INTERNATIONAL MONETARY FUND

MALI

Joint IMF/World Bank Debt Sustainability Analysis 2007

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the International Development Association

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1. **Mali's debt service indicators have improved markedly since the Multilateral Debt Relief Initiative (MDRI) was completed in 2006.**[1] The updated debt sustainability analysis (DSA) indicates that, in the baseline scenario, Mali's external and public debt indicators would remain below the indicative thresholds throughout the period of projections (2006-26). Only under the most extreme stress tests would the debt indicators breach—toward the end of the period—the indicative thresholds. Overall, the assessment is that, following MDRI and other favorable economic developments, Mali has improved from a moderate to a low risk of debt distress. Nevertheless, in light of large future borrowing requirements, a careful selection of investment projects and a high degree of concessionality would remain important factors for maintaining Mali's debt sustainability over the long term.

2. **The baseline scenario incorporates MDRI and reflects prudent macroeconomic projections (Box 1).** In the recent past, Mali's external environment has improved significantly on account of higher gold production, favorable weather yielding good cereal harvest, and strengthened terms of trade (due especially to higher gold prices). The medium-term outlook envisages continued macroeconomic stability and sustained economic growth, supported by continued structural reforms, highly concessional borrowing, and a moderate scaling up of aid. Exports are projected to drive growth over the medium term based on an increase in gold production spurred by the high international gold prices**.** In the long term, however, gold production is projected to taper off, and weather conditions are unlikely to be as favorable as in the period 1994-2005,[2] resulting in slightly lower growth of GDP and

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[1] The debt relief provided to Mali by the IMF, World Bank (IDA), and African Development Bank (AfDB), including HIPC, amounts to about US$2.07 billion or 60 percent of Mali's total nominal external debt stock at end-2005.

[2] Due to cyclical weather patterns, rainfall levels in the long-term are assumed to remain at their average levels.

exports, and slowing the improvement in the current account deficit. The fiscal deficit (including grants), upon which net public borrowing depends, is projected to hover around 4 percent of GDP throughout the DSA period.

Box 1. Mali: Debt Sustainability Analysis: Macroeconomic Assumptions, 2006-26

- Real GDP is projected to grow by 5.1 percent a year on average during 2006-11 and remain around 5 percent a year thereafter, assuming lower gold production from 2012 onward and rainfall returning to its long term average level.[3]
- Consumer price inflation remains at about 2.5 percent a year.
- With grants assumed to average 5.2 percent of GDP a year during 2006-11, the fiscal deficit (including grants) increases from 3.7 percent of GDP in 2007 to 4.5 percent in 2011 and to an average of 4.4 percent a year during the period 2012-2026.
- The non-interest current account deficit averages 4.7 percent of GDP a year during 2006-11, and then decreases to 4.3 percent of GDP a year during 2012-26.
- Export value grows by about 7.6 percent a year during 2006-11 and averages 8 percent thereafter. The terms of trade and real exchange rate are projected to remain unchanged from 2011 onwards.
- Import volumes are projected to grow slightly faster than real GDP growth.
- Public sector net external borrowing averages 3-4.5 percent of GDP a year; loans are assumed to have an average maturity of 36.5 years, a grace period of 11 years, an average interest rate of 1.1 percent, and a grant element of 50 percent. It is assumed that 65 percent of the new borrowings will come from multilateral sources and the remaining 35 percent from bilateral sources.
- It is assumed that there will be no new public sector domestic medium and long term (MLT) loans. The current MLT domestic loan stock is assumed to be amortized linearly through the period 2007-2011. Net private capital inflows are assumed to average 1.1 percent of GDP a year (compared to 2.3 percent a year over the period 1995-2003).
- A uniform discount rate of 5 percent is used for the NPV calculations.

[3] In the medium term (2007-11), annual economic growth is expected to hover around 5 percent based on moderate growth in the mining sector and a pick-up in the services sector. In the long term (2012-26), at the current pace of economic reform, it is prudently assumed that the economy will grow at its historical trend rate of 5 percent per year. The Malian authorities, who commented on the DSA, expressed preference in having the government's own assumptions reflected in the DSA. In this regard, consideration of the medium-term GDP growth rate of 7 percent per annum projected in the new PRSP (2007-2011) would reduce the debt ratios even further.

3. **As a starting point, Mali's external debt ratios have improved dramatically compared to the projections made in the previous DSA[4].** In addition to MDRI, this improvement mainly reflects the respective impacts of the CFA franc appreciation against the U.S. dollar on the debt-to-GDP ratio[5], and of better-than-expected U.S. dollar-denominated exports in 2006 on the debt-service-to-exports ratio. As a result, the external-debt-to-GDP ratios declined from 48 percent in 2005 to 20 percent in 2006, while the debt-service-to-exports ratio declined from 7 percent in 2005 to 4 percent in 2006. Although Mali's external debt ratios are projected to increase steadily over time, they are projected to remain below the applicable indicative debt thresholds over the period 2006-26 in the baseline scenario (Box 2, Figure 1, and Table 1).

