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MALI

JOINT WORLD BANK-IMF DEBT SUSTAINABILITY ANALYSIS

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MALI: JOINT BANK-FUND DEBT SUSTAINABILITY ANALYSIS	
Risk of external debt distress	Moderate
Overall risk of debt distress	Moderate
Granularity in the risk rating	Limited space to absorb shocks
Application of judgment	Yes

Mali's public debt remains at moderate risk of overall debt distress—unchanged from the 2021 debt sustainability analysis.[1] However, vulnerabilities have increased. Public debt has increased rapidly over the past five years (by 14 percentage points to 50.4 percent of GDP in 2021) as well as relative to the 2021 DSA. Over the medium term, the public debt-to-GDP ratio is projected to reach around 60 percent. The mechanical risk rating of external debt distress is low. However, under a customized scenario where external debt is classified as quasi-residence-based, the two external debt service indicators persistently breach their thresholds for distress during the forecast horizon. Reflecting these breaches, judgment has been applied to the granularity of the risk rating to indicate limited space to absorb shocks. For overall debt, stress tests suggest that the present value (PV) of the public debt-to-GDP ratio exhibits a prolonged and substantial breach of its benchmark under a scenario of commodity price shocks. Furthermore, like other WAEMU countries, government spending not captured by the fiscal deficit has been contributing to the rise in Mali's public debt. A customized scenario with stock-flow adjustments, assuming that these 'below-the-line operations' continue (in line with historical averages), shows public debt rising above the threshold. To ensure debt sustainability in the future, stronger fiscal consolidation will be necessary. This includes limiting future borrowing to concessional terms to minimize interest costs, as well as resolving security and political issues. Finally, tighter financial conditions in

[1] The DSA analysis reflects a debt carry capacity of Medium considering Mali's composite indicator index of 2.90, based on the IMF's October 2022 World Economic Outlook and the 2021 World Bank Country Policy and Institutional Assessment (CPIA).

Public Disclosure Authorized

the regional securities market pose significant risks to sustainability, requiring prudent cash management and clear and timely communication with creditors to carefully manage any liquidity shortfalls

PUBLIC DEBT COVERAGE

1. Mali's public debt covers the external and domestic obligations of the central government (Text Table 1 and 2). State and local government entities do not borrow directly on their own. A detailed breakdown of the debt of state-owned enterprises (SOE) is currently not available, but the liabilities are estimated to be large. Staff are therefore supporting authorities' efforts to broaden the coverage of public debt reporting to include the debt of SOEs and other public institutions.[2] Improvements in debt recording and reporting are critical. External debt is classified by currency denomination[3] due to data limitation, staff are not able to track the residency of holders of government securities. Rule of thumb estimates based on auction data suggests the amount of external debt as defined by creditor residency is likely to be significantly larger. The DSA model-based output about external debt sustainability should, therefore, be treated with more caution.

2. A contingent liability test with tailored magnitude of shocks is applied to reflect the potential impacts of additional liabilities (Text Table 2). The component of the contingent liability shock related to SOEs, which are not accounted for in the public sector coverage, is assumed to be 8 percent of GDP, 6 percentage points higher than the default setting. That reflects the possibility that some SOE liabilities could add to public debt. The known liabilities of the electricity company EDM amount to 5 percent of GDP, for example. The shock from the financial sector is set at the default level of 5 percent of GDP. According to the World Bank's Public Private Partnerships (PPP) database, the capital stock of PPPs in Mali is estimated to be 3.7 percent of GDP, so the PPP component of the contingent liability stress test is calibrated to be 1.3 percent of GDP. Total contingent liabilities are therefore assumed to be 14.3 percent of GDP for the purposes of the stress test.

Text Table 1. Mali: Coverage of Public Debt

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

[2] Efforts have been made with the support from the IMF (AFRITAC mission on debt reporting) and the World Bank. Under the World Bank Sustainable Development Finance Policy (SDFP), the government has initiated regular reporting of the debt situation of selected SOEs with financial risks.

[3] The only exception is the borrowing from the West African Development Bank (BOAD), which is considered external debt despite being local-currency-denominated.

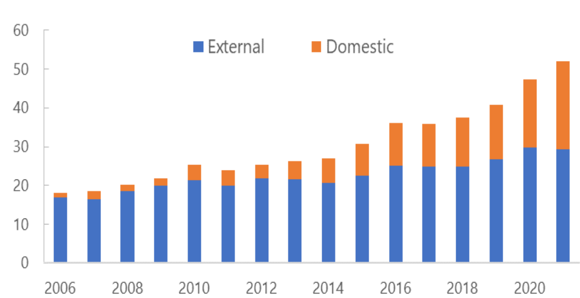
Text Table 2. Mali: Size of Contingent Liability Shock

		Default		Used for the analysis
1	The country's coverage of public debt	The central, state, and local governments		
2	Other elements of the general government not captured in 1.	0	percent of GDP	0.0
3	SoE's debt (guaranteed and not guaranteed by the government)	2	percent of GDP	8.0
4	PPP	35	percent of PPP stock	1.3
5	Financial market (the default value of 5 percent of GDP is the minimum value)	5	percent of GDP	5.0
	Total (2+3+4+5) (in percent of GDP)			14.3

DEBT BACKGROUND

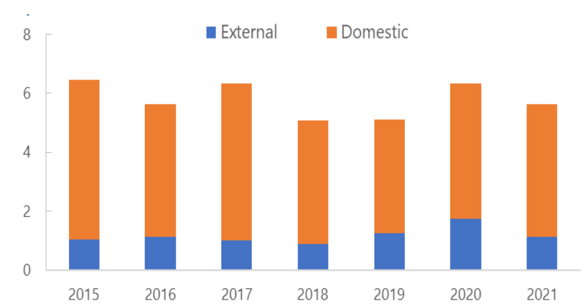
3. **At end-2021, Mali's stock of public debt amounted to 50.4 percent of GDP, with sixty percent of public debt consisting of external debt** (Text Figure 1 and Text Table 3). External debt amounted to CFAF 3,107 billion (28.3 percent of GDP), of which CFAF 2,371 billion (21.6 percent of GDP) was owed to multilateral creditors and CFAF 737 billion (6.7 percent of GDP) to bilateral creditors. The main external creditors— accounting for 90 percent of the external debt stock— included the IMF, World Bank, African Development Fund, West African Development Bank, Islamic Development Bank, as well as the governments of France (French Development Agency), China, India, and Abu Dhabi (Abu Dhabi Development Fund). Around 30 percent of Mali's external debt is denominated in euros, which is not exposed to exchange rate risk given the CFAF peg to the euro. External debt is generally on concessional terms, with an average weighted interest rate of 0.6 percent and maturity of more than 10 years. Public debt service as a percentage of GDP stood at around 6 percent in 2021, broadly stable since 2015 (Text Figure 2).

Text Figure 1. Mali: Public Debt Stock (Percent of GDP)



Source: Malian authorities, IMF Staff Calculations

Text Figure 2. Mali: Public Debt Service (Percent of GDP)



Source: Malian authorities, IMF Staff Calculations

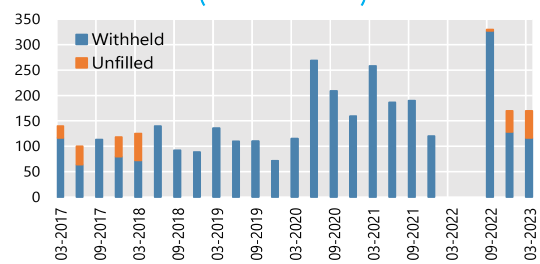
4. **Domestic debt consists mostly of short- and medium-term treasury securities**, predominantly held by banks domiciled in Mali or in the rest of the West African Economic and Monetary Union (WAEMU). Domestic debt has built up rapidly, increasing from a low base of 8.1 percent of GDP in 2015 to 22.1 percent of GDP in 2021. It consists mostly of treasury bills and bonds issued on the WAEMU regional market, but also includes syndicated loans with groups of regional banks that carry a premium of about 200 basis points over the securities issued in regional markets. The increasing share of domestic debt increases Mali's debt servicing costs due to its average effective interest rate of 6.1 percent, compared to 0.6 percent for external debt. Ninety percent of Mali's domestic debt stock consists of T-Bonds with a maturity of more than 1 year. In

2021, the SDR allocation was received by the regional central bank (BCEAO) and then on lent to WAEMU member countries in CFAF, which is recorded as domestic debt for the purpose of the DSA.

