MALI

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STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION AND EIGHTH AND NINTH REVIEWS UNDER THE EXTENDED CREDIT FACILITY ARRANGEMENT —DEBT SUSTAINABILITY ANALYSIS

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Risk of external debt distress:	*Moderate*
Augmented by significant risks stemming from domestic public debt?	*No*

This debt sustainability analysis (DSA) reflects updated information on the macroeconomic outlook and indicates that Mali stands at moderate risk of debt distress—unchanged from the previous analysis (7th ECF program review of July 2017 -Country report 17/209). Under the baseline scenario all external debt indicators and debt service ratios lie below the policy-dependent thresholds throughout the projection period. Under worst-case stress scenarios, only the debt-to-export ratio breaches its threshold (as in the July 2017 DSA). The country's external debt profile is vulnerable to changes in financing conditions, exchange rate depreciation, and shocks to export growth. The inclusion of domestic debt does not alter the assessment of Mali's debt sustainability.[1]

[1] MLI's 3-year average (2014-16) CPIA [3.37]- its 'performance classification' [medium] and resulting LIC-DSF thresholds (see following for example [select country]): http://www.imf.org/external/pubs/ft/dsa/lic.aspx

BACKGROUND

1. **At end-2017, Mali's stock of total public debt was composed mostly of external debt on concessional terms (Text figure 1 and 2, Text table 1).** External public and publicly guaranteed (PPG) debt amounted to CFAF 2,231 billion (25.1 percent of GDP), and was held mostly by multilateral creditors (CFAF 1802 billion). The stock of domestic debt increased rapidly in recent years reaching CFAF 982 billion (11.2 percent of GDP) at end-2017 resulting from the authorities stepping up their domestic debt issuance on the regional market. Debt was held mostly by commercial banks in treasury bills and bonds (Text figure 1 and 2, Text Table 2).

Text Table 1. Mali: External Debt Stock at Year-End, 2001–17

(billions of CFAF)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	1,969	1,156	1,169	1,185	1,474	606	643	811	958	1,134	1,230	1,382	1,445	1,485	1,753	2,080	2,231
(percent of GDP)	*77.5*	*42.6*	*42.8*	*41.2*	*44.8*	*16.8*	*16.5*	*18.6*	*19.9*	*21.4*	*20.1*	*21.8*	*22.1*	*20.9*	*22.6*	*25.0*	*25.1*
Multilateral	1,506	824	741	878	1,199	357	448	616	767	896	1,006	1,105	1,160	1,202	1,383	1,632	1,802
IMF [1]	110	100	94	79	66	4	6	19	68	72	101	101	83	94	79	103	117
World Bank/IDA	343	106	176	268	384	84	216	263	313	414	494	578	586	597	728	823	908
African Development Bank	329	116	239	289	380	121	134	112	136	158	257	247	229	245	253	343	387
Islamic Development Bank	45	40	36	55	64	31	57	96	112	114	124	118	111	92	116	141	118
Others	678	462	195	187	306	117	34	126	138	139	30	62	151	174	208	222	272
Official Bilateral	456	327	423	302	270	247	193	192	188	236	222	276	284	282	370	447	429
Paris Club official debt	127	31	8	17	18	13	16	4	4	10	13	13	10	8	41	41	40
Non-Paris Club official debt	328	297	416	285	252	234	178	188	184	226	209	263	275	273	329	406	389
Other Creditors	7	4	4	4	6	2	3	3	3	3	2	2	1	1	0	0	0

Source: Malian authorities, staff estimates

[1] Includes August 2009 SDR allocation.

Text Table 2. Mali: Public Domestic Debt Stock at Year-End, 2009–17

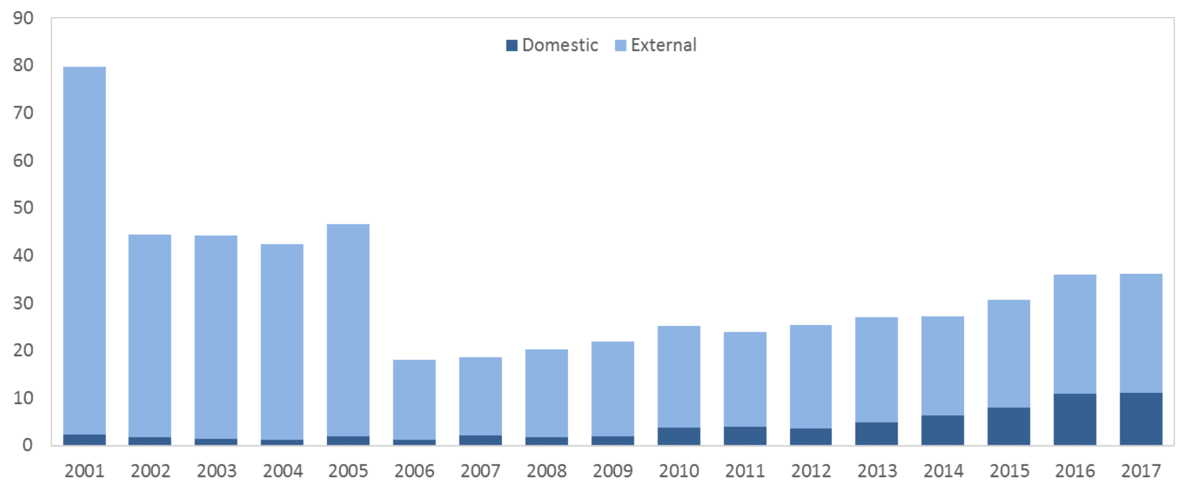
(billions of CFAF)

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	97	203	238	231	318	445	622	913	982
(percent of GDP)	2	4	4	4	5	6	8	11	11
Short Term	33	52	120	143	187	336	243	236	88
Medium and Long term	63	152	119	88	132	109	379	676	894
Central bank (ex IMF)	8	6	3	1	0	0	0	0	0
Commercial banks	82	94	114	112	172	329	433	567	606
Other [1]	6	104	120	119	146	116	189	345	376

