Report No. 16/24, January 2016.

[2] Includes publicly-guaranteed external borrowing.

Box 1. Macroeconomic Framework for the DSA

Despite near-term weakness in the mining sector, the medium-term and long-term framework underpinning the DSA assumes that Rwanda continues to enjoy rapid growth, and low and stable inflation.

Key highlights:

- **Growth:** Long-run growth is unchanged, projected at 7.5 percent. The composition of growth is anticipated to shift toward the private sector and net exports as measures designed to expand and diversify the export base and promote import substitution are assumed fruitful.
- **External sector:** Near-term weakness in mineral exports will be partially offset by buoyancy in exports of coffee and tea, non-traditional exports and tourism. Exports of goods and services (as a percent of GDP) are expected to gradually rise over the projection horizon; and import needs are expected to remain high, reflecting continued high investment needs in the economy. Consequently, Rwanda's external current account is projected to remain in deficit throughout the period under consideration, though the gap is expected to narrow.
- **Inflation:** Inflation is expected to remain contained. At the end of 2015 inflation was 4.5 percent and is expected to rise and be maintained at the authorities' medium-term target of 5 percent.
- **Reserves**: Reserve buffers are expected to recover from their current level and attain coverage of 4.5 months of prospective imports by 2023, consistent with the monetary integration process among East African Community members.
- **Fiscal outlook.** The key fiscal assumption is that there would be a gradual and consistent rise in domestic revenues (excluding grants) from 2018 to 2036. This reflects the authorities' commitment to raise Rwanda's revenue collection efforts to comparable level observed in other countries in the region. Primary expenditures are forecast to remain high, reflecting the need for ongoing significant capital and current spending.
- **Grants.** The DSA assumes a tapering of external donor assistance, reflecting reduced access to grants, given Rwandan's improved debt distress risk rating, and greater capacity to mobilize and use domestic revenue
- **External borrowing.** The assumptions for new external borrowing vary over the assessment period. From 2016-2021, the framework assumes central government external borrowing needs are met mainly by disbursements of contracted external multilateral and bilateral debt, and financing under the IMF Standby Credit Facility; while public guaranteed external borrowing associated with RwandAir's expansion and the completion of the Kigali Convention Center is done via commercial debt. From 2022 onward, the framework assumes that the external financing needs of the central government will be financed by new external debt, with a progressively increasing share from commercial debt, including bonds issued in the international capital market.
- **Domestic borrowing.** The framework assumes that over the long-term net domestic borrowing will be 0.5 percent of GDP. Over time, the composition of domestic borrowing is also expected to shift towards medium- and long-term debt as the authorities intensify efforts to develop the local government bond market.
- **Domestic interest rates.** New domestic borrowing is expected to be contracted at a nominal interest rate of 8 percent.

DEBT SUSTAINABILITY ANALYSIS

A. External DSA

4. **Based on the assumptions outlined above, Rwanda's debt is assessed to be sustainable with low risk of debt distress (Figure 1 and Tables 4 and 5).** Similar to the last DSA update, Rwanda is classified as a "strong" performer, based on the quality of the country's policies and institutions as measured by the 3-year average of the ratings under the World Bank's Country Policy and Institutional Assessment (CPIA). This is reflected in higher debt sustainability thresholds compared to countries operating in a weak policy environment.[3] Under the baseline scenario all debt burden indicators are projected to remain below the policy-dependent thresholds. Standard stress tests show in 2023 (when the Eurobond issued in 2013 is set to mature) temporary breaches of the debt service-to-revenue ratio, and the debt service-to-exports ratio thresholds. These findings highlight the vulnerability of the Rwandan economy to external shocks and liquidity pressures at the time the Eurobond matures. However, as the breaches of these debt service ratios are temporary, and taking into account the relatively low level of external debt and strengthening indicators of repayment capacity (the expansion of Rwanda's export base and tax revenues), and that Rwanda is assumed to refinance the maturing Eurobond, the final assessment for Rwanda's external public and public guaranteed debt is a low risk of debt distress.