4. **Mali's total public debt indicators are also projected to remain below their respective indicative thresholds[6]** (Box 2, Figure 2, and Table 2). In the baseline scenario, the NPV-of-debt-to-revenue ratio is projected to increase from 79 percent in 2006 to 130 percent in 2026, remaining well below the 250 percent threshold. The debt-service-to-revenue(excl. grants) ratio is projected to stay under the 30 percent threshold, declining from 9 percent in 2006 to 6 percent in 2026. The NPV-of-public debt-to-GDP ratio has the same trend as the NPV of external debt-to-GDP ratio, since external debt is fully public debt and the domestic debt is projected to remain a very low proportion of public debt[7].

5. **Mali is assessed as having a low risk of debt distress over the period 2006-2026.** Both the standard and bound sets of sensitivity tests suggest that Mali will avoid any external and public debt distress, except towards the end of the period in the most extreme stress test[8] (Figures 1 and 2; Tables 3 and 4). In the baseline, Mali's external and public debt indicators do not breach any of the relevant thresholds over the period of projection, although in some scenarios there are significant increases in debt indicators over the long term. These

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[4] Debt Sustainability for Mali (IMF Country Report No. 06/73) and Program Document for the Mali Economic Policy and Public Finance Management Credit (IDA Report No. 34053-ML, Annex 9).

[5] After HIPC and MDRI, US dollar denominated debt represents only 13 percent of Mali's external debt stock in 2006.

[6] Based on the average of 2003-2005 World Bank Country Policy Institutional Assessment (CPIA) ratings, Mali is classified as a "medium performer", which determines the relevant debt thresholds of debt indicators.

[7] Mali's current debt strategy relies on lower cost concessional external financing, thereby reducing the stock of the government's domestic borrowing and promoting the "crowding in" of credit to the private sector.

[8] Mali's macroeconomic indicators, and therefore its capacity to repay its debt, are subject to risks from climatic and commodity price shocks. They are also dependent upon increased investment in productive sectors that could deteriorate the current account and affect external debt dynamics. Furthermore, in the last two decades, Mali has benefited from highly concessional loans, which may not necessarily continue to be available in the future. The standard and bound sets of sensitivity tests assess the effect of these risks on the debt indicators.

increases are particularly marked for the scenario "new public sector loans on less favorable terms," in which the NPV of external debt-to-exports ratios approach the thresholds in 2025[9]. Productive public investments financed by highly concessional assistance would therefore remain key to maintain Mali's debt sustainability over the long run[10].

