December 2022

RWANDA

JOINT WORLD BANK-IMF DEBT SUSTAINABILITY ANALYSIS[1]

Approved by:

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Prepared by the staff of the International Development Association (IDA) and the International Monetary Fund (IMF).

RWANDA: JOINT BANK-FUND DEBT SUSTAINABILITY ANALYSIS	
Risk of external debt distress	Moderate
Overall risk of debt distress	Moderate
Granularity in the risk rating	Sustainable
Application of judgment	Yes

The updates to the Bank/Fund assessment of Rwanda's debt sustainability analysis indicate a moderate risk of external and overall public debt distress. The current debt-carrying capacity is consistent with a classification of 'strong'.[2] The baseline scenario is based on the macroeconomic projections in the accompanying Staff Report for discussions of a new PCI and RSF request, reflecting the negative impact of the spillovers from the Russian invasion of Ukraine. Rwanda's financing strategy assumes continued support from bilateral and multilateral development partners over the medium term, with highly concessional loans for new external borrowing under IDA 20 and an increasing share of domestic financing in the long term. The DSA also incorporates a 36-month Resilience and Sustainability Facility (RSF)-supported program with proposed access level of 150 percent of quota (SDR 240.3 million). While the debt indicators and standard stress tests mechanically classify debt sustainability risks as low, in staff's judgement, they don't fully capture the highly uncertain and difficult current external environment for Rwanda affecting the risks of declining concessional financing, U.S. monetary policy tightening and U.S. dollar appreciation, and terms-of-trade shocks, which warrants maintaining moderate risk of debt distress. The country also remains susceptible to adverse market conditions and climate shocks. The authorities are encouraged to implement the ambitious fiscal consolidation strategy envisaged under the new PCI, use concessional external financing (including the RSF) in place of the more expensive domestic financing to increase international reserve buffers, and further strengthen their debt management capacity to mitigate heightened uncertainty and risks, including those climate-related, surrounding the current environment.

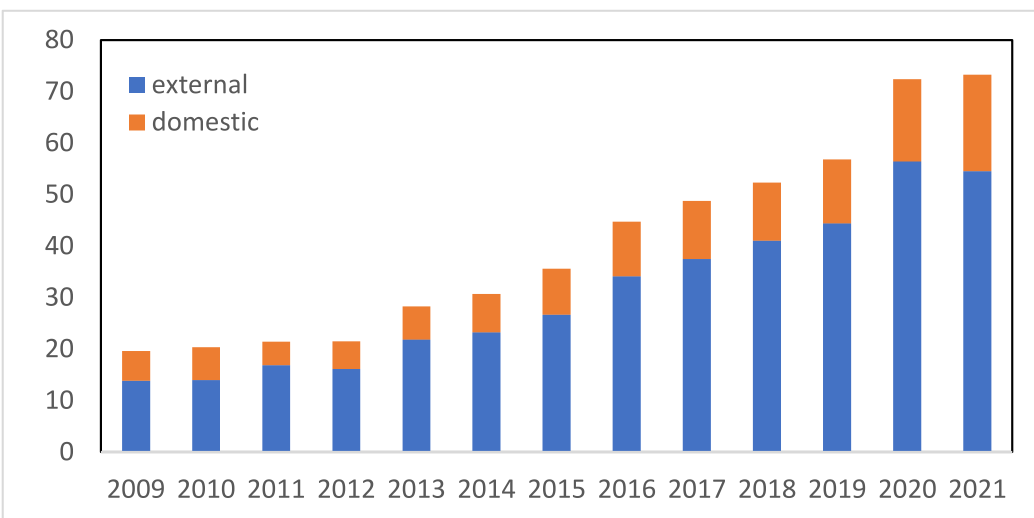
[1] This debt sustainability analysis was conducted using the Joint Bank-Fund Debt Sustainability Framework for Low-Income Countries (LIC-DSF) that was approved in 2017. The fiscal year for Rwanda is from July to June; however, this DSA is prepared on a calendar year basis.

[2] Rwanda's has a debt carrying capacity indicator score of 3.16 based on the October 2022 WEO and the World Bank's 2021 CPIA data. This implies a classification of strong debt carrying capacity, which is the same classification as under the previous DSA.

BACKGROUND

1. **Rwanda's public and publicly-guaranteed (PPG) external debt-to-GDP ratio increased by 31.3 percentage points over the last 7 years, driven by loans to meet the development needs envisaged in the National Strategy for Transformation (NST), but also to respond to the fallout from the COVID-19 pandemic.** The development needs are supported by a long-planned comprehensive public investment strategy, including three large projects to support trade and tourism through a series of public-private partnerships and external guarantees outside the budgetary central government (construction of the Kigali Convention Center completed in 2016, the expansion of the national airline RwandAir, and the ongoing construction of the Bugesera airport). These developments contributed to an increase in PPG external debt by 21.1 percentage points in the five years preceding the COVID-19 shock. At the same time, the increase in the fiscal deficit due to revenue shortfalls and a scaling up in spending to address the COVID-19 crisis led to sharp debt increase by an additional 12.1 percentage points in 2020, followed by 1.9 percentage points decline in 2021. As a result, external PPG debt has risen from 23.2 percent of GDP in 2014 to 54.5 percent in 2021 (Text Figure 1). It continues to be dominated by multilateral lending on concessional terms, resulting in a present value (PV) of external PPG debt-to-GDP ratio of 34.9 percent at end-2021. Total PPG debt stood at 73.3 percent of GDP at end-2021, which is slightly lower than the 2021 DSA projections (estimated at 74.6 percent of GDP) due to higher-than-expected GDP growth and lower fiscal deficit. In August 2021, Rwanda took advantage of the favorable market conditions and issued US$620 million Eurobond at 5.5 percent yield, partly to buyback 85 percent of the 2013 Eurobonds maturing in 2023 and smooth out the liquidity risk. Interest rates on domestic T-bills and T-bonds range from 5.7 percent (28 days) to 12.9 percent (20 years).

Text Figure 1. Total PPG Debt
(Percent of GDP)



Sources: Rwandan authorities and IMF Staff Calculations

Text Table 1. Rwanda: Decomposition of Public and Publicly-Guaranteed Debt and Debt Service by Creditor, 2021–231

	Debt Stock (end of period)			Debt Service					
	2021			2021	2022	2023	2021	2022	2023
	(In US$ mn)	(Percent total debt)	(Percent GDP)[5]	(In US$ mn)			(Percent GDP)		
Total	7,944.8	100.0	73.3	976.3	884.7	561.0	8.8	7.3	4.3
External	5,910.0	74.4	54.5	720.0	195.7	251.3	6.5	1.6	1.9
Multilateral creditors[2]	4,331.6	54.5	40.0	69.6	91.4	104.7	0.6	0.8	0.8
IMF	364.3	4.6	3.4	0.0	45.0	33.7	0.0	0.4	0.3
World Bank	2,583.1	32.5	23.8	38.7	49.3	59.0	0.3	0.4	0.4
ADB/AfDB/IADB	1,045.0	13.2	9.6	15.6	16.3	17.8	0.1	0.1	0.1
Other Multilaterals	339.2	4.3	3.1	15.4	15.1	15.6	0.1	0.1	0.1
o/w: IFAD	171.7	2.2	1.6						
BADEA	77.8	1.0	0.7						
Bilateral Creditors	813.4	10.2	7.5	37.9	33.0	33.1	0.3	0.3	0.3
Paris Club	328.9	4.1	3.0	14.1	7.3	7.3	0.1	0.1	0.1
o/w: JICA	142.4	1.8	1.3						
AFD	101.9	1.3	0.9						
Non-Paris Club	484.5	6.1	4.5	23.8	25.7	25.8	0.2	0.2	0.2
o/w: EXIM-CHINA	333.3	4.2	3.1						
SFD	77.7	1.0	0.7						
Bonds	680.6	8.6	6.3	360.6	38.1	96.7	3.3	0.3	0.7
Commercial creditors	84.3	1.1	0.8	251.8	33.1	16.8	2.3	0.3	0.1
o/w: Trade Development Bank	50.3	0.6	0.5						
o/w: KCB Kenya	10.5	0.1	0.1						
Other international creditors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic	2,034.8	25.6	18.8	256.3	689.0	309.8	2.3	5.7	2.4
Held by residents, total	2,034.8	25.6	18.8	256.3	689.0	309.8	2.3	5.7	2.4
Held by non-residents, total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
T-Bills	420.7	5.3	3.9	38.7	405.5	24.6	0.3	3.3	0.2
Bonds	935.3	11.8	8.6	156.6	155.8	177.0	1.4	1.3	1.3
Loans	678.8	8.5	6.3	61.0	127.7	108.2	0.6	1.1	0.8
Memo items:									
Collateralized debt[3]	0.0	0.0	0.0						
Contingent liabilities[4]	0.0	0.0	0.0						
Nominal GDP (US$ million)				10,944	12,679	14,709			

1/As reported by country authorities according to their classification of creditors, including by official and commercial. Debt coverage is the same as the DSA.
2/"Multilateral creditors" are simply institutions with more than one official shareholder and may not necessarily align with creditor classification under other IMF policies (e.g. Lending Into Arrears).
3/Debt is collateralized when the creditor has rights over an asset or revenue stream that would allow it, if the borrower defaults on its payment obligations, to rely on the asset or revenue stream to secure repayment of the debt. Collateralization entails a borrower granting liens over specific existing assets or future receivables to a lender as security against repayment of the loan. Collateral is "unrelated" when it has no relationship to a project financed by the loan. An example would be borrowing to finance the budget deficit, collateralized by oil revenue receipts. See the joint IMF-World Bank note for the G20 "Collateralized Transactions: Key Considerations for Public Lenders and Borrowers" for a discussion of issues raised by collateral.
4/Guaranteed debt is included in public debt.
5/Data is reported by the authorities based on calculations in national currency, deviates from U.S. dollar-based calculations due to the difference between end-of-period exchange rate (applied for nominator) and period-average exchange rate (applied for denominator).

Sources: Rwandan authorities and IMF Staff Calculations

PUBLIC DEBT COVERAGE

2. The DSA covers the central government, guarantees, and state-owned enterprises (Text Table 2). The Ministry of Finance and Economic Planning (MINECOFIN) publishes annual debt data, covering domestic and external debt of the central government, broken down by multilateral, bilateral and commercial debt, as well as information on both domestic and external guarantees and domestic and external debt held by all state-owned enterprises (SOEs).[3] There is no debt stemming from extra budgetary funds, long term central bank financing of the government, nor the state-owned social security fund. The local government debt is not covered but the existing stock to date is marginal,[4] and its contracting is subject to approval by MINECOFIN. The contingent liabilities shock (6.1 percent of GDP) accounts for potential fiscal costs associated with fiscal risks of existing public-private partnerships (PPPs), as well as for the possible incidence of a financial crisis. External debt is defined on a currency basis.