5. The government of Mali faced considerable liquidity pressures during 2022. Its gross financing needs in 2022 were around 10 percent of GDP, which it had to meet fully through regional markets and regional syndicated bonds given the drying up of most external financing in the aftermath of the socio-political turmoil. However:

- **The ECOWAS sanctions in the first half of 2022 cut Mali off from the regional securities market, and more broadly from the regional payments and financial system**. As a result, Mali was forced to accumulate sizable arrears. Once the sanctions were lifted in July 2022, Mali made substantial efforts to repay its arrears to major external and domestic creditors and regained access to the regional market.
- **Even after the sanctions were lifted in July 2022, it was difficult to meet the large annual financing needs in the span of the remaining six months. The outstanding amount of domestic arrears, especially to suppliers, remained sizable at the end of 2022, against the backdrop of significantly tightened financial conditions.** Following initial success, the regional market showed signs of saturation in early 2023. Several issuances of government debt were under-subscribed, and some were cancelled. Overall, Mali fulfilled around 80 percent of its revised annual issuance (65 percent of its gross financing needs) in 2022 through debt or syndicated loans. Going forward, preliminary data from April 2023 indicate outstanding domestic arrears have fallen somewhat, as the government has expressed its firm commitment to clear them.[4] Despite the sizable amount, they do not trigger an "in debt distress" rating, as the accumulation of arrears was a product of the sanctions in 2022.[5] In addition to the persistent effects of the 2022 sanctions, this accumulation is further affected by financing difficulty caused by significantly tightened financial conditions. Such tightening, which also applies to other WAEMU countries, is driven by several factors, namely: monetary policy tightening to combat high inflation throughout the WAEMU region (a policy rate increase to 3 percent in March 2023, a 100 bp rise since June 2022); withdrawals of COVID-related support by BCEAO; risk-off sentiments causing difficulties in Eurobond issuance and continued undersubscription in the WAEMU-wide regional securities market; and BCEAO's restoration of liquidity provision under new refinancing criteria

Text Figure 3. Mali: Withheld and Unfilled Bond Issuances
(CFAF Billions)



Source: UMOA Titres Mali, IMF Staff Computations

Note: Issuance does not include syndicated loans (Appel Public à l'Epargne)

[4] Staff's preliminary estimate suggests domestic arrears are in the range of around 1.5-3 percent of GDP. This estimate needs to be treated with caution as the data are not definitive and may be influenced by currently volatile financing conditions. The outstanding amount of external arrears is estimated to be very small, at around 0.1 to 0.2 percent of GDP.

[5] See '*Guidance Note on the Bank-Fund Debt Sustainability Framework for Low Income Countries'*, paragraph 90.

(variable rate, fixed allotment), which makes it more difficult for Mali and regional banks to access central bank money.

Text Table 3. Mali: Debt Stock at Year-End, 2015-2021
(Billions of CFAF)

	2015	2016	2017	2018	2019	2020	2021
Total	2,344.5	2,991.0	3,209.4	3,608.0	4,123.3	4,758.6	5,521.3
(percent of GDP)	30.3	36.0	36.0	38.1	40.7	46.9	50.4
External	1,754.0	2,081.3	2,227.5	2,349.4	2,698.9	2,995.2	3,107.0
Multilateral	1,384.0	1,633.7	1,798.9	1,889.1	2,061.1	2,313.6	2,370.5
IMF	79.7	104.9	113.9	181.6	190.3	297.1	331.2
World Bank	728.3	822.5	907.5	946.6	1,086.3	1,153.5	1,180.1
African Development Fund	252.9	342.6	387.3	397.9	409.8	437.3	451.1
West African Development Bank	65.8	65.5	122.0	108.4	121.7	150.8	142.1
Islamic Development Bank	115.6	141.3	117.8	99.3	97.9	130.5	123.0
Others	141.8	156.9	150.4	155.4	155.2	144.5	143.0
Official Bilateral	370.0	447.6	428.6	460.3	637.8	681.6	736.6
Paris Club	49.0	49.8	48.1	51.4	86.8	135.7	140.6
France	34.4	34.4	34.0	37.8	73.2	97.9	103.6
Korea	8.1	8.4	8.1	7.8	8.0	32.9	32.6
Austria	3.3	3.3	3.3	3.3	3.3	3.0	2.8
Belgium	3.2	3.7	2.8	2.5	2.3	1.9	1.7
Non-Paris Club	321.0	397.7	380.5	408.9	551.0	545.9	596.0
China	193.3	263.1	261.9	294.1	248.6	270.5	280.6
India	84.3	83.2	71.5	75.2	57.5	53.1	60.6
Abu Dhabi	-	-	-	-	165.1	150.2	162.2
Kuwait	21.7	31.9	30.4	25.5	26.9	31.4	33.7
Others	21.7	19.5	16.7	14.1	52.7	40.7	58.8
Domestic	590.5	909.7	981.9	1,258.6	1,424.4	1,763.3	2,414.3
T-bills	242.8	236.3	87.8	185.8	126.5	119.0	127.7
T-bonds	347.7	673.4	894.1	1,022.9	1,025.2	1,015.5	2,144.6
Syndicated Bonds	-	-	-	-	222.7	578.9	0.0
Sukuk Bonds	-	-	-	50.0	50.0	50.0	0.0

Sources: Malian authorities.

UNDERLYING MACROECONOMIC ASSUMPTIONS AND COUNTRY CLASSIFICATION

6. The baseline scenario reflects the impact of the recent social and political turmoil in its near-term projections, **while in the medium and long term, the key macroeconomic assumptions are broadly in line with the 2021 DSA -** notably, in terms of the growth path and the eventual convergence towards fiscal consolidation, while the current account projections are more positive in the medium term and official aid projections are on a lower path relative to that in the previous DSA. More specifically:

- **GDP is expected to rebound and stabilize in the medium term.** After COVID- and sanctions-induced slowdowns to an average of 1.8 percent in 2020-2022, GDP growth is expected to rebound to above 5 percent in 2023 and 2024, before settling at its estimated potential growth rate of 5 percent over the medium term. Several factors are assumed to drive this growth rebound, including higher mining output due to new discoveries of gold in 2022 and new lithium mine projects; favorable medium-term gold price projections; strong agricultural output barring weather and fertilizer shocks; and reduced political uncertainty after the assumed 2024 presidential elections, leading to higher domestic activities and a resumption in IFI budget support.

- **Fiscal policy has been loose but is expected to return to a path of consolidation over the medium term.** A combination of external and domestic shocks—including Russia's invasion of Ukraine and an ensuing cost-of-living crisis, the US dollar appreciation, significant deterioration in the security situation and a six-month ECOWAS embargo—have led to an increase in total debt in 2022. At the same time, while some measures have been undertaken to boost tax revenue, no major policy changes are currently envisaged to cut spending for 2023 (a pre-election year). The authorities plan to maintain fiscal deficits of close to 5 percent of GDP. Continued increases in financing needs (around 13 percent of GDP in 2023) amid limited support from the international community while facing rising high wage and interest bills will increase risks to liquidity and debt sustainability. Going forward, the authorities' multiyear budget envisages a gradual consolidation of the fiscal position during 2024-25. This consolidation is expected to arise mainly through revenue administration measures and the activation of delayed tax measures, introduced in 2022 to broaden the tax base and improve compliance, and assumed to remain in place going forward. These measures include the introduction of an electronic tax declaration for large companies subject to VAT, a digital invoicing system, a new tax on exports of gold and other mining products not covered by the Mining Code, a minimum transport tax on two-wheeled and related vehicles, new excise taxes and increases of existing ones on select consumer products, the taxation of previously exempt agricultural equipment, and operationalization of monthly VAT credit refunds. Under current policies, fiscal deficit is expected to reach WAEMU's 3-percent-of-GDP ceiling by 2026.

- **Gross financing needs are assumed to be met in large part by domestic issuances in the near term, while the share of external financing is expected to rise in the medium term**. Due to political uncertainly, external financing fell from over CFAF 120 billion in 2021 to around 66 billion in 2022, which was 6 percent of Mali's gross financing needs. Mali received no external budget support in 2022, so external financing entirely reflected project support. External budget support is not expected to return in 2023 and 2024, although some project support is expected to continue in those years, especially from the World Bank. In large part, this implies that gross financing needs are met mainly by domestic issuances. In the medium term, conditional on the 2024 election, external financing is projected to rise, accounting for over 20 percent of gross financing needs in 2027. This rise partly reflects the significant increase in IDA credit disbursements from the World Bank, under new IDA borrowing terms.[6] External funding is projected to fall back as a share of total financing thereafter, partly following the gradual decline in the expected IDA credit disbursements in the longer term as the economic and social conditions improve.