B. Public DSA

5. **Adding domestic public debt to external debt does not change the results of the analysis (see Figure 2 and Tables 6 and 7).** The evolution of the total public debt indicators broadly follows that of external debt under the baseline. The DSA suggests that public debt remains stable under the baseline. Based on the 3 indicators examined—PV of public debt-to-GDP, PV of public debt-to-revenue and debt service of public debt-to-revenue—the long-term path of total public debt is projected to be broadly stable in the baseline (Figure 6). PV of public debt-to-GDP remains comfortably below the indicative benchmark throughout the assessment period. The sharp increase in the PV of debt-to-revenue indicator when the primary balance is assumed fixed at 2016 level highlights the importance of securing the revenue gains assumed under the baseline.

[3] The thresholds for strong performers are 200, 50 and 300 percent for the PV of debt to exports, GDP and government revenue, respectively. Debt service thresholds are 25 and 22 percent of exports and revenue, respectively.

AUTHORITIES' VIEW

6. **The Rwandan authorities broadly agree with the results of this DSA and the overall conclusion of a low risk of external debt distress.** They agree with the assessment that the main risk to public debt vulnerability is still the narrow export base. But, at the same time, they also expect that the on-going investments and the implementation of measures to expand and diversify the traditional and non-traditional exports and tourism sectors will contribute to limit this risk. Further, the authorities agree that having in place a prudent medium-term debt management strategy, and carefully prioritizing future projects and their financing are necessary to contain public debt vulnerabilities.

CONCLUSION

7. **Rwanda continues to face a low risk of debt distress but remains subject to external vulnerabilities**. Under the current set of baseline assumptions, Rwanda's debt burden indicators remain below the policy-related thresholds under baseline scenario, with temporary breaches of the respective thresholds of the debt service-to-revenue and the debt service-to-exports ratios in 2023 under standard stress tests. These breaches of the two liquidity ratios underscore Rwanda's susceptibility to external shocks and the potential risk of liquidity pressures in the future. However, it is judged that the risk arising from these breaches can be mitigated by the ability of the authorities to refinance non-concessional debt falling due in 2023, provided that sound macroeconomic and fiscal policies are maintained. Public debt, though increasing, remains comparatively low and the profile of Rwanda's external debt burden is also expected to improve over time, given the expected strong growth, expansion in exports and improvement in revenues.

8. **The main risk to Rwanda's debt sustainability remains the narrow export base.** While it is assumed that this risk will be mitigated by export expansion and diversification over the assessment period, the current weakness in mineral exports is a poignant reminder of the vulnerability that arises from a narrow export base heavily affected by fluctuating commodity prices and output. Moreover, should the anticipated medium-to long-term expansion in exports fail to materialize, resulting in lower than expected export receipts, the risks to debt sustainability over the longer term would rise.

Table 4. External Debt Sustainability Framework, Baseline Scenario, 2013-2036[1]