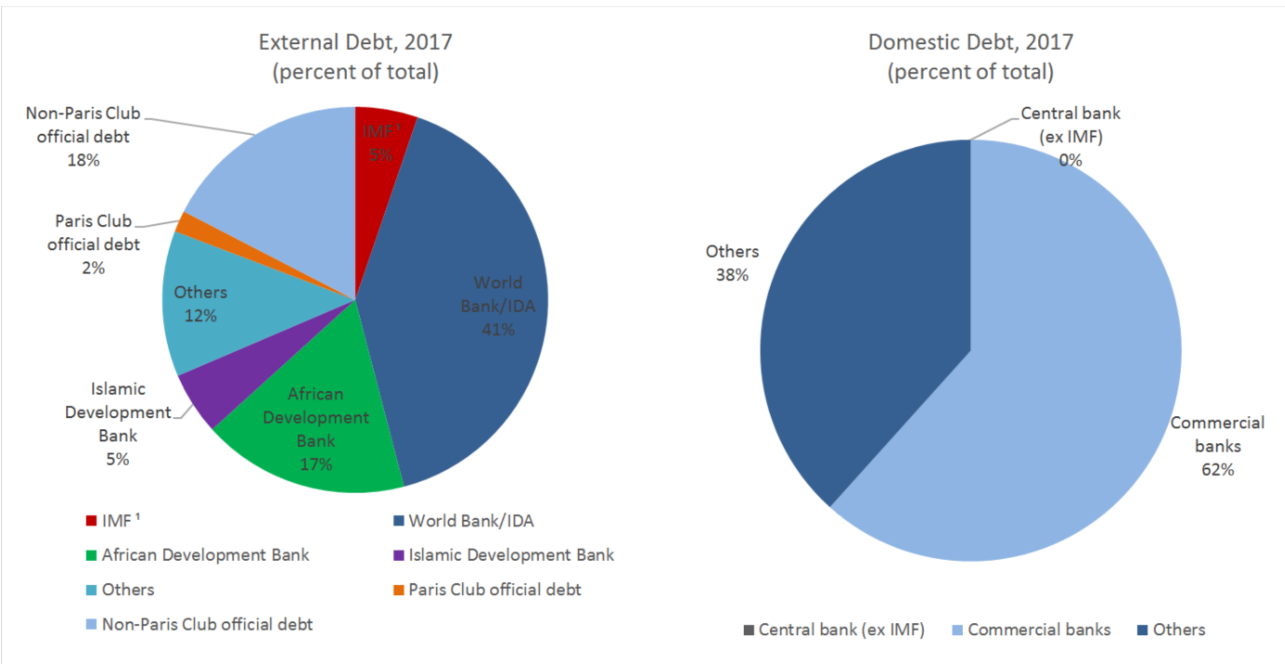
Source: Malian authorities, staff estimates

[1] Includes debt owed to non-banks and banks resident in WAEMU countries outside of Mali.

Text Figure 1. Public debt, 2001–17
(percent of GDP)



Text Figure 2. Holders of Mali's Public Debt, 2017



Sources: Malian authorities; and IMF staff calculations.

MACROECONOMIC OUTLOOK, 2018–38

2. **This DSA is consistent with the macroeconomic framework underlying the Staff Report prepared for the 2018 Article IV and Eighth and Ninth Reviews of the ECF-Supported Program.** Key macroeconomic assumptions are broadly in-line with those used in the previous DSA and are as follows:

- **Real GDP growth.** The outlook for growth remains positive. Real output gains are estimated at 5.3 percent in 2017 and projected at 5.0 percent in 2018, converging over the long term to 4.7 percent—Mali's long-term growth potential (Table 1).

- **Fiscal policy.** In 2018, despite steady spending pressures, the authorities are committed to containing the overall fiscal deficit (including grants) to 3.3 percent of GDP. This path would help them to achieve an overall fiscal balance of 3 percent of GDP by 2019, in line with the WAEMU convergence criterion.

- **External sector.** The current account deficit (including grants) is projected at 6.5 percent of GDP in 2018 (broadly unchanged from the 7th review) due to a deterioration in the terms of trade (higher oil prices), and solid import growth associated with public and private investment. Thereafter, the current account deficit is projected to narrow from 6.3 percent in 2019, before widening to about 6.4 percent by 2023. It would stabilize at about 6.6 percent of GDP over the longer term. This stabilization in the external position would be driven partly by supportive macroeconomic policies, gradual increase in other exports (including food, cotton, tourism and other minerals such as phosphate, uranium, bauxite, iron ore, copper, and nickel), and lower long-run oil prices. These factors should help to offset the expected steady decline in export earnings from gold[2]. The current account deficit continues to be financed mainly through foreign direct investment, public sector borrowing, and official grant flows.

3. **Gross financing needs will be covered by a combination of external and domestic debt**. For 2018 and the near term, the authorities plan to increase the issuance of domestic debt to offset a temporary shortfall in external financing. Over the medium term, as access to external financing sources is expected to gradually normalize, the composition of financing is expected to become again broadly similar to the previous DSA, with about 70 percent from external sources and 30 percent from regional and domestic sources.

4. **The main differences in the medium-term macroeconomic assumptions with respect to the previous DSA are as follows (Table 1):**

- The GDP deflator in U.S. dollar terms is projected to be higher during the projection period compared with the previous DSA.

- Official aid, defined as the sum of concessional grants and loans, is expected to be lower at

[2] Gold export volumes are expected to decline steadily over time, with the share of gold in total exports projected to fall from 67 percent in 2015 to about 20 percent in 2036.

3.4 percent of GDP in 2018 compared to 5.2 percent of GDP in the previous DSA. Most multi-year external support programs expired in 2017 and key donors reduced their budget support commitments in 2018. However, continued reform momentum should help expedite preparatory work for launching new external support programs. Consequently, official aid is expected to gradually converge to its long-term level at about 4.5 percent of GDP, as in the previous DSA.

- Gold prices are projected to be higher than in the previous DSA. Gold exports as a percentage of GDP is projected to be slightly lower than in the previous DSA.
- Oil prices are projected to be lower in 2017, but higher in 2018-19 than in the previous DSA.
- The DSA incorporates updated data on domestic debt for 2016 and 2017, according to the latest data provided by the authorities and the BCEAO in January 2018. These data show higher level of domestic debt than in the previous DSA.