- **The current account deficit widened to 7.5 percent of GDP in 2021 but is expected to fall back to 6.9 percent of GDP in 2022 and to around 3-4 percent over the medium term.** External imbalances are expected to ease on the back of elevated gold price and normalized fuel prices projected over the medium term and as the one-off political factors reverse. In addition, the gradual return of the fiscal position to WAEMU targets is also expected to alleviate pressures on the current account. The differences in the current account projections between the current and previous DSAs arise mainly from updated assumptions on the path of gold and fuel prices.

[6] As Mali is classified as an IDA-only country with a moderate risk of debt distress, it has access to concessional 50-year credits and Shorter-Maturity Loans (SMLs). The former has 50-year final maturity, a 10-year grace period, and zero interest or service charge; the latter (12 percent of the country allocation) a 12-year final maturity, a 6-year grace period, zero interest or service charge.

7. **Realism tool comparisons show that projections are broadly in line with historical precedent and the experiences of comparable countries** (Figures 3 and 4).[7]

- **Debt dynamics*.*** The dynamic of public debt as a percentage of GDP shows a more gradual increase in the near to medium term relative to the past five years, largely due to the projected growth rebound assumption (Figure 3). A sizable residual for the past debt increase is partly a result of the "stock-flow adjustments", a common phenomenon across WAEMU countries, whereby government spending not captured by the fiscal deficit contributes to debt accumulation. The higher growth assumption is also expected to drive the difference in the past and future changes in external debt as a percentage of GDP, although to a lesser extent. A sizable residual for the projected decline in external debt is partly a result of the expected decrease in the availability of external loans in the near term.

- **Fiscal adjustment.** The projected three-year change in the primary balance as a share of GDP (0.7 percentage points between 2022-24) lies below the 75th percentile of the distribution of approved Fund-supported programs for LICs since the 1990s, suggesting the adjustment in the primary fiscal balance is in line with the other countries' experiences (Figure 4).

- **Public investment and growth*.*** Although public investment as a share of GDP has been below the expected level under the 2021 DSA, partly because of political developments, it is projected to rise to a level consistent with the previous DSA's projection over the near term.

Text Table 4. Mali: Evolution of Selected Projected Macroeconomic Indicators

	2019	2020	2021	2022	2023	2024	2025	2026	Long term[1]
				Projections					
Real GDP Growth									
Current DSA	4.8	-1.2	3.1	3.7	5.0	5.1	5.3	5.1	5.0
Previous DSA	4.8	-2.0	4.0	6.0	5.0	5.0	5.0	5.0	5.0
GDP Deflator									
Current DSA	1.9	1.4	4.9	4.9	3.0	2.8	2.0	2.0	2.0
Previous DSA	-3.3	3.7	6.7	2.8	2.4	2.2	2.2	2.2	2.9
Overall fiscal balance (including grants, percent of GDP)									
Current DSA	-1.7	-5.4	-4.8	-4.8	-4.8	-4.3	-3.6	-3.0	-3.0
Previous DSA	-1.7	-5.5	-5.5	-4.5	-3.5	-3.0	-3.0	-3.0	-3.0
Export of goods and services (percent of GDP)									
Current DSA	25.7	29.4	27.2	28.6	29.0	27.7	28.7	27.7	19.9
Previous DSA	24.9	27.1	25.2	23.8	22.6	21.6	20.8	19.9	15.7
Import of goods and services (percent of GDP)									
Current DSA	38.0	36.0	38.4	39.1	38.2	37.1	36.8	36.3	33.1
Previous DSA	36.0	32.2	33.9	33.3	32.7	32.1	31.8	31.3	30.0
Current account (including grants, percent of GDP)									
Current DSA	-7.5	-2.2	-7.5	-6.9	-6.1	-5.5	-3.4	-3.7	-9.1
Previous DSA	-4.8	-2.0	-2.4	-2.9	-3.6	-4.5	-5.3	-5.9	-8.5
Official aid[2] (percent of GDP)									
Current DSA	5.6	2.6	1.7	0.8	1.9	2.4	4.0	4.1	3.7
Previous DSA	5.6	2.9	3.7	5.0	5.2	4.9	4.8	4.8	4.5

Sources: Malian authorities; and IMF Staff estimates and projections.

[1] Defined as the last 15 years of the projection period. For the current DSA, the long term covers the 2027-41 period. The previous DSA

[2] Defined as the sum of concessional grants and loans.

[7] Realism tools help scrutinize baseline macroeconomic and debt projections, for example by comparing them to previous outturns or to cross-country experiences. These are used as a cross-check for the baseline projections to ensure that the assessment of debt sustainability is based on credible assumptions.

COUNTRY CLASSIFICATION AND DETERMINATION OF STRESS TESTS

8. Mali's debt carrying capacity is assessed as 'medium.' Based on the October 2022 WEO and World Bank's 2021 CPIA, Mali's composite indicator score is 2.90. Any score below 2.69 would be classified as 'low,' and any score above 3.05 would be 'high,' with the relevant thresholds used to assess the external debt risk rating. The assessment is broadly unchanged from the previous DSA.

9. The debt sustainability analysis relies on six standardized stress tests. It includes a tailored commodity price shock[8], a separate customized scenario using residency-based definition of external debt (details in paragraph 10), and another separate customized scenario with stock-flow adjustments for below the line fiscal operations (details in paragraph 11). It also uses a historical scenario as a robustness check for the baseline scenario. The standardized stress tests use the default settings. The historical scenario produces the path of debt with key macroeconomic variables in the baseline projection that are permanently replaced by their 10-year historical averages.

10. The customized scenario for external debt sustainability analysis relies on residency-based definition of external debt. Due to data limitations, staff adopt a currency-based definition of external debt in DSA in the baseline assessment, and government securities issued in the WAEMU regional market are treated as domestic debt. According to auction data, around two thirds of Mali government securities are bid by residence of other WAEMU members. Assuming the absence of secondary market trading, the 2022 present value of the CFAF-denominated government debt held by nonresidents is expected to be around 35 percent of GDP, while the PV of foreign-currency denominated debt only accounts for around 15 percent of GDP. To assess external debt sustainability under a residency-based definition, we construct a customized scenario when two thirds of government securities are classified as external debt.

11. The customized scenario for public debt sustainability analysis takes into account "stock-flow adjustments", where below-the-line operations contribute to debt increases. Across WAEMU countries, public debt has increased beyond those that can be explained by the overall fiscal deficits in recent years. These "stock-flow adjustments" (SFA) can be caused by several factors, including extra-budgetary funds, differences in accounting methods between the fiscal balance and public debt, valuation effects, government guarantees, or a materialization of contingent liabilities. SFAs have averaged 1.5 percent of GDP across the currency union, and about 0.7 percent of GDP in Mali.[9] Since such discrepancies between below and above the line fiscal accounts may be difficult to project going forward, staff approximates the possibility of such SFAs continuing by assuming that the true overall deficits are 0.7 percent of GDP higher every year over the forecasting horizon.

[8] 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.

[9] The estimate of this historical average is based on a data vintage at the time of conducting the assessment for this report. More updated data, used for the analysis in the Selected Issues Paper published alongside this report, suggest a higher number for Mali (0.9 percent). This suggests that the results related to stock-flow adjustments presented for this Report likely serve as lower bound of the true estimates.

Text Table 5. Mali: Debt Carrying Capacity and Thresholds

Country	Mali
Country Code	**678**

Debt Carrying Capacity	**Medium**

Final	Classification based on current vintage	Classification based on the previous vintage	Classification based on the two previous vintages
Medium	Medium 2.90	Medium 2.94	Medium 2.96

Calculation of the CI Index

Components	Coefficients (A)	10-year average values (B)	CI Score components (A*B) = (C)	Contribution of components
CPIA	0.385	3.295	1.27	44%
Real growth rate (in percent)	2.719	3.973	0.11	4%
Import coverage of reserves (in percent)	4.052	44.277	1.79	62%
Import coverage of reserves^2 (in percent)	-3.990	19.604	-0.78	-27%
Remittances (in percent)	2.022	5.675	0.11	4%
World economic growth (in percent)	13.520	2.898	0.39	14%
CI Score			2.90	100%
CI rating			**Medium**	

APPLICABLE	
EXTERNAL debt burden thresholds	
PV of debt in % of	
Exports	180
GDP	40
Debt service in % of	
Exports	15
Revenue	18

APPLICABLE	
TOTAL public debt benchmark	
PV of total public debt in percent of GDP	55

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

DEBT SUSTAINABILITY ANALYSIS

EXTERNAL DEBT SUSTAINABILITY

12. **External debt is projected to fall gradually, with public and private debt both declining in the long run** (Table 1). Under the baseline scenario, the public and publicly guaranteed (PPG) external debt-to-GDP ratio is expected to fall slightly in 2022 relative to the previous year. It then follows a downward trajectory to settle at 20 percent of GDP at the end of the projection period in 2042, as growth converges to its potential and reliance on domestic debt continues to be significant given the scarcity of concessional official loans.