Box 2: Policy-Based Debt Burden Indicators

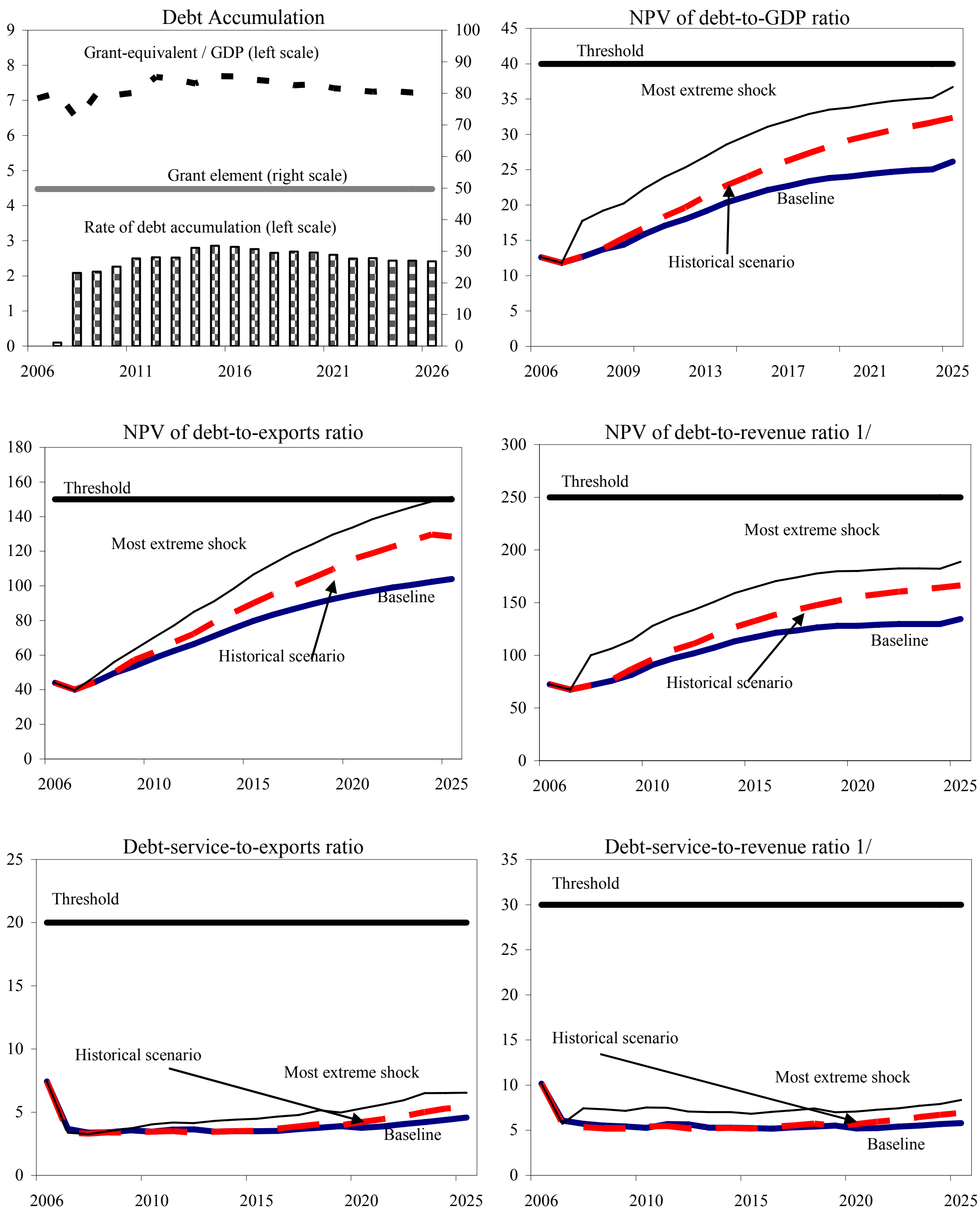
	Thresholds[1/]	Mali: Baseline Scenario Ratios		
		2006	2006-11[2/]	2012-26[2/]
		(in percent)		
NPV of external debt-to-exports	150	40.0	51.3	88.7
NPV of external debt-to-GDP	40	11.8	14.3	22.9
External debt service-to-exports	20	3.7	3.5	3.8
NPV of public debt-to revenue 3/	250	78.9	81.3	113.7
Public debt service-to revenue 3/	30	9.4	8.1	6.2

1/ Policy indicative thresholds for a medium policy performer.
2/ Simple averages.
3/ Excluding grants.

9 Assuming that the interest rate on all new borrowings is 2 percentage points higher than in the baseline, the average concessionality decreases from 50 percent to 24 percent.

10 Currently, Mali's external financing depends on highly concessional donor assistance, amounting to about 10½ percent of GDP, of which about half is in the form of grants. Loans have an average concessionality element of 50 percent. The baseline DSA trend projections assume a similar external financing profile. However, Mali recently contracted a non-concessional loan and lease agreement with the Islamic Development Bank for an energy project. The loan and lease agreement amounts to 1 percent of GDP with a concessionality of 8.5 percent, which has a minor impact on debt dynamics, given its limited size.