5. **The DSA projects that public debt will grow from about 35.6 percent of GDP in 2017 to 51.1 percent in 2038.** Of this, external debt would increase from about 24.5 percent of GDP to 35.1 percent in 2038 (from about 25 percent of GDP to 36 percent, respectively, in the previous DSA). Domestic debt accumulation would be slightly higher than in the previous DSA as the authorities are assumed to increase reliance on domestic funding in 2018 to compensate for a temporary shortfall in external financing.

DEBT SUSTAINABILITY ANALYSIS

A. External DSA

6. **The results of the external DSA confirm that Mali's debt dynamics are sustainable under the baseline scenario**. Under the baseline scenario, all external debt ratios remain below their indicative thresholds, though one measure—the present value (PV) of PPG debt to exports ratio, as in the previous DSA, displays a distinct uptrend over the course of the forecast, rising some 87 percent over the coming 20 years, a note of concern, and in part the result of subdued export growth in the medium to longer term. (Figure 1a, panel c, and Table 2a) The ratio for the PV of PPG debt to GDP, calculated using a 5 percent discount rate, is projected to remain between 15 and 21 percent of GDP, well below the indicative threshold of 40 percent throughout the projection period (Figure 1a, panel b, and Table 2a). The PV of PPG debt-to-revenue ratio is also projected to remain broadly stable at around 86 percent, comfortably below the 250 percent threshold (Figure 1, panel d, and Table 2a).

7. **Almost all debt indicators remain below indicative thresholds even under the most extreme scenarios.** The present values of the debt-to-GDP ratio, debt-to-revenue ratio, and liquidity measures of debt service to exports and revenues (excluding grants) all remain under the debt distress thresholds under most extreme stress tests and alternative scenarios However, the present value of debt-to-exports ratio, shows a breach of threshold from 2030 to 2038 in line with the previous DSA, under an assumption of

tighter financing conditions for public debt, ('terms shock').[3] The breach averages 43 points, or 28 percentage points above threshold over the period, characterized as substantial and prolonged, and sufficient to assess Mali as standing at moderate risk of external debt distress. Going forward, however, the full implementation of the 2015 peace agreement and continued policy reforms should promote economic development, while increasing the overall flexibility and dynamism of the economy to cushion shocks. In particular, the ongoing scaling up and country-wide expansion of public sector investment in high-priority infrastructure augurs well for increasing overall economy-wide productivity growth and lead to the development of other sectors with export potential. These initiatives would help to make the economy more diversified and resilient to export shocks.

8. Mali's external debt sustainability is sensitive to an export-market growth shock, a reduction in transfers and FDI and, a combination shock, along with changes in borrowing terms. Under a bounds test that reduces export growth temporarily in 2018–19 with the effect of reducing exports levels permanently, the PV of the debt-to-exports ratio would breach its threshold in 2037 (Table 2b, Scenario B2). A bounds test that reduces FDI and official and private transfers in 2018–19, would cause the PV of the debt-to-exports ratio to start rising toward threshold, almost breaching it in 2038 (Table 2b, Scenario B4). A bounds test that combines shocks to growth, export values, the US dollar GDP deflator and FDI would cause the debt to exports ratio to almost breach its threshold in 2038 (Table 2b, Scenario B5). This highlights once more the need to diversify exports, reducing current vulnerabilities to (largely) external shocks.

B. Public DSA

9. The inclusion of domestic debt somewhat worsens the assessment of Mali's debt sustainability, contributing to a higher PV of total public debt-to-GDP ratio contrasted with the previous DSA. The projected shortfall of external financing in 2018, while assumed to be temporary, is offset by an increase in domestic debt in the short-term that deteriorates further the profile of overall debt sustainability. (Figure 2, Table 2a, Table 2b). The PV of public sector debt-to-GDP ratio increases to between 26.8 and 36.1 percent of GDP during the entire projection period compared to 23.5 and 28.5 percent of GDP, respectively, in the previous DSA. The PV of public sector debt-to-revenue ratio deteriorates to between 134 and 151 percent during the entire projection period compared to 107 and 123 percent, respectively, in the previous DSA. The recent rapid growth of the domestic debt stock needs to be monitored closely to maintain debt sustainability and financial stability going forward.

CONCLUSION

10. This updated DSA, as the previous one, suggests that Mali's risk of debt distress remains moderate. However, the projected shortfall in external financing in the near-term, while assumed temporary, puts additional moderate pressure on Mali' debt sustainability. Assuming an unchanged fiscal consolidation path from the previous DSA, the extent of the worsening in the debt profile will depend on

[3] In the previous DSA the most extreme shock was a combination shock, which is by design a temporary shock for two years.

the size and duration of the shift from external to domestic financing. As in the previous DSA, stress tests highlight a sustained breach of the threshold for the PV of PPG external debt-to-exports under the most extreme shock. Mali's debt sustainability is highly sensitive to a tightening of financing terms, and a combination shock. In addition to a financing shock (less favorable terms for external finance looking forward—which yields the breach noted above), Mali's debt sustainability is also vulnerable to a reduction in transfers and FDI, and an export shock owing to the export concentration in gold. And as highlighted in the previous DSA, it remains crucial that Mali maintain prudent macroeconomic policies, strengthen the effectiveness of public debt management, and continue to meet its external financing needs with grants and concessional loans, wherever possible. In addition, the country should ensure that underlying projects deliver a high return on investment, while continuing the implementation of structural reforms to improve the investment climate and export diversification, amid an expected decline in gold's export performance over the medium term. The Malian authorities broadly agreed with the conclusions of the DSA. They indicated that they considered their economy could grow faster than envisaged by staff over the medium to long term, but shared staff's overall assessment.