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections									
	2013	2014	2015			2016	2017	2018	2019	2020	2021	2016-2021 Average	2026	2036	2022-2036 Average
External debt (nominal) 1/	**26.6**	**28.0**	**32.8**			**41.5**	**45.1**	**47.7**	**47.7**	**46.5**	**45.0**		**36.7**	**24.3**	
of which: public and publicly guaranteed (PPG)	22.1	23.6	28.5			37.8	41.7	44.7	45.0	44.1	42.7		34.1	21.1	
Change in external debt	5.5	1.4	4.8			8.7	3.6	2.6	-0.1	-1.2	-1.5		-1.0	-2.7	
Identified net debt-creating flows	4.5	5.9	8.9			10.7	5.6	3.0	3.4	3.1	2.8		2.3	3.2	
Non-interest current account deficit	**7.0**	**9.9**	**12.7**	**6.8**	**3.6**	**15.7**	**11.1**	**9.2**	**10.0**	**10.1**	**10.1**		**8.6**	**8.7**	8.7
Deficit in balance of goods and services	16.9	16.7	17.6			20.6	15.7	13.8	13.1	13.2	11.9		11.9	11.9	
Exports	15.6	16.9	17.3			16.7	17.6	18.4	18.7	18.9	20.4		20.4	20.4	
Imports	32.5	33.5	34.9			37.3	33.3	32.2	31.9	32.1	32.3		32.3	32.3	
Net current transfers (negative = inflow)	-11.3	-8.1	-6.4	-10.7	2.2	-6.8	-6.0	-6.0	-4.0	-3.9	-3.7		-3.7	-2.8	-3.4
of which: official	-7.2	-8.4	-4.0			-4.4	-4.4	-2.5	-2.2	-2.0	-1.8		-1.3	-0.6	
Other current account flows (negative = net inflow)	1.3	1.3	1.6			1.9	1.5	1.4	0.8	0.8	1.9		0.5	-0.4	
Net FDI (negative = inflow)	**-2.1**	**-3.4**	**-3.9**	**-1.8**	**1.1**	**-3.9**	**-4.0**	**-4.2**	**-4.5**	**-4.8**	**-5.1**		**-4.5**	**-4.5**	-4.5
Endogenous debt dynamics 2/	**-0.4**	**-0.6**	**0.1**			**-1.2**	**-1.5**	**-2.0**	**-2.0**	**-2.2**	**-2.2**		**-1.9**	**-1.1**	
Contribution from nominal interest rate	0.5	0.7	0.8			0.8	0.9	1.0	1.2	1.0	0.9		0.7	0.8	
Contribution from real GDP growth	-1.0	-1.8	-1.9			-1.9	-2.4	-3.0	-3.2	-3.3	-3.2		-2.6	-1.8	
Contribution from price and exchange rate changes	0.1	0.5	1.2			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**1.0**	**-4.5**	**-4.1**			**-2.0**	**-2.0**	**-0.3**	**-3.5**	**-4.3**	**-4.3**		**-3.4**	**-5.9**	
of which: 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/	...	...	22.2			28.4	30.0	30.8	30.4	29.5	28.2		23.5	18.4	
In percent of exports	...	...	128.3			170.0	170.5	167.3	162.1	155.9	138.4		115.1	90.2	
PV of PPG external debt	**...**	**...**	**17.9**			**24.8**	**26.7**	**27.8**	**27.7**	**27.1**	**26.0**		**21.0**	**15.2**	
In percent of exports	**...**	**...**	**103.4**			**148.1**	**151.6**	**151.0**	**147.9**	**143.2**	**127.2**		**102.8**	**74.4**	
In percent of government revenues	**...**	**...**	**85.2**			**116.1**	**128.3**	**132.3**	**145.5**	**135.9**	**128.6**		**99.8**	**67.2**	
Debt service-to-exports ratio (in percent)	**6.4**	**8.0**	**9.0**			**8.4**	**10.8**	**13.2**	**14.0**	**13.3**	**13.5**		**13.4**	**19.2**	