Text Table 2. Rwanda: Coverage of Public and Publicly-Guaranteed Debt and Parameters for Contingent Liability Shocks for the Tailored Stress Test

	Subsectors of the public sector	Check box
1	Central government	X
2	State and local government	
3	Other elements in the general government	X
4	o/w: Social security fund	X
5	o/w: Extra budgetary funds (EBFs)	X
6	Guarantees (to other entities in the public and private sector, including to SOEs)	X
7	Central bank (borrowed on behalf of the government)	X
8	Non-guaranteed SOE debt	X

1	The country's coverage of public debt	The central government plus social security and extra budgetary funds, central bank, government-guaranteed debt, non-guaranteed SOE debt		
		Default	Used for the analysis	Reasons for deviations from the default settings
2	Other elements of the general government not captured in 1.	0 percent of GDP	0	
3	SoE's debt (guaranteed and not guaranteed by the government) 1/	2 percent of GDP	0	SOE debt is covered in PPG debt
4	PPP 2/	35 percent of PPP stock	1.1	default, i.e. 35 percent of PPP stock
5	Financial market (the default value of 5 percent of GDP is the minimum valu	5 percent of GDP	5	
	Total (2+3+4+5) (in percent of GDP)		6.1	

1/ The default shock of 2% of GDP will be triggered for countries whose government-guaranteed debt is not fully captured under the country's public debt definition (1.). If it is already included in the government debt (1.) and risks associated with SoE's debt not guaranteed by the government is assessed to be negligible, a country team may reduce this to 0%.

2/ When PPP stock is less than 3 percent of GDP, as reflected in the World Bank's database, then test is set to zero.

3/ Based on project value

UNDERLYING ASSUMPTIONS

3. **The macroeconomic assumptions underlying the baseline scenario reflect recent economic developments and policies, including adverse spillovers from the war on Ukraine (Text Table 3).** Compared to the previous DSA, growth was downgraded by 0.4 percentage points to 6.8 percent in 2022, and by 1.7 percentage points to 6.2 percent in 2023. This partly reflects energy and food price increases exacerbated by the war on Ukraine adding to inflationary pressures in Rwanda, while reducing real incomes domestically and in the trading partner countries. Economic activity is expected to regain momentum in 2024, if the situation normalizes, driven by the pickup in construction of the new airport and the subsequent boost to the services sector, and private consumption and investment as the main growth drivers in the medium term. Overall, growth trajectory for 2024 onwards was kept broadly unchanged from

[3] Leases on RwandAir (SOE) aircrafts are not covered; further data will be needed from the authorities to assess its impact on PPG debt. In addition, existing public-private partnerships (power purchase agreements, water purchase agreements, etc.) are not part of the PPG debt.

[4] Local government debt stood at RWF 3.9bn or 0.04 percent GDP at end-2021. The authorities expect to start regularly reporting the local government debt in 2023.

the previous DSA, gradually converging to 6.5 percent over the long term. The fiscal consolidation path envisaged in the previous DSA is expected to be broadly maintained although slightly more backloaded, predicated on the phasing-off of large COVID-19 related spending, spending rationalization through better spending prioritization and efficiency gains, and domestic revenue mobilization under the current medium-term revenue strategy. But multiple factors affect the projected fiscal deficit trajectory, including the significant UK budget grants that are deficit reducing and the changes in IDA20 financing terms that will increase primary deficit as it shifts financing from the World Bank from 50-50 grant-loan financing to 100 percent loans, though with higher concessional terms. The projections continue to assume strong fiscal policy consolidation to accelerate public debt convergence to the anchor, with some relaxation afterwards[5]. The current account improved in 2022, reflecting a temporary reduction in capital imports, tourism recovery, and strong remittances. The current account deficit is projected to widen in 2023 due to adverse commodity price dynamics and start narrowing thereafter, largely driven by fiscal developments. It expanded amid sustained external financing and fiscal policy response to COVID-19 but the current account gap is expected to start narrowing down as the envisaged fiscal tightening takes place, with the current account deficit reaching 7.7 percent GDP by 2027.

4. **Rwanda's financing strategy assumes continued support from bilateral and multilateral development partners over the medium term (Table 5).** Besides financing from the World Bank and the IMF, the projection assumes disbursements of external financing from the African Development Bank and several other multilateral and official bilateral partners. In the context of fiscal consolidation and negotiated new external resources, the share of domestic financing is projected to remain low until 2030 and pick up thereafter. The share of market-based external financing is also projected to increase starting 2030, although very slowly. Under the IDA20 financing terms, the volume of loans is projected to increase given the shift from 50-50 grant-loan financing under IDA19 to 100 percent loans, hence, the fiscal deficit and the nominal debt will increase as well, but given the higher concessional terms of IDA20 loans, the expected impact on the present value of debt is marginal.[6] IDA financing signed after 2024 is assumed to be in the form of 100 percent credit on regular IDA terms.

5. **The DSA also takes into account a proposal for a 36-month Resilience and Sustainability Facility (RSF)-supported program with the access level of 150 percent of quota (SDR240.3 million).**[7] The RSF-supported program will help the authorities to undertake the delivery and monitoring of ambitious climate-related measures, which are expected to encourage private financing for green investment. Financial assistance under the RSF is projected to support authorities' efforts in greening the economy by providing more concessional external financing in place of the more expensive domestic financing while also expected to help catalyze concessional financing from other sources, thus improving the underlying public debt dynamics. Besides reducing the PV of debt, RSF would also support international reserve buffers, needed to deal with natural disaster shocks, as discussed in ¶15. The RSF-supported reforms are also expected to counter adverse debt dynamics by strengthening climate-sensitive policies and enabling

[5] The fiscal consolidation path and policies discussed in Country Report No. 2022/200 is broadly maintained.

[6] 50-year loans under IDA20 have grant element of about 74 percent, while 50-50 grant-loan financing that prevailed under IDA19 has grant element of about 77 percent. With 3 percentage points difference, if cumulative disbursements under IDA20 reach 3.2 percent GDP, the effect on PV of external debt would be increase by about 0.1 percent GDP.

[7] The RSF loan has a 20-year maturity with 10 ½ year grace period, with borrowers paying an interest rate with a modest margin over the three-month SDR rate.

an integrated government strategy to combat climate change and its adverse macroeconomic consequence, thereby improving resilience to climate shocks. It will do so inter alia by reducing the adverse impact of natural disasters on output, damages to physical assets, and post-disaster fiscal costs (as illustrated by the IMF DIGNAD model simulations in Box 2 of the accompanying Staff Report for discussions of a new PCI and RSF request).

Text Table 3. Rwanda: Key Macroeconomic and Debt Assumptions—Comparison with the Previous Debt Sustainability Analysis

Calendar year	2021	2022	2027	2032	2037	2041	2027-41
	Actual			Projections			
Selected indicators from the macro-framework and debt data							
(Percent, unless otherwise indicated)							
				PV of PPG External Debt to GDP Ratio			
2021 DSA (5th PCI Review)	36.1	39.2	38.8	30.9	26.3	22.1	29.7
2022 DSA (current)	34.9	33.6	39.5	35.2	28.4	24.2	32.2
				PV of Public Debt to GDP Ratio			
2021 DSA (5th PCI Review)	52.9	55.3	47.9	42.9	42.1	42.0	43.2
2022 DSA (current)	54.4	52.7	52.1	46.1	49.4	51.0	48.7
				Grant Element of New External Borrowing			
2021 DSA (5th PCI Review)	26.3	39.8	43.7	38.0	29.2	19.3	33.0
2022 DSA (current)		47.9	41.8	37.5	35.1	24.7	35.3
				Real GDP Growth (annual percent change)			
2021 DSA (5th PCI Review)	10.2	7.2	6.3	7.1	6.7	6.5	6.8
2022 DSA (current)	10.9	6.8	6.2	7.1	6.7	6.5	6.9
				Current Account Balance (percent of GDP)			
2021 DSA (5th PCI Review)	-11.0	-11.5	-7.0	-7.2	-6.0	-5.1	-6.6
2022 DSA (current)	-10.9	-10.5	-7.7	-10.3	-9.5	-8.4	-9.5
				Exports of goods and services (percent of GDP)			
2021 DSA (5th PCI Review)	18.9	24.4	33.3	32.8	30.5	29.7	31.9
2022 DSA (current)	19.1	24.1	27.0	24.7	24.7	25.7	25.1
				Fiscal balance (percent of GDP)			
2021 DSA (5th PCI Review)	-9.3	-7.8	-3.1	-4.1	-3.4	-3.3	-3.6
2022 DSA (current)	-7.9	-8.0	-3.0	-3.9	-3.9	-3.6	-3.6
				CPI, period average (percent)			
2021 DSA (5th PCI Review)	0.7	5.7	5.0	5.0	5.0	5.0	5.0
2022 DSA (current)	0.8	12.6	5.0	5.0	5.0	5.0	5.0

6. **Realism tools indicate that the planned fiscal adjustment is ambitious (Figure 4).** A 3-year fiscal consolidation in the primary balance is expected to peak at 3.8 percentage points of GDP from 2024 to 2027. Such adjustment lies in the top quartile of the distribution of past adjustments for a sample of LICs, signaling that the envisaged fiscal adjustment in the baseline scenario is ambitious based on past experiences in LICs. The adjustment reflects the domestic revenue mobilization and spending rationalization measures expected to be implemented during the period covered under the new PCI arrangement.

7. **In the past, PPG debt dynamics have been strongly affected by the materialization of fiscal risks (Figure 3).** Changes in total public debt over the past five years have been driven by higher-than-anticipated primary deficits due to the pandemic response and unanticipated developments of the debt

outside the budgetary central government, leading to a higher-than-expected debt accumulation of about 25 percentage points of GDP—well in excess of the 75 percent quartile of other low-income countries. The ongoing efforts with the support of IMF TA to strengthen the management of fiscal risks to mitigate unanticipated fiscal developments outside the central government, which is a key pillar of the first PCI and the proposed new PCI, would help mitigate the prospects for unexpected debt increases. Going forward, the evolution of public debt will continue to be dominated by the path of the primary fiscal deficit and the real GDP growth.

COUNTRY CLASSIFICATION AND DETERMINATION OF SCENARIO STRESS TESTS

8. **Rwanda's debt-carrying capacity continues to be assessed as "strong" (Text Tables 4a and 4b).** The composite index (CI) for Rwanda, which measures the debt-carrying capacity in the new LIC-DSF, stands at 3.16, above the cut-off value of 3.05 for strong capacity countries. The underlying inputs for the calculation of the CI were sourced from the IMF's October 2022 WEO, and October 2022 update of the World Bank Country Policy and Institutional Assessment (CPIA) to 2021 levels. The CI score is largely driven by Rwanda's high CPIA score and adequate reserve coverage.