Table 1. Mali: Evolution of Selected Macroeconomic Indicators

	2015	2016 Est.	2017 Est.	2018 Projections	2019 Projections	Long term [1] Projections
Real GDP growth						
Current DSA	6.0	5.8	5.3	5.0	4.7	4.7
Previous DSA	6.0	5.8	5.3	5.0	4.7	4.7
GDP Deflator in US dollar terms						
Current DSA	1.2	3.6	11.3	2.5	3.0	2.2
Previous DSA	-14.2	1.3	-2.9	1.1	0.7	2.0
Overall fiscal deficit (excluding grants, percent of GDP)						
Current DSA	-4.5	-5.5	-4.5	-4.5	-4.7	-4.2
Previous DSA	-4.5	-5.5	-5.7	-5.5	-5.0	-4.2
Overall fiscal deficit (including grants, percent of GDP)						
Current DSA	-1.8	-3.9	-2.9	-3.3	-3.0	-3.0
Previous DSA	-1.8	-3.9	-3.5	-3.4	-3.0	-3.0
Current account deficit [2] (excluding grants, percent of GDP)						
Current DSA	-12.3	-14.6	-13.1	-13.6	-13.5	-7.6
Previous DSA	-12.3	-14.6	-16.7	-14.7	-14.0	-7.5
Current account deficit (including grants, percent of GDP)						
Current DSA	-5.3	-7.2	-6.0	-6.5	-6.3	-6.5
Previous DSA	-5.3	-7.1	-8.2	-6.6	-6.2	-6.3
Official aid [3] (percent of GDP)						
Current DSA	5.6	3.4	3.9	3.4	3.8	4.5
Previous DSA	5.6	3.4	5.2	5.2	5.5	4.6
Gold prices (US$/fine ounce London fix)						
Current DSA	1160	1248	1257	1340	1375	1481
Previous DSA	1160	1248	1254	1281	1311	1333
Gold exports (percent of GDP)						
Current DSA	13.0	13.5	13.1	12.5	11.1	5.4
Previous DSA	13.0	13.8	13.5	13.4	13.0	7.4
Oil prices (US$/barrel)[4]						
Current DSA	51	43	53	62	58	54
Previous DSA	51	43	55	55	54	55

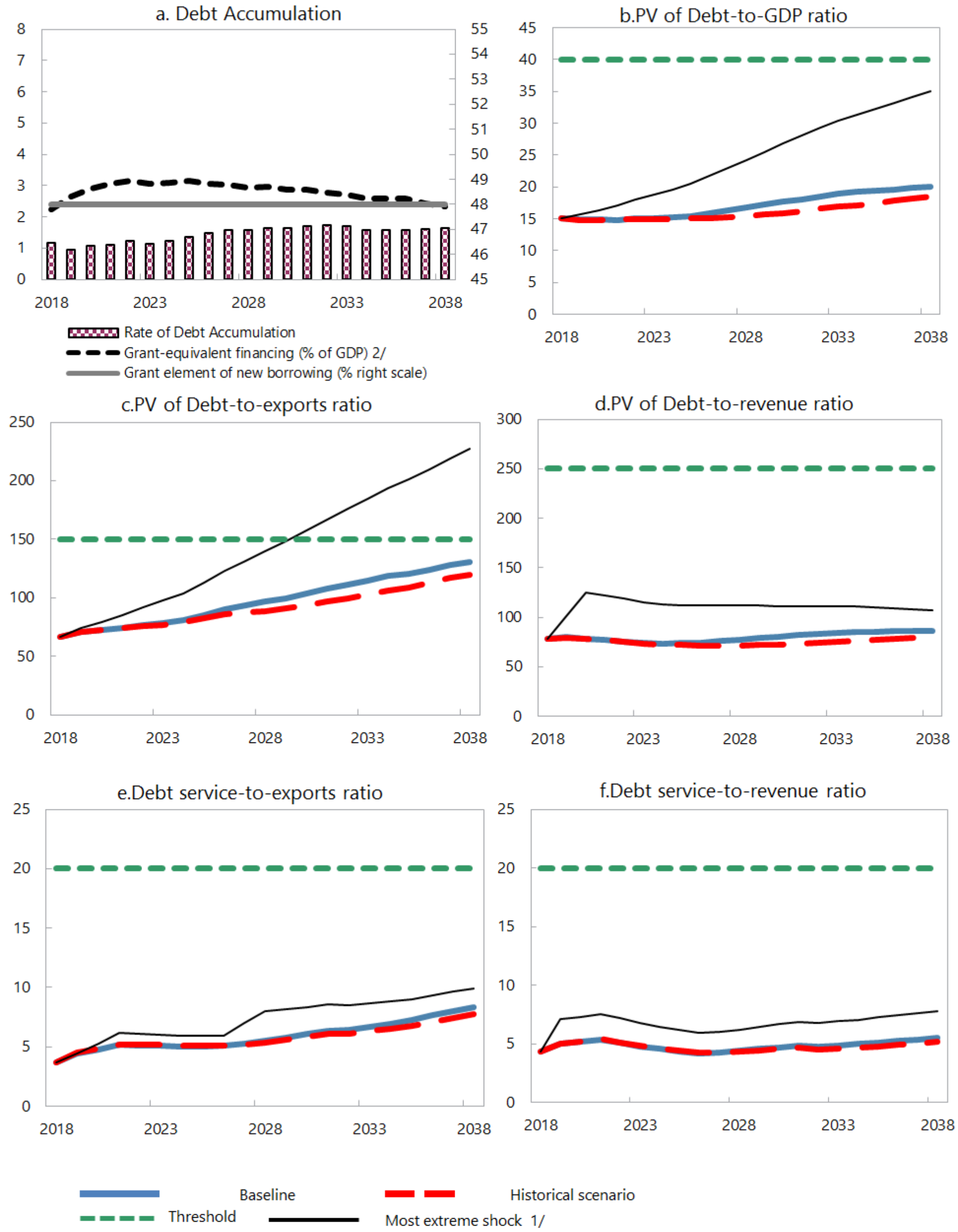
[1] Defined as the last 15 years of the projection period. For the current DSA, the long term covers the 2023-37 period as for the previous DSA.

[2] The large current account (excluding grants) deficit in 2015-19 reflects the international military assistance, which is assumed to continue into the medium term. It is registered as imports of security services financed by grants, which average 6% of GDP per annum.

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

[4] Simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh.