PPG debt service-to-exports ratio (in percent)	**3.5**	**4.8**	**5.5**			**4.5**	**6.7**	**8.9**	**9.4**	**8.5**	**8.7**		**6.1**	**6.8**	
PPG debt service-to-revenue ratio (in percent)	**2.6**	**4.2**	**4.5**			**3.5**	**5.7**	**7.8**	**9.3**	**8.0**	**8.8**		**5.9**	**6.2**	
Total gross financing need (Billions of U.S. dollars)	0.5	0.6	0.9			1.1	0.8	0.7	0.8	0.9	1.0		1.5	4.9	
Non-interest current account deficit that stabilizes debt ratio	1.4	8.4	8.0			7.1	7.5	6.6	10.0	11.3	11.6		9.7	11.5	
Key macroeconomic assumptions															
Real GDP growth (in percent)	4.7	7.0	6.9	7.5	1.9	6.0	6.0	7.0	7.2	7.5	7.5	6.9	7.5	7.5	7.5
GDP deflator in US dollar terms (change in percent)	-0.5	-1.8	-4.0	2.5	5.7	-3.4	-3.1	-2.5	0.1	1.7	1.7	-0.9	2.0	2.0	1.8
Effective interest rate (percent) 5/	2.4	2.7	2.8	2.5	0.8	2.4	2.2	2.4	2.7	2.4	2.2	2.4	2.0	3.1	2.3
Growth of exports of G&S (US dollar terms, in percent)	15.5	14.1	5.2	17.4	21.9	-1.1	8.3	8.9	9.2	10.3	18.0	8.9	9.7	9.6	9.4
Growth of imports of G&S (US dollar terms, in percent)	-1.4	8.6	6.7	16.8	14.8	9.6	-8.3	0.8	6.1	10.0	9.9	4.7	9.7	9.6	9.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	29.5	48.5	52.9	47.2	47.5	51.9	46.2	38.3	17.8	29.4
Government revenues (excluding grants, in percent of GDP)	21.4	19.1	21.0			21.3	20.8	21.0	19.0	19.9	20.2		21.0	22.6	21.7
Aid flows (in Billions of US dollars) 7/	0.6	0.5	0.7			0.6	0.6	0.7	0.5	0.5	0.5		0.5	0.2	
of which: Grants	0.3	0.4	0.3			0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	
of which: Concessional loans	0.4	0.1	0.3			0.4	0.3	0.5	0.3	0.2	0.3		0.3	0.1	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			5.4	5.0	5.4	4.7	4.0	3.9		2.2	0.4	1.7
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			43.9	65.2	67.6	65.0	68.1	71.0		57.9	55.2	49.2
Memorandum items:															
Nominal GDP (Billions of US dollars)	7.5	7.9	8.1			8.3	8.5	8.9	9.5	10.4	11.4		17.6	44.2	
Nominal dollar GDP growth	4.1	5.1	2.6			2.4	2.7	4.3	7.3	9.3	9.3	5.9	9.7	9.6	9.4
PV of PPG external debt (in Billions of US dollars)			1.4			2.0	2.2	2.4	2.6	2.8	2.9		3.6	6.6	
(PVt-PVt-1)/GDPt-1 (in percent)						7.2	2.6	2.3	2.4	1.8	1.3	2.9	1.6	-0.1	1.1
Gross workers' remittances (Billions of US dollars)	0.2	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.3		0.4	0.6	
PV of PPG external debt (in percent of GDP + remittances)	...	...	17.6			24.2	26.2	27.2	27.1	26.5	25.4		20.5	15.0	
PV of PPG external debt (in percent of exports + remittances)	...	...	93.1			131.8	136.4	135.8	132.6	128.3	114.7		92.1	69.7	
Debt service of PPG external debt (in percent of exports + remittar	...	...	5.0			4.0	6.1	8.0	8.4	7.6	7.8		5.5	6.4	