13. **The risk of external debt distress is moderate, with limited space to absorb shocks.** All external debt indicators remain below their corresponding indicative thresholds under the baseline scenario and standardized stress tests (Figure 1). Under the baseline scenario, the PV of the external debt-to-GDP ratio is projected to decrease slowly from 16.7 percent to 14.5 percent in 2032, as the economy outgrows the supply of external concessional lending. This is well below the indicative threshold of 40 percent. The PV of the external debt-to-exports ratio follows a mild U-shaped pattern, eventually trending upward due to declining exports as a share of GDP in the medium to long term. Nevertheless, it remains comfortably below the 180 percent threshold. Indicators of debt servicing costs are all stable and below their corresponding threshold limits. Under standardized stress tests, which include the most extreme shock scenarios, the four indicators also remain comfortably below their respective thresholds. By contrast, in the customized scenario using residency-based definition of external debt, the expected paths of debt service-to-exports ratio and debt service-to-revenue ratio exceed their corresponding thresholds for a prolonged period from 2024 to 2032. Because of higher interest rates of government securities, the impact on debt service indicators is disproportionately strong. In addition, the present-value-of-debt-to-export indicator also breaches the threshold during the last year of the projection period. These breaches highlight the sensitivity of the debt sustainability assessment to the definition of the external debt. While the moderate risk tool shows there is substantial space to absorb shocks using currency-based definition of external debt (Figure 5), staff judge the actual space to absorb shocks to be limited because of the large share of government securities held by nonresidents.

PUBLIC DEBT SUSTAINABILITY

14. **The public debt-to-GDP ratio is projected to rise to around 60 percent over the medium term.** After a sizable increase in the fiscal deficit during the pandemic and periods of political turmoil, the expected fiscal consolidation means that the deficit is expected to gradually decrease to below the WAEMU ceiling of 3 percent of GDP. Even so, borrowing costs are expected to increase as global financial conditions tighten, and the overall public debt-to-GDP ratio is expected to rise to almost 60 percent of GDP by 2032 (Table 2). In 2022, public debt is expected to be around 6 percent of GDP higher than in the previous DSA projections from 2021. That is due to the late registration of 2020 debt in 2021, the accumulation of deposits at the regional central bank in 2021 following a large disbursement of a World Bank loan at end-2022, and the effect of the large US dollar appreciation vis-à-vis the euro during 2022. The external debt-to-GDP ratio is expected to decline over the medium term because of a relative scarcity

of external concessional loans. This assumption is sensitive to several factors, however, including global economic conditions and investor confidence in Mali. The projected contributions of different debt-creating factors are broadly consistent with historical precedent.

15. The risk of public debt distress remains moderate. Under the baseline scenario, the PV of the public debt-to-GDP ratio is expected to be below the 55 percent indicative threshold throughout the projection period (Figure 2). By contrast, in the default adverse scenario of a commodity price shock, the PV of the public debt-to-GDP ratio would diverge to an increasing path and breach the 55 percent threshold in 2025.[10] In the historical scenario where macroeconomic variables in the baseline projection are permanently replaced by their 10-year historical averages, the PV of the public debt-to-GDP ratio would also diverge to an increasing path and breach the 55 percent threshold in 2031. Finally, in the customized scenario of stock-flow-adjustments, the public debt-to-GDP ratio is set on an upward trajectory and breaches the threshold by 2032. This result is not surprising, given that the public debt ratio in the baseline scenario is already on a slightly upward trajectory. Hence, it is vulnerable to any permanent shocks to the overall balance - even SFAs less than the historical 0.70 percentage points of GDP - are likely to set public debt on an unsustainable path.

RISK RATING AND VULNERABILITIES

16. Mali's risk of external and overall debt distress remains 'moderate.' Although the four external debt indicators remain comfortably below their respective thresholds under the baseline scenario and standardized stress tests, three indicators breach their thresholds under the customized scenario that uses a residency-based definition of external debt. Staff therefore estimate the risk of external debt distress to likely be significantly higher after accounting for government securities held by nonresidents, and judge the risk of external debt distress to be moderate. In the adverse scenario of a commodity price shock, the historical scenario, and the customized scenario of a permanent stock-flow adjustment, the projected path of the PV of the public debt-to-GDP ratio diverges and breaches marginally the 55 percent threshold in 2031 and 2032. This reflects reduced fiscal space due to the recent increase in the public debt-to-GDP ratio.

17. Domestic political instability and external financing conditions pose risks around debt financing. Mali's isolation from its traditional donors and the forced recourse to domestic markets to meet the financing needs carries significant financing risks for its fiscal position. Such risks are further tilted toward to the downside following the postponement of the constitutional referendum in March 2023, which increases political uncertainty regarding the promise of holding elections in 2024, and potential reintroduction of sanctions. Also contributing to these financing risks are the current tighter financial conditions in the regional securities market, which have curtailed Mali's access to finance and pose a significant risk to debt sustainability. These developments are especially worrisome given that under the most extreme scenario for overall public debt, the PV of public debt-to-revenue and debt service-to-revenue ratios rise to high levels, with the latter rising above 100 percent by 2031. This implies insufficient revenues to cover recurrent expenditures. To reduce risks to debt sustainability, resolving security and

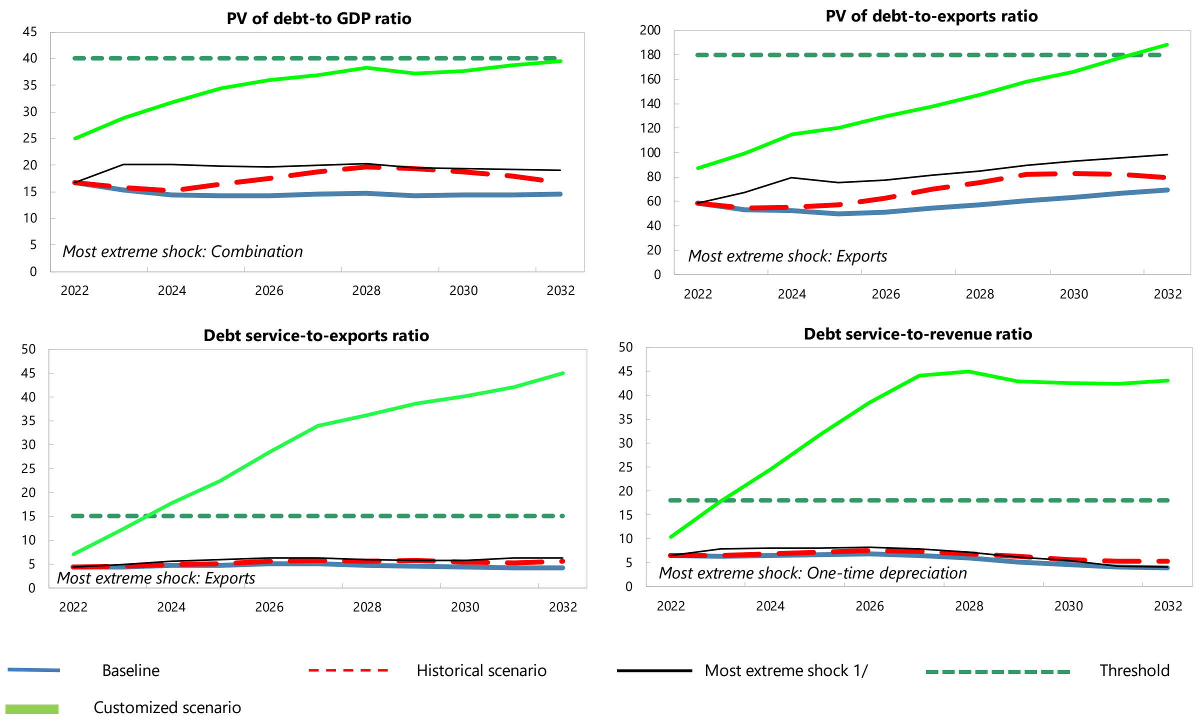
[10] The design of DSA stress test can overstate the persistency of commodity price shock by assuming zero elasticity of expenditure relative to GDP in the long run.

political issues and restoring fiscal discipline will be important for rebuilding investor confidence, which is key to attract financing. The current situations also call for prudent cashflow management and management of existing arrears. In this process, engagement with creditors to ensure clear communication and timely payments would be also crucial.