Text Table 4a. Rwanda: Debt-Carrying Capacity

Components	Coefficients (A)	10-year average values (B)	CI Score components (A*B) = (C)	Contribution of components
CPIA	0.39	4.06	1.56	49%
Real growth rate (in percent)	2.72	6.27	0.17	5%
Import coverage of reserves (in percent)	4.05	39.20	1.59	50%
Import coverage of reserves^2 (in percent)	-3.99	15.37	-0.61	-19%
Remittances (in percent)	2.02	2.97	0.06	2%
World economic growth (in percent)	13.52	2.90	0.39	12%
CI Score			3.16	100%
CI rating			Strong	

New framework				
	Cut-off values			
Weak	CI ≤	2.69		
Medium	2.69	< CI ≤	3.05	
Strong	CI >	3.05		

Text Table 4b. Rwanda: Applicable Thresholds and Benchmarks

EXTERNAL debt burden thresholds	Weak	Medium	Strong
PV of debt in % of			
Exports	140	180	240
GDP	30	40	55
Debt service in % of			
Exports	10	15	21
Revenue	14	18	23

TOTAL public debt benchmark	Weak	Medium	Strong
PV of total public debt in percent of GDP	35	55	70

9. **Rwanda may still face liquidity pressures from adverse market conditions if it turns to market financing to close the significant gross financing needs (Figure 5).** Market-financing stress test was applied to Rwanda. Risk indicators from the stress test show that the country has significant gross financing needs, and its spreads have increased following the recent rise of sovereign spreads globally, breaching the thresholds.

DEBT SUSTAINABILITY ANALYSIS

EXTERNAL DEBT

10. External debt indicators under the baseline and standard stress tests remain below their respective thresholds (Tables 1 and 3; Figure 1). Solvency indicators, PV of external debt-to-GDP ratio and of external debt-to-export ratio, remain below their indicative thresholds under the baseline scenario and under the most extreme shocks, combined and export shocks. Liquidity indicators show that liquidity risks are remote, as the authorities' debt management strategy to smooth out the debt servicing profile helped to mitigate the liquidity risks. The debt service-to-exports and debt service-to-revenue ratios remain below their thresholds until 2031 under the baseline and all stress tests applied, but prudent debt management strategy would be needed to mitigate the risks associated with the repayment of the existing Eurobond in 2031.

11. A customized alternative scenario illustrates risks to external debt sustainability stemming from the current uncertain and difficult external environment for Rwanda not fully captured in standard stress tests, with PV of external debt-to-GDP and debt service-to-revenue ratios reaching and briefly breaching the respective thresholds (Figure 1, Table 1). The current risks for Rwanda include, among others: decline in availability of concessional financing from their development partners; U.S. monetary policy tightening, and the associated tightening of external commercial borrowing terms and U.S. dollar appreciation putting additional pressure on the exchange rate; domestic monetary policy tightening and increasing domestic borrowing costs; terms-of-trade shocks (e.g., oil price increase); decline in tourism amid continued war on Ukraine. The alternative scenario illustrates the combined risk of temporary decline in external budget grants and sustained U.S. dollar appreciation pressures. In the scenario, only clearly identified grants from international organizations are assumed to materialize in 2023–26, while grants from foreign governments and other grants are excluded. The resulting gap is covered with external commercial borrowing, which assumes further increases in interest rate following the U.S. monetary policy tightening. The scenario also assumes additional Rwanda franc depreciation against the U.S. dollar to reverse the recent rapid real effective exchange rate appreciation (21.4 percent in January-August 2022). Under this alternative scenario, PV of debt reaches the threshold value of 55 percent GDP in 2025-2026 (with a small breach), before gradually reducing to the baseline trajectory. The debt service-to-revenue ratio briefly exceeds the 23 percent threshold in 2028.

12. The PV of external debt-to-GDP ratio increases steadily under the historical scenario since the latter assumes large external shock and imbalance reflecting averages of several large shocks and imbalances observed in the past (Table 3 and Figure 1). This is primarily due to the large current account deficit and negative USD GDP deflator calibrated using historical averages, which covered a period including several large shocks (commodity prices and drought) and large external imbalances corrected over 2015–17. Thus, policy adjustment to ensure a steady narrowing of the current account deficit from its elevated 2019–21 levels, as envisaged under the baseline scenario (Text Table 2), is key to strengthen robustness of the debt dynamics.

PUBLIC DEBT

13. Under the baseline scenario, the PPG debt is expected to reach the program debt anchor of 65 percent of GDP under the PCI by 2031, supported by a large, but growth-friendly fiscal consolidation and a strong rebound in economic activity (Table 2). The nominal PPG debt is projected to peak at 77.3 percent GDP in 2025 then gradually converge to the debt anchor of 65 percent GDP by 2031.[8] The present value (PV) of PPG debt is projected to decline and achieve the East African Community debt convergence criterion of 50 percent by 2028. These dynamics would require a cumulative reduction in the primary fiscal deficit by 4.4 percentage points of GDP between 2021 and 2027.

14. Contingent on the projected growth trajectory and ambitious fiscal consolidation, PV of PPG debt stays well below the indicative benchmark of 70 percent of GDP but remains close to the threshold under the growth shock scenario (Tables 2 and 4; Figure 2). In the baseline scenario, the PV of PPG debt reaches 56.1 percent in 2024 and declines to below 50 percent in 2028. While the PV of PPG debt does not cross the 70 percent threshold under the most severe, growth shock, it stays close to the benchmark. While liquidity risks are muted in the baseline, reflecting a smooth debt service path achieved by the Eurobond issuance, debt service costs would remain elevated under the severe, growth shock.

CLIMATE CHANGE RISKS

15. Rwanda is vulnerable to the consequences of climate change through various channels, which might affect the debt dynamics. World Bank's (2022) Country Climate and Development Report (CCDR) for Rwanda identified that climate change might increase variability of crop yields, reduce labor productivity, and affect tourism through changing patterns of rainfall, extreme heat, increased incidents of illnesses, while extreme flooding events might become more frequent and damaging. This might reduce the long-term growth, affecting debt sustainability indicators in the long run, and increase risks of damage to infrastructure and other built-up capital requiring strong fiscal response.

16. To illustrate the risk of extreme flooding event, a natural disaster stress test for Rwanda was conducted, showing that preserving existing fiscal policy buffers and building up international reserves would be warranted (Figures 6 and 7). The natural disaster stress test was informed by the once-in-100-years flooding scenario discussed in the CCDR. The flooding was assumed to damage 11.2 percent of the physical capital and require about 18 percent of GDP of investments to fully replace the damage.[9] The associated increase of imports would create a balance-of-payments need estimated at 6 percent GDP (US$0.8 billion in 2022 prices).[10] In the year of the flooding, the GDP is expected to decline by 4.4 percent. Given limited domestic savings, the investment needs are assumed to be covered with external financing. The projected debt dynamics, for external and total PPG debt, indicates that existing policy buffers (including proposed RSF financing) might need to be fully utilized to deal with such a shock,

[8] For discussion of the debt anchor see Country Report No. 2021/1 and the accompanying staff report for new PCI and RSF request (EBM/22).

[9] Capital-to-GDP ratio was estimated at 1.6 using the perpetual inventory method.

[10] Import content of investment was estimated at 34 percent using 2021 shares of capital imports in gross fixed capital formation and intermediate and energy imports in GDP.

and deployment of international reserves in addition to incurrence of liabilities might be needed as PV of external PPG debt-to-GDP ratio and PV of total PPG debt-to-GDP ratio approach their indicative thresholds. While this scenario illustrates the impact of a major natural disaster, it is considered separately from the other stress tests, given the calibrated low probability of the event. That said, with expected increase in the frequency and intensity of climate change events, series of smaller but more frequent natural disasters could lead to comparable balance-of-payments needs and debt risks.

17. Rwanda has prepared an ambitious and innovative response package of measures seeking to carve out a green, inclusive, responsible, and growth-orientated development pathway outlined in its revised Nationally Determined Contribution (NDC). While additional unilateral climate spending and investment are unlikely to fundamentally change the climate outlook for Rwanda, as such a change calls for global action, they can increase countries' resilience to climate shocks (as illustrated in the Debt, Investment, Growth, and Natural Disasters (DIGNAD) model simulations in Box 2 of the accompanying Staff Report for discussions of a new PCI and RSF request)[11]. According to the NDC, the estimated cost of new investments is US$11.0 billion, of which US$6.9 billion is conditional on new financing. This is equivalent to spending an average of 8.8 percent of GDP each year through 2030—exceeding recorded and projected annual inflows of either official development assistance (ODA) or foreign direct investment (FDI) between 2015 and 2030 and representing a large share of domestic revenue collection or public investment spending during the same period. The CCDR noted that this commitment likely overstates the true additional expense since either some NDC projects are already underway, or they would replace other development projects in the pipeline.

18. While it remains difficult to quantify the risks to PPG debt sustainability associated with the NDC objectives of the authorities, such risks can be assumed contained, as the authorities' actions are contingent on the availability of grant resources and private financing. Currently, it remains unclear how much climate-related spending the authorities are already implementing, hence, how much additional financing is required to achieve the NDC objectives. However, the authorities are not expected to take climate-related actions, beyond what is already included in the baseline projections, that would jeopardize risks to PPG debt sustainability. Therefore, mix of official development assistance, FDI, taxation, internal and external borrowing, and government spending reallocations will be essential to achieve the NDC objectives. The implementation of the reforms under the RSF aims to address these questions through public financial management (PFM) reform quantifying fiscal climate measures and catalyzing other financial sources.

ASSESSMENT

19. Rwanda's debt is assessed to be sustainable with a moderate risk of external and overall public debt distress (with judgment applied to the mechanical risk ratings), which is in line with the previous DSA assessment. Mechanical external and overall ratings suggest low risk of debt distress, as debt indicators remain below their respective thresholds under the baseline and under the most extreme standard shock scenarios. However, this shock scenarios do not fully capture the current uncertain and

[11] The DIGNAD model provides a framework to evaluate macroeconomic and financial implications of alternative investment programs and financing strategies (see Marto, Papageorgiou, and Kluyev, 2018).

difficult external environment, so judgement was applied to account for the external risks faced by Rwanda (as illustrated in the customized alternative scenario) to classify the risk of external and overall public debt distress as moderate. Given the moderate risk of debt distress assessment the limit on the stock of new external PPG debt will continue to be monitored under the new PCI.

20. As updates with respect to the external environment are evolving, risks to the debt outlook and sustainability could elevate should the situation deteriorate further. The macroeconomic framework which underpins this DSA reflects currently available information. The baseline scenario assumes Rwanda gradually reverts to its growth trend and continues to achieve robust growth over the medium term, while concessional financing is expected to decline only gradually in the long term. As the situation evolves, including with respect to the war on Ukraine, commodity prices, foreign inflation and growth, the debt risk assessment might change.