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).

Table 5. Rwanda: Sensitivity Analysis of Key Indicators of Public and Publicly Guaranteed External Debt, 2016-2036[1/]

(In percent)

	Projections							
	2016	2017	2018	2019	2020	2021	**2026**	2036
PV of debt-to GDP ratio								
Baseline	25	27	28	28	27	26	**21**	15
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	25	23	23	23	22	21	**17**	18
A2. New public sector loans on less favorable terms in 2016-2036 2/	25	27	30	31	32	31	**29**	25
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	25	26	27	28	27	26	**21**	15
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	25	27	30	30	29	28	**22**	15
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	25	26	27	27	27	26	**21**	15
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	25	26	28	28	28	27	**21**	15
B5. Combination of B1-B4 using one-half standard deviation shocks	25	24	24	24	24	23	**18**	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	25	37	39	39	39	37	**30**	22
PV of debt-to-exports ratio								
Baseline	148	152	151	148	143	127	**103**	74
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	148	133	127	120	115	102	**82**	91
A2. New public sector loans on less favorable terms in 2016-2036 2/	148	153	162	168	167	154	**143**	122
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	148	146	146	145	141	125	**101**	73
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	148	164	192	190	184	163	**130**	89
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	148	146	146	145	141	125	**101**	73
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	148	149	153	152	147	131	**105**	74
B5. Combination of B1-B4 using one-half standard deviation shocks	148	140	136	136	132	117	**95**	71
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	148	146	146	145	141	125	**101**	73
PV of debt-to-revenue ratio								
Baseline	116	128	132	146	136	129	**100**	67
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	116	113	111	119	109	103	**80**	82
A2. New public sector loans on less favorable terms in 2016-2036 2/	116	129	142	165	159	155	**139**	110
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	116	124	130	145	136	128	**100**	67
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	116	128	142	158	147	139	**107**	68
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	116	123	129	144	134	127	**99**	66
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	116	126	134	150	140	132	**102**	67
B5. Combination of B1-B4 using one-half standard deviation shocks	116	115	113	127	119	112	**88**	61
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	116	179	185	207	193	183	**142**	95

Table 5. Rwanda: Sensitivity Analysis of Key Indicators of Public and Publicly Guaranteed External Debt, 2016-2036 1/ (Concluded)

(In percent)

