INTERNATIONAL MONETARY FUND

MALI

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SIXTH REVIEW UNDER THE EXTENDED CREDIT FACILITY ARRANGEMENT AND REQUEST FOR MODIFICATION OF A PERFORMANCE CRITERION—DEBT SUSTAINABILITY ANALYSIS

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

This low-income country debt sustainability analysis (LIC DSA) updates the joint IMF/IDA DSA from November 25, 2015. The updated external DSA indicates that Mali is at moderate risk of debt distress—unchanged from the previous Debt Sustainability Analysis (DSA). Debt sustainability is highly sensitive to a tightening of financial terms, limiting the room for non-concessional borrowing. It is also vulnerable to a reduction in transfers and foreign direct investment and an export shock stemming from the concentration of exports in gold.

BACKGROUND

A. Recent Developments in Public External Debt

1. Mali's stock of external debt increased moderately in 2015 on account of higher concessional borrowing. It rose to 22.6 percent of GDP,[1] reflecting mainly borrowing from the International Development Association (IDA), the Islamic Development Bank (IsDB), and bilateral creditors (Text Table 1). The bulk of Mali's stock of external public debt is owed to multilateral creditors, mainly IDA, ADB, and IsDB. There are no official estimates of Mali's total private external debt stock but a rough proxy suggests this is likely to be small, at less than 7 percent of GDP at end-2014.[2]

Text Table 1. Mali: External Debt Stock at Year-End, 2001–15

(billions of CFAF)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total	1,969	1,156	1,169	1,185	1,474	606	643	811	958	1,134	1,229	1,382	1,407	1,485	1,754
(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	21.5	20.9	22.6
Multilateral	1,506	824	741	878	1,199	357	448	616	767	896	1,006	1,105	1,160	1,202	1,384
IMF [1]	110	100	94	79	66	4	6	19	68	72	101	101	83	94	80
World Bank/IDA	343	106	176	268	384	84	216	263	313	414	494	578	586	597	728
African Development Bank	329	116	239	289	380	121	134	112	136	158	257	247	229	245	253
Islamic Development Bank	45	40	36	55	64	31	57	96	112	114	124	118	111	92	116
Others	678	462	195	187	306	117	34	126	138	139	30	62	151	174	208
Official Bilateral	456	327	423	302	270	247	193	192	188	236	222	276	284	282	370
Paris Club official debt	127	31	8	17	18	13	16	4	4	10	13	13	10	8	49
Non-Paris Club official debt	328	297	416	285	252	234	178	188	184	226	209	263	275	273	321
Other Creditors	7	4	4	4	6	2	3	3	3	3	2	2	1	1	0

Sources: Malian authorities, staff estimates.

[1] Includes August 2009 SDR allocation.

B. Recent Developments in Public Domestic Debt

2. Mali's domestic public debt is low but has increased rapidly over the past few years. At end 2015, domestic public debt was 7.5 percent of GDP, continuing its ascending trend since 2013 (Text Table 2). The outstanding stock consists mainly of treasury bills and bonds issued on the regional market of the West African Economic and Monetary Union (WAEMU), but it also includes some arrears owed to domestic

[1] This and other GDP ratios mentioned in this document, including those in the tables, are based on the new national accounts. These feature an upward revision to nominal GDP of about 20 percent, which has a significant impact on keys fiscal ratios amongst others. See Box 1 in IMF Country Report No. 16/149 for additional details.

[2] Calculated as the gross external liabilities of commercial banks resident in Mali from the monetary survey and the gross external liabilities of the Malian non-bank sector vis-à-vis banks that report to the Bank of International Settlements (BIS). The latter may also include any debt of the public sector to BIS-reporting banks.

suppliers that have been validated through audits and recognized as debt by the authorities. The increase in the stock of domestic debt in 2015 resulted mainly from new issuances of treasury bills and bonds.

Text Table 2. Mali: Public Domestic Debt Stock at Year-End, 2010–15
(billions of CFAF)

	2009	2010	2011	2012	2013	2014	2015
Total	97	203	238	231	318	445	583
Nominal GDP	4807	5289	6124	6352	6544	7114	7748
(percent of GDP)	2.0	3.8	3.9	3.6	4.9	6.3	7.5
Central bank (ex IMF)	8	6	3	1	0	0	0
Commercial banks	82	94	114	112	172	329	433
Other [1]	6	104	120	119	146	116	150

Sources: Malian authorities, staff estimates.
[1] Includes debt owed to non-banks and banks resident in WAEMU countries outside of Mali.

C. Debt Burden Thresholds under the Debt Sustainability Framework

3. **Mali is a medium policy performer for the purpose of determining the debt burden thresholds under the Debt Sustainability Framework (DSF).** Mali's rating on the World Bank's Country Policy and Institutional Assessment (CPIA) averaged 3.38 (on a scale of 1 to 6) during 2012–14, making it a medium policy performer. The corresponding external public debt burden thresholds are shown in Text Table 3.

Text Table 3. External Public Debt Thresholds for "Medium-Policy Performers" under the Debt Sustainability Framework

	Without remittances	With remittances
Present value of external debt in percent of:		
GDP	40	36
Exports	150	120
Revenue	250	250
External debt service in percent of:		
Exports	20	16
Revenue	20	20

UNDERLYING ASSUMPTIONS

A. Baseline Scenario

4. In the short run, the economy is expected to grow slightly above trend as the recovery following the political and security crisis of 2012 takes hold. The baseline scenario remains broadly in line with that of the December 2015 DSA[3] and assumes a stable political environment, the implementation of sound macroeconomic and structural policies, and the continued provision of aid and broadly stable foreign direct investment (FDI). Notable revisions compared to the December 2015 DSA include (Text Table 4):

- Real GDP growth in 2016 is expected to be slightly weaker than in 2015 on the back of strong agricultural production during the previous year. In the long run, growth is assumed to stay around its historical average at 4.7 percent, which is slightly higher than in the last DSA thanks to higher public investment.
- The overall fiscal deficit (excluding grants) as a proportion of GDP is projected to be slightly higher than in the previous DSA in 2016–18 due to increased spending on security and implementation of the peace process, but will then fall below the ratio as the authorities embark on fiscal consolidation process and meet the WAEMU commitment of reducing the overall deficit to 3 percent of GDP by 2019.
- Oil prices are around 10 percent lower over the projection period, which is expected to result in a modest boost to the trade balance in the medium term from lower oil imports.
- Gold prices are around 10 to 15 percent higher over the projection period, which also has a positive effect on the trade balance in the medium term.
- The current account deficit (both including and excluding grants) is expected to be greater than that in the previous DSA in 2016–17 due to continued strong import growth associated with a higher fiscal deficit and further increases in public investment, as well as continued accommodative monetary policy by the regional central bank (BCEAO). Thereafter, it is lower than in the previous DSA thanks mainly to better terms of trade.
- All new external borrowing is projected to be on similar terms as in the recent past. The main change with respect to the previous DSA is higher borrowing from the IMF given the augmentation of access granted at the time of the fifth review under the ECF arrangement.