AUTHORITIES' VIEWS

18. The authorities agreed with the general conclusions of the debt sustainability analysis. They underscored their commitment to maintaining a sustainable level of debt that does not exceed a moderate risk of debt distress. They acknowledged that while the debt stock had remained at a sustainable level, liquidity issues could pose a risk to debt sustainability, especially against the backdrop of a significant tightening of financing conditions in the regional securities markets. They have been engaging with creditors to carefully manage existing arrears and are considering strategies and financial instruments to manage the debt (adjusting maturity profile, issuance volumes, alternative markets, etc.) and reduce debt concentration in certain sectors and creditors.

Figure 1. Mali: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2022–32



Customization of Default Settings	Size	Interactions
Tailored Stress		
Combined CL	Yes	
Natural disaster	n.a.	n.a.
Commodity price	No	No
Market financing	n.a.	n.a.

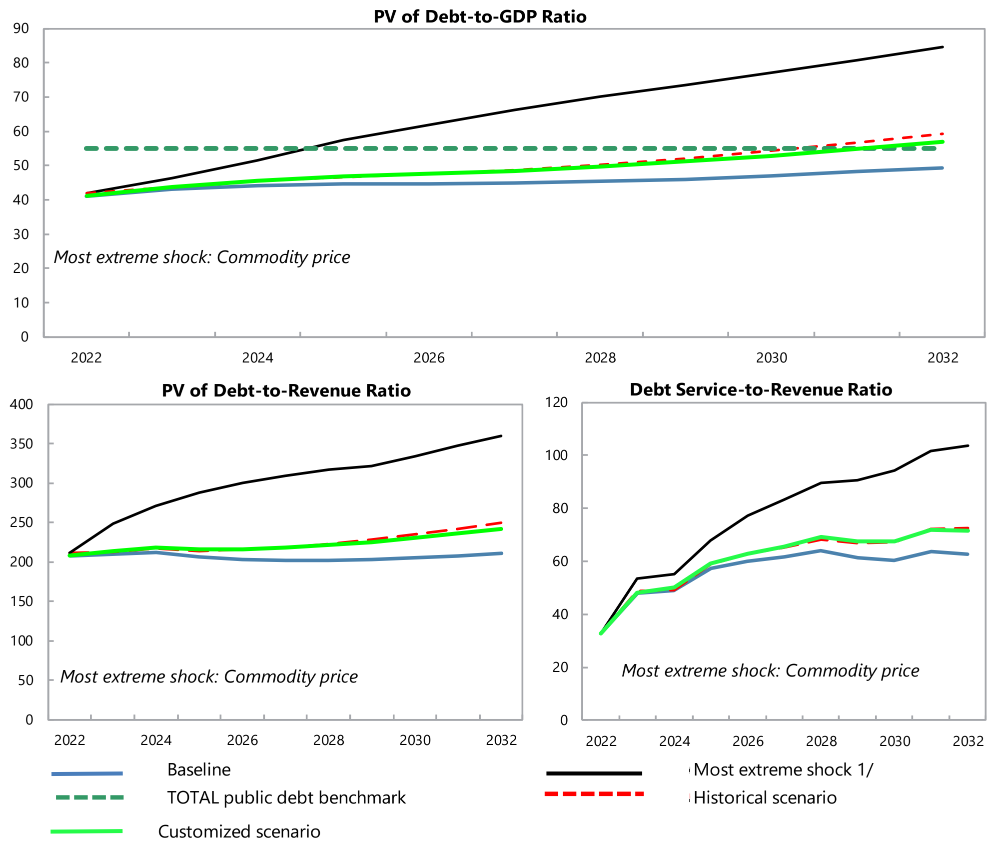
Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing assumptions on additional financing needs resulting from the 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	1.2%	1.2%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	30	30
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. 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.
Note: 1) The customized scenario is based on residency-based definition of external debt; and 2) the magnitude of shocks used for the commodity pirce shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Figure 2. Mali: Indicators of Public Debt Under Alternative Scenarios, 2022–32



Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	14%	14%
Domestic medium and long-term	77%	77%
Domestic short-term	9%	9%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	1.2%	1.2%
Avg. maturity (incl. grace period)	30	30
Avg. grace period	6	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	6.2%	6.2%
Avg. maturity (incl. grace period)	5	5
Avg. grace period	0	0
Domestic short-term debt		
Avg. real interest rate	4.2%	4.2%

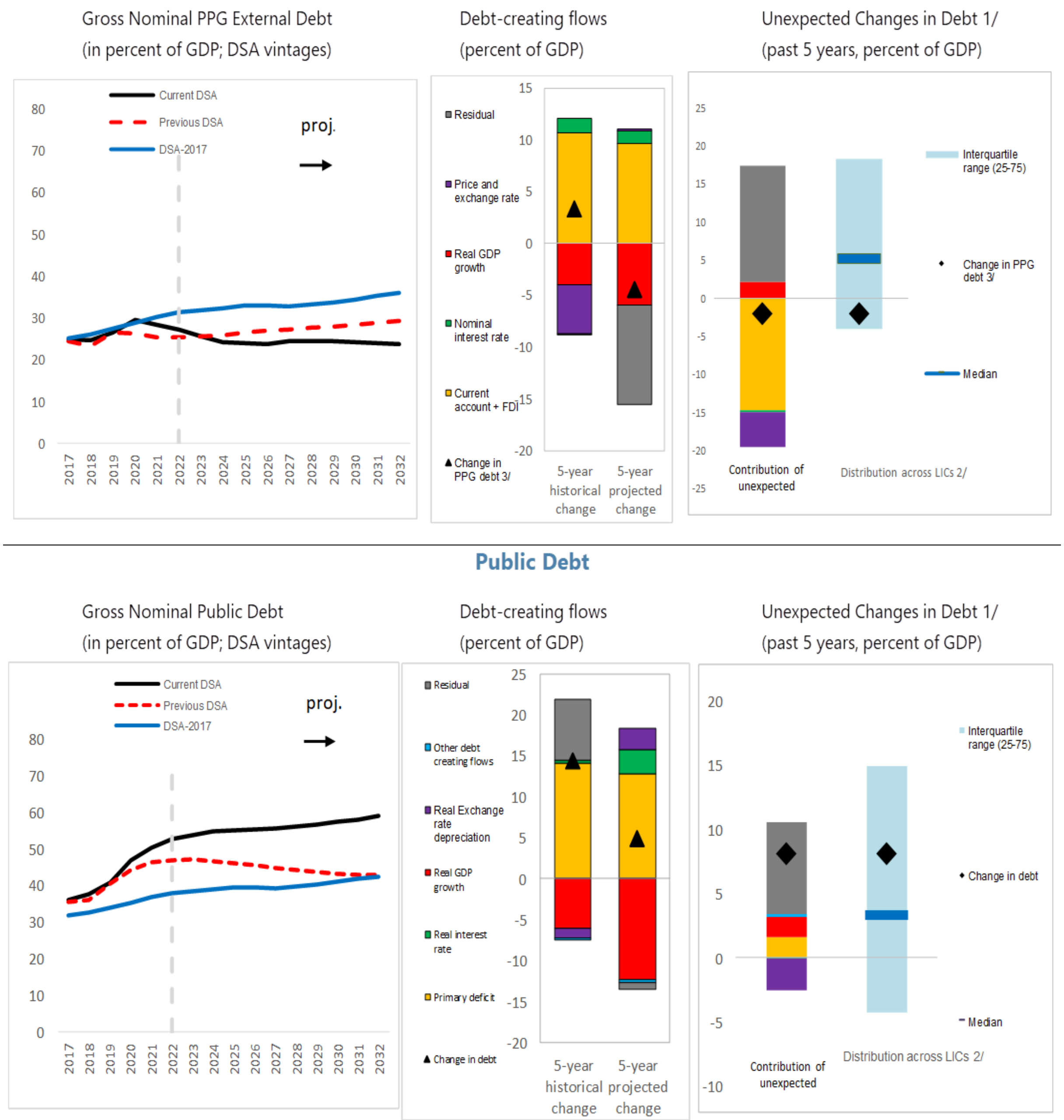
* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

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.

Note: The customized scenario is the stock-flow adjustment scenario.