Debt service-to-exports ratio								
Baseline	4	7	9	9	8	9	**6**	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	4	7	8	7	6	7	**4**	6
A2. New public sector loans on less favorable terms in 2016-2036 2/	4	7	6	6	6	6	**6**	9
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	4	7	9	8	8	8	**5**	6
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	4	8	11	10	9	10	**7**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	4	7	9	8	8	8	**5**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	4	7	9	8	8	8	**6**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	4	7	9	8	7	8	**5**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	4	7	9	8	8	8	**5**	6
Debt service-to-revenue ratio								
Baseline	3	6	8	9	8	9	**6**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2016-2036 1/	3	6	7	7	6	7	**4**	5
A2. New public sector loans on less favorable terms in 2016-2036 2/	3	6	5	6	6	6	**6**	8
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	3	6	8	8	7	8	**5**	6
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	3	6	8	9	8	8	**6**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	3	6	8	8	7	8	**5**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	3	6	8	8	7	8	**6**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	3	6	7	7	7	7	**5**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	3	9	11	12	10	12	**8**	8
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	29	29	29	29	29	29	**29**	29

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.

Table 6. Rwanda: Public Sector Debt Sustainability Framework, Baseline Scenario, 2013-2036[1/]

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate					Projections				
	2013	2014	2015	Average 5/	Standard Deviation 5/	2016	2017	2018	2019	2020	2021	2016-21 Average	2026	2036	2022-36 Average
Public sector debt 1/	26.8	29.3	35.4			44.8	48.8	49.8	49.7	49.1	47.8		38.1	25.4	
of which: foreign-currency denominated	22.1	23.6	28.5			37.8	41.7	44.7	45.0	44.1	42.7		34.1	21.1	
Change in public sector debt	10.1	2.4	6.1			9.4	4.0	1.0	-0.1	-0.5	-1.3		-1.1	-2.4	
Identified debt-creating flows	-2.1	-0.5	1.7			0.7	-1.0	-2.2	0.0	-1.5	-2.0		-1.6	-1.9	
Primary deficit	3.6	4.1	3.9	1.3	2.2	3.7	2.3	1.9	3.3	2.5	2.2	2.7	1.8	0.0	1.1
Revenue and grants	25.0	24.0	25.0			23.8	23.3	23.5	21.5	22.2	22.3		22.2	22.9	
of which: grants	3.6	4.9	4.0			2.5	2.5	2.5	2.4	2.3	2.2		1.2	0.4	
Primary (noninterest) expenditure	28.7	28.2	28.9			27.5	25.6	25.4	24.8	24.7	24.6		24.0	22.9	
Automatic debt dynamics	-0.2	-1.2	0.5			-0.3	-0.4	-1.2	-3.0	-3.2	-3.3		-2.8	-1.7	
Contribution from interest rate/growth differential	-0.7	-1.5	-1.1			-1.6	-2.3	-2.9	-3.0	-3.3	-3.4		-2.8	-1.7	
of which: contribution from average real interest rate	0.0	0.2	0.8			0.4	0.3	0.3	0.4	0.2	0.0		-0.1	0.2	
of which: contribution from real GDP growth	-0.8	-1.7	-1.9			-2.0	-2.5	-3.2	-3.3	-3.5	-3.4		-2.7	-1.9	
Contribution from real exchange rate depreciation	0.5	0.4	1.7			1.3	1.8	1.7	0.0	0.1	0.1		...	...	
Other identified debt-creating flows	-5.5	-3.5	-2.7			-2.7	-2.9	-2.9	-0.3	-0.8	-1.0		-0.5	-0.2	
Privatization receipts (negative)	-5.7	-3.0	-3.1			-3.5	-3.1	-3.1	-0.5	-1.0	-1.0		-0.5	-0.2	
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)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.2	-0.5	0.4			0.8	0.2	0.2	0.2	0.2	0.0		0.0	0.0	
Residual, including asset changes 6/	12.1	2.9	4.4			8.7	5.0	3.2	-0.1	1.0	0.7		0.5	-0.5	
Other Sustainability Indicators															
PV of public sector debt	...	...	24.8			31.7	33.8	32.8	32.4	32.1	31.1		24.9	19.4	
of which: foreign-currency denominated	...	...	17.9			24.8	26.7	27.8	27.7	27.1	26.0		21.0	15.2	
of which: external	...	...	17.9			24.8	26.7	27.8	27.7	27.1	26.0		21.0	15.2	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	4.5	8.3	9.3			10.6	9.5	9.8	9.5	8.0	7.4		5.6	5.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	99.2			133.1	144.8	139.6	150.9	144.7	139.1		112.1	84.7	
PV of public sector debt-to-revenue ratio (in percent)	...	...	117.9			148.8	162.2	156.3	170.1	161.4	154.1		118.6	86.1	
of which: external 3/	...	...	85.2			116.1	128.3	132.3	145.5	135.9	128.6		99.8	67.2	
Debt service-to-revenue and grants ratio (in percent) 4/	3.5	4.5	5.8			5.1	7.3	9.3	9.9	8.5	8.8		6.4	7.2	
Debt service-to-revenue ratio (in percent) 4/	4.0	5.6	6.9			5.7	8.2	10.4	11.2	9.4	9.8		6.8	7.3	
Primary deficit that stabilizes the debt-to-GDP ratio	-6.4	1.7	-2.2			-5.7	-1.7	0.9	3.4	3.0	3.6		2.8	2.4	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	4.7	7.0	6.9	7.5	1.9	6.0	6.0	7.0	7.2	7.5	7.5	6.9	7.5	7.5	7.5
Average nominal interest rate on forex debt (in percent)	1.8	2.4	2.6	2.3	0.9	2.1	2.0	2.2	2.5	2.2	2.1	2.2	1.8	2.8	2.1
Average real interest rate on domestic debt (in percent)	...	2.4	8.1	0.3	5.2	3.1	3.5	3.8	3.0	1.8	-0.2	2.5	0.2	1.8	0.8
Real exchange rate depreciation (in percent, + indicates depreciation)	2.9	1.8	7.4	-0.2	5.1		...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	4.7	3.7	1.2	6.0	4.1	4.4	4.6	4.8	5.0	4.7	4.7	4.7	5.0	5.0	4.8
Growth of real primary spending (deflated by GDP deflator, in percent)	12.3	5.1	9.7	3.5	5.0	1.0	-1.3	6.2	4.4	7.1	7.1	4.1	6.6	6.9	7.0
Grant element of new external borrowing (in percent)	...	...	...	...	...	29.5	48.5	52.9	47.2	47.5	51.9	46.2	38.3	17.8	...