[3] See Joint IDA/IMF Debt Sustainability Analysis in the IMF Country Report No. 15/339.

Text Table 4. Mali: Evolution of Selected Macroeconomic Indicators

	2015	2016	2017	2018	2019	Long term [1]
	Est	Projections				
Real GDP growth						
Current DSA	6.0	5.4	5.3	4.8	4.7	4.7
Previous DSA	4.9	5.4	5.1	4.5	5.0	4.5
Overall fiscal deficit (excluding grants, percent of GDP)						
Current DSA	-4.5	-6.3	-6.1	-5.5	-4.9	-4.2
Previous DSA	-6.0	-5.5	-5.6	-5.2	-5.3	-5.4
Overall fiscal deficit (including grants, percent of GDP)						
Current DSA	-1.8	-4.3	-4.1	-3.5	-3.0	-3.0
Previous DSA	-3.1	-3.0	-3.2	-2.8	-2.9	-3.0
Current account deficit [2] (excluding grants, percent of GDP)						
Current DSA	-14.3	-17.0	-15.9	-13.3	-12.8	-7.4
Previous DSA	-12.9	-13.2	-13.9	-15.1	-15.2	-8.3
Current account deficit (including grants, percent of GDP)						
Current DSA	-7.3	-7.7	-6.8	-5.3	-5.3	-6.3
Previous DSA	-2.5	-3.2	-4.4	-6.1	-6.6	-6.1
Official aid [3] (percent of GDP)						
Current DSA	5.6	4.4	4.5	4.7	5.1	4.6
Previous DSA	6.0	5.0	5.4	5.5	5.7	6.0
Gold prices (US$/fine ounce London fix)						
Current DSA	1160	1276	1343	1373	1387	1418
Previous DSA	1175	1158	1171	1188	1208	1234
Gold exports (percent of GDP)						
Current DSA	12.8	12.7	13.0	12.4	11.8	5.2
Previous DSA	15.5	14.1	13.1	10.8	10.0	5.8
Oil prices (US$/barrel)[4]						
Current DSA	51	42	49	52	54	58
Previous DSA	52	50	55	60	62	63

[1] Defined as the last 15 years of the projection period. For the current DSA, the long term covers the 2022-36 period. For the previous DSA, it covered 2021-35.

[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.

5. A central feature of Mali's long-term external sector outlook is the steady decline of annual gold production expected to be compensated only in part by other exports. The baseline long-term scenario assumes trend GDP growth of 4.7 percent—in line with the historical average—as strong growth in the secondary and tertiary sectors offsets the steady decline of gold production (Box 1). Inflation is expected to remain moderate as prudent fiscal policies are implemented and the monetary policy stance stays consistent with the objectives of the regional central bank. The current account deficit is expected to remain stable (about 7.5 percent of GDP excluding grants and about 6.5 percent of GDP including grants) as the decline in gold exports is compensated for by an increase of other exports including agricultural products and other minerals.

Box 1. Mali: Macroeconomic Assumptions Underlying the Baseline Scenario, 2016–36

- **Real GDP growth.** It is expected to remain robust as Mali's recovery from the recent political and security challenges takes hold. Near term growth in 2016 is projected to remain robust at 5.4 percent, while long-term growth is expected to average 4.7 percent per year. This is moderately higher than the trend observed during the past 10 years which included the 2012 crisis (4.3 percent) but in line with average growth over the past 30 years. Gold output is projected to decline by around 4 percent annually starting in 2021 but strong growth in the secondary and tertiary sectors, aided by political stability and supported by structural reforms, is expected to offset this decline over time.
- **Consumer price inflation.** It is projected to remain below the WAEMU convergence criterion rate of 3 percent on the basis of low global inflation and normal domestic weather conditions.
- **Fiscal policy.** Owing to pressing public spending needs related to security and the implementation of the peace agreement, the overall fiscal deficit (including grants) is expected to reach 4.3 percent of GDP in 2016. The 2016 deficit will be financed by tapping domestic and regional markets and by the augmentation of access to IMF resources. The basic fiscal balance (revenue plus budgetary grants minus domestically financed expenditure) is expected to remain at zero from 2019 onwards and the overall fiscal balance at 3 percent of GDP, in line with the WAEMU convergence criterion. Tax revenue (as a percent of GDP) is expected to increase by about 3 percentage points over the projection period to fund the increase in domestically financed expenditure and compensate for the reduction in aid after the post-crisis surge. Therefore, there is no recourse to additional domestic borrowing to finance the budget, except for rolling over the current stock of domestic debt at market rates.
- **The non-interest current account deficit (including transfers)**. It is projected to average about 6 percent of GDP over 2022–36, in line with the historic average. It is expected to widen from 7.3 percent of GDP in 2015 to 7.7 percent of GDP in 2016, mainly due to a rise in non-oil imports. 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.[1] This decline is projected to be compensated in part by a gradual increase in other exports (including food, cotton, tourism and other minerals such as phosphate, uranium, bauxite, iron ore, copper, and nickel) and in part by a deceleration of import growth as the fiscal deficit is reduced and subsequently remains stable. Remittances (net private transfers) are projected to remain at their current ratio of about 6 percent of GDP.
- **The cost of new financing.** It is projected to be on similar terms as in the past. The baseline scenario projects a rapid population growth, which results in low per capita income growth and therefore continuous access to concessional financing linked to low income status.