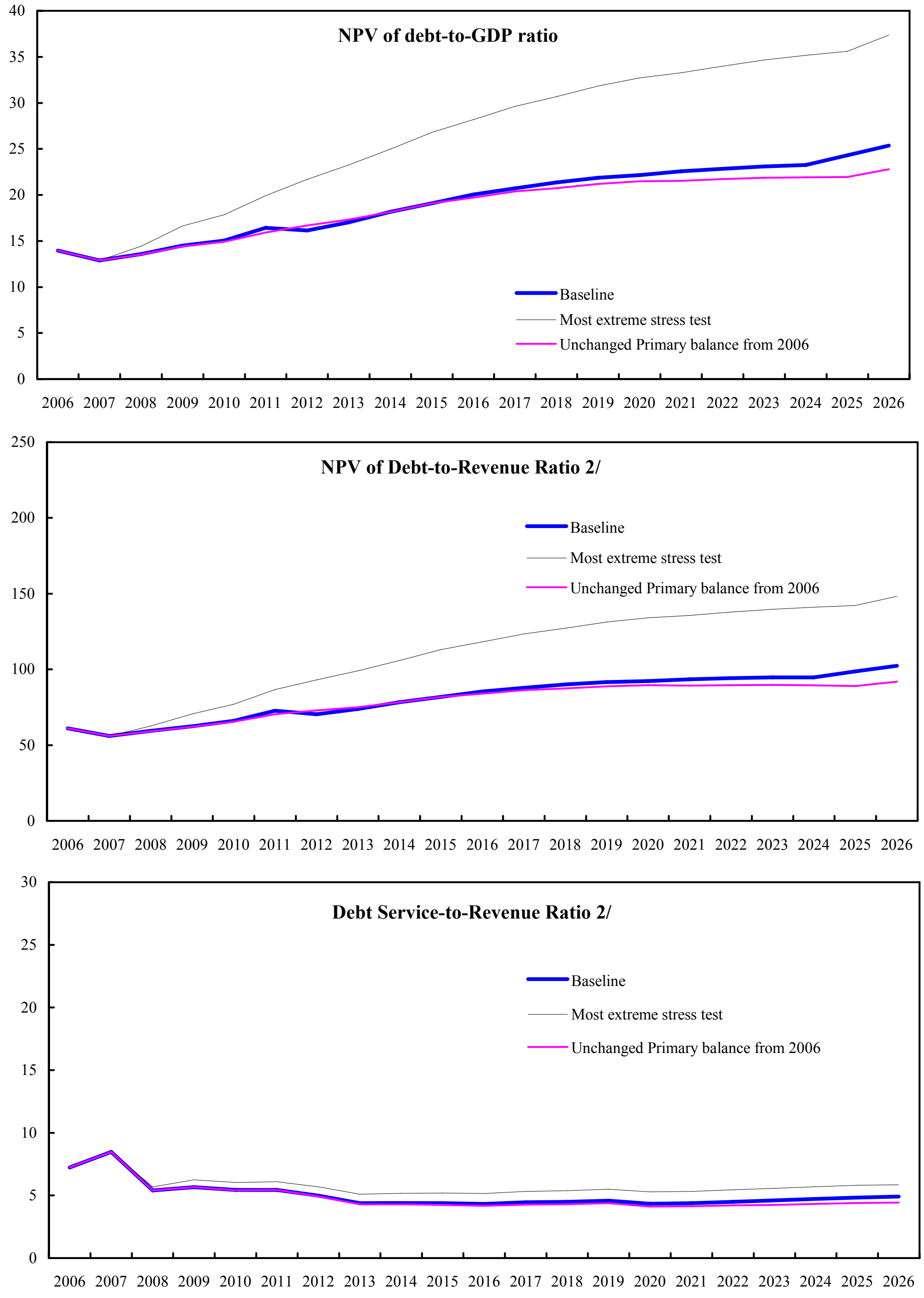
Figure 1. Mali: Indicators of Public and Publicly Guaranteed External Debt
Under Alternative Scenarios, 2006-2026 (in percent)



Source: Staff projections and simulations.

1/ Revenue excludes grants.

Figure 2.Mali: Indicators of Public Debt Under Alternative Scenarios, 2006-2026 1/



Source: Staff projections and simulations.
1/ Most extreme stress test is test that yields highest ratio in 2016.
2/ Revenue including grants.