Sources: Country authorities; and staff estimates and projections.
1/ Indicate coverage of public sector.
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.
6/ Residuals in 2016 and 2017 arise mainly because guaranteed non-concessional loans are excluded from the fiscal accounts and additional IMF financing is used to increase reserves buffer.

Table 7. Rwanda: Sensitivity Analysis for Key Indicators of Public Debt 2016–2036

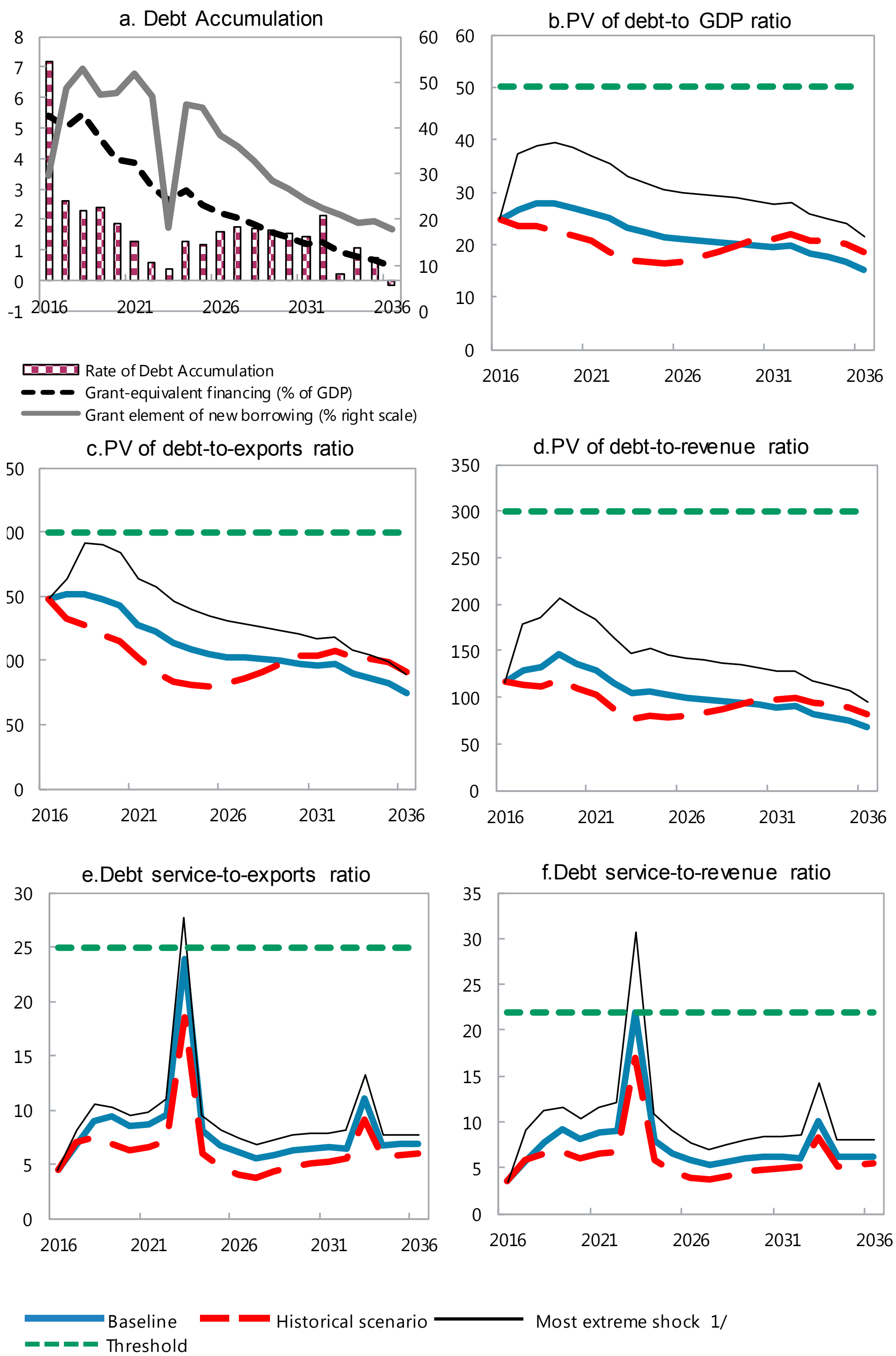
	Projections							
	2016	2017	2018	2019	2020	2021	2026	2036
PV of Debt-to-GDP Ratio								
Baseline	32	34	33	32	32	31	25	19
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	32	33	31	29	28	27	21	20
A2. Primary balance is unchanged from 2016	32	35	35	35	35	35	36	41
A3. Permanently lower GDP growth 1/	32	34	33	33	33	32	29	31
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	32	34	34	33	33	33	27	23
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	32	35	35	34	34	33	26	20
B3. Combination of B1-B2 using one half standard deviation shocks	32	34	33	33	32	31	25	19
B4. One-time 30 percent real depreciation in 2017	32	45	42	41	40	38	30	25
B5. 10 percent of GDP increase in other debt-creating flows in 2017	32	41	40	39	38	37	30	22
PV of Debt-to-Revenue Ratio 2/								
Baseline	133	145	140	151	145	139	112	85
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	133	140	132	136	127	120	95	86
A2. Primary balance is unchanged from 2016	133	149	149	162	159	157	160	180
A3. Permanently lower GDP growth 1/	133	146	141	154	149	145	129	133
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	133	146	143	156	150	145	122	100
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	133	148	147	159	152	146	118	87
B3. Combination of B1-B2 using one half standard deviation shocks	133	144	141	152	146	140	113	84
B4. One-time 30 percent real depreciation in 2017	133	192	180	190	178	169	134	108
B5. 10 percent of GDP increase in other debt-creating flows in 2017	133	175	169	181	173	166	134	96
Debt Service-to-Revenue Ratio 2/								
Baseline	5	7	9	10	8	9	6	7
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	5	7	9	9	8	8	6	7
A2. Primary balance is unchanged from 2016	5	7	9	10	9	9	8	12
A3. Permanently lower GDP growth 1/	5	7	9	10	9	9	7	10
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	5	7	9	10	9	9	7	8
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	5	7	9	10	9	9	7	7
B3. Combination of B1-B2 using one half standard deviation shocks	5	7	9	10	9	9	6	7
B4. One-time 30 percent real depreciation in 2017	5	9	13	14	12	13	10	12
B5. 10 percent of GDP increase in other debt-creating flows in 2017	5	7	11	12	10	10	8	8

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.