[1/] New mining projected to come on stream from 2018 is, however, expected to provide some support to gold exports in the medium term.

6. Risks to the macroeconomic outlook stem mainly from the fragile security situation and governance issues. Renewed governance lapses and a failure to deepen PFM reforms could curtail or delay donor support. This, in turn, could hinder solidifying the foundations of the peace agreement. A deterioration of security conditions would have macroeconomic effects, including lower growth and tax revenues and higher security spending. On the upside, an uncertain global economic environment (notably due to the Brexit vote) could further raise gold prices and further dampen oil prices; this would help to narrow Mali's current account deficit and stimulate economic activity.

B. External DSA

7. Under the baseline assumptions, all external debt and debt-service ratios remain below the policy-dependent thresholds throughout the projection period (Figure 1a). The present value (PV) of external debt, calculated using the 5 percent discount rate, is expected to remain between about 14 and 19 percent of GDP throughout the projection period, (Table 1a). As production from existing and planned new gold mines declines starting in 2021 and growth of other exports only partly compensates for that decline, the PV of the external debt-to-exports ratio is projected to increase from about 66 percent in 2015 to 140 percent in 2036, still below the threshold of 150 percent (Figure 1a, Table 1a). With a 4 percentage points increase in tax revenue to GDP during the projection period, the PV of the external debt-to-revenue ratio is expected to remain broadly stable between about 80 percent and 90 percent, comfortably below the 250 percent threshold (Figure 1a, Table 1a).

8. Under the alternative probability approach in the baseline scenario, all external debt and debt-service ratios also remain below the policy-dependent thresholds throughout the projection period (Figure 1b). Since Mali's debt-to-export ratio lies just within 10 percent of the threshold in the baseline case (and is hence considered "borderline"), the use of the "probability approach" is recommended. The "probability approach" is an alternative and complementary methodology for assessing external debt sustainability, based on the evolution of the probability of debt distress over time, rather than on the evolution of debt burden indicators. Under the probability approach, the projected probability of debt distress (expressed as a percent) associated with each debt burden indicator is compared to a threshold level, which in contrast to the baseline approach, is country specific; in this case, the thresholds incorporate Mali's individual CPIA score and average GDP growth rate. Application of the probability approach in Mali's case yields a similar conclusion as the standard approach.

9. Mali's external debt sustainability is most sensitive to a tightening of financial terms while also being vulnerable to a reduction in transfers and FDI and an export shock. Under a bound test where financial terms are tightened by 2 percentage points over the projection period, the PV of debt-to-exports ratio would breach the threshold in 2026 and continue to increase until the end of the projection period to reach 262 percent in 2036 (Figure 1a, chart c; Table 1b, Scenario A2). Under a bound test that reduces FDI and official and private transfers in 2017–18 by 4 percent of GDP, the PV of the debt-to-exports ratio would exceed the threshold from 2026 until the end of the projection period (Table 1b, Scenario B4). And under a bound test that reduces export *growth* temporarily in 2017–18 with the effect of reducing exports *levels* permanently by 14 percent, the PV of the debt-to-exports ratio would breach the threshold in 2024 (Table 1b, Scenario B2). Under the probability approach, external debt is most sensitive to the same set of shocks as under the standard approach, particularly to a tightening of financial terms, which again causes a prolonged breach of the threshold for the debt-to-exports ratio (Figure 1b, chart c).

C. Public DSA

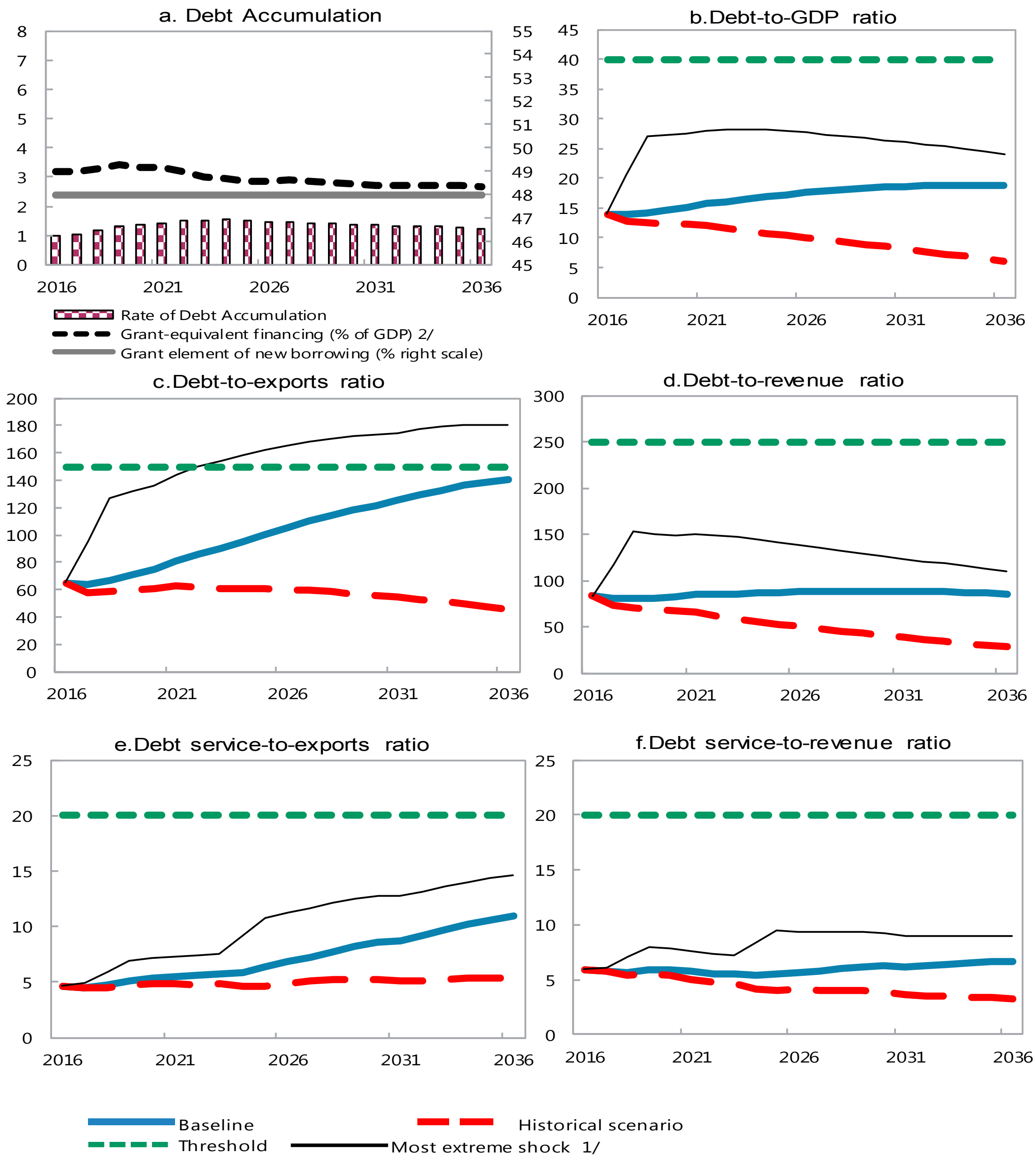
10. The inclusion of domestic debt does not alter the assessment of Mali's debt sustainability. Given the small size of Mali's domestic debt and the absence of recourse to additional domestic borrowing in the baseline scenario, the public debt sustainability analysis closely mirrors the external debt sustainability analysis (Figure 2 and Table 2a). The PV of public sector debt-to-GDP ratio stays between 21 and 26 percent of GDP during the whole projection period. However, in light of the recent rapid growth in the stock of domestic debt (¶2), new domestic borrowing should be closely monitored.