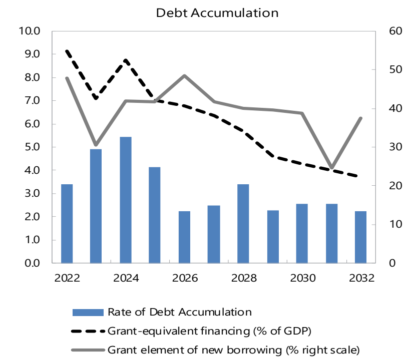
AUTHORITIES' VIEWS

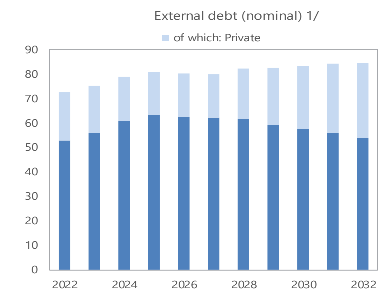
21. The authorities broadly agree with the results of the DSA and the overall assessment of a moderate risk of external and overall debt distress. The authorities' debt management strategy will continue to be based on maximizing external concessional funding to avoid pressures on the debt repayment profile, while also implementing prudent spending and revenue measures agreed under the PCI to bring the debt level to the anchor of 65 percent debt-to-GDP, which they expect to build buffers to absorb shocks and reduce solvency risks. The authorities also recognize potential fiscal risks stemming from PPAs and WPAs and have been strengthening their capacity to manage such risks. They expect their current liability management strategy of converting short term external debt into long term domestic debt would help in shielding the portfolio from refinancing risk stemming from external shocks.

Table 1. Rwanda: External Debt Sustainability Framework, Baseline Scenario, 2021–42
(In percent of GDP, Unless Otherwise Indicated)

	Actual	Projections								Average 8/	
	2021	2022	2023	2024	2025	2026	2027	2032	2042	Historical	Projections
External debt (nominal) 1/	75.7	72.5	75.1	79.0	81.0	80.4	79.8	84.7	79.0	48.3	80.5
of which: public and publicly guaranteed (PPG)	54.5	53.0	55.9	60.8	63.1	62.5	62.1	53.9	34.4	35.3	58.7
Change in external debt	-2.1	-3.1	2.6	3.9	2.0	-0.6	-0.5	0.5	-1.8		
Identified net debt-creating flows	2.8	3.1	3.8	2.4	1.5	0.6	0.2	1.0	-0.9	6.4	1.6
Non-interest current account deficit	10.0	9.5	11.0	9.7	9.1	6.6	5.7	7.9	5.5	10.0	8.4
Deficit in balance of goods and services	15.8	15.9	16.0	15.5	14.6	11.8	11.0	10.6	6.7	15.5	12.9
Exports	19.1	24.1	25.0	25.9	26.6	26.7	27.0	24.7	26.0		
Imports	34.8	40.0	41.1	41.4	41.2	38.5	38.0	35.3	32.7		
Net current transfers (negative = inflow)	-6.8	-7.8	-6.1	-6.7	-6.4	-6.1	-6.2	-4.6	-3.2	-6.9	-5.8
of which: official	-6.5	-7.0	-5.8	-5.9	-4.9	-4.9	-4.9	-2.9	-1.7		
Other current account flows (negative = net inflow)	1.0	1.3	1.1	0.9	0.9	0.9	0.9	1.9	2.0	1.4	1.4
Net FDI (negative = inflow)	-1.9	-3.0	-4.3	-3.8	-4.0	-2.9	-2.8	-3.9	-4.6	-2.7	-3.5
Endogenous debt dynamics 2/	-5.2	-3.4	-2.8	-3.4	-3.6	-3.2	-2.7	-3.0	-1.7		
Contribution from nominal interest rate	1.0	1.0	1.4	1.9	2.0	2.0	1.9	2.4	3.1		
Contribution from real GDP growth	-7.8	-4.5	-4.2	-5.3	-5.6	-5.2	-4.6	-5.5	-4.8		
Contribution from price and exchange rate changes	1.6	...	...	...	...	...	...	...	...		
Residual 3/	-4.9	-6.2	-1.3	1.5	0.4	-1.2	-0.7	-0.4	-1.0	-0.8	-0.8
of which: exceptional financing /9	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Sustainability indicators											
PV of PPG external debt-to-GDP ratio	34.9	33.6	35.8	38.9	40.4	39.9	39.5	35.2	23.4		
PV of PPG external debt-to-exports ratio	183.3	139.3	143.1	150.1	152.1	149.4	146.3	142.7	89.7		
PPG debt service-to-exports ratio	34.2	6.8	8.6	7.3	8.6	10.8	11.1	9.2	8.4		
PPG debt service-to-revenue ratio	34.2	8.7	11.6	10.1	11.6	14.4	14.7	10.3	8.9		
Gross external financing need (Billion of U.S. dollars)	1.8	1.3	1.5	1.5	1.6	1.5	1.5	3.1	7.8		
Key macroeconomic assumptions											
Real GDP growth (in percent)	10.9	6.8	6.2	7.5	7.5	6.8	6.2	7.1	6.5	6.4	7.0
GDP deflator in US dollar terms (change in percent)	-2.0	6.9	1.3	-1.3	-0.9	0.2	1.0	2.0	2.0	-1.3	1.5
Effective interest rate (percent) 4/	1.3	1.6	2.0	2.7	2.6	2.6	2.6	3.1	4.2	3.0	2.6
Growth of exports of G&S (US dollar terms, in percent)	9.4	44.4	11.6	9.8	9.2	7.5	8.5	8.6	10.1	8.8	11.6
Growth of imports of G&S (US dollar terms, in percent)	7.8	31.1	10.4	7.1	5.8	0.1	5.9	6.9	10.0	6.0	9.0
Grant element of new public sector borrowing (in percent)	...	47.9	30.6	41.9	41.7	48.4	41.8	37.5	32.8	...	39.4
Government revenues (excluding grants, in percent of GDP)	19.1	18.8	18.5	18.8	19.7	20.1	20.5	22.0	24.7	13.8	20.3
Aid flows (in Billion of US dollars) 5/	0.6	1.3	1.0	1.3	1.2	1.3	1.2	1.2	1.7		
Grant-equivalent financing (in percent of GDP) 6/	...	9.1	7.1	8.8	7.0	6.8	6.4	3.7	2.3	...	6.1
Grant-equivalent financing (in percent of external financing) 6/	...	74.7	57.9	62.4	62.1	69.2	65.2	59.4	53.3	...	61.3
Nominal GDP (Billion of US dollars)	11	13	14	14	15	16	18	27	64		
Nominal dollar GDP growth	8.7	14.2	7.5	6.1	6.5	7.0	7.2	9.2	8.6	4.9	8.6
Memorandum items:											
PV of external debt 7/	56.1	53.1	55.1	57.1	58.3	57.7	57.3	66.1	68.0		
In percent of exports	294.1	220.3	220.1	220.4	219.3	216.3	212.0	267.8	261.3		
Total external debt service-to-exports ratio	44.9	15.0	18.2	18.3	18.9	21.1	21.6	29.6	44.0		
PV of PPG external debt (in Billion of US dollars)	3.9	4.2	4.9	5.6	6.2	6.5	7.0	9.7	14.9		
(PVt-PVt-1)/GDPt-1 (in percent)		3.4	4.9	5.4	4.2	2.2	2.5	2.2	1.1		
Non-interest current account deficit that stabilizes debt ratio	12.1	12.6	8.4	5.8	7.1	7.2	6.3	7.3	7.3		

Definition of external/domestic debt	**Currency-based**
Is there a material difference between the two criteria?	**No**





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

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

6/ 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).

7/ Assumes that PV of private sector debt is equivalent to its face value.

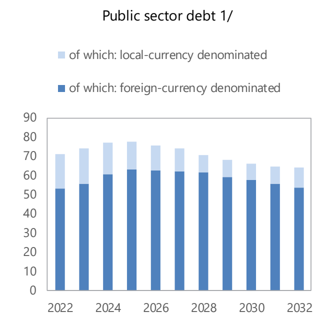
8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

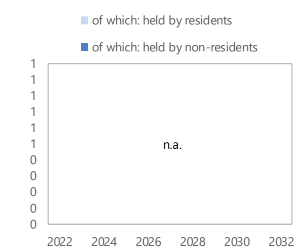
9/ Grant for debt relief under CCRT

Table 2. Rwanda: Public Sector Debt Sustainability Framework, Baseline Scenario, 2021–42
(In percent of GDP, Unless Otherwise Indicated)

	Actual	Projections								Average 6/	
	2021	2022	2023	2024	2025	2026	2027	2032	2042	Historical	Projections
Public sector debt 1/	73.3	71.3	73.9	76.8	77.3	75.7	73.9	64.1	63.4	46.1	71.2
of which: external debt	54.5	53.0	55.9	60.8	63.1	62.5	62.1	53.9	34.4	35.3	58.7
Change in public sector debt	0.9	-2.0	2.6	2.9	0.5	-1.6	-1.8	-0.6	1.4		
Identified debt-creating flows	1.0	-1.7	2.3	2.4	0.0	-2.0	-1.9	-0.6	1.4	1.5	-0.9
Primary deficit	6.0	5.9	5.2	5.4	3.3	1.8	1.6	3.4	3.8	2.6	3.2
Revenue and grants	24.6	25.1	23.3	23.7	23.7	24.0	24.4	24.2	26.0	19.7	24.0
of which: grants	5.5	6.3	4.8	5.0	4.0	3.9	3.9	2.2	1.3		
Primary (noninterest) expenditure	30.6	31.0	28.4	29.2	27.0	25.8	26.0	27.5	29.8	22.3	27.2
Automatic debt dynamics	-5.0	-7.6	-2.9	-2.8	-3.1	-3.7	-3.4	-4.0	-2.4		
Contribution from interest rate/growth differential	-6.5	-5.6	-3.6	-4.1	-4.7	-4.2	-3.8	-4.0	-2.4		
of which: contribution from average real interest rate	0.6	-1.0	0.6	1.1	0.6	0.8	0.6	0.3	1.4		
of which: contribution from real GDP growth	-7.1	-4.6	-4.2	-5.2	-5.3	-4.9	-4.4	-4.3	-3.8		
Contribution from real exchange rate depreciation	1.5	...	...	...	...	...	...	...	...		
Other identified debt-creating flows	0.0	0.0	0.0	-0.2	-0.2	-0.1	-0.1	0.0	0.0	0.0	-0.1
Privatization receipts (negative)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Recognition of contingent liabilities (e.g., bank recapitalization)	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		
Other debt creating or reducing flow (use of earmarked fund)	0.0	0.0	0.0	-0.2	-0.2	-0.1	-0.1	0.0	0.0		
Residual	-0.1	-2.3	1.1	1.8	2.1	0.8	0.4	0.0	0.0	3.8	0.3
Sustainability indicators											
PV of public debt-to-GDP ratio 2/	54.4	52.7	55.0	56.1	55.8	53.9	52.1	46.1	52.8		
PV of public debt-to-revenue and grants ratio	221.7	209.6	236.6	236.6	235.5	224.3	213.1	190.6	203.2		
Debt service-to-revenue and grants ratio 3/	59.6	33.6	41.8	43.9	40.4	40.5	39.2	29.7	48.4		
Gross financing need 4/	20.7	14.3	14.9	15.6	12.7	11.4	11.0	10.5	16.4		
Key macroeconomic and fiscal assumptions											
Real GDP growth (in percent)	10.9	6.8	6.2	7.5	7.5	6.8	6.2	7.1	6.5	6.4	7.0
Average nominal interest rate on external debt (in percent)	1.4	1.4	1.3	1.6	1.7	1.7	1.6	1.7	2.0	2.0	1.6
Average real interest rate on domestic debt (in percent)	6.0	-2.7	4.6	5.7	6.1	6.1	5.9	5.3	5.7	2.9	4.9
Real exchange rate depreciation (in percent, + indicates depreciation)	2.9	...	...	...	...	...	...	...	...	3.1	...
Inflation rate (GDP deflator, in percent)	2.7	11.9	7.3	5.3	5.2	5.1	5.0	5.0	5.0	3.7	5.9
Growth of real primary spending (deflated by GDP deflator, in percent)	44.1	8.3	-2.8	10.3	-0.6	2.3	7.0	9.7	12.6	12.7	6.1
Primary deficit that stabilizes the debt-to-GDP ratio 5/	5.1	7.9	2.5	2.5	2.8	3.4	3.4	4.0	2.4	-3.0	4.1
PV of contingent liabilities (not included in public sector debt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Definition of external/domestic debt	**Currency-based**
Is there a material difference between the two criteria?	**No**





Sources: Country authorities; and staff estimates and projections.