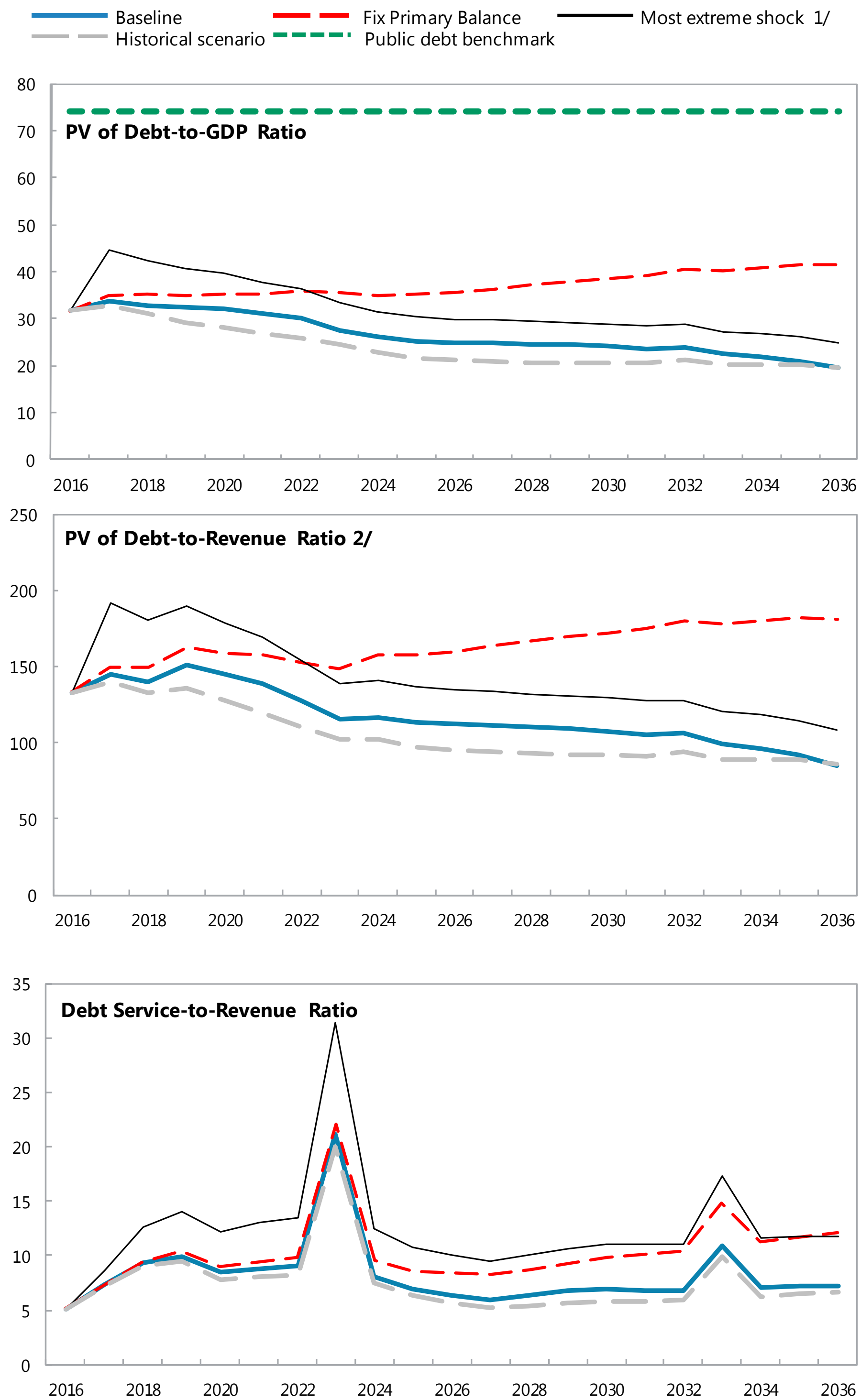
Figure 1. Rwanda: Indicators of Public and Public Guaranteed External Debt under Alternative Scenarios, 2016-2036 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2026. In figure b. it corresponds to a One-time depreciation shock; in c. to a Exports shock; in d. to a One-time depreciation shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock

Figure 2. Rwanda: Indicators of Public Debt under Alternative Scenarios, 2016-2036[1/]



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2026.

2/ Revenues are defined inclusive of grants.