11. The Malian authorities broadly agreed with the conclusions of the DSA. Staff and the authorities agreed on the importance of continuing to meet their financing needs with grants and concessional loans with a minimum grant element of 35 percent, where possible. The authorities remain committed to this policy. They indicated that they considered the Malian economy could grow faster than envisaged by staff over the medium term, but shared staff's overall assessment. In accordance with the Fund's new debt limits policy, the authorities agreed with IMF staff on a borrowing plan for 2016 and 2017. Further to the recent assessment of the capacity in recording and monitoring public debt in Mali (considered as "adequate" this year, an improvement from "weak" in 2015), debt targets under the Fund program would be in the form of a PV limit on new overall external borrowing from 2017 onward. The 2016 program will still include a ceiling for the nominal value of new external borrowing contracted on non-concessional terms.

D. Conclusion

12. The DSA indicates that Mali remains at moderate risk of debt distress based on the external debt burden indicators. Although none of the debt burden thresholds are breached over the 20–year projection period under the baseline scenario—broadly unchanged from the last DSA—the stress test shows a sustained breach of the debt-to-exports limit under the most extreme shock. Debt sustainability is highly sensitive to a tightening of financing terms, underscoring the importance for the Malian government of continuing to meet its external financing needs with grants and concessional loans, wherever possible, and where loans are contracted on less concessional terms, ensuring that the underlying projects deliver a high return on investment. In addition to a financing shock, 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. Given the expected decline in gold exports in the medium term, and the uncertain prospects for export diversification, improving export performance in other sectors to compensate for the expected decline in gold exports will also be critical to maintaining external debt sustainability. Moreover, the authorities should also continue with their efforts to improve Mali's debt management capacity, notably by strengthening the quality of the public debt database and enhancing the capacity of the Debt Directorate.