1/ Coverage of debt: The central government plus social security and extra budgetary funds, central bank, government-guaranteed debt, non-guaranteed SOE debt. Definition of external debt is Currency-based.

2/ The underlying PV of external debt-to-GDP ratio under the public DSA differs from the external DSA with the size of differences depending on exchange rates projections.

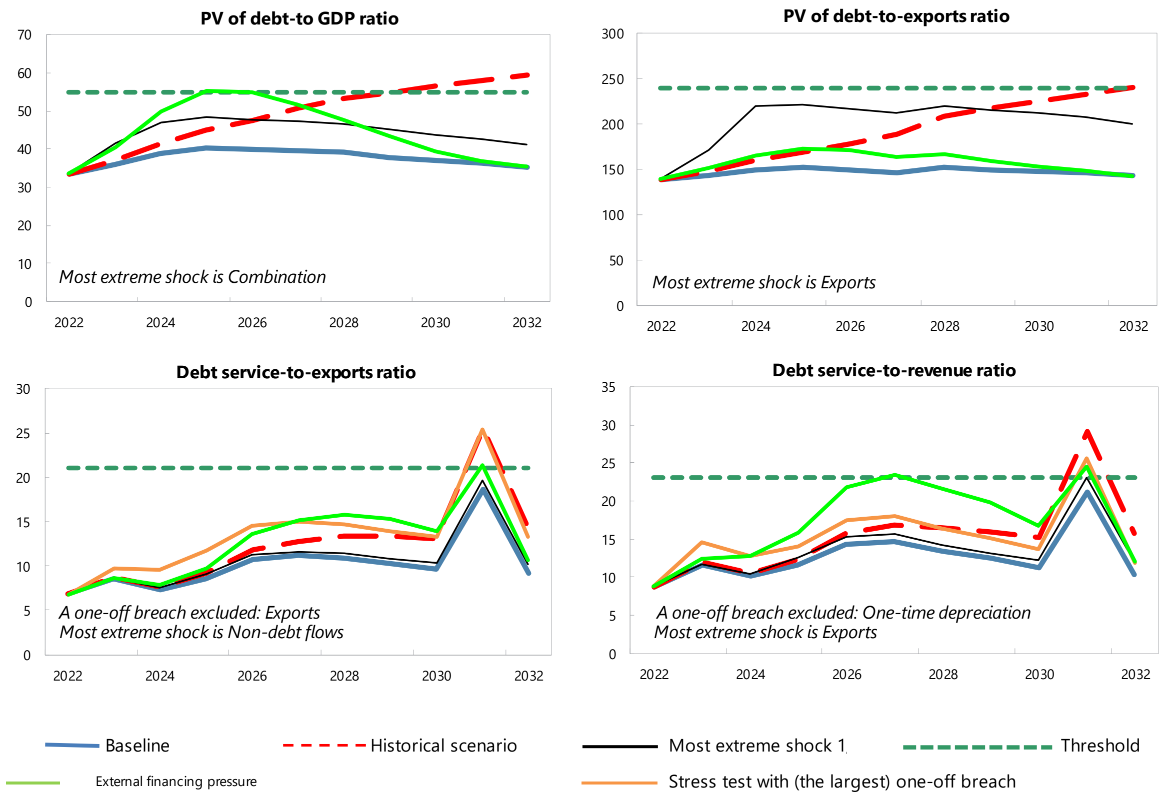
3/ Debt service is defined as the sum of interest and amortization of medium and long-term, and short-term debt.

4/ 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 and other debt creating/reducing flows.

5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio ((-): a primary surplus), which would stabilizes the debt ratio only in the year in question.

6/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

Figure 1. Rwanda: Indicators of Public and Publicly-Guaranteed External Debt Under Alternative Scenarios, 2022–32 1/ 2/



Customization of Default Settings

	Size	Interactions
Tailored Tests		
Combined CLs	Yes	
Natural Disasters	n.a.	n.a.
Commodity Prices 2/	n.a.	n.a.
Market Financing	No	No

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing Assumptions for Stress Tests*

	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	2.3%	2.3%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	28	28
Avg. grace period	6	6

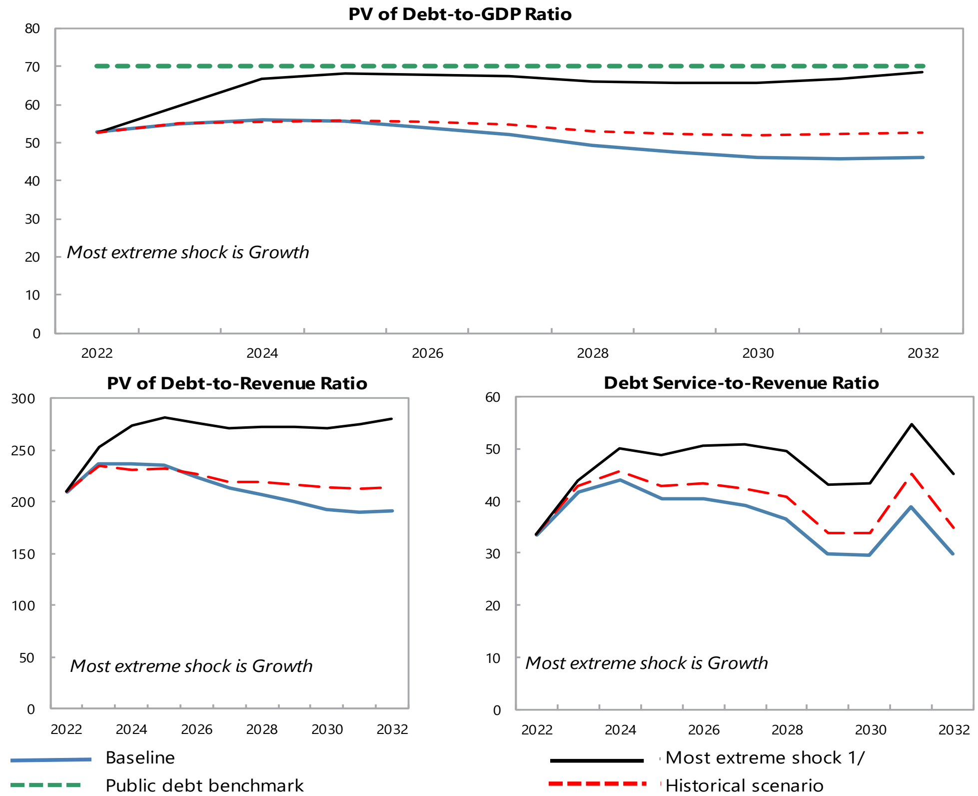
* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2032. Stress tests with one-off breaches are also presented (if any), while these one-off breaches are deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Figure 2. Rwanda: Indicators of Public Debt Under Alternative Scenarios, 2022–32 [1/]



Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	52%	52%
Domestic medium and long-term	17%	17%
Domestic short-term	31%	31%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	2.3%	2.3%
Avg. maturity (incl. grace period)	28	28
Avg. grace period	6	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	5.9%	5.9%
Avg. maturity (incl. grace period)	3	3
Avg. grace period	2	2
Domestic short-term debt		
Avg. real interest rate	2%	2.0%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2032. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Table 3. Rwanda: Sensitivity Analysis for Key Indicators of Public and Publicly-Guaranteed External Debt, 2022–32
(In Percent)