Figure 1a. Mali: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2018–38

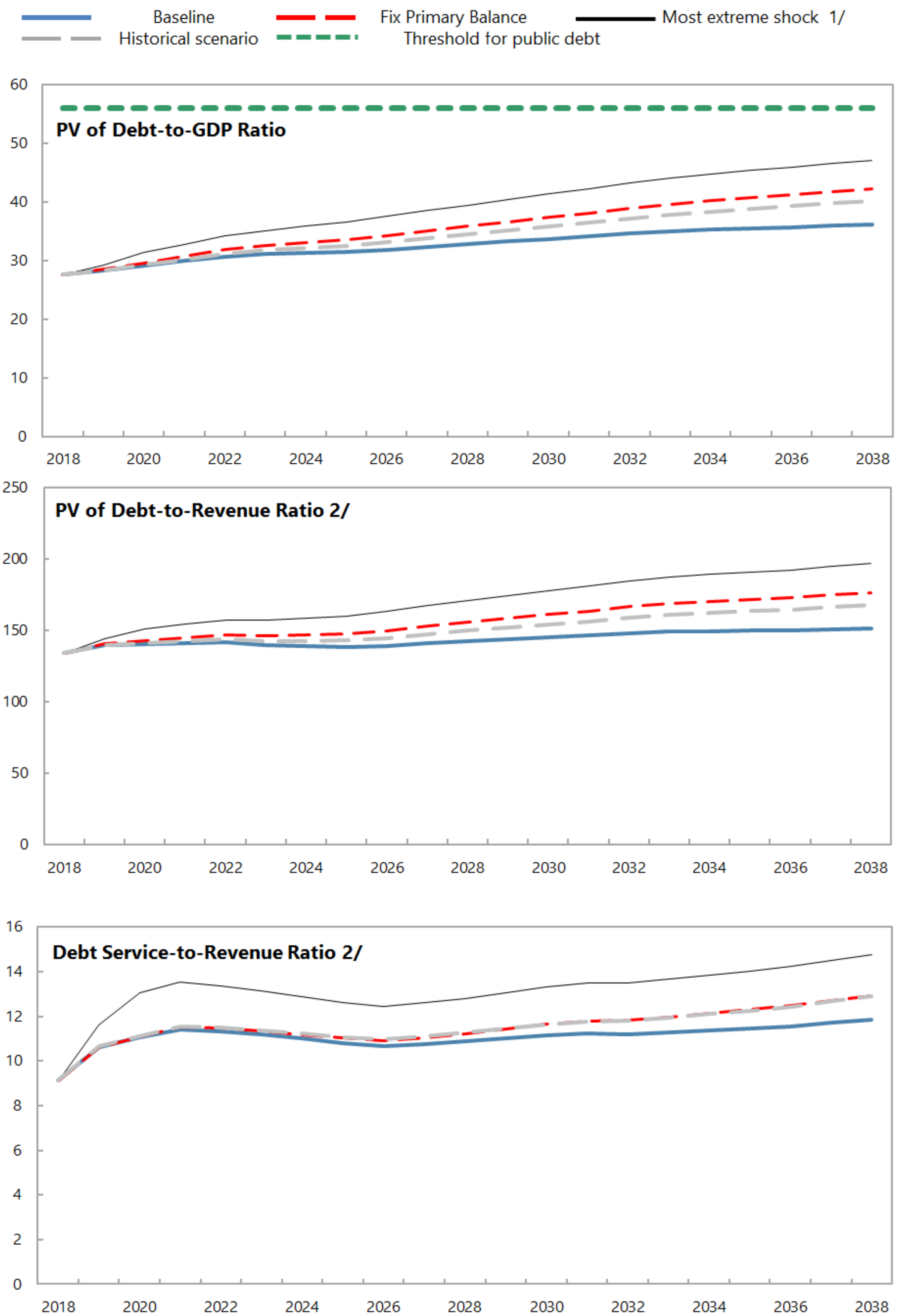


Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2028. In figure b. it corresponds to a B5. Combination of B1-B4 using one-half standard deviation shocks shock; in c. to a A2. New public sector loans on less favorable terms in 2018-2038 2 shock; in d. to a B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/ shock; in e. to a B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/ shock and in figure f. to a B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/ shock

2/ The decline in grant-equivalent financing in 2016 reflects the return to more normal levels of concessional aid following the exceptionally high level of assistance related to the 2011-2012 crisis.

Figure 2. Mali: Indicators of Public Debt Under Alternative Scenarios, 2018-38



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio on or before 2028.
2/ Revenues are defined inclusive of grants.

Table 1a. Mali: External Debt Sustainability Framework, Baseline Scenario, 2018-2038 1/

(In percent of GDP, unless otherwise indicated)