Figure 1a. Mali: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2016–36 1/

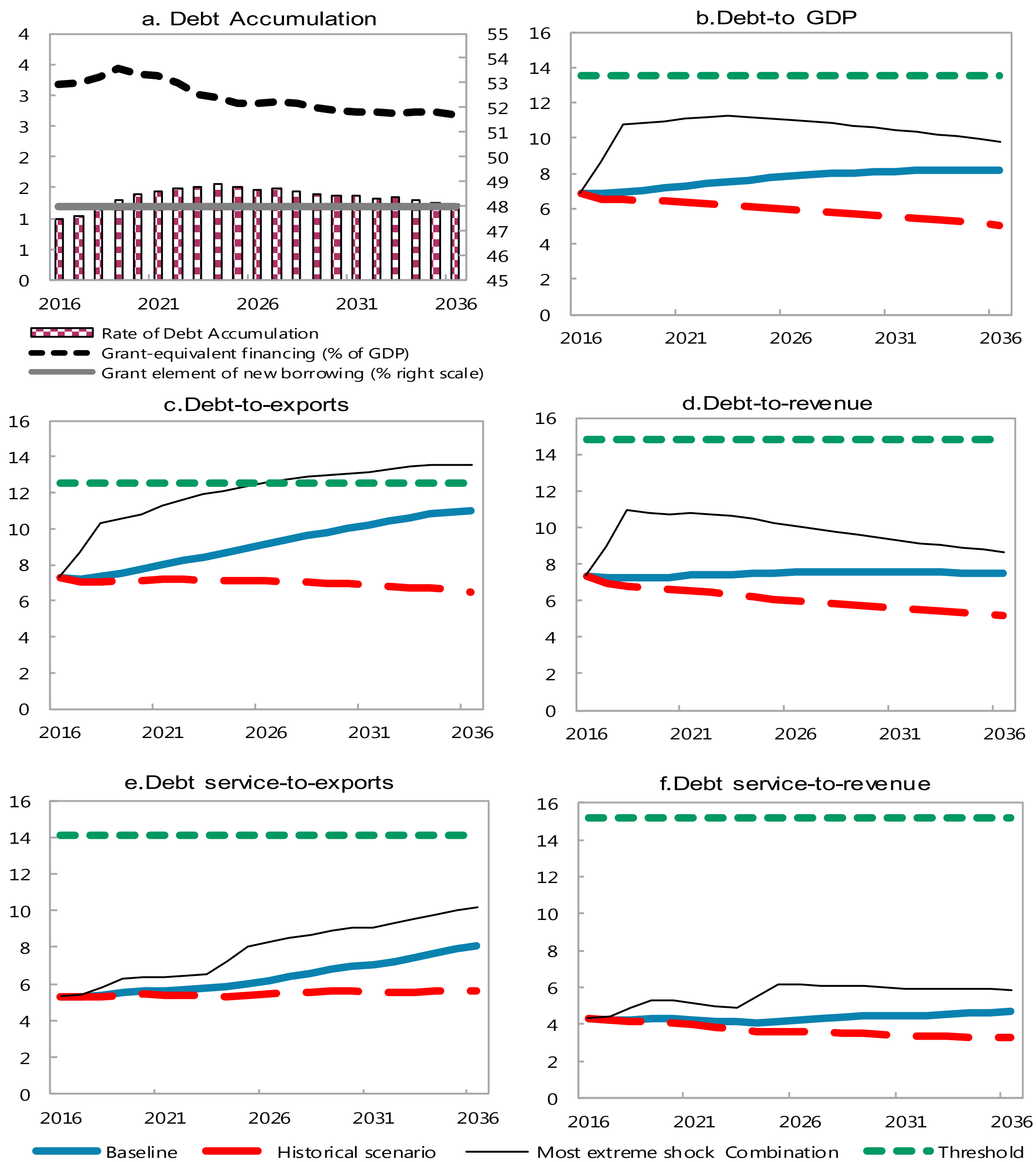


Sources: Country authorities; and staff estimates and projections.

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

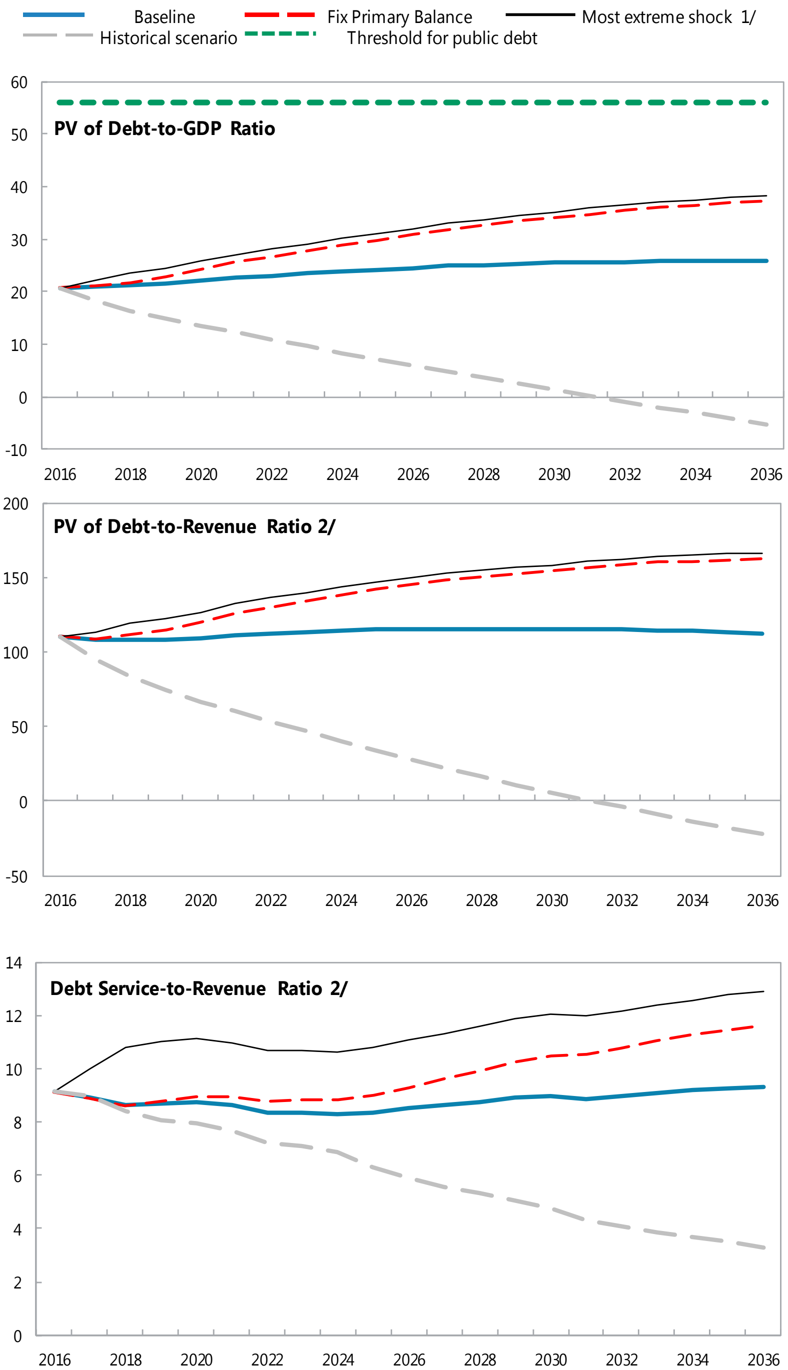
Figure 1b. Mali: Probability of Debt Distress of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2016–36 1/



Sources: Country authorities; and staff estimates and projections.

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

Figure 2. Mali: Indicators of Public Debt Under Alternative Scenarios, 2016–36[1/]



Sources: Country authorities; and staff estimates and projections.

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

2/ Revenues are defined inclusive of grants.

Table 1a. Mali: External Debt Sustainability Framework, Baseline Scenario, 2016–36 [1/]

(In percent of GDP, unless otherwise indicated)