	Projections										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PV of debt-to GDP ratio											
Baseline	**33.6**	**35.8**	**38.9**	**40.4**	**39.9**	**39.5**	**39.2**	**37.9**	**37.0**	**36.2**	**35.2**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	33.6	37.0	41.5	45.0	47.6	50.9	53.4	54.8	56.4	57.9	59.3
B. Bound Tests											
B1. Real GDP growth	33.6	38.2	44.2	45.9	45.3	44.9	44.5	43.0	42.0	41.1	40.0
B2. Primary balance	33.6	36.4	41.2	42.9	42.4	42.1	41.8	40.4	39.4	38.5	37.4
B3. Exports	33.6	38.0	45.1	46.5	45.8	45.3	44.7	43.1	41.9	40.7	39.2
B4. Other flows 2/	33.6	38.3	43.5	44.9	44.3	43.7	43.2	41.7	40.6	39.4	38.1
B6. One-time 30 percent nominal depreciation	33.6	45.2	44.8	46.8	46.3	45.9	45.7	44.2	43.3	42.6	41.6
B6. Combination of B1-B5	33.6	41.6	46.8	48.4	47.7	47.2	46.7	45.1	43.8	42.7	41.3
C. Tailored Tests											
C1. Combined contingent liabilities	33.6	38.0	41.7	43.4	43.2	42.9	42.6	41.2	40.2	39.3	38.2
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	33.6	40.0	43.6	45.5	44.8	44.1	43.6	42.1	41.2	40.3	39.2
Threshold	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**
PV of debt-to-exports ratio											
Baseline	**139.3**	**143.1**	**150.1**	**152.1**	**149.4**	**146.3**	**153.2**	**150.1**	**148.1**	**146.0**	**142.7**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	139.3	147.9	160.1	169.4	178.2	188.5	208.7	217.2	225.5	233.4	240.1
B. Bound Tests											
B1. Real GDP growth	139.3	143.1	150.1	152.1	149.4	146.3	153.2	150.1	148.1	146.0	142.7
B2. Primary balance	139.3	145.5	158.9	161.3	158.9	155.9	163.2	159.9	157.7	155.3	151.5
B3. Exports	139.3	172.2	220.0	221.2	216.9	211.8	220.7	215.8	212.0	207.2	201.1
B4. Other flows 2/	139.3	153.1	167.9	169.1	165.8	162.0	168.9	165.3	162.4	159.0	154.5
B6. One-time 30 percent nominal depreciation	139.3	143.1	137.0	139.7	137.4	134.7	141.6	138.9	137.3	136.2	133.8
B6. Combination of B1-B5	139.3	169.0	164.9	190.5	186.9	182.7	190.7	186.6	183.3	179.7	174.8
C. Tailored Tests											
C1. Combined contingent liabilities	139.3	151.9	161.1	163.5	161.8	158.9	166.3	163.2	161.0	158.6	154.9
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	139.3	143.2	150.8	153.6	150.4	146.4	152.6	149.4	147.7	145.6	142.4
Threshold	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**
Debt service-to-exports ratio											
Baseline	**6.8**	**8.6**	**7.3**	**8.6**	**10.8**	**11.1**	**10.9**	**10.3**	**9.6**	**18.6**	**9.2**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	6.8	8.8	7.6	9.2	11.9	12.7	13.4	13.3	13.1	25.5	14.1
B. Bound Tests											
B1. Real GDP growth	6.8	8.6	7.3	8.6	10.8	11.1	10.9	10.3	9.6	18.6	9.2
B2. Primary balance	6.8	8.6	7.5	9.0	11.3	11.6	11.4	10.8	10.1	19.2	9.8
B3. Exports	6.8	9.7	9.6	11.8	14.6	14.9	14.7	13.9	13.3	25.5	13.3
B4. Other flows 2/	6.8	8.6	7.6	9.1	11.3	11.6	11.4	10.8	10.4	19.7	10.2
B6. One-time 30 percent nominal depreciation	6.8	8.6	7.3	8.2	10.4	10.8	10.6	10.0	9.3	17.8	8.4
B6. Combination of B1-B5	6.8	9.2	8.9	10.5	13.0	13.3	13.0	12.3	12.1	22.4	11.5
C. Tailored Tests											
C1. Combined contingent liabilities	6.8	8.6	7.6	8.9	11.1	11.5	11.3	10.7	10.0	19.0	9.5
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	6.8	8.6	7.7	10.0	13.6	13.4	11.9	9.6	8.7	18.4	9.0
Threshold	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**
Debt service-to-revenue ratio											
Baseline	**8.7**	**11.6**	**10.1**	**11.6**	**14.4**	**14.7**	**13.5**	**12.4**	**11.2**	**21.3**	**10.3**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	8.7	11.9	10.5	12.4	15.8	16.8	16.5	16.0	15.3	29.0	15.8
B. Bound Tests	8.7	12.4	12.8	15.8	21.8		21.7	19.8	16.7	24.5	**12.0**
B1. Real GDP growth	8.7	12.4	11.5	13.2	16.3	16.7	15.3	14.1	12.7	24.1	11.7
B2. Primary balance	8.7	11.6	10.4	12.2	15.0	15.2	14.0	13.0	11.8	21.9	10.9
B3. Exports	8.7	11.7	10.5	12.6	15.3	15.6	14.3	13.2	12.3	23.0	11.8
B4. Other flows 2/	8.7	11.6	10.5	12.3	15.0	15.3	14.0	13.0	12.1	22.5	11.4
B6. One-time 30 percent nominal depreciation	8.7	14.7	12.7	13.9	17.5	17.9	16.5	15.2	13.7	25.7	11.9
B6. Combination of B1-B5	8.7	12.3	11.8	13.5	16.5	16.8	15.4	14.2	13.4	24.4	12.3
C. Tailored Tests											
C1. Combined contingent liabilities	8.7	11.6	10.4	12.0	14.8	15.1	13.9	12.9	11.6	21.7	10.7
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	8.7	11.6	10.6	13.4	18.1	17.7	14.7	11.5	10.2	21.0	10.1
Threshold	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**

Sources: Country authorities; and staff estimates and projections.

1/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.

2/ Includes official and private transfers and FDI.

Table 4. Rwanda: Sensitivity Analysis for Key Indicators of Public Debt, 2022–32
(In Percent)

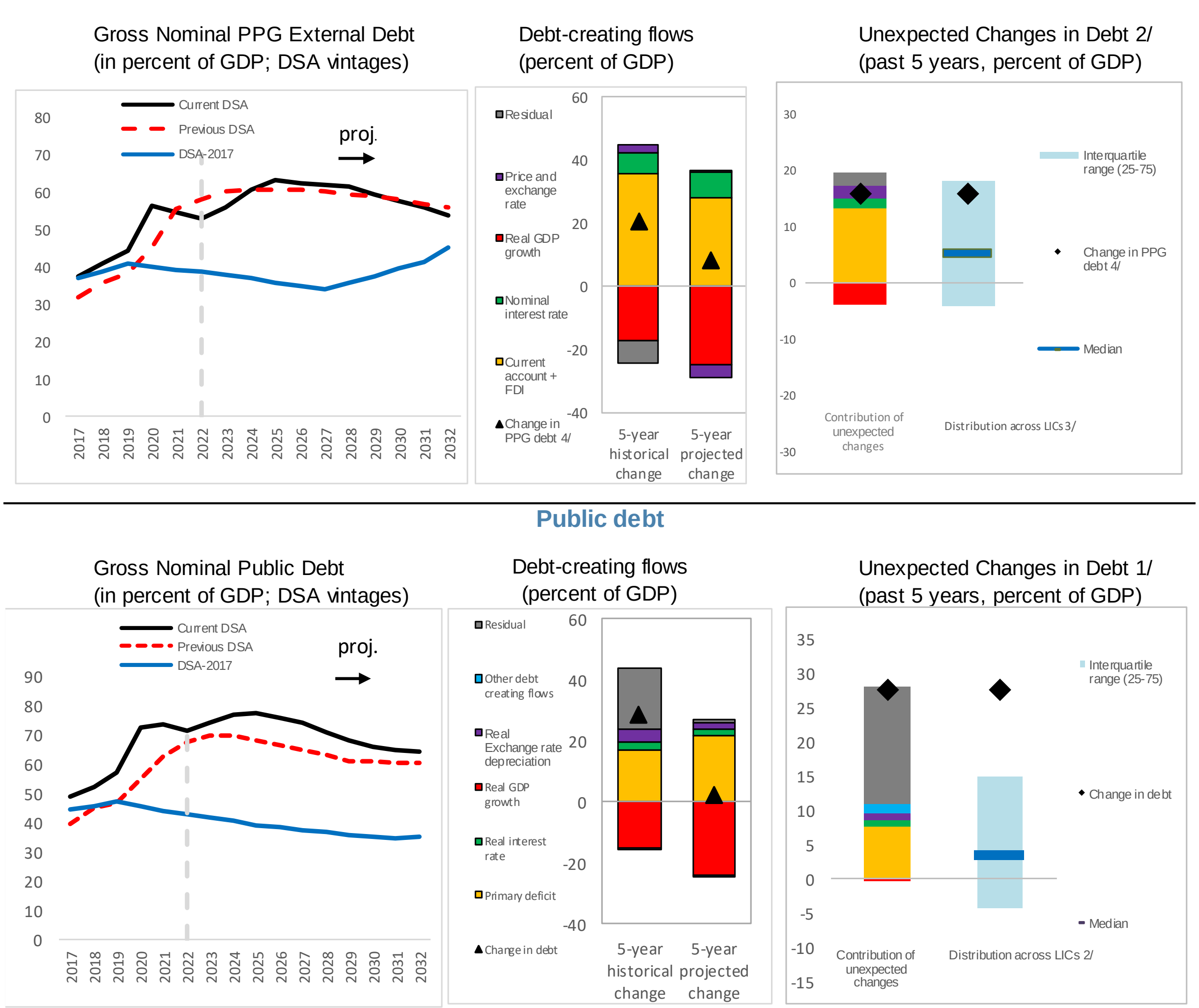
	Projections										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PV of Debt-to-GDP Ratio											
Baseline	**52.7**	**55.0**	**56.1**	**55.8**	**53.9**	**52.1**	**49.2**	**47.5**	**46.2**	**45.8**	**46.1**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	53	55	55	56	55	55	53	52	52	52	53
B. Bound Tests											
B1. Real GDP growth	53	60	67	68	68	68	66	66	66	67	69
B2. Primary balance	53	56	60	59	57	55	52	50	49	48	48
B3. Exports	53	57	62	62	60	58	54	53	51	50	50
B4. Other flows 2/	53	58	61	60	58	56	53	51	50	49	49
B6. One-time 30 percent nominal depreciation	53	60	58	56	53	50	45	43	40	38	38
B6. Combination of B1-B5	53	55	57	57	55	54	51	49	48	47	48
C. Tailored Tests											
C1. Combined contingent liabilities	53	60	61	60	58	56	53	51	50	49	49
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	53	55	56	56	54	52	49	47	46	46	46
Public debt benchmark	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**70**
PV of Debt-to-Revenue Ratio											
Baseline	**209.6**	**236.6**	**236.6**	**235.5**	**224.3**	**213.1**	**206.6**	**200.1**	**193.1**	**190.3**	**190.6**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	210	235	231	233	227	220	219	217	214	213	214
B. Bound Tests											
B1. Real GDP growth	210	253	273	282	277	271	273	273	272	275	281
B2. Primary balance	210	243	252	250	238	226	219	211	204	200	200
B3. Exports	210	246	262	261	248	236	229	221	213	208	207
B4. Other flows 2/	210	248	257	255	243	231	224	217	208	204	203
B6. One-time 30 percent nominal depreciation	210	261	250	241	222	205	192	181	169	161	158
B6. Combination of B1-B5	210	235	242	241	230	219	213	206	199	196	197
C. Tailored Tests											
C1. Combined contingent liabilities	210	258	256	254	242	229	222	215	207	204	203
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	210	237	237	237	225	213	206	199	193	190	190
Debt Service-to-Revenue Ratio											
Baseline	**33.6**	**41.8**	**43.9**	**40.4**	**40.5**	**39.2**	**36.7**	**29.9**	**29.5**	**38.8**	**29.7**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2042 1/	34	43	46	43	43	42	41	34	34	45	35
B. Bound Tests											
B1. Real GDP growth	34	44	50	49	51	51	50	43	43	55	45
B2. Primary balance	34	42	46	44	43	42	39	31	31	40	31
B3. Exports	34	42	44	41	41	40	37	30	30	40	31
B4. Other flows 2/	34	42	44	41	41	40	37	30	30	40	31
B6. One-time 30 percent nominal depreciation	34	41	44	39	41	40	37	31	30	41	30
B6. Combination of B1-B5	34	41	45	42	42	41	38	31	31	40	31
C. Tailored Tests											
C1. Combined contingent liabilities	34	42	52	44	45	42	39	32	31	40	31
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	34	42	44	42	44	42	38	29	29	39	30

Sources: Country authorities; and staff estimates and projections.

1/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.

2/ Includes official and private transfers and FDI.

Figure 3. Rwanda: Drivers of Debt Dynamics––Baseline Scenario[1/]



1/ Compared to 2017 DSA and the previous full DSA in 2020.

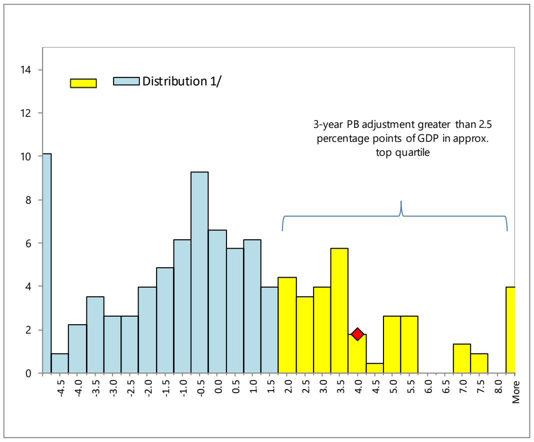
2/ Difference between anticipated and actual contributions on debt ratios.