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections									
	2015	2016	2017			2018	2019	2020	2021	2022	2023	2018-2023 Average	2028	2038	2024-2038 Average
External debt (nominal) 1/	**22.6**	**24.9**	**24.5**			**23.4**	**23.2**	**23.4**	**23.6**	**24.1**	**24.4**		**28.0**	**35.1**	
of which: public and publicly guaranteed (PPG)	22.6	24.9	24.5			23.4	23.2	23.4	23.6	24.1	24.4		28.0	35.1	
Change in external debt	1.6	2.3	-0.4			-1.1	-0.2	0.1	0.2	0.6	0.3		0.9	0.5	
Identified net debt-creating flows	6.0	3.9	1.0			3.2	3.1	2.9	2.8	3.0	3.1		3.3	2.7	
Non-interest current account deficit	**5.0**	**6.9**	**5.7**	**6.6**	**3.7**	**6.3**	**6.1**	**5.9**	**5.8**	**6.0**	**6.1**		**6.3**	**5.9**	6.1
Deficit in balance of goods and services	15.6	16.9	15.7			15.3	15.6	15.2	15.0	15.0	10.7		11.3	10.9	
Exports	24.0	23.4	23.2			22.7	21.1	20.6	20.1	19.7	19.3		17.3	15.4	
Imports	39.6	40.3	38.9			38.0	36.7	35.7	35.0	34.7	30.0		28.6	26.3	
Net current transfers (negative = inflow)	-12.5	-12.3	-12.1	-9.6	3.9	-12.1	-12.2	-11.8	-11.6	-11.3	-6.7		-6.3	-5.5	-6.1
of which: official	-7.0	-7.4	-7.1			-7.1	-7.1	-6.8	-6.6	-6.3	-1.7		-1.3	-0.5	
Other current account flows (negative = net inflow)	2.0	2.4	2.1			3.1	2.6	2.5	2.4	2.3	2.1		1.3	0.5	
Net FDI (negative = inflow)	**-1.5**	**-1.8**	**-2.9**	**-3.0**	**1.8**	**-2.3**	**-2.2**	**-2.2**	**-2.2**	**-2.2**	**-2.2**		**-2.2**	**-2.2**	-2.2
Endogenous debt dynamics 2/	**2.4**	**-1.2**	**-1.7**			**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.8**		**-0.8**	**-1.0**	
Contribution from nominal interest rate	0.3	0.3	0.3			0.2	0.2	0.3	0.3	0.3	0.3		0.4	0.5	
Contribution from real GDP growth	-1.4	-1.2	-1.2			-1.0	-1.0	-1.0	-1.0	-1.0	-1.1		-1.2	-1.5	
Contribution from price and exchange rate changes	3.5	-0.3	-0.9			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**-4.3**	**-1.6**	**-1.4**			**-4.3**	**-3.3**	**-2.8**	**-2.6**	**-2.5**	**-2.8**		**-2.4**	**-2.1**	
of which: exceptional financing	-0.2	-0.2	-0.2			-0.2	-0.2	-0.1	-0.1	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	15.8			15.1	14.9	14.9	14.8	15.0	15.1		16.7	20.1	
In percent of exports	...	...	68.0			66.4	70.8	72.3	73.9	76.3	78.2		96.5	130.2	
PV of PPG external debt	**...**	**...**	**15.8**			**15.1**	**14.9**	**14.9**	**14.8**	**15.0**	**15.1**		**16.7**	**20.1**	
In percent of exports	**...**	**...**	**68.0**			**66.4**	**70.8**	**72.3**	**73.9**	**76.3**	**78.2**		**96.5**	**130.2**	
In percent of government revenues	**...**	**...**	**85.3**			**77.8**	**80.0**	**78.2**	**76.7**	**75.6**	**73.8**		**77.6**	**86.3**	
Debt service-to-exports ratio (in percent)	**6.5**	**4.3**	**4.7**			**3.7**	**4.5**	**4.8**	**5.1**	**5.1**	**5.1**		**5.5**	**8.4**	
PPG debt service-to-exports ratio (in percent)	**6.5**	**4.3**	**4.7**			**3.7**	**4.5**	**4.8**	**5.1**	**5.1**	**5.1**		**5.5**	**8.4**	
PPG debt service-to-revenue ratio (in percent)	**9.5**	**6.1**	**5.9**			**4.4**	**5.0**	**5.2**	**5.3**	**5.1**	**4.8**		**4.4**	**5.5**	
Total gross financing need (Billions of U.S. dollars)	0.7	0.9	0.6			0.9	0.9	1.0	1.0	1.1	1.2		1.8	3.5	
Non-interest current account deficit that stabilizes debt ratio	3.4	4.6	6.1			7.4	6.3	5.8	5.6	5.4	5.8		5.5	5.3	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.0	5.8	5.3	4.4	2.3	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
GDP deflator in US dollar terms (change in percent)	-14.2	1.2	3.6	2.4	8.9	11.3	2.5	3.0	2.7	2.0	2.2	4.0	2.0	2.2	2.2
Effective interest rate (percent) 5/	1.4	1.5	1.5	1.5	0.2	1.0	1.1	1.2	1.2	1.3	1.3	1.2	1.4	1.5	1.5
Growth of exports of G&S (US dollar terms, in percent)	-2.8	4.3	8.0	6.6	11.1	14.4	-0.3	5.2	5.0	4.7	5.0	5.7	6.0	6.0	5.4
Growth of imports of G&S (US dollar terms, in percent)	-5.2	9.0	5.4	9.6	18.7	14.2	3.6	5.0	5.4	5.7	-7.5	4.4	6.1	6.1	6.0
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
Government revenues (excluding grants, in percent of GDP)	16.4	16.7	18.5			19.4	18.7	19.0	19.3	19.9	20.4		21.6	23.3	22.1
Aid flows (in Billions of US dollars) 7/	0.7	0.5	0.6			0.6	0.7	0.9	1.0	1.1	1.1		1.6	2.9	
of which: Grants	0.4	0.2	0.2			0.2	0.3	0.4	0.4	0.4	0.5		0.5	0.4	
of which: Concessional loans	0.4	0.3	0.4			0.4	0.4	0.5	0.6	0.7	0.7		1.2	2.5	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			2.3	2.7	2.9	3.1	3.1	3.1		2.9	2.3	2.8
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			66.6	70.4	69.1	69.2	68.4	69.6		63.8	55.4	61.9
Memorandum items:															
Nominal GDP (Billions of US dollars)	13.1	14.0	15.3			17.9	19.2	20.7	22.3	23.8	25.5		35.8	69.8	
Nominal dollar GDP growth	-9.1	7.1	9.1			16.9	7.4	7.8	7.6	6.8	7.0	8.9	6.8	7.1	7.0
PV of PPG external debt (in Billions of US dollars)			2.5			2.7	2.9	3.1	3.3	3.6	3.9		6.0	14.1	
(PVt-PVt-1)/GDPt-1 (in percent)						1.2	1.0	1.1	1.1	1.2	1.1	1.1	1.6	1.6	1.6
Gross workers' remittances (Billions of US dollars)	0.7	0.7	0.8			0.9	1.0	1.0	1.1	1.2	1.3		1.8	3.5	
PV of PPG external debt (in percent of GDP + remittances)	...	...	15.0			14.4	14.2	14.2	14.1	14.3	14.4		15.9	19.1	
PV of PPG external debt (in percent of exports + remittances)	...	...	56.0			54.4	57.2	58.1	59.2	60.9	62.1		74.9	98.3	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	3.9			3.0	3.6	3.9	4.1	4.1	4.0		4.3	6.3	

Sources: Country authorities; and staff estimates and projections.

1/ Public sector external debt only.