Table 1. Mali: External Debt Sustainability Framework, Baseline Scenario, 2003-2026 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/										
	2003	2004	2005			2006	2007	2008	2009	2010	2011	2006-11 Average	2016	2026	2012-26 Average
External debt (nominal) 1/	**49.3**	**48.8**	**47.9**	74.4	26.5	**20.0**	**22.6**	**24.4**	**26.5**	**27.9**	**30.7**	25.3	**40.2**	**49.1**	42.4
o/w public and publicly guaranteed (PPG)	49.3	48.8	47.9	73.7	25.6	20.0	22.6	24.4	26.5	27.9	30.7	25.3	40.2	49.1	42.4
Change in external debt	0.0	-0.5	-0.9	-5.3	11.6	-27.9	2.6	1.8	2.1	1.3	2.8	-2.9	1.4	2.2	1.2
Identified net debt-creating flows	-0.2	4.0	-0.9	0.7	8.5	1.8	3.8	3.2	2.1	2.4	2.1	2.6	1.7	1.1	1.6
Non-interest current account deficit	**7.5**	6.8	5.7	6.5	1.9	**4.9**	**5.3**	**4.9**	**3.9**	**4.5**	**4.5**	4.7	**4.4**	**4.0**	4.3
Deficit in balance of goods and services	7.4	9.4	8.4	11.1	8.8	6.4	6.8	6.5	4.8	4.9	4.9	5.7	4.4	3.8	4.2
Exports	24.6	24.5	28.6	25.7	3.2	29.6	28.7	27.6	26.8	27.3	27.3	27.9	26.5	25.6	25.9
Imports	32.0	33.9	37.0	36.8	8.2	35.9	35.5	34.1	31.6	32.2	32.2	33.6	31.0	29.4	30.1
Net current transfers (negative = inflow)	-3.3	-3.9	-2.8	-4.9	1.8	-2.6	-1.4	-1.4	-1.4	-1.4	-1.3	-1.6	-1.2	-0.9	-1.1
o/w official	-1.8	-2.0	-1.3	-2.9	1.7	-1.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.6	-0.4	-0.4	-0.4
Other current account flows (negative = net inflow)	3.5	1.3	0.1	0.2	6.2	1.0	0.0	-0.2	0.5	0.9	1.0	0.5	1.1	1.1	1.2
Net FDI (negative = inflow)	**-1.2**	**-1.1**	**-1.0**	-2.3	2.1	**-1.2**	**-1.0**	**-1.0**	**-1.0**	**-1.0**	**-1.0**	-1.0	**-1.1**	**-1.2**	-1.1
Endogenous debt dynamics 2/	**-6.5**	**-1.8**	**-5.7**	-3.5	6.0	**-1.8**	**-0.5**	**-0.8**	**-0.8**	**-1.1**	**-1.3**	-1.0	**-1.6**	**-1.8**	-1.6
Contribution from nominal interest rate	0.7	0.6	0.2	0.7	0.2	0.5	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Contribution from real GDP growth	-3.1	-1.0	-2.6	-3.9	3.8	-2.3	-0.7	-1.0	-1.1	-1.4	-1.6	-1.3	-1.9	-2.2	-2.0
Contribution from price and exchange rate changes	-4.2	-1.3	-3.3	-0.4	6.1	-1.5	...	...	...	...	...	-1.5	...	...	...
Residual (3-4) 3/	**0.2**	**-4.5**	**0.0**	-6.0	7.8	**-29.7**	**-1.2**	**-1.3**	**0.0**	**-1.1**	**0.7**	-5.4	**-0.3**	**1.1**	-0.5
o/w exceptional financing	-0.7	-0.6	0.0	-2.4	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NPV of external debt 4/	26.2	26.9	12.6	23.8	7.6	11.8	12.7	13.7	14.4	15.9	17.1	14.3	22.1	27.2	22.9
In percent of exports	106.4	110.0	44.0	93.3	33.0	40.0	44.2	49.7	53.6	58.2	62.4	51.3	83.4	106.1	88.7