Figure 3. Mali: Drivers of Debt Dynamics—Baseline Scenario



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

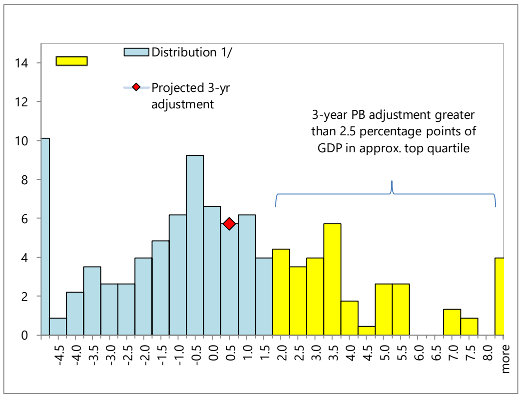
2/ Distribution across LICs for which LIC DSAs were produced.

3/ 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.

Sources: Malian authorities and staff estimates and projections.

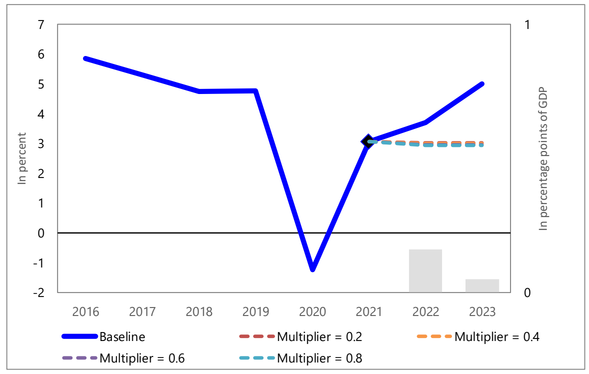
Figure 4. Mali: Realism Tools

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



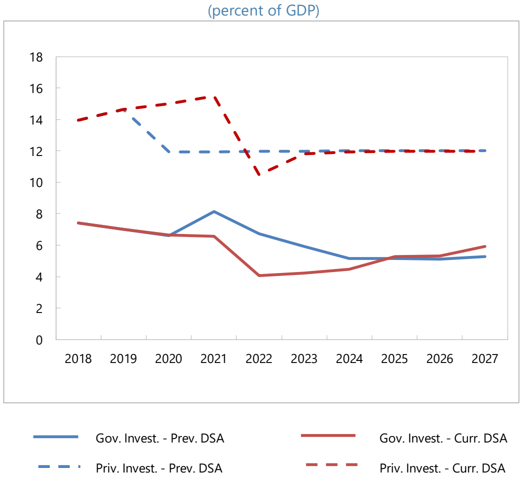
1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

Fiscal Adjustment and Possible Growth Paths 1/

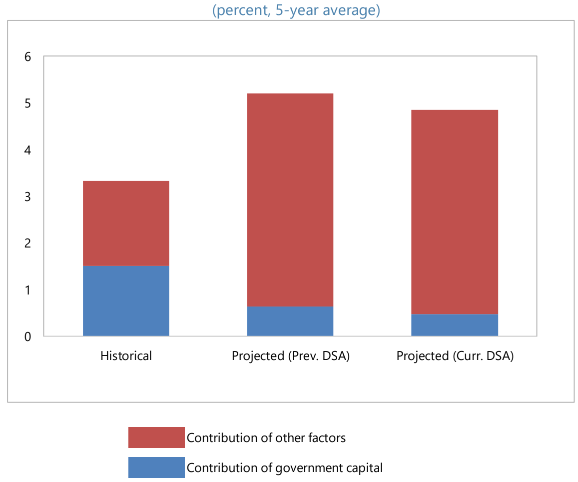


1/ Bars refer to annual projected fiscal adjustment (right-hand side scale) and lines show possible real GDP growth paths under different fiscal multipliers (left-hand side scale).

Public and Private Investment Rates
(percent of GDP)



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



Sources: Malian authorities and staff estimates and projections.

Figure 5. Mali: Qualification of the Moderate Category, 2022–2032 1/

Sources: Country authorities; and staff estimates and projections.

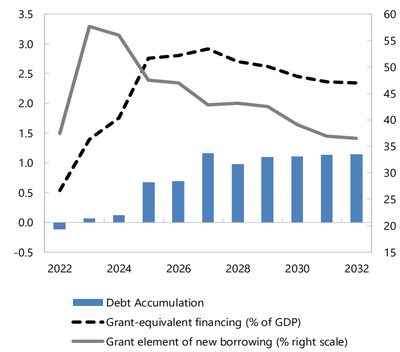
1/ For the PV debt/GDP and PV debt/exports thresholds, x is 20 percent and y is 40 percent. For debt service/Exports and debt service/revenue thresholds, x is 12 percent and y is 35 percent.

Table 1. Mali: External Debt Sustainability Framework. Baseline Scenario, 2019–42
(In percent of GDP, unless otherwise indicated)