2/ Derived as $[r - g - \rho(1+g)]/(1+g+\rho+g\rho)$ 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); project grants, changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes. The calculation of the residual assumes the capital account is a debt-creating flow, which is inappropriate in Mali's case since the capital account consists primarily of project grants (around 2% of GDP).

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

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

6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

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

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 1b. Mali: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2018–38

(In percent of GDP, unless otherwise indicated)

						Projections						
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2038
PV of Debt-to-GDP ratio												
Baseline	15	15	15	15	15	15	15	15	16	16	17	20
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2018-2038 1/	15	15	15	15	15	15	15	15	15	15	15	18
A2. New public sector loans on less favorable terms in 2018-2038 2	15	16	16	17	18	19	20	21	22	23	24	35
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	15	15	16	16	16	16	16	16	17	17	18	21
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	15	16	17	17	17	17	17	17	18	18	18	21
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	15	16	18	18	18	18	18	19	19	20	20	24
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	15	19	23	23	23	23	23	23	23	23	23	23
B5. Combination of B1-B4 using one-half standard deviation shocks	15	19	24	24	24	23	23	23	24	24	24	25
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	15	21	21	21	21	21	22	22	22	23	24	28
PV of Debt-to-exports ratio												
Baseline	66	71	72	74	76	78	81	85	90	93	96	130
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2018-2038 1/	66	70	72	74	76	77	79	83	86	87	89	120
A2. New public sector loans on less favorable terms in 2018-2038 2	66	74	79	85	91	97	104	113	123	131	140	227
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	66	71	73	74	77	78	81	85	90	94	97	131
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	66	77	95	96	99	101	104	109	114	118	121	155
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	66	71	73	74	77	78	81	85	90	94	97	131
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	66	92	113	114	116	117	119	124	129	131	132	147
B5. Combination of B1-B4 using one-half standard deviation shocks	66	83	105	106	109	110	112	117	122	125	126	147
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	66	71	73	74	77	78	81	85	90	94	97	131
PV of Debt-to-revenue ratio												
Baseline	78	80	78	77	76	74	73	74	74	76	78	86
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2018-2038 1/	78	79	78	77	75	73	72	72	71	71	71	79
A2. New public sector loans on less favorable terms in 2018-2038 2	78	84	86	88	91	92	95	98	102	107	112	150
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	78	82	82	81	80	78	78	78	79	80	82	91
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	78	83	89	87	85	83	82	82	83	84	85	89
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	78	88	95	93	92	89	89	89	90	92	94	105
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	78	103	122	118	115	111	109	108	107	107	106	98
B5. Combination of B1-B4 using one-half standard deviation shocks	78	101	125	122	119	115	113	112	112	112	112	107
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	78	114	111	109	107	105	104	104	106	108	110	122

Table 1b. Mali: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2018-2038 (continued)

(In percent of GDP, unless otherwise indicated)

	Projections											
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2037
Debt service-to-exports ratio												
Baseline	4	4	5	5	5	5	5	5	5	5	5	8
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2018-2038 1/	4	4	5	5	5	5	5	5	5	5	5	8
A2. New public sector loans on less favorable terms in 2018-2038 2	4	4	5	5	6	6	6	6	7	7	8	13
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	4	4	5	5	5	5	5	5	5	5	5	8
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	4	5	6	6	6	6	6	6	6	6	7	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	4	4	5	5	5	5	5	5	5	5	5	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	4	4	5	6	6	6	6	6	6	7	8	10
B5. Combination of B1-B4 using one-half standard deviation shocks	4	4	5	6	6	6	6	6	6	7	8	10
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	4	4	5	5	5	5	5	5	5	5	5	8
Debt service-to-revenue ratio												
Baseline	4	5	5	5	5	5	5	4	4	4	4	6
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2018-2038 1/	4	5	5	5	5	5	5	4	4	4	4	5
A2. New public sector loans on less favorable terms in 2018-2038 2	4	5	5	6	5	5	5	5	5	6	6	9
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	4	5	5	6	5	5	5	5	4	5	5	6
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	4	5	5	6	5	5	5	5	4	5	5	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	4	6	6	6	6	6	6	5	5	5	5	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	4	5	6	6	6	6	5	5	5	6	6	7
B5. Combination of B1-B4 using one-half standard deviation shocks	4	5	6	7	7	6	6	6	5	6	7	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	4	7	7	8	7	7	6	6	6	6	6	8
Memorandum item:												
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	43	43	43	43	43	43	43	43	43	43	43	43

Sources: Country authorities; and staff estimates and projections.

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

Table 2a. Mali: Public Sector Debt Sustainability Framework, Baseline Scenario, 2018–38

(In percent of GDP, unless otherwise indicated)