	Actual			Historical [6/] Average	Standard [6/] Deviation	Projections									
	2013	2014	2015			2016	2017	2018	2019	2020	2021	2016-2021 Average	2026	2036	2022-2036 Average
External debt (nominal) 1/	**21.5**	**21.0**	**23.4**			**22.9**	**23.0**	**23.7**	**24.6**	**25.8**	**27.0**		**31.0**	**34.5**	
of which: public and publicly guaranteed (PPG)	21.5	21.0	23.4			22.9	23.0	23.7	24.6	25.8	27.0		31.0	34.5	
Change in external debt	-0.3	-0.5	2.4			-0.5	0.1	0.6	0.9	1.2	1.2		0.7	0.0	
Identified net debt-creating flows	-0.7	2.0	8.5			5.6	4.8	3.5	3.4	3.5	3.8		4.1	4.2	
Non-interest current account deficit	**2.6**	**4.5**	**7.0**	**6.3**	**3.9**	**7.4**	**6.5**	**5.0**	**5.0**	**5.1**	**5.4**		**5.8**	**6.1**	5.9
Deficit in balance of goods and services	15.0	15.5	16.8			18.7	17.5	15.1	14.7	14.5	14.8		10.5	11.6	
Exports	24.9	22.5	22.0			21.7	22.1	21.3	20.7	20.2	19.4		16.7	13.4	
Imports	39.9	38.0	38.9			40.4	39.6	36.4	35.4	34.7	34.2		27.3	25.0	
Net current transfers (negative = inflow)	-15.4	-13.5	-12.2	-8.5	3.8	-14.6	-14.3	-13.2	-12.7	-12.2	-12.0		-6.3	-6.1	-6.3
of which: official	-9.6	-8.0	-7.0			-9.4	-9.1	-7.9	-7.5	-7.0	-6.8		-1.1	-0.9	
Other current account flows (negative = net inflow)	3.0	2.4	2.4			3.2	3.3	3.1	2.9	2.8	2.6		1.6	0.6	
Net FDI (negative = inflow)	**-2.3**	**-1.0**	**-0.9**	**-2.8**	**2.0**	**-0.9**	**-0.9**	**-0.9**	**-0.8**	**-0.8**	**-0.8**		**-0.8**	**-0.8**	-0.8
Endogenous debt dynamics 2/	**-1.0**	**-1.5**	**2.4**			**-0.9**	**-0.8**	**-0.7**	**-0.7**	**-0.8**	**-0.8**		**-0.9**	**-1.1**	
Contribution from nominal interest rate	0.3	0.2	0.3			0.3	0.3	0.3	0.3	0.3	0.3		0.4	0.4	
Contribution from real GDP growth	-0.5	-1.4	-1.4			-1.2	-1.1	-1.0	-1.0	-1.1	-1.1		-1.3	-1.5	
Contribution from price and exchange rate changes	-0.8	-0.3	3.5			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**0.5**	**-2.4**	**-6.1**			**-6.1**	**-4.7**	**-2.8**	**-2.5**	**-2.3**	**-2.5**		**-3.4**	**-4.2**	
of which: exceptional financing	-0.1	0.0	-0.2			-0.2	-0.2	-0.2	-0.2	-0.1	0.0		0.0	0.0	
PV of external debt 4/	...	...	14.5			14.0	14.0	14.2	14.6	15.1	15.7		17.6	18.7	
In percent of exports	...	...	65.6			64.7	63.4	66.6	70.5	74.7	80.7		105.0	139.9	
PV of PPG external debt	**...**	**...**	**14.5**			**14.0**	**14.0**	**14.2**	**14.6**	**15.1**	**15.7**		**17.6**	**18.7**	
In percent of exports	**...**	**...**	**65.6**			**64.7**	**63.4**	**66.6**	**70.5**	**74.7**	**80.7**		**105.0**	**139.9**	
In percent of government revenues	**...**	**...**	**88.0**			**83.3**	**80.5**	**80.8**	**80.7**	**81.6**	**84.5**		**87.7**	**85.7**	
Debt service-to-exports ratio (in percent)	**3.8**	**4.3**	**7.1**			**4.6**	**4.5**	**4.7**	**5.1**	**5.3**	**5.5**		**6.8**	**10.9**	
PPG debt service-to-exports ratio (in percent)	**3.8**	**4.3**	**7.1**			**4.6**	**4.5**	**4.7**	**5.1**	**5.3**	**5.5**		**6.8**	**10.9**	
PPG debt service-to-revenue ratio (in percent)	**6.4**	**6.5**	**9.5**			**5.9**	**5.7**	**5.7**	**5.8**	**5.8**	**5.7**		**5.7**	**6.7**	
Total gross financing need (Billions of U.S. dollars)	0.2	0.6	1.0			1.1	1.0	0.8	0.9	1.0	1.1		1.6	3.4	
Non-interest current account deficit that stabilizes debt ratio	2.9	4.9	4.6			7.9	6.4	4.4	4.0	3.9	4.1		5.1	6.0	
Key macroeconomic assumptions															
Real GDP growth (in percent)	2.3	7.0	6.0	4.1	2.2	5.4	5.3	4.8	4.7	4.7	4.7	4.9	4.7	4.7	4.7
GDP deflator in US dollar terms (change in percent)	4.0	1.6	-14.2	3.9	9.6	2.1	2.7	1.6	1.4	1.5	0.7	1.7	1.7	2.2	1.9
Effective interest rate (percent) 5/	1.3	1.2	1.4	1.5	0.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3
Growth of exports of G&S (US dollar terms, in percent)	-1.3	-1.9	-10.9	8.9	15.4	5.9	10.0	3.0	2.9	3.9	1.4	4.5	3.3	5.3	4.1
Growth of imports of G&S (US dollar terms, in percent)	33.7	3.5	-6.9	11.7	19.2	11.9	5.9	-2.0	3.1	4.3	4.0	4.5	5.0	6.3	4.6
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)	14.5	14.9	16.4			16.8	17.4	17.6	18.0	18.5	18.6		20.0	21.9	20.6
Aid flows (in Billions of US dollars) 7/	0.6	0.6	0.7			0.5	0.5	0.6	0.7	0.7	0.7		0.9	1.6	
of which: Grants	0.4	0.3	0.4			0.3	0.3	0.3	0.3	0.3	0.3		0.3	0.5	
of which: Concessional loans	0.3	0.2	0.4			0.2	0.2	0.3	0.3	0.4	0.4		0.5	1.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			3.2	3.2	3.3	3.4	3.3	3.3		2.9	2.7	2.8
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			71.7	71.0	69.7	68.1	66.4	66.1		62.6	60.6	62.1
Memorandum items:															
Nominal GDP (Billions of US dollars)	13.2	14.4	13.1			14.1	15.2	16.2	17.2	18.3	19.3		26.8	51.0	
Nominal dollar GDP growth	6.4	8.8	-9.1			7.6	8.1	6.5	6.2	6.3	5.4	6.7	6.5	7.0	6.7
PV of PPG external debt (in Billions of US dollars)			1.9			2.0	2.1	2.3	2.5	2.8	3.0		4.7	9.5	
(PVt-PVt-1)/GDPt-1 (in percent)						1.0	1.0	1.2	1.3	1.4	1.4	1.2	1.5	1.2	1.4
Gross workers' remittances (Billions of US dollars)	0.8	0.8	0.7			0.7	0.8	0.8	0.9	1.0	1.0		1.4	2.7	
PV of PPG external debt (in percent of GDP + remittances)	...	...	13.7			13.3	13.3	13.5	13.8	14.3	14.9		16.7	17.8	
PV of PPG external debt (in percent of exports + remittances)	...	...	53.1			52.2	51.3	53.6	56.3	59.4	63.6		80.0	100.7	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	5.7			3.7	3.6	3.8	4.1	4.2	4.3		5.2	7.9	

Sources: Country authorities; and staff estimates and projections.

