INTERNATIONAL MONETARY FUND

MALI

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STAFF REPORT FOR THE 2012 ARTICLE IV CONSULTATION, REQUEST FOR DISBURSEMENT UNDER THE RAPID CREDIT FACILITY, AND CANCELLATION OF THE EXTENDED CREDIT FACILITY ARRANGEMENT —JOINT IDA/IMF DEBT SUSTAINABILITY ANALYSIS UNDER THE DEBT SUSTAINABILITY FRAMEWORK FOR LOW-INCOME COUNTRIES

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Mali's risk of debt distress continues to be assessed as moderate—unchanged from the previous Debt Sustainability Analysis (DSA). Debt sustainability remains mostly sensitive to a hardening of financial terms or an export shock stemming from the concentration of exports on gold.

I. BACKGROUND

A. Recent Developments in Public External Debt

1. As a result of the enhanced Highly Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI), Mali's stock of external debt has declined significantly. Mali's stock of public and publicly guaranteed external debt declined from 103 percent of GDP in 2000 to 19 percent in 2006 owing to enhanced HIPC debt relief in 2002 and MDRI debt relief in 2006 (Text Table 1). At end-2011, it had increased to 28.1 percent of GDP owing mainly to new loans by the International Development Association (IDA), the African Development Bank (ADB), the Islamic Development Bank (IsDB), and the IMF (mainly through an allocation of SDR 74 million in 2009). All of Mali's external debt is public and the bulk is owed to multilateral creditors, mainly IDA, AfDB and IsDB.

Text Table 1: Mali: External Debt Stock at Year-End, 2001–11
(billions of CFAF)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total	1939.7	1968.6	1156.1	1169.4	1184.5	1474.3	606.4	643.4	810.8	955.2	1134.1	1414.4
(percent of GDP)	102.6	89.0	52.0	47.7	45.0	50.9	18.9	18.8	20.7	22.6	24.3	28.1
Multilateral	1434.9	1503.9	824.5	741.5	878.3	1198.8	357.3	447.6	615.9	766.8	895.8	1141.4
IMF [1]	105.9	110.1	100.1	94.5	78.8	65.7	4.1	6.1	18.6	67.6	72.1	92.4
World Bank/IDA	327.6	343.3	106.0	176.5	268.3	383.5	83.8	216.3	262.5	313.2	413.6	493.5
African Development Bank	391.8	328.9	116.0	239.2	289.4	379.7	121.4	133.7	112.3	136.3	157.7	257.0
Islamic Development Bank	50.0	45.0	40.5	36.4	54.7	63.9	31.4	57.3	96.3	111.8	113.8	124.1
Others	559.6	676.5	461.9	154.9	187.0	290.6	64.0	109.1	129.1	137.9	138.6	174.4
Bilateral	498.2	459.0	328.4	423.5	301.9	270.0	246.9	193.3	149.7	188.4	235.8	271.4
Paris Club official debt	141.7	127.4	30.6	7.6	16.9	17.7	13.0	15.6	4.4	4.4	10.2	13.2
Non-Paris Club official debt	356.5	331.6	297.8	415.9	285.0	252.3	233.8	177.7	145.3	184.0	225.5	258.2
Other Creditors	7.3	7.4	4.3	4.4	4.4	5.5	2.3	2.5	2.8	2.9	2.6	1.7

Source: Malian authorities, staff estimates.

[1] Includes August 2009 SDR allocation.

B. Recent Developments in Public Domestic Debt

2. **Mali's domestic public debt is small** (4.7 percent of GDP in 2011, Text Table 2). It consists of treasury bills and bonds issued on the regional market of the West African Economic and Monetary Union (WAEMU), and commercial bank loans. Domestic debt has more than doubled between 2009 and 2011 mainly as a result of new issuances of treasury bills and bonds (CFAF 137 billion at the end of 2011), but also owing to an inventory of all loans contracted or guaranteed by the government that the authorities have been conducting as part of their plan to strengthen debt management.