3/ Distribution across LICs for which LIC DSAs were produced.

4/ Given the relatively low private external debt for average low-income countries, a ppt change in PPG external debt should be largely explained by the drivers of the external debt dynamics equation.

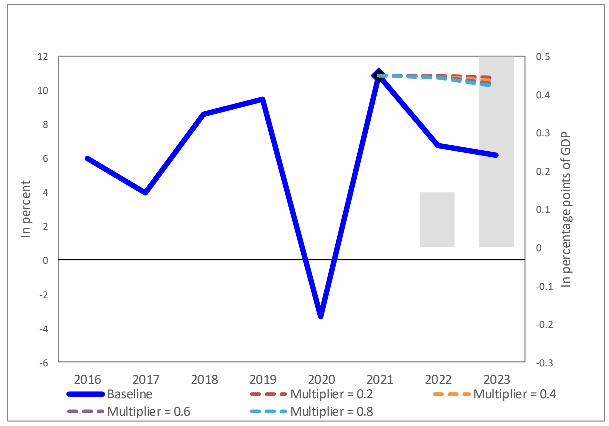
Figure 4. Rwanda: Realism Tools

3-Year Adjustment in Primary Balance
(Percentage points of GDP)



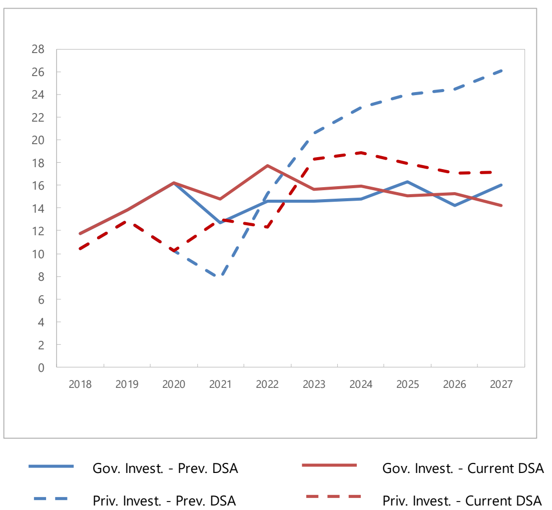
1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

Fiscal Adjustment and Possible Growth Paths 1/



1/ Bars refer to annual projected fiscal adjustment (right-hand side scale) and lines show possible real GDP growth paths under different fiscal multipliers (left-hand side scale).

Public and Private Investment Rates 1/
(% of GDP)



1/ Private investment includes the Bugesera airport project.

Contribution to Real GDP growth
(percent, 5-year average)

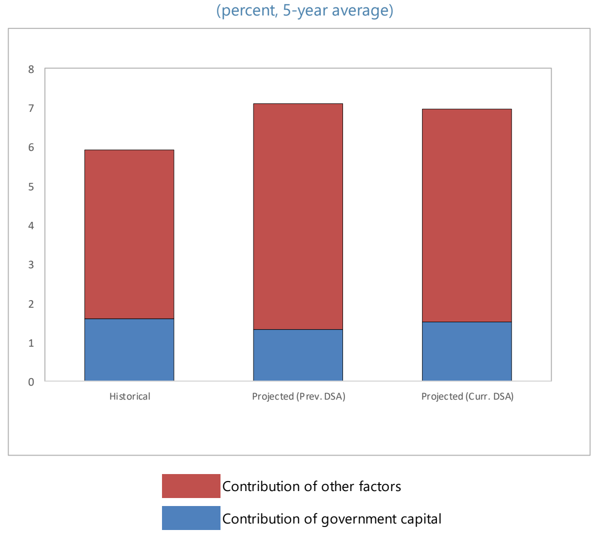
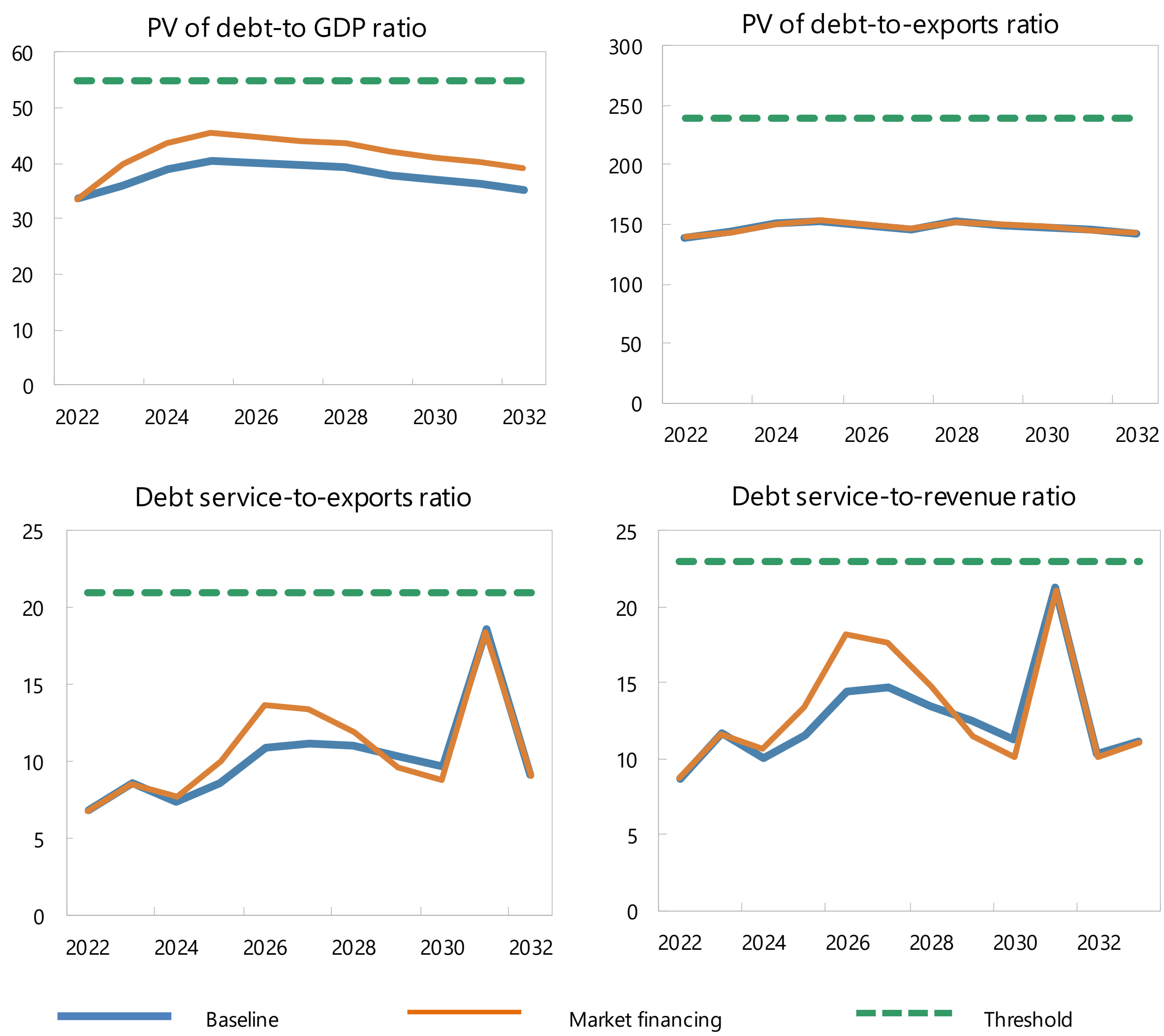


Figure 5. Rwanda: Market-Financing Risk Indicators

	GFN 1/	EMBI 2/
Benchmarks	14	570
Values	16	596
Breach of benchmark	Yes	Yes
Potential heightened liquidity needs	High	

1/ Maximum gross financing needs (GFN) over 3-year baseline projection horizon.
2/ EMBI spreads correspond to the latest available data.



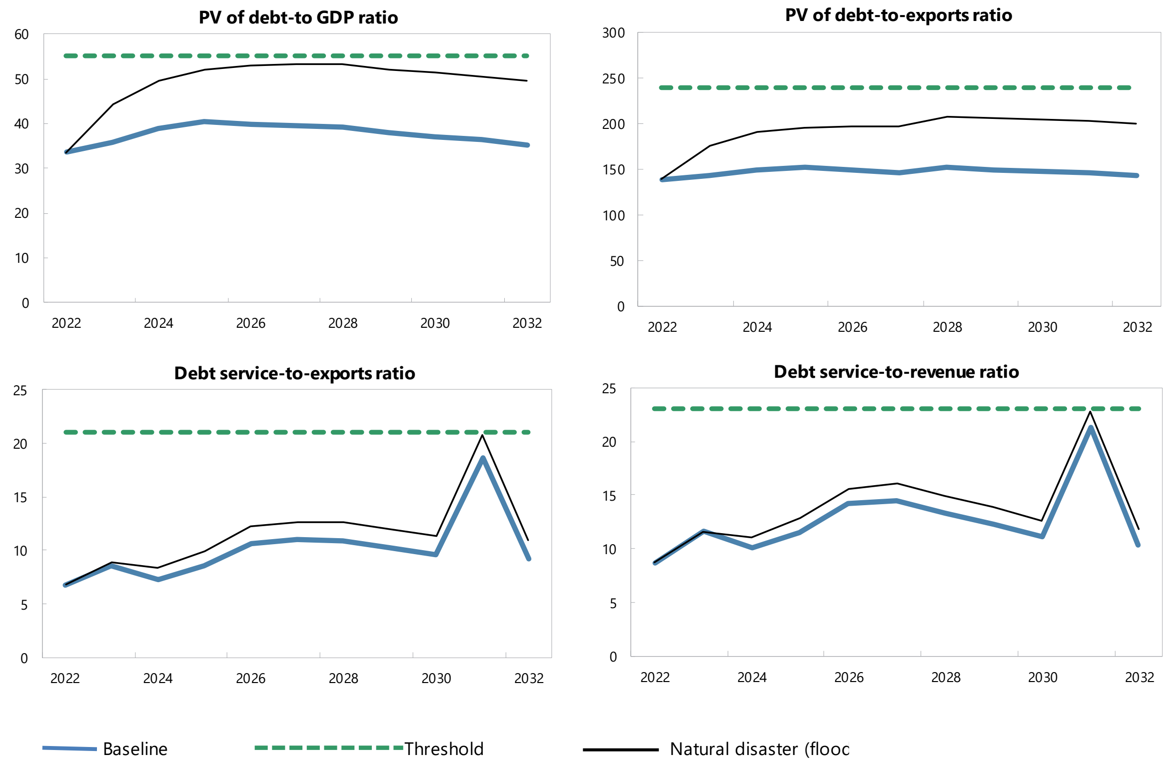
Sources: Country authorities; and staff estimates and projections.