1/ Public sector external debt only.

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); 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, 2016–36

(In percent)

	Projections											
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2036
Debt-to-GDP ratio												
Baseline	14	14	14	15	15	16	16	16	17	17	18	19
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2016-2036 1/	14	13	12	12	12	12	12	11	11	10	10	6
A2. New public sector loans on less favorable terms in 2016-2036 2	14	15	16	17	19	20	22	23	24	25	27	35
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	14	14	15	16	16	17	17	17	18	18	19	20
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	14	16	19	19	20	20	20	21	21	21	21	20
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	14	15	17	17	18	18	19	19	20	20	21	22
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	14	20	25	25	25	26	26	26	26	26	25	22
B5. Combination of B1-B4 using one-half standard deviation shocks	14	20	27	27	27	28	28	28	28	28	28	24
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	14	20	20	21	21	22	23	23	24	24	25	26
Debt-to-exports ratio												
Baseline	65	63	67	71	75	81	86	90	95	100	105	140
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2016-2036 1/	65	58	58	60	61	62	62	61	61	60	60	45
A2. New public sector loans on less favorable terms in 2016-2036 2	65	67	74	83	92	104	115	125	135	147	158	262
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	65	64	67	71	75	81	86	90	95	100	105	140
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	65	85	116	121	126	135	141	147	153	158	163	195
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	65	64	67	71	75	81	86	90	95	100	105	140
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	65	89	116	121	125	132	137	142	145	148	151	164
B5. Combination of B1-B4 using one-half standard deviation shocks	65	95	127	132	136	144	150	154	158	162	165	180
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	65	64	67	71	75	81	86	90	95	100	105	140
Debt-to-revenue ratio												
Baseline	83	80	81	81	82	84	85	86	86	87	88	86
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2016-2036 1/	83	73	71	68	67	65	62	58	55	53	50	28
A2. New public sector loans on less favorable terms in 2016-2036 2	83	85	90	95	101	109	114	119	123	128	132	160
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	83	83	86	86	87	90	91	91	92	93	93	91
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	83	92	108	107	106	109	108	108	107	106	105	92
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	83	88	95	95	96	99	100	100	101	102	103	101
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	83	113	141	138	136	138	136	134	132	129	126	100
B5. Combination of B1-B4 using one-half standard deviation shocks	83	118	153	150	148	150	149	147	144	141	138	110
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	83	114	114	115	115	119	120	121	122	123	124	121

Table 1b. Mali: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2016–36 (concluded)

(In percent)

	Projections											
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2036
Debt service-to-exports ratio												
Baseline	5	4	5	5	5	5	6	6	6	6	7	11
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2016-2036 1/	5	4	4	5	5	5	5	5	5	5	5	5
A2. New public sector loans on less favorable terms in 2016-2036 2	5	4	5	5	5	6	6	7	7	8	9	17
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	5	4	5	5	5	5	6	6	6	6	7	11
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	5	5	6	7	8	8	8	8	9	10	11	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	5	4	5	5	5	5	6	6	6	6	7	11
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	5	4	5	6	7	7	7	7	8	10	10	13
B5. Combination of B1-B4 using one-half standard deviation shocks	5	5	6	7	7	7	7	8	9	11	11	15
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	5	4	5	5	5	5	6	6	6	6	7	11
Debt service-to-revenue ratio												
Baseline	6	6	6	6	6	6	6	5	5	5	6	7
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2016-2036 1/	6	6	5	5	5	5	5	5	4	4	4	3
A2. New public sector loans on less favorable terms in 2016-2036 2	6	6	6	6	6	6	6	6	7	7	8	10
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2017-2018	6	6	6	6	6	6	6	6	6	6	6	7
B2. Export value growth at historical average minus one standard deviation in 2017-2018 3/	6	6	6	6	6	6	6	6	6	7	7	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2017-2018	6	6	7	7	7	7	6	6	6	6	7	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2017-2018 4/	6	6	6	7	7	7	7	7	8	9	9	8
B5. Combination of B1-B4 using one-half standard deviation shocks	6	6	7	8	8	8	7	7	8	9	9	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2017 5/	6	8	8	8	8	8	8	8	8	8	8	9
Memorandum item:												
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	41	41	41	41	41	41	41	41	41	41	41	41