Text Table 2: Mali: Public Domestic Debt Stock at Year-End, 2001–11
(billions of CFAF)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total	20.8	58.5	48.7	37.5	36.0	61.6	45.4	80.2	74.1	90.3	203.4	238.1
(percent of GDP)	1.1	2.6	2.2	1.5	1.4	2.1	1.4	2.3	1.9	2.1	4.4	4.7
Debt to the Central Bank	3.0	25.8	25.1	23.1	20.3	17.9	15.3	13.1	10.7	8.3	5.8	3.3
Central Bank Statutory Advances	0.0	23.2	23.2	21.7	19.7	17.5	15.3	13.1	10.7	8.3	5.8	3.3
Other debt to the Central Bank	3.0	2.6	1.9	1.4	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Debt to the banking sector	17.8	32.7	23.6	14.4	15.7	43.6	30.0	67.1	63.4	82.0	197.5	234.8

Source: Malian authorities, staff estimates.

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 3.65 (on a scale of 1 to 6) during 2009–11, 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	
Present value of external debt in percent of:	
GDP	40
Exports	150
Revenue	250
External debt service in percent of:	
Exports	20
Revenue	20

II. BASELINE SCENARIO UNDERLYING THE DEBT SUSTAINABILITY ANALYSIS

4. **The central feature of Mali's medium- and long-term macroeconomic outlook is the steady decline of annual gold production expected to be compensated only in part by other exports**. The baseline scenario assumes a continuation of trend GDP growth as agriculture offsets the steady decline of gold production (Box 1). Inflation is expected to remain moderate as prudent fiscal policies are implemented with no recourse to domestic borrowing. The current account deficit is expected to remain stable, as the decline in gold exports is compensated by an increase of other exports including agricultural products and other minerals, and a deceleration in import growth.

Box 1. Mali: Macroeconomic Assumptions Underlying the Baseline Scenario, 2012–32

- **Real GDP** growth is expected to pick up after a 1.5 percent decline caused by the political and security challenges in 2012, and average 5 percent per year, slightly above the trend observed during the last 10 years (4.8 percent). Near term growth is assumed to be slightly higher than average owing to an expected rebound from the current crisis. Gold output is projected to decline by about 2 percent annually starting in 2014. Higher agricultural production is expected to outweigh this decline over time owing to cotton and other agricultural sector reforms. With a projected rapid population growth, the baseline scenario thus assumes low per capita income growth (and therefore no access to middle income status which would reduce concessional financing).
- **Consumer price inflation** is projected to remain below the WAEMU convergence criterion of 3 percent.
- **Fiscal policy.** The basic fiscal balance (revenue plus budgetary grants minus domestically financed expenditure) is expected to be equal to or greater than zero in order to meet the WAEMU convergence criterion. Tax revenue and domestically financed expenditure are expected to increase in sync by about 4 percent of GDP during 2012–32. Therefore, there is no recourse to domestic borrowing to finance the budget, except for rolling over current stock of domestic debt at market rates. In 2012, the overall fiscal deficit (excluding grants) shrinks to 2.9 percent owing to the suspension of donor budget support after the military coup of March 2012; the deficit is financed by donor project support and the use of government deposits in the banking system. With the resumption of budget support, the overall fiscal deficit (excluding grants) is projected to hover around 5.5 percent of GDP from 2014 onward, and to be financed by external loans for 50 percent and grants for the balance.
- **The non-interest current account deficit** is projected to stay at around 5.3 percent, slightly above the historic average (4.7 percent of GDP). Gold exports volumes are expected to decline steadily over time, and the share of gold in total exports is projected to fall from 74 percent in 2012 to about 32 percent in 2032. This decline is projected to be compensated by a gradual increase of other exports (including food, cotton, and other minerals such as cement, phosphate, uranium, bauxite, iron ore, copper, nickel, oil) ,and a deceleration of import growth. Remittances (in percent of GDP) are projected to remain close to historical average.
- **External arrears.** Debt service in 2012 was hampered by the political instability, which contributed to the suspension of budget aid and a weak revenue performance, causing the government to only serve part of the external debt and accumulate arrears to the amount of USD 58 million. The government has duly informed the creditors of its inability to serve its external debt in full for the time being and reiterated its willingness to clear all its arrears as soon as possible. The DSA assumes that these arrears will be paid in five annual installments over the 2014–18 period.