	Actual		Average 5/	Standard Deviation 5/	Projections									
	2016	2017			2018	2019	2020	2021	2022	2023	2018-23 Average	2028	2038	2024-38 Average
Public sector debt 1/	35.9	35.6			35.9	36.6	37.6	38.6	39.8	40.4		44.0	51.1	
of which: foreign-currency denominated	24.9	24.5			23.4	23.2	23.4	23.6	24.1	24.4		28.0	35.1	
Change in public sector debt	5.2	-0.3			0.3	0.7	1.0	1.0	1.2	0.6		0.9	0.5	
Identified debt-creating flows	2.5	-2.1			-0.1	0.5	0.5	0.4	0.5	0.4		0.3	-0.3	
Primary deficit	3.3	2.0	2.1	0.9	2.6	2.2	2.1	2.0	2.0	1.9	2.1	1.9	1.7	1.8
Revenue and grants	18.3	20.1			20.6	20.3	20.7	21.1	21.7	22.3		23.0	23.9	
of which: grants	1.6	1.6			1.2	1.6	1.7	1.8	1.8	1.8		1.4	0.6	
Primary (noninterest) expenditure	21.6	22.1			23.1	22.4	22.8	23.2	23.6	24.2		24.9	25.6	
Automatic debt dynamics	-0.8	-4.1			-2.6	-1.5	-1.5	-1.6	-1.5	-1.5		-1.6	-2.1	
Contribution from interest rate/growth differential	-1.4	-1.5			-1.7	-1.5	-1.4	-1.4	-1.4	-1.5		-1.1	-1.3	
of which: contribution from average real interest rate	0.3	0.3			0.0	0.2	0.3	0.3	0.3	0.3		0.8	0.9	
of which: contribution from real GDP growth	-1.7	-1.8			-1.7	-1.6	-1.6	-1.7	-1.7	-1.8		-1.9	-2.3	
Contribution from real exchange rate depreciation	0.6	-2.5			-0.9	0.0	-0.1	-0.2	0.0	-0.1		...	...	
Other identified debt-creating flows	0.0	-0.1			0.0	-0.2	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.2	0.1			0.2	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	
Debt relief (HIPC and other)	-0.2	-0.2			-0.2	-0.2	0.0	0.0	0.0	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	
Residual, including asset changes	2.7	1.8			0.4	0.2	0.5	0.6	0.7	0.2		0.6	0.9	
Other Sustainability Indicators														
PV of public sector debt	...	26.8			27.6	28.3	29.1	29.9	30.7	31.1		32.8	36.1	
of which: foreign-currency denominated	...	15.8			15.1	14.9	14.9	14.8	15.0	15.1		16.7	20.1	
of which: external	...	15.8			15.1	14.9	14.9	14.8	15.0	15.1		16.7	20.1	
Gross financing need 2/	7.9	6.8			5.4	5.4	5.5	5.6	5.7	5.7		5.8	6.0	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	133.3			134.0	139.4	140.6	141.4	141.7	139.6		142.7	151.4	
PV of public sector debt-to-revenue ratio (in percent)	...	145.0			142.4	151.6	153.2	154.5	154.5	152.0		151.9	155.3	
of which: external 3/	...	85.3			77.8	80.0	78.2	76.7	75.6	73.8		77.6	86.3	
Debt service-to-revenue and grants ratio (in percent) 4/	9.6	10.7			9.1	10.6	11.0	11.4	11.3	11.2		10.9	11.9	
Debt service-to-revenue ratio (in percent) 4/	10.5	11.6			9.7	11.5	12.0	12.5	12.4	12.2		11.6	12.2	
Primary deficit that stabilizes the debt-to-GDP ratio	-2.0	2.4			2.2	1.5	1.1	1.0	0.8	1.3		1.0	1.2	
Key macroeconomic and fiscal assumptions														
Real GDP growth (in percent)	5.8	5.3	4.4	2.3	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Average nominal interest rate on forex debt (in percent)	1.5	1.5	1.5	0.2	1.0	1.1	1.2	1.2	1.3	1.3	1.2	1.4	1.5	1.5
Average real interest rate on domestic debt (in percent)	3.3	3.5	1.8	3.5	3.4	3.7	3.4	3.2	3.0	2.9	3.3	3.0	2.8	2.9
Real exchange rate depreciation (in percent, + indicates depreciation)	2.9	-10.7	0.0	8.5	-3.9	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	1.5	1.6	4.1	3.4	1.4	1.4	1.8	2.0	2.0	2.2	1.8	2.0	2.2	2.2
Growth of real primary spending (deflated by GDP deflator, in percent)	12.1	8.2	3.2	5.2	9.8	1.5	6.3	6.4	6.8	7.2	6.3	4.9	4.8	5.1
Grant element of new external borrowing (in percent)	...	...	...	...	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0

Sources: Country authorities; and staff estimates and projections.

1/ Gross debt of central government

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. The historical average for the primary deficit, however, excludes 2006 (the year of MDRI debt relief and hence an unusually large primary surplus).

Table 2b. Mali: Sensitivity Analysis for Key Indicators of Public Debt, 2018–38

	Projections							
	2018	2019	2020	2021	2022	2023	2028	2038
PV of Debt-to-GDP Ratio								
Baseline	28	28	29	30	31	31	33	36
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	28	28	29	30	31	32	34	40
A2. Primary balance is unchanged from 2018	28	29	30	31	32	33	36	42
A3. Permanently lower GDP growth 1/	28	28	30	31	32	33	37	51
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2019-2020	28	29	31	33	34	35	39	47
B2. Primary balance is at historical average minus one standard deviations in 2019-2020	28	29	30	31	32	32	34	37
B3. Combination of B1-B2 using one half standard deviation shocks	28	29	30	32	33	33	37	42
B4. One-time 30 percent real depreciation in 2019	28	34	34	34	34	34	33	33
B5. 10 percent of GDP increase in other debt-creating flows in 2019	28	34	35	35	36	36	37	39
PV of Debt-to-Revenue Ratio 2/								
Baseline	134	139	141	141	142	140	143	151
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	134	140	141	143	144	142	150	168
A2. Primary balance is unchanged from 2018	134	141	143	145	147	146	156	177
A3. Permanently lower GDP growth 1/	134	140	143	145	147	146	162	212
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2019-2020	134	144	151	154	157	157	171	197
B2. Primary balance is at historical average minus one standard deviations in 2019-2020	134	142	146	146	146	144	146	153
B3. Combination of B1-B2 using one half standard deviation shocks	134	142	147	149	150	149	159	177
B4. One-time 30 percent real depreciation in 2019	134	168	165	161	158	152	144	137
B5. 10 percent of GDP increase in other debt-creating flows in 2019	134	167	167	166	165	162	161	162
Debt Service-to-Revenue Ratio 2/								
Baseline	9	11	11	11	11	11	11	12
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	9	11	11	12	11	11	11	13
A2. Primary balance is unchanged from 2018	9	11	11	12	11	11	11	13
A3. Permanently lower GDP growth 1/	9	11	11	12	12	12	12	15
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2019-2020	9	11	12	12	12	12	12	14
B2. Primary balance is at historical average minus one standard deviations in 2019-2020	9	11	11	12	11	11	11	12
B3. Combination of B1-B2 using one half standard deviation shocks	9	11	11	12	12	12	11	13
B4. One-time 30 percent real depreciation in 2019	9	12	13	14	13	13	13	15
B5. 10 percent of GDP increase in other debt-creating flows in 2019	9	11	12	12	12	12	12	13

Sources: Country authorities; and staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.

2/ Revenues are defined inclusive of grants.