NPV of PPG external debt	**26.2**	**26.9**	**12.6**	23.8	7.6	**11.8**	**12.7**	**13.7**	**14.4**	**15.9**	**17.1**	14.3	**22.1**	**27.2**	22.9
In percent of exports	**106.4**	**110.0**	**44.0**	93.3	33.0	**40.0**	**44.2**	**49.7**	**53.6**	**58.2**	**62.4**	51.3	**83.4**	**106.1**	88.7
In percent of government revenues	**150.5**	**150.4**	**72.6**	138.1	45.8	**67.5**	**71.4**	**75.8**	**81.5**	**90.9**	**97.2**	80.7	**121.4**	**139.0**	122.9
Debt service-to-exports ratio (in percent)	**5.8**	**6.4**	**7.4**	10.4	5.7	**3.7**	**3.4**	**3.4**	**3.6**	**3.5**	**3.6**	3.5	**3.5**	**4.7**	3.8
PPG debt service-to-exports ratio (in percent)	**5.8**	**6.4**	**7.4**	9.8	5.6	**3.7**	**3.4**	**3.4**	**3.6**	**3.5**	**3.6**	3.5	**3.5**	**4.7**	3.8
PPG debt service-to-revenue ratio (in percent)	**9.3**	**9.1**	**10.2**	16.6	9.3	**6.1**	**5.7**	**5.5**	**5.4**	**5.3**	**5.7**	5.6	**5.2**	**6.1**	5.4
Total gross financing need (billions of U.S. dollars)	0.4	0.4	0.4	0.2	0.2	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.6	1.3	0.8
Non-interest current account deficit that stabilizes debt ratio	7.5	7.3	6.6	11.8	10.6	32.7	2.8	3.1	1.8	3.1	1.7	7.5	2.9	1.8	3.1
Key macroeconomic assumptions															
Real GDP growth (in percent)	7.4	2.2	6.1	5.3	4.1	5.3	4.1	4.8	4.8	5.4	6.2	5.1	5.4	5.0	5.2
GDP deflator in US dollar terms (change in percent)	9.2	2.7	7.3	3.0	9.4	3.2	4.7	2.9	5.4	0.3	2.7	3.2	3.1	0.0	3.0
Effective interest rate (percent) 5/	1.7	1.2	0.6	1.0	0.4	1.1	1.2	1.2	1.2	1.1	1.1	1.2	1.1	0.9	1.1
Growth of exports of G&S (US dollar terms, in percent)	5.6	8.3	32.0	13.5	13.7	10.9	6.4	3.9	8.0	8.2	8.0	7.6	8.0	7.0	7.9
Growth of imports of G&S (US dollar terms, in percent)	7.6	15.4	23.2	12.7	22.2	4.4	8.2	3.8	3.0	8.4	7.8	5.9	7.8	7.0	7.7
Grant element of new public sector borrowing (in percent)	...	...	49.7	49.7		49.7	49.7	49.7	49.7	49.7	49.7	49.7	49.7	49.7	49.7
Aid flows (in billions of US dollars) 7/	0.9	0.4	2.0	0.8	0.5	0.6	0.7	0.8	0.9	0.9	1.0	0.8	1.5	0.1	1.5
o/w Grants	0.2	0.2	0.3	0.2	0.1	0.4	0.3	0.4	0.4	0.5	0.5	0.4	0.8	1.7	1.1
o/w Concessional loans	0.2	0.2	0.2	0.1	0.1	0.3	0.2	0.3	0.4	0.4	0.5	0.3	0.7	0.1	0.5
Grant-equivalent financing (in percent of GDP) 8/	...	...	3.1	3.1		7.2	6.5	7.2	7.1	7.2	7.7	7.2	7.6	7.4	7.4
Grant-equivalent financing (in percent of external financing) 8/	...	...	61.3	61.3		79.8	74.9	77.1	77.4	76.9	76.0	77.0	76.4	77.5	77.3
Memorandum items:															
Nominal GDP (billions of US dollars)	4.9	5.4	6.1	3.9	1.2	6.5	7.2	7.7	8.6	9.1	9.9	7.8	14.9	33.0	19.7
(NPVt-NPVt-1)/GDPt-1 (in percent)						0.1	2.1	2.1	2.3	2.5	2.5	1.8	2.8	2.4	2.6