III. DEBT SUSTAINABILITY ANALYSIS

A. External Debt

5. **Under the baseline assumptions, all external debt and debt-service ratios remain below the policy-dependent thresholds throughout the projection period** (Figure 1). The present value (PV) of external debt is expected to slightly climb from 24 percent of GDP in 2011 to 25 percent in 2032 (Table 1a). As production from existing gold mines declines starting in 2014 and other exports' growth

only partly compensates for that decline, the PV of the external debt-to-exports ratio is projected to increase from 76 percent in 2012 to 143 percent in 2032, below the threshold of 150 percent (Figure 1c). With a projected increase in tax revenue by 4 percent of GDP during the projection period, the PV of the external debt-to-revenue ratio is expected to decline from 135 percent in 2012 to 122 percent in 2032, remaining significantly below the threshold of 250 percent (Figure 1d, Table 1a).

6. **Mali's external debt sustainability is mostly sensitive to an export shock and a hardening of financial terms, limiting the scope for non-concessional borrowing**. Under a bound test that reduces exports *growth* temporarily in 2013–14 with the effect of reducing exports *levels* permanently by 25 percent, the PV of the debt-to-exports ratio would exceed the threshold in the year 2024 and remain high until the end of the projection period (Figure 1c, Table 1b, Scenario B2). Under a hardening of financial terms, the PV of debt-to-exports ratio would breach the threshold by a large margin in the second half of the projection period and for a protracted period of time (Table 1b, Scenario A2).

B. Public Debt

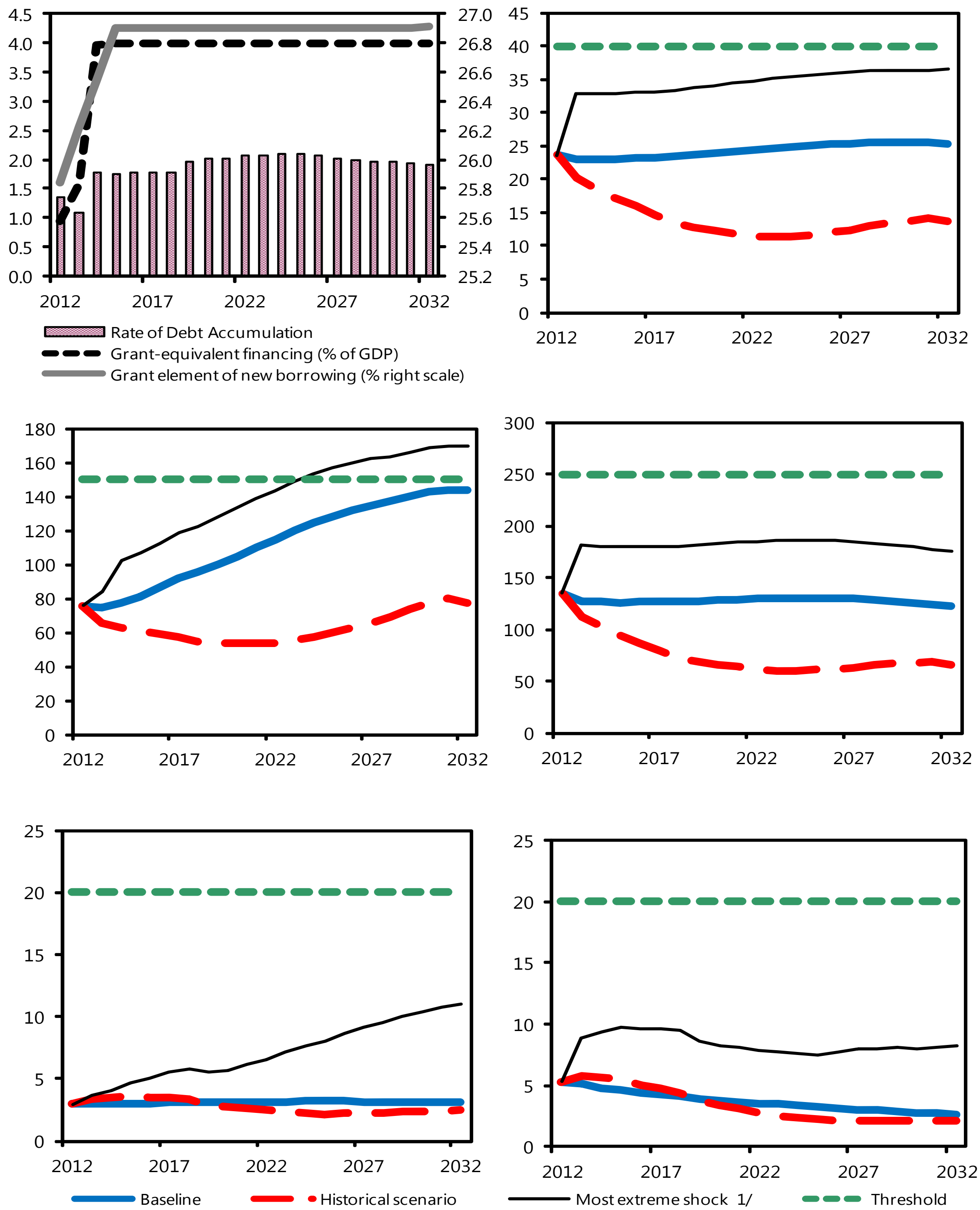
7. **The inclusion of domestic debt does not alter the assessment of Mali's debt sustainability.** Given the small size of Mali's domestic debt and the absence of recourse to domestic borrowing in the base line scenario, the public debt sustainability analysis closely mirrors the external debt sustainability analysis (Figure 2 and Table 2a). The PV of debt-to-GDP ratio slightly decreases from 29 percent in 2012 to 27 percent in 2032.