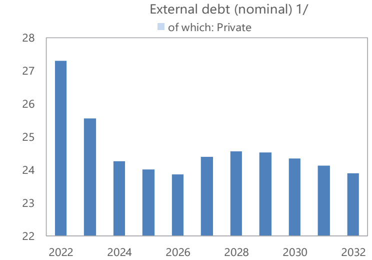
	Actual			Projections								Average 8/	
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2032	2042	Historical	Projections
External debt (nominal) 1/	**26.7**	**29.5**	**28.3**	**27.3**	**25.6**	**24.3**	**24.0**	**23.9**	**24.4**	**23.9**	**20.0**	**24.6**	**24.6**
of which: public and publicly guaranteed (PPG)	**26.7**	**29.5**	**28.3**	**27.3**	**25.6**	**24.3**	**24.0**	**23.9**	**24.4**	**23.9**	**20.0**	**24.6**	**24.6**
Change in external debt	1.9	2.9	-1.2	-1.0	-1.7	-1.3	-0.3	-0.1	0.5	-0.2	-0.4		
Identified net debt-creating flows	**2.2**	**-1.4**	**1.3**	**3.3**	**1.7**	**1.2**	**-0.8**	**-0.5**	**-0.1**	**4.2**	**9.3**	**1.4**	**1.6**
Non-interest current account deficit	**7.1**	**1.8**	**7.3**	**6.6**	**5.9**	**5.2**	**3.2**	**3.5**	**3.8**	**8.1**	**13.0**	**5.0**	**5.5**
Deficit in balance of goods and services	12.2	6.5	11.2	10.5	9.2	9.5	8.1	8.6	9.0	12.6	16.3	**12.3**	**10.1**
Exports	25.7	29.4	27.2	28.6	29.0	27.7	28.7	27.7	26.8	21.0	14.4		
Imports	38.0	36.0	38.4	39.1	38.2	37.1	36.8	36.3	35.8	33.5	30.7		
Net current transfers (negative = inflow)	-8.8	-8.5	-7.9	-7.5	-7.1	-7.1	-7.8	-7.8	-7.9	-7.3	-6.2	**-10.4**	**-7.5**
of which: official	-4.4	-3.7	-3.1	-2.8	-2.6	-2.5	-3.2	-3.2	-3.2	-3.2	-3.3		
Other current account flows (negative = net inflow)	3.7	3.8	4.0	3.6	3.8	2.8	2.8	2.7	2.7	2.8	2.9	**3.1**	**2.9**
Net FDI (negative = inflow)	**-5.0**	**-3.0**	**-3.0**	**-2.5**	**-3.1**	**-3.0**	**-3.0**	**-3.0**	**-3.0**	**-3.0**	**-3.0**	**-2.7**	**-3.0**
Endogenous debt dynamics 2/	**0.0**	**-0.1**	**-3.0**	**-0.8**	**-1.0**	**-1.0**	**-1.0**	**-0.9**	**-0.9**	**-0.9**	**-0.7**		
Contribution from nominal interest rate	0.3	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3		
Contribution from real GDP growth	-1.2	0.3	-0.8	-1.1	-1.3	-1.2	-1.2	-1.2	-1.1	-1.1	-1.0		
Contribution from price and exchange rate changes	0.9	-0.9	-2.4	...	...	...	...	...	...	...	...		
Residual 3/	**-0.3**	**4.3**	**-2.5**	**-4.3**	**-3.5**	**-2.5**	**0.6**	**0.4**	**0.6**	**-4.4**	**-9.7**	**-0.6**	**-2.1**
of which: exceptional financing	-0.2	-0.1	-0.1	-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	**...**	**...**	**16.3**	**16.7**	**15.4**	**14.5**	**14.3**	**14.2**	**14.5**	**14.5**	**13.7**		
PV of PPG external debt-to-exports ratio	**...**	**...**	**59.9**	**58.4**	**53.0**	**52.2**	**49.7**	**51.0**	**54.2**	**69.4**	**95.3**		
PPG debt service-to-exports ratio	**4.8**	**6.3**	**3.9**	**4.4**	**4.3**	**4.6**	**4.7**	**5.1**	**5.0**	**4.1**	**7.2**		
PPG debt service-to-revenue ratio	**6.3**	**9.5**	**5.1**	**6.5**	**6.3**	**6.4**	**6.7**	**6.9**	**6.5**	**4.0**	**4.2**		
Gross external financing need (Million of U.S. dollars)	589.1	105.8	1071.7	1021.1	833.9	787.7	358.0	466.5	577.2	2260.1	8325.3		
Key macroeconomic assumptions													
Real GDP growth (in percent)	4.8	-1.2	3.1	3.7	5.0	5.1	5.3	5.1	5.0	5.0	5.0	**3.7**	**4.9**
GDP deflator in US dollar terms (change in percent)	-3.4	3.4	8.8	-6.6	3.9	2.0	0.6	0.6	0.5	2.0	2.0	**0.8**	**1.2**
Effective interest rate (percent) 4/	1.3	1.5	0.7	1.0	1.0	1.0	1.0	0.9	0.9	1.1	1.4	**0.8**	**1.0**
Growth of exports of G&S (US dollar terms, in percent)	6.1	17.0	3.7	1.8	10.6	2.3	9.8	2.2	1.8	3.1	3.3	**7.1**	**3.7**
Growth of imports of G&S (US dollar terms, in percent)	7.8	-3.2	19.8	-1.3	6.4	4.3	5.0	4.4	4.0	6.0	6.2	**7.6**	**4.9**
Grant element of new public sector borrowing (in percent)	...	...	...	37.4	57.7	56.0	47.5	46.9	42.9	36.5	33.1	**...**	**44.2**
Government revenues (excluding grants, in percent of GDP)	19.6	19.3	20.8	19.4	19.9	20.0	20.2	20.4	20.7	21.9	24.8	**16.9**	**20.7**
Aid flows (in Million of US dollars) 5/	326.5	212.1	133.2	134.3	221.9	317.9	608.9	666.1	738.0	954.6	1615.2		
Grant-equivalent financing (in percent of GDP) 6/	...	...	...	0.5	1.4	1.8	2.8	2.8	2.9	2.3	2.2	**...**	**2.2**
Grant-equivalent financing (in percent of external financing) 6/	...	...	...	64.4	72.0	71.9	67.9	67.0	62.1	64.9	65.6	**...**	**66.3**
Nominal GDP (Million of US dollars)	17,281	17,643	19,782	19,171	20,909	22,411	23,752	25,115	26,499	38,054	75,560		
Nominal dollar GDP growth	1.2	2.1	12.1	-3.1	9.1	7.2	6.0	5.7	5.5	7.1	7.1	**4.5**	**6.2**
Memorandum items:													
PV of external debt 7/	...	...	16.3	16.7	15.4	14.5	14.3	14.2	14.5	14.5	13.7		
In percent of exports	...	...	59.9	58.4	53.0	52.2	49.7	51.0	54.2	69.4	95.3		
Total external debt service-to-exports ratio	4.8	6.3	3.9	4.4	4.3	4.6	4.7	5.1	5.0	4.1	7.2		
PV of PPG external debt (in Million of US dollars)			3223.5	3200.7	3213.1	3238.8	3389.8	3554.3	3846.8	5536.7	10357.9		
(PVt-PVt-1)/GDPt-1 (in percent)				-0.1	0.1	0.1	0.7	0.7	1.2	1.1	0.8		
Non-interest current account deficit that stabilizes debt ratio	5.3	-1.1	8.5	7.7	7.6	6.5	3.4	3.6	3.3	8.3	13.4		

Definition of external/domestic debt	**Currency-based**
Is there a material difference between the two criteria?	**Yes**

Debt Accumulation



External debt (nominal) 1/



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.

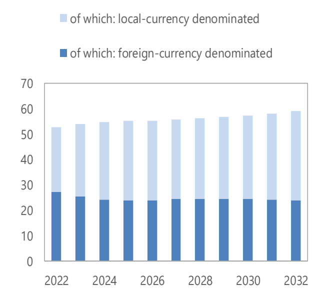
8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

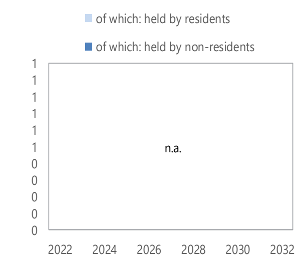
Table 2. Mali: Public Debt Sustainability Framework. Baseline Scenario, 2019–42

	Actual			Projections								Average 6/	
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2032	2042	Historical	Projections
Public sector debt 1/	40.7	46.9	50.4	52.5	53.8	54.6	55.1	55.2	55.5	58.8	69.2	35.7	55.8
of which: external debt	26.7	29.5	28.3	27.3	25.6	24.3	24.0	23.9	24.4	23.9	20.0	24.6	24.6
Change in public sector debt	3.2	6.2	3.4	2.2	1.3	0.8	0.5	0.1	0.3	0.8	1.2		
Identified debt-creating flows	-0.2	2.9	3.2	2.1	1.4	1.0	0.8	0.4	0.7	0.8	1.2	1.4	0.9
Primary deficit	0.7	4.2	3.5	3.3	3.3	2.8	2.1	1.5	1.5	1.5	1.5	2.3	2.0
Revenue and grants	21.5	20.5	21.5	19.8	20.5	20.9	21.8	22.0	22.3	23.5	26.4	18.6	22.0
of which: grants	1.9	1.2	0.7	0.4	0.7	0.9	1.6	1.6	1.6	1.6	1.6		
Primary (noninterest) expenditure	22.1	24.7	24.9	23.1	23.8	23.6	23.8	23.5	23.7	24.9	27.9	20.9	24.0
Automatic debt dynamics	-0.9	-1.2	-0.3	-0.9	-1.8	-1.7	-1.3	-1.0	-0.7	-0.6	-0.2		
Contribution from interest rate/growth differential	-1.4	1.2	-2.3	-3.2	-2.1	-1.7	-1.3	-1.1	-1.0	-0.7	-0.3		
of which: contribution from average real interest rate	0.3	0.7	-0.9	-1.4	0.4	0.9	1.4	1.6	1.6	2.1	3.0		
of which: contribution from real GDP growth	-1.7	0.5	-1.4	-1.8	-2.5	-2.6	-2.7	-2.7	-2.6	-2.8	-3.2		
Contribution from real exchange rate depreciation	0.5	-2.4	2.0	...	...	...	...	...	...	...	...		
Other identified debt-creating flows	0.0	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0
Privatization receipts (negative)	0.1	0.1	0.1	0.0	0.1	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	0.0	0.0		
Debt relief (HIPC and other)*	-0.2	-0.1	-0.1	-0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.0		
Other debt creating or reducing flow (please specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual	3.4	3.3	0.2	2.3	0.2	-0.2	-0.2	-0.3	-0.1	0.1	0.0	1.3	0.1
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	38.3	41.1	43.1	44.3	44.8	44.8	44.9	49.4	62.9		
PV of public debt-to-revenue and grants ratio	...	...	178.2	207.8	209.8	211.8	205.8	203.3	201.8	210.2	238.4		
Debt service-to-revenue and grants ratio 3/	23.8	31.1	25.2	32.8	48.1	49.0	57.2	60.2	61.7	62.5	73.5		
Gross financing need 4/	5.7	10.5	8.9	9.7	13.2	13.0	14.5	14.7	15.2	16.1	20.9		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	4.8	-1.2	3.1	3.7	5.0	5.1	5.3	5.1	5.0	5.0	5.0	3.7	4.9
Average nominal interest rate on external debt (in percent)	1.4	1.5	0.6	1.0	1.0	1.0	1.0	0.9	0.9	1.1	1.4	0.8	1.0
Average real interest rate on domestic debt (in percent)	3.3	4.3	1.2	0.6	4.7	4.5	5.7	6.2	6.5	7.3	6.9	3.5	5.8
Real exchange rate depreciation (in percent, + indicates depreciation)	2.3	-8.8	7.2	...	...	...	...	...	...	...	...	1.5	...
Inflation rate (GDP deflator, in percent)	1.9	1.4	4.9	4.9	3.0	2.8	2.0	2.0	2.0	2.0	2.0	2.2	2.4
Growth of real primary spending (deflated by GDP deflator, in percent)	19.3	10.1	4.2	-4.0	8.1	4.5	6.0	3.7	6.0	6.1	6.2	7.1	5.0
Primary deficit that stabilizes the debt-to-GDP ratio 5/	-2.5	-2.0	0.0	1.1	2.0	1.9	1.5	1.4	1.1	0.6	0.2	-1.5	1.2
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	0.0	0.0		

Definition of external/domestic debt	**Currency-based**
Is there a material difference between the two criteria?	**Yes**

Public sector debt 1/





Sources: Country authorities; and staff estimates and projections.