Source: Staff simulations.

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. Projections also includes contribution from price and exchange rate changes. The large residual in 2006 is due to MDRI.
4/ Assumes that NPV of private sector debt is equivalent to its face value.
5/ Current-year interest payments divided by previous period debt stock.
6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.
7/ Defined as grants, concessional loans, and debt relief.
8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the NPV of new debt).

Table 2.Mali: Public Sector Debt Sustainability Framework, Baseline Scenario, 2003-2026
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 5/	Standard Deviation 5/	Projections									
	2003	2004	2005			2006	2007	2008	2009	2010	2011	2006-11 Average	2016	2026	2012-26 Average
Public sector debt 1/	47.2	45.3	51.3	80.9	27.9	21.4	23.6	25.3	27.3	28.5	31.3	26.2	40.7	49.6	42.9
o/w foreign-currency denominated	44.1	43.5	49.3	78.9	28.7	20.0	22.6	24.4	26.5	27.9	30.7	25.3	40.2	49.1	42.4
Change in public sector debt	-5.6	-1.9	6.0	5.1	37.7	-29.9	2.3	1.7	2.0	1.2	2.7	-3.3	1.4	2.2	1.2
Identified debt-creating flows	-11.2	-2.6	5.5	-5.5	16.4	-29.4	1.5	1.2	1.6	0.8	2.6	-3.6	1.1	2.1	1.0
Primary deficit	0.6	1.7	2.6	1.7	1.0	2.7	3.3	3.3	3.3	3.4	4.0	3.3	3.9	3.9	3.9
Revenue and grants	20.9	20.2	22.0	19.7	1.2	22.9	23.0	22.9	23.2	22.8	22.6	22.9	23.5	24.8	23.9
of which : grants	4.5	3.7	4.1	4.6	0.9	5.2	5.4	5.1	5.1	5.1	5.1	5.2	5.3	5.3	5.3
Primary (noninterest) expenditure	21.5	21.9	24.6	21.4	1.4	25.6	26.2	26.2	26.5	26.2	26.6	26.2	27.4	28.7	27.8
Automatic debt dynamics	-11.7	-4.3	3.3	-4.5	11.4	-6.6	-1.0	-1.7	-1.3	-2.2	-1.3	-2.4	-2.9	-1.8	-2.9
Contribution from interest rate/growth differential	-3.9	-1.6	-3.2	-5.1	4.4	-3.1	-0.8	-1.1	-1.1	-1.4	-1.7	-1.6	-2.3	-2.6	-2.4
of which : contribution from average real interest rate	-0.4	-0.6	-0.6	-0.8	0.5	-0.5	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.4	-0.3
of which : contribution from real GDP growth	-3.5	-1.1	-2.6	-3.5	4.1	-2.6	-0.8	-1.1	-1.2	-1.4	-1.7	-1.4	-2.0	-2.3	-2.1
Contribution from real exchange rate depreciation	-7.8	-2.6	6.5	1.2	10.0	-3.6	-0.2	-0.6	-0.2	-0.8	0.4	-0.8	-0.6	0.9	-0.5
Other identified debt-creating flows	0.0	0.0	-0.3	-2.6	7.5	-25.5	-0.7	-0.4	-0.4	-0.4	-0.1	-4.6	0.0	0.0	0.0
Privatization receipts (negative)	0.0	0.0	-0.3	-0.4	0.5	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recognition of implicit or contingent liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt relief (HIPC and other)	0.0	0.0	0.0	-2.3	7.2	-25.5	-0.5	-0.4	-0.4	-0.4	-0.1	-4.6	0.0	0.0	0.0
Other (specify, 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	0.0	0.0	0.0	0.0
Residual, including asset changes	5.6	0.7	0.5	-0.3	4.1	-0.5	0.7	0.5	0.5	0.4	0.1	0.3	0.4	0.1	0.2
NPV of public sector debt	29.3	25.2	29.7	10.8	13.1	14.0	12.9	13.6	14.5	15.1	16.4	14.4	20.0	25.4	21.2
o/w foreign-currency denominated	26.3	23.4	27.7	8.6	12.9	12.6	11.8	12.7	13.7	14.4	15.9	13.5	19.6	24.9	21.4
o/w external	26.3	23.4	27.7	...	...	12.6	11.8	12.7	13.7	14.4	15.9	13.5	21.2	26.1	22.7
NPV 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
Gross financing need 2/	3.5	4.0	4.8	5.0	0.9	4.4	5.2	5.0	5.1	5.1	5.7	5.1	5.4	5.6	5.5
NPV of public sector debt-to-revenue and grants ratio (in percent)	140.4	124.7	135.3	47.1	60.3	61.0	56.1	59.4	62.4	66.0	72.7	62.9	85.4	102.3	88.5
NPV of public sector debt-to-revenue ratio (in percent)	178.6	153.0	166.0	58.8	75.0	78.9	73.4	76.4	80.0	85.1	93.9	81.3	110.3	130.1	113.7
o/w external 3/	...	...	...	...	...	71.2	67.4	71.3	75.7	81.3	90.6	76.2	116.8	134.0	122.1
Debt service-to-revenue and grants ratio (in percent) 4/	13.8	11.7	9.8	15.6	5.5	7.2	8.5	5.4	5.7	5.4	5.4	6.3	4.3	4.9	4.5
Debt service-to-revenue ratio (in percent) 4/	17.5	14.3	12.0	20.4	8.1	9.4	11.1	7.0	7.3	7.0	7.0	8.1	5.6	6.2	6.2
Primary deficit that stabilizes the debt-to-GDP ratio		3.6	-3.4	0.1	4.9	32.7	1.0	1.7	1.3	2.2	1.3	6.7	2.5	1.7	2.7
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	7.2	2.4	6.1	5.3	4.1	5.2	4.1	4.8	4.8	5.4	6.2	5.1	5.4	5.0	5.2
Average nominal interest rate on forex debt (in percent)	1.2	1.8	1.2	1.0	0.3	0.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.0	1.2
Average real interest rate on domestic currency debt (in percent)	-0.1	-3.6	7.6	-1.0	5.1	9.0	8.2	6.3	19.1	19.2	17.9	13.3	0.9	5.2	2.0
Real exchange rate depreciation (in percent, + indicates depreciation)	-17.5	-6.2	16.1	0.8	13.4	-7.8	-1.1	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	2.8	5.2	-3.6	2.0	3.9	5.1	2.6	4.2	2.5	4.7	-0.5	3.1	3.7	0.0	3.3
Growth of real primary spending (deflated by GDP deflator, in percent)	3.8	4.1	19.3	8.1	7.8	9.6	6.6	4.8	6.0	4.1	7.8	6.5	5.9	5.6	5.7
Grant element of new external borrowing (in percent)	49.7	49.7	49.7	49.7	0.0	49.7	49.7	49.7	49.7	49.7	49.7	49.7	49.7	49.7	49.7

Sources: Country authorities; and Fund staff estimates and projections.
1/ [Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.]
2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.
3/ Revenues excluding grants.
4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 3. Mali: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2006-26
(In percent)