Table 5. Rwanda: Public Debt Decomposition, 2021–42

	Actual	*Projections*																				
Creditor profile	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Total, US$ mn	**7,945**	**8,791**	**9,710**	**10,737**	**11,536**	**12,182**	**12,758**	**13,387**	**14,107**	**14,927**	**15,984**	**17,283**	**18,840**	**20,500**	**22,246**	**24,101**	**26,079**	**28,219**	**30,534**	**33,064**	**35,823**	**39,753**
External, US$ mn	**5,910**	**6,537**	**7,340**	**8,496**	**9,416**	**10,061**	**10,719**	**11,645**	**12,263**	**13,014**	**13,797**	**14,526**	**15,188**	**15,763**	**16,341**	**16,950**	**17,592**	**18,276**	**19,009**	**19,792**	**20,641**	**21,552**
Multilateral creditors	*4,332*	*4,913*	*5,372*	*6,201*	*6,909*	*7,568*	*8,120*	*8,850*	*9,336*	*9,909*	*10,479*	*11,017*	*11,513*	*11,959*	*12,395*	*12,832*	*13,277*	*13,739*	*14,220*	*14,725*	*15,265*	*15,837*
IMF	356	305	387	480	519	474	431	387	343	321	321	321	321	309	284	252	220	188	156	124	92	59
World Bank	2,583	3,059	3,249	3,696	4,145	4,664	5,071	5,596	5,954	6,353	6,734	7,093	7,428	7,742	8,055	8,377	8,709	9,056	9,421	9,805	10,219	10,659
AfDB	1,045	1,111	1,204	1,380	1,492	1,568	1,655	1,772	1,851	1,942	2,029	2,110	2,178	2,237	2,301	2,364	2,425	2,487	2,550	2,616	2,684	2,757
Other Multilaterals	348	437	532	646	754	861	963	1,095	1,188	1,293	1,395	1,493	1,586	1,671	1,754	1,838	1,923	2,008	2,093	2,181	2,270	2,362
Bilateral Creditors	*813*	*878*	*989*	*1,177*	*1,289*	*1,375*	*1,475*	*1,606*	*1,683*	*1,770*	*1,854*	*1,931*	*2,010*	*2,079*	*2,147*	*2,218*	*2,298*	*2,379*	*2,469*	*2,563*	*2,666*	*2,777*
Paris Club	329	374	459	595	692	776	861	968	1,040	1,120	1,198	1,272	1,342	1,406	1,470	1,536	1,604	1,673	1,744	1,818	1,900	1,985
Non-Paris Club	485	504	530	581	597	599	613	638	642	650	656	659	668	673	677	683	694	706	725	744	766	792
Private Creditors	*765*	*747*	*979*	*1,118*	*1,218*	*1,118*	*1,125*	*1,189*	*1,245*	*1,334*	*1,464*	*1,578*	*1,665*	*1,725*	*1,799*	*1,899*	*2,017*	*2,157*	*2,320*	*2,504*	*2,710*	*2,937*
Bonds	681	681	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620
Loans	84	66	359	498	598	498	505	569	625	714	844	958	1,045	1,105	1,179	1,279	1,397	1,537	1,700	1,884	2,090	2,317
Domestic, US$ mn	**2,035**	**2,253**	**2,370**	**2,241**	**2,121**	**2,121**	**2,039**	**1,742**	**1,843**	**1,914**	**2,187**	**2,757**	**3,652**	**4,737**	**5,905**	**7,151**	**8,487**	**9,943**	**11,526**	**13,271**	**15,182**	**18,201**
Memo items:																						
Collateralized debt (US$ million)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Multilateral and collateralized debt																						
Multilateral debt, US$ mn	**4,332**	**4,913**	**5,372**	**6,201**	**6,909**	**7,568**	**8,120**	**8,850**	**9,336**	**9,909**	**10,479**	**11,017**	**11,513**	**11,959**	**12,395**	**12,832**	**13,277**	**13,739**	**14,220**	**14,725**	**15,265**	**15,837**
percent of external debt	73.3	75.2	73.2	73.0	73.4	75.2	75.7	76.0	76.1	76.1	76.0	75.8	75.8	75.9	75.9	75.7	75.5	75.2	74.8	74.4	74.0	73.5
percent of GDP[1]	40.0	39.8	40.9	44.4	46.3	47.0	47.0	46.8	45.1	43.8	42.4	40.9	39.1	37.2	35.4	33.7	32.0	30.5	29.0	27.7	26.4	25.3
IMF and World Bank	*2,939*	*3,364*	*3,636*	*4,176*	*4,663*	*5,138*	*5,501*	*5,983*	*6,297*	*6,674*	*7,055*	*7,414*	*7,749*	*8,051*	*8,340*	*8,630*	*8,929*	*9,244*	*9,576*	*9,929*	*10,311*	*10,718*
percent of external debt	49.7	51.5	49.5	49.2	49.5	51.1	51.3	51.4	51.3	51.3	51.1	51.0	51.0	51.1	51.0	50.9	50.8	50.6	50.4	50.2	50.0	49.7
percent of GDP[1]	27.1	27.3	27.7	29.9	31.3	31.9	31.8	31.7	30.5	29.5	28.6	27.5	26.3	25.1	23.8	22.6	21.5	20.5	19.6	18.7	17.9	17.1
AfDB	*1,045*	*1,111*	*1,204*	*1,380*	*1,492*	*1,568*	*1,655*	*1,772*	*1,851*	*1,942*	*2,029*	*2,110*	*2,178*	*2,237*	*2,301*	*2,364*	*2,425*	*2,487*	*2,550*	*2,616*	*2,684*	*2,757*
percent of external debt	17.7	17.0	16.4	16.2	15.8	15.6	15.4	15.2	15.1	14.9	14.7	14.5	14.3	14.2	14.1	13.9	13.8	13.6	13.4	13.2	13.0	12.8
percent of GDP[1]	9.6	9.0	9.2	9.9	10.0	9.7	9.6	9.4	8.9	8.6	8.2	7.8	7.4	7.0	6.6	6.2	5.8	5.5	5.2	4.9	4.6	4.4
Other Multilateral	*348*	*437*	*532*	*646*	*754*	*861*	*963*	*1,095*	*1,188*	*1,293*	*1,395*	*1,493*	*1,586*	*1,671*	*1,754*	*1,838*	*1,923*	*2,008*	*2,093*	*2,181*	*2,270*	*2,362*
percent of external debt	5.9	6.7	7.2	7.6	8.0	8.6	9.0	9.4	9.7	9.9	10.1	10.3	10.4	10.6	10.7	10.8	10.9	11.0	11.0	11.0	11.0	11.0
percent of GDP[1]	3.2	3.5	4.0	4.6	5.1	5.4	5.6	5.8	5.7	5.7	5.6	5.5	5.4	5.2	5.0	4.8	4.6	4.5	4.3	4.1	3.9	3.8
Collateralized debt, US$ mn	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*

1/ debr as percent of GDP is calculated by authorities based on debt and GDP values in RwF

Figure 6. Rwanda: Public and Publicly-Guaranteed External Debt Natural Disaster (Flooding) Stress Test



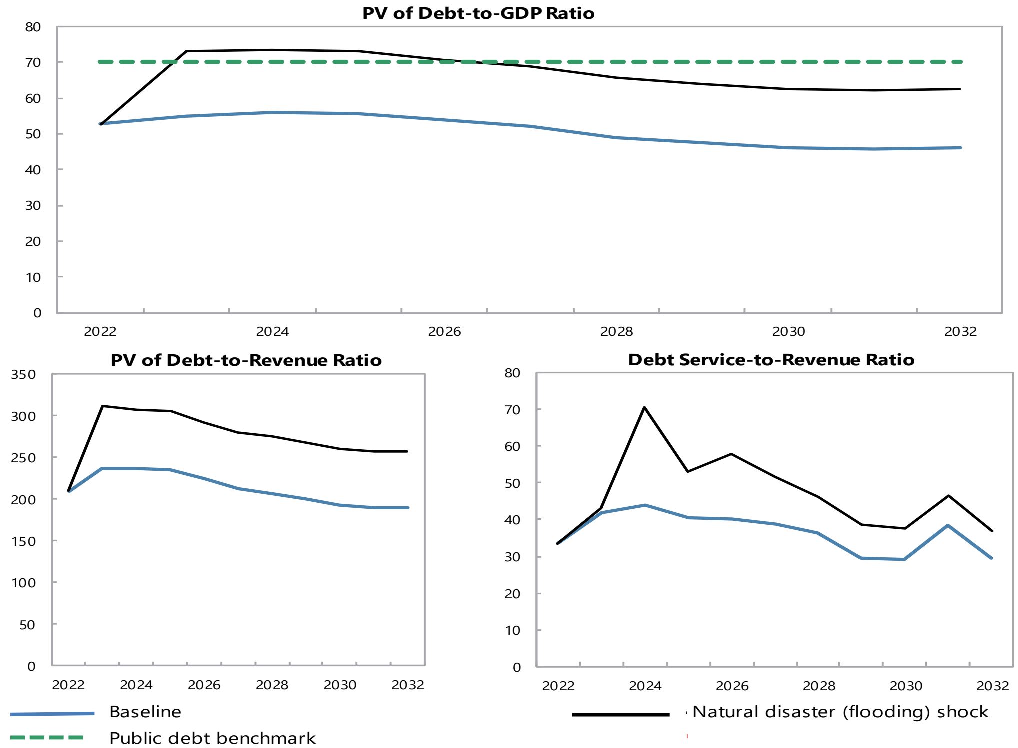
Borrowing Assumptions for Stress Tests*		
	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	2.3%	2.3%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	28	28
Avg. grace period	6	6

* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

The Natutal Disaster stress test was informed by the once-in-100-years flooding scenario discussed in the World Bank's 2022 Country Climate and Development Report for Rwanda. In partiocular, the flooding was assumed to damage 11.2% of the physical capital, which would require 17.9% of GDP external financing to be replaced (with capital-to-GDP estimation at 1.6 based on the perpetual inventory method). As the result of the flooding, the GDP was expected to decline by 4.4%, with a similar exports dynamics.

Figure 7. Rwanda: Public and Publicly-Guaranteed Debt Natural Disaster (Flooding) Stress Test



Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	52%	52%
Domestic medium and long-term	17%	17%
Domestic short-term	31%	31%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	2.3%	2.3%
Avg. maturity (incl. grace period)	28	28
Avg. grace period	6	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	5.9%	5.9%
Avg. maturity (incl. grace period)	3	3
Avg. grace period	2	2
Domestic short-term debt		
Avg. real interest rate	2%	2.0%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

The Natutal Disaster stress test was informed by the once-in-100-years flooding scenario discussed in the World Bank's 2022 Country Climate and Development Report for Rwanda. In partiocular, the flooding was assumed to damage 11.2% of the physical capital, which would require 17.9% of GDP external financing to be replaced (with capital-to-GDP estimation at 1.6 based on the perpetual inventory method). As the result of the flooding, the GDP was expected to decline by 4.4%, with a similar exports dynamics.