1/ Coverage of debt: The central government . 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.

* CCRT-related debt relief is included in the revenue as *a capital grant* in the fiscal account, and thereby included in the primary deficit but not in the "debt relief (HIPC and other)".

Table 3. Mali: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2022–2032

	Projections 1/										
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
PV of debt-to GDP ratio											
Baseline	16.7	15.4	14.5	14.3	14.2	14.5	14.8	14.2	14.3	14.4	14.5
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	17	16	15	16	17	19	20	19	19	18	17
Customized scenario: residency-based definition of external debt	25	29	32	34	36	37	38	37	38	39	40
B. Bound Tests											
B1. Real GDP growth	17	16	16	16	16	17	17	16	16	16	17
B2. Primary balance	17	15	15	15	14	15	15	15	15	15	15
B3. Exports	17	17	19	19	18	19	19	18	18	18	18
B4. Other flows 3/	17	18	19	19	19	19	19	19	18	18	18
B5. Depreciation	17	19	15	15	15	15	16	15	15	16	16
B6. Combination of B1-B5	17	20	20	20	20	20	20	19	19	19	19
C. Tailored Tests											
C1. Combined contingent liabilities	17	16	16	16	16	17	17	17	17	18	18
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	17	18	19	19	18	18	18	17	17	16	16
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	40	40	40	40	40	40	40	40	40	40	40
PV of debt-to-exports ratio											
Baseline	58	53	52	50	51	54	57	61	63	66	69
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	58	54	55	57	63	70	75	82	83	82	80
Customized scenario: residency-based definition of external debt	87	100	115	120	130	138	147	158	166	178	**189**
B. Bound Tests											
B1. Real GDP growth	58	53	52	50	51	54	57	61	63	66	69
B2. Primary balance	58	53	53	51	52	56	58	63	65	69	72
B3. Exports	58	67	79	75	77	81	85	90	93	95	98
B4. Other flows 3/	58	62	70	66	68	72	75	79	81	84	86
B5. Depreciation	58	53	43	41	42	45	48	51	54	57	61
B6. Combination of B1-B5	58	68	63	65	66	70	73	78	80	83	86
C. Tailored Tests											
C1. Combined contingent liabilities	58	57	57	56	58	63	67	72	76	81	85
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	58	68	75	70	70	72	73	75	76	76	77
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	180	180	180	180	180	180	180	180	180	180	180
Debt service-to-exports ratio											
Baseline	4	4	5	5	5	5	5	5	4	4	4
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	4	4	5	5	6	6	6	6	5	5	5
Customized scenario: residency-based definition of external debt	7	12	18	22	28	34	36	39	40	42	45
B. Bound Tests											
B1. Real GDP growth	4	4	5	5	5	5	5	5	4	4	4
B2. Primary balance	4	4	5	5	5	5	5	5	4	4	4
B3. Exports	4	5	6	6	6	6	6	6	6	6	6
B4. Other flows 3/	4	4	5	5	5	5	5	5	5	5	5
B5. Depreciation	4	4	5	5	5	5	5	4	4	3	3
B6. Combination of B1-B5	4	5	5	5	6	6	5	5	5	5	5
C. Tailored Tests											
C1. Combined contingent liabilities	4	4	5	5	5	5	5	5	4	4	4
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	4	5	5	6	6	6	5	5	5	5	5
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	15	15	15	15	15	15	15	15	15	15	15
Debt service-to-revenue ratio											
Baseline	6	6	6	7	7	6	6	5	5	4	4
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	6	7	7	7	8	7	7	6	6	5	5
Customized scenario: residency-based definition of external debt	10	18	**25**	**32**	**38**	**44**	**45**	**43**	**43**	**42**	**43**
B. Bound Tests	10	18	**25**	**32**	**38**	**44**	**45**	**43**	**43**	**42**	**43**
B1. Real GDP growth	6	7	7	8	8	7	7	6	5	5	5
B2. Primary balance	6	6	6	7	7	7	6	5	5	4	4
B3. Exports	6	6	7	7	7	7	6	5	5	5	5
B4. Other flows 3/	6	6	7	7	7	7	6	5	5	5	5
B5. Depreciation	6	8	8	8	8	8	7	6	5	4	4
B6. Combination of B1-B5	6	7	8	8	8	8	7	6	6	6	5
C. Tailored Tests											
C1. Combined contingent liabilities	6	6	7	7	7	7	6	5	5	4	4
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	6	7	8	8	8	8	7	6	5	5	5
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	18	18	18	18	18	18	18	18	18	18	18

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the threshold.
2/ 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.
3/ Includes official and private transfers and FDI.

Table 4. Mali: Sensitivity Analysis for Key Indicators of Public Debt, 2022–2032

	Projections 1/										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
					PV of Debt-to-GDP Ratio						
Baseline	41	43	44	45	45	45	45	46	47	48	49
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	42	44	45	47	48	49	50	52	54	**57**	**59**
Customized scenario: stock-flow adjustment	41	44	46	47	48	48	50	51	53	55	**57**
B. Bound Tests											
B1. Real GDP growth	42	48	**55**	**58**	**61**	**63**	**67**	**70**	**73**	**77**	**81**
B2. Primary balance	42	45	47	48	48	48	48	49	50	51	52
B3. Exports	41	45	48	49	49	49	49	50	51	51	52
B4. Other flows 3/	41	46	49	49	49	49	50	50	51	52	53
B5. Depreciation	42	46	45	44	42	41	41	40	40	40	40
B6. Combination of B1-B5	42	44	46	46	46	47	47	48	49	50	52
C. Tailored Tests											
C1. Combined contingent liabilities	42	**57**	**58**	**58**	**58**	**58**	**58**	**59**	**59**	**60**	**61**
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	42	46	52	**57**	**62**	**66**	**70**	**73**	**77**	**81**	**85**
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL public debt benchmark	55	55	55	55	55	55	55	55	55	55	55
					PV of Debt-to-Revenue Ratio						
Baseline	208	210	212	206	203	202	202	203	205	207	210
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	211	213	217	214	216	218	222	228	235	242	250
Customized scenario: stock-flow adjustment	33	48	50	59	63	66	69	68	67	72	72
B. Bound Tests											
B1. Real GDP growth	211	233	262	265	273	282	293	305	317	330	342
B2. Primary balance	211	219	226	219	216	214	214	214	216	218	220
B3. Exports	208	219	232	224	221	219	219	219	220	221	223
B4. Other flows 3/	208	222	235	228	224	222	222	222	223	224	225
B5. Depreciation	211	223	214	203	194	186	181	177	174	173	172
B6. Combination of B1-B5	211	213	220	212	210	209	210	211	214	217	220
C. Tailored Tests											
C1. Combined contingent liabilities	211	278	278	268	264	260	259	258	258	259	261
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	211	249	271	288	300	309	317	322	334	347	359
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
					Debt Service-to-Revenue Ratio						
Baseline	33	48	49	57	60	62	64	61	60	64	63
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2022-2032 2/	33	49	49	59	63	65	68	67	67	72	72
Customized scenario: stock-flow adjustment	33	48	50	59	63	66	69	68	67	72	72
B. Bound Tests											
B1. Real GDP growth	33	51	57	70	76	82	88	90	92	99	100
B2. Primary balance	33	48	51	60	63	65	67	65	63	67	65
B3. Exports	33	48	49	58	61	62	64	62	61	65	64
B4. Other flows 3/	33	48	49	58	61	62	64	62	61	65	64
B5. Depreciation	33	45	47	54	57	58	60	58	57	60	58
B6. Combination of B1-B5	33	47	49	58	61	63	65	63	62	66	65
C. Tailored Tests											
C1. Combined contingent liabilities	33	48	69	74	78	81	85	78	76	79	78
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	33	54	55	68	77	83	90	91	94	102	104
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the benchmark.
2/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.
3/ Includes official and private transfers and FDI.