8. **Mali's total public debt sustainability is most sensitive to a growth shock.** In particular, a permanent decline in long-term GDP growth from 5 percent to 4.7 percent would increase the PV of debt-to-GDP ratio to 37 percent in 2032 (Figure 2; Table 2b, Scenario A3).

IV. DEBT DISTRESS CLASSIFICATION AND CONCLUSIONS

9. **The DSA indicates that Mali remains at moderate risk of debt distress based on the external debt burden indicators.** As in last year's DSA, none of the debt burden thresholds are breached over the 20-year projection period under the baseline scenario, and debt sustainability remains mostly sensitive to an export shock and to a hardening of financing terms. However, given the expected decline in gold exports in the medium term, the uncertain prospects for export diversification, and the present political and security situation, Mali's debt sustainability needs to remain under close scrutiny. The above mentioned factors necessitate recommending that the government continue to limit its external financing to grants and concessional loans.

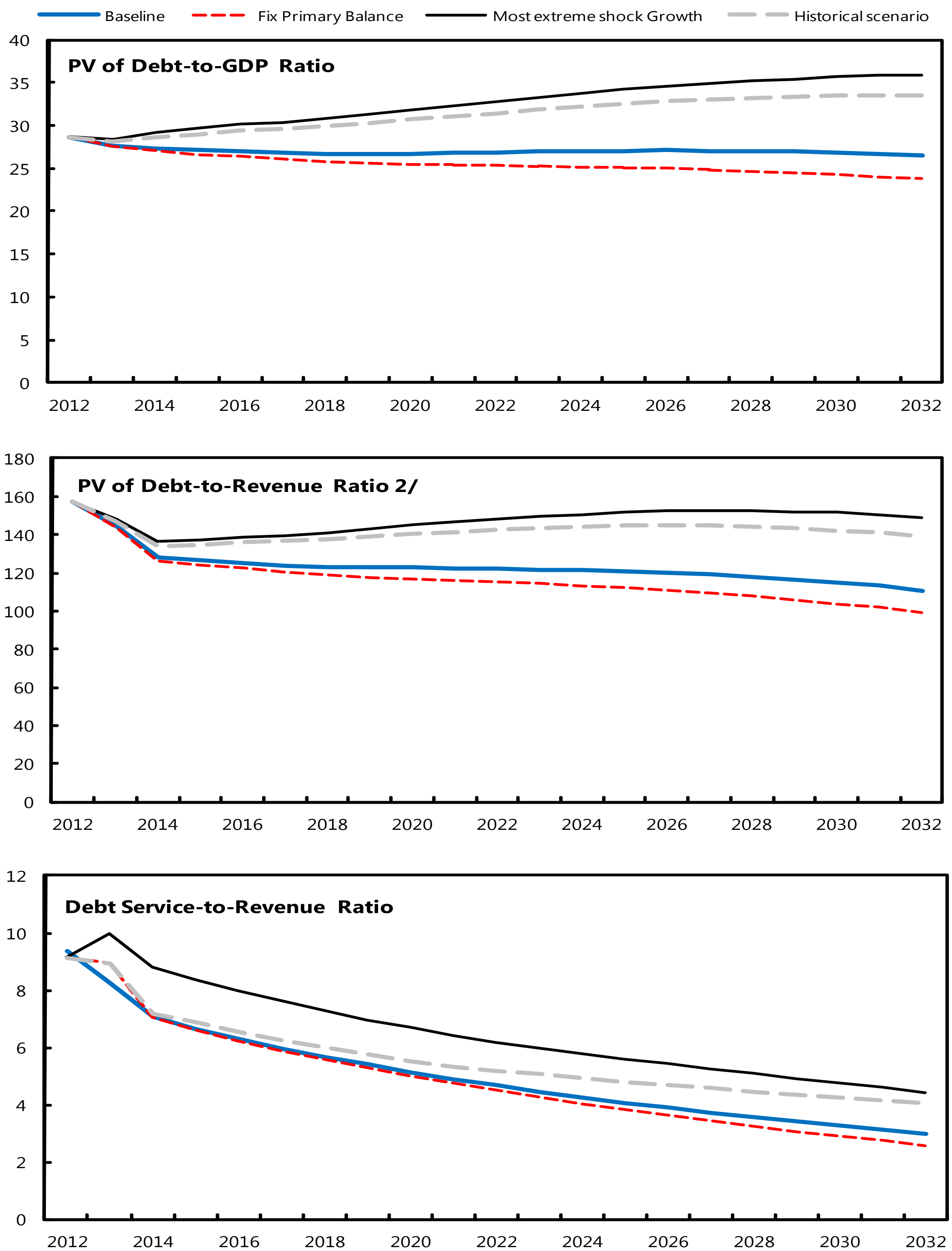
Figure 1. Mali: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2012-2032 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2022. In figure b. it corresponds to a One-time depreciation shock; in c. to a Exports shock; in d. to a One-time depreciation shock; in e. to a Terms shock and in figure f. to a One-time depreciation shock

Figure 2. Mali: Indicators of Public Debt Under Alternative Scenarios, 2012-2032 1/



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2022.
2/ Revenues are defined inclusive of grants.