	Projections							
	2006	2007	2008	2009	2010	2011	2016	2026
NPV of debt-to-GDP ratio								
Baseline	12	13	14	14	16	17	22	27
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-27 1/	12	13	14	15	17	18	25	33
A2. New public sector loans on less favorable terms in 2008-27 2/	12	14	15	17	19	21	30	38
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	12	13	15	15	17	18	24	29
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	12	13	16	16	18	19	24	28
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	12	14	17	18	20	21	27	34
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	12	12	13	14	15	16	22	27
B5. Combination of B1-B4 using one-half standard deviation shocks	12	12	13	14	15	17	23	30
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	12	18	19	20	22	24	31	38
NPV of debt-to-exports ratio								
Baseline	40	44	50	54	58	62	83	106
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	40	44	50	57	62	67	95	128
A2. New public sector loans on less favorable terms in 2007-26 2/	40	47	56	63	70	77	113	148
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	40	44	50	54	58	63	84	107
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	40	50	63	67	71	76	98	120
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	40	44	50	54	58	63	84	107
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	40	43	47	51	55	60	82	106
B5. Combination of B1-B4 using one-half standard deviation shocks	40	40	39	42	47	52	74	99
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	40	44	50	54	58	63	84	107
Debt service-to-exports ratio								
Baseline	4	3	3	4	3	4	4	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-27 1/	3	3	3	3	3	4	4	5
A2. New public sector loans on less favorable terms in 2008-27 2/	3	3	4	4	4	4	5	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	3	3	3	3	3	3	3	5
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	3	3	4	4	4	4	4	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	3	3	3	3	3	3	3	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	3	3	3	3	3	3	3	5
B5. Combination of B1-B4 using one-half standard deviation shocks	3	3	3	3	3	3	3	4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	3	3	3	3	3	3	3	5
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	52	52	52	52	52	52	52	52

Source: Staff projections and simulations.

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

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Table 4.Mali: Sensitivity Analysis for Key Indicators of Public Debt 2006-2026

	Projections						
	2006	2007	2008	2009	2010	2016	2026
NPV of Debt-to-GDP Ratio							
Baseline	14	13	14	15	15	20	25
A. Alternative scenarios							
A1. Real GDP growth and primary balance are at historical averages	14	13	13	13	13	14	13
A2. Primary balance is unchanged from 2006	14	13	14	14	15	20	23
A3. Permanently lower GDP growth 1/	14	13	14	15	16	27	45
B. Bound tests							
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	14	13	14	17	18	28	37
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	14	13	13	14	14	21	26
B3. Combination of B1-B2 using one half standard deviation shocks	14	13	13	14	14	21	25
B5. 10 percent of GDP increase in other debt-creating flows in 2008	14	13	19	19	19	25	28
NPV of Debt-to-Revenue Ratio 2/							
Baseline	61	56	59	62	66	85	102
A. Alternative scenarios							
A1. Real GDP growth and primary balance are at historical averages	61	56	55	55	56	59	52
A2. Primary balance is unchanged from 2006	61	56	59	62	65	84	92
A3. Permanently lower GDP growth 1/	61	56	60	64	69	112	173
B. Bound tests							
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	61	56	63	70	77	118	148
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	61	56	58	60	64	91	106
B3. Combination of B1-B2 using one half standard deviation shocks	61	56	57	59	62	87	101
B5. 10 percent of GDP increase in other debt-creating flows in 2008	61	56	83	83	85	107	115
Debt Service-to-Revenue Ratio 2/							
Baseline	7	8	5	6	5	4	5
A. Alternative scenarios							
A1. Real GDP growth and primary balance are at historical averages	7	8	5	6	5	4	3
A2. Primary balance is unchanged from 2006	7	8	5	6	5	4	4
A3. Permanently lower GDP growth 1/	7	8	5	6	6	5	7
B. Bound tests							
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	7	8	6	6	6	5	6
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	7	8	5	6	5	4	5
B3. Combination of B1-B2 using one half standard deviation shocks	7	8	5	6	5	4	5
B5. 10 percent of GDP increase in other debt-creating flows in 2008	7	8	5	6	6	5	5
Debt Service-to-GDP Ratio							
Baseline	2	2	1	1	1	1	1
A. Alternative scenarios							
A1. Real GDP growth and primary balance are at historical averages	2	2	1	1	1	1	1
A2. Primary balance is unchanged from 2006	2	2	1	1	1	1	1
A3. Permanently lower GDP growth 1/	2	2	1	1	1	1	2
B. Bound tests							
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	2	2	1	1	1	1	2
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	2	2	1	1	1	1	1
B3. Combination of B1-B2 using one half standard deviation shocks	2	2	1	1	1	1	1
B5. 10 percent of GDP increase in other debt-creating flows in 2008	2	2	1	1	1	1	1

Sources: Country authorities; and Fund staff estimates and projections.
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of 20 (i.e., the length of the projection period).
2/ Revenues are defined inclusive of grants.