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, 2016–36

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2013	2014	2015	Average 5/	Standard Deviation 5/	2016	2017	2018	2019	2020	2021	2016-21 Average	2026	2036	2022-36 Average
Public sector debt 1/	26.4	27.3	30.9			29.7	30.0	30.7	31.6	32.7	34.0		38.0	41.5	
of which: foreign-currency denominated	21.5	21.0	23.4			22.9	23.0	23.7	24.6	25.8	27.0		31.0	34.5	
Change in public sector debt	1.0	0.9	3.6			-1.3	0.4	0.6	0.9	1.2	1.2		0.7	0.0	
Identified debt-creating flows	-0.5	2.8	2.1			1.6	1.9	1.5	1.0	1.3	1.3		0.7	0.3	
Primary deficit	1.9	2.3	1.2	-1.4	9.6	3.7	3.4	2.9	2.3	2.3	2.3	2.8	2.3	2.2	2.3
Revenue and grants	17.4	17.1	19.1			18.9	19.4	19.6	20.0	20.3	20.3		21.3	22.9	
of which: grants	2.8	2.2	2.7			2.0	2.0	2.0	1.9	1.8	1.8		1.3	1.1	
Primary (noninterest) expenditure	19.3	19.4	20.3			22.5	22.8	22.5	22.3	22.5	22.6		23.6	25.2	
Automatic debt dynamics	-1.2	0.7	0.9			-2.0	-1.4	-1.2	-1.1	-1.0	-1.0		-1.5	-2.0	
Contribution from interest rate/growth differential	-0.4	-1.6	-1.5			-1.4	-1.3	-1.3	-1.2	-1.3	-1.3		-1.6	-1.9	
of which: contribution from average real interest rate	0.2	0.2	0.0			0.1	0.2	0.1	0.1	0.2	0.1		0.0	-0.1	
of which: contribution from real GDP growth	-0.6	-1.7	-1.5			-1.6	-1.5	-1.4	-1.4	-1.4	-1.5		-1.7	-1.9	
Contribution from real exchange rate depreciation	-0.7	2.3	2.4			-0.6	-0.1	0.1	0.1	0.3	0.3		...	...	
Other identified debt-creating flows	-1.2	-0.2	-0.1			0.0	-0.1	-0.2	-0.2	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.8	0.0	0.1			0.2	0.1	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	
Debt relief (HIPC and other)	-0.4	-0.2	-0.2			-0.2	-0.2	-0.2	-0.2	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	0.0	
Residual, including asset changes	1.5	-1.9	1.5			-2.9	-1.6	-0.9	-0.1	-0.1	0.0		0.0	-0.2	
Other Sustainability Indicators															
PV of public sector debt	...	...	22.0			20.8	21.0	21.2	21.6	22.1	22.7		24.5	25.7	
of which: foreign-currency denominated	...	...	14.5			14.0	14.0	14.2	14.6	15.1	15.7		17.6	18.7	
of which: external	...	...	14.5			14.0	14.0	14.2	14.6	15.1	15.7		17.6	18.7	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	5.4	6.4	7.7			9.0	8.2	7.8	7.3	7.3	7.3		7.3	7.6	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	115.0			110.3	108.2	108.3	107.8	108.9	111.6		115.2	112.2	
PV of public sector debt-to-revenue ratio (in percent)	...	...	133.7			123.5	120.7	120.5	119.4	119.4	122.1		122.5	117.7	
of which: external 3/	...	...	88.0			83.3	80.5	80.8	80.7	81.6	84.5		87.7	85.7	
Debt service-to-revenue and grants ratio (in percent) 4/	7.9	8.8	11.2			9.1	8.9	8.6	8.7	8.7	8.6		8.5	9.3	
Debt service-to-revenue ratio (in percent) 4/	9.4	10.1	13.1			10.2	9.9	9.6	9.6	9.6	9.4		9.0	9.8	
Primary deficit that stabilizes the debt-to-GDP ratio	0.9	1.4	-2.4			4.9	3.1	2.3	1.4	1.1	1.0		1.6	2.2	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	2.3	7.0	6.0	4.1	2.2	5.4	5.3	4.8	4.7	4.7	4.7	4.9	4.7	4.7	4.7
Average nominal interest rate on forex debt (in percent)	1.3	1.2	1.4	1.5	0.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3
Average real interest rate on domestic debt (in percent)	5.3	6.0	2.3	0.9	3.7	3.6	4.6	4.0	4.3	4.6	4.4	4.3	3.4	2.9	3.2
Real exchange rate depreciation (in percent, + indicates depreciation)	-3.5	11.3	12.3	-1.5	9.3	-2.7	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	0.7	1.6	2.8	4.7	3.2	1.5	1.7	1.1	0.8	0.7	0.9	1.1	1.7	2.2	1.9
Growth of real primary spending (deflated by GDP deflator, in percent)	31.2	7.7	11.3	5.0	10.0	16.6	6.6	3.2	4.0	5.8	4.9	6.9	5.8	5.0	5.5
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, 2016–36

	Projections							
	2016	2017	2018	2019	2020	2021	2026	2036
PV of Debt-to-GDP Ratio								
Baseline	21	21	21	22	22	23	25	26
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	21	18	16	15	14	12	6	-5
A2. Primary balance is unchanged from 2016	21	21	22	23	24	26	31	37
A3. Permanently lower GDP growth 1/	21	21	22	22	23	24	28	38
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	21	22	24	25	26	27	32	38
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	21	24	28	28	28	29	30	29
B3. Combination of B1-B2 using one half standard deviation shocks	21	22	23	23	24	25	29	34
B4. One-time 30 percent real depreciation in 2017	21	26	26	25	25	25	24	22
B5. 10 percent of GDP increase in other debt-creating flows in 2017	21	27	27	27	27	28	29	29
PV of Debt-to-Revenue Ratio 2/								
Baseline	110	108	108	108	109	112	115	112
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	110	95	84	74	67	60	28	-22
A2. Primary balance is unchanged from 2016	110	109	111	115	119	126	145	162
A3. Permanently lower GDP growth 1/	110	109	110	111	113	117	133	167
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	110	113	119	122	126	132	150	166
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	110	125	142	140	140	142	140	127
B3. Combination of B1-B2 using one half standard deviation shocks	110	111	115	117	120	125	137	147
B4. One-time 30 percent real depreciation in 2017	110	135	131	126	123	123	113	96
B5. 10 percent of GDP increase in other debt-creating flows in 2017	110	138	137	135	136	138	136	125
Debt Service-to-Revenue Ratio 2/								
Baseline	9	9	9	9	9	9	8	9
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	9	9	8	8	8	8	6	3
A2. Primary balance is unchanged from 2016	9	9	9	9	9	9	9	12
A3. Permanently lower GDP growth 1/	9	9	9	9	9	9	9	12
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2017-2018	9	9	9	9	9	9	10	12
B2. Primary balance is at historical average minus one standard deviations in 2017-2018	9	9	9	10	10	9	10	10
B3. Combination of B1-B2 using one half standard deviation shocks	9	9	9	9	9	9	9	11
B4. One-time 30 percent real depreciation in 2017	9	10	11	11	11	11	11	13
B5. 10 percent of GDP increase in other debt-creating flows in 2017	9	9	9	10	9	9	10	10

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.