Table 1a.Mali: External Debt Sustainability Framework, Baseline Scenario, 2009-2032 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections									
	2009	2010	2011			2012	2013	2014	2015	2016	2017	2012-2017 Average	2022	2032	2018-2032 Average
External debt (nominal) 1/	**22.6**	**24.3**	**28.1**			**29.9**	**29.0**	**29.0**	**29.2**	**29.5**	**29.6**		**31.1**	**32.4**	
of which: public and publicly guaranteed (PPG)	22.6	24.3	28.1			29.9	29.0	29.0	29.2	29.5	29.6		31.1	32.4	
Change in external debt	1.8	1.7	3.8			1.7	-0.9	0.0	0.2	0.3	0.1		0.3	-0.1	
Identified net debt-creating flows	-4.9	5.6	2.0			3.1	1.9	1.5	1.6	1.6	2.0		1.6	0.7	
Non-interest current account deficit	**3.6**	**10.8**	**7.4**	**4.7**	**3.7**	**5.0**	**6.5**	**6.3**	**6.3**	**5.8**	**6.5**		**5.2**	**4.4**	4.7
Deficit in balance of goods and services	7.6	13.9	10.0			4.9	6.0	7.6	7.7	7.8	8.6		8.9	9.7	
Exports	23.7	26.0	26.1			31.2	30.8	29.8	28.4	27.0	25.5		21.3	17.7	
Imports	31.4	39.9	36.1			36.1	36.8	37.4	36.0	34.8	34.1		30.1	27.5	
Net current transfers (negative = inflow)	-5.4	-5.7	-4.3	-4.9	0.6	-4.8	-3.8	-4.2	-3.9	-3.7	-3.6		-3.7	-3.9	-3.8
of which: official	-1.9	-2.1	-1.3			-1.6	-0.8	-1.4	-1.2	-1.2	-1.2		-1.2	-1.2	
Other current account flows (negative = net inflow)	1.4	2.6	1.7			4.9	4.3	2.9	2.5	1.8	1.4		0.1	-1.4	
Net FDI (negative = inflow)	**-8.4**	**-4.2**	**-2.8**	**-3.1**	**2.0**	**-2.8**	**-3.6**	**-3.7**	**-3.6**	**-3.2**	**-3.5**		**-2.6**	**-2.6**	-2.8
Endogenous debt dynamics 2/	**-0.2**	**-0.9**	**-2.5**			**0.8**	**-1.0**	**-1.2**	**-1.0**	**-1.0**	**-1.0**		**-1.0**	**-1.1**	
Contribution from nominal interest rate	0.3	0.1	0.3			0.4	0.4	0.4	0.4	0.4	0.4		0.4	0.4	
Contribution from real GDP growth	-0.9	-1.3	-0.6			0.4	-1.4	-1.6	-1.4	-1.4	-1.4		-1.4	-1.5	
Contribution from price and exchange rate changes	0.4	0.2	-2.2			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**6.8**	**-3.9**	**1.8**			**-1.3**	**-2.8**	**-1.4**	**-1.4**	**-1.3**	**-1.9**		**-1.3**	**-0.8**	
of which: exceptional financing	-0.3	-0.2	-0.3			-0.2	-0.2	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	21.6			23.6	23.0	23.0	23.1	23.2	23.3		24.4	25.4	
In percent of exports	...	...	82.9			75.6	74.5	77.2	81.3	86.0	91.4		114.6	143.2	
PV of PPG external debt	**...**	**...**	**21.6**			**23.6**	**23.0**	**23.0**	**23.1**	**23.2**	**23.3**		**24.4**	**25.4**	
In percent of exports	**...**	**...**	**82.9**			**75.6**	**74.5**	**77.2**	**81.3**	**86.0**	**91.4**		**114.6**	**143.2**	
In percent of government revenues	**...**	**...**	**125.6**			**134.7**	**127.2**	**126.4**	**126.1**	**126.3**	**126.2**		**129.6**	**122.0**	
Debt service-to-exports ratio (in percent)	**1.2**	**2.2**	**3.8**			**3.0**	**3.0**	**2.9**	**2.9**	**3.0**	**3.1**		**3.1**	**3.1**	
PPG debt service-to-exports ratio (in percent)	**1.2**	**2.2**	**3.8**			**3.0**	**3.0**	**2.9**	**2.9**	**3.0**	**3.1**		**3.1**	**3.1**	
PPG debt service-to-revenue ratio (in percent)	**1.7**	**3.3**	**5.7**			**5.3**	**5.1**	**4.8**	**4.6**	**4.4**	**4.2**		**3.5**	**2.6**	
Total gross financing need (Billions of U.S. dollars)	-0.4	0.7	0.6			0.3	0.4	0.4	0.4	0.4	0.5		0.7	1.0	
Non-interest current account deficit that stabilizes debt ratio	1.8	9.1	3.6			3.3	7.4	6.3	6.1	5.5	6.4		4.9	4.5	
Key macroeconomic assumptions															
Real GDP growth (in percent)	4.5	5.8	2.7	4.8	1.6	-1.5	4.8	5.8	5.3	5.0	5.0	4.1	5.0	4.9	5.0
GDP deflator in US dollar terms (change in percent)	-2.0	-0.7	10.0	8.6	8.2	-3.7	0.3	1.9	1.8	1.8	2.4	0.7	2.4	1.7	2.4
Effective interest rate (percent) 5/	1.6	0.7	1.2	1.3	0.4	1.3	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
Growth of exports of G&S (US dollar terms, in percent)	-16.8	15.0	13.4	13.6	15.8	13.3	3.9	4.1	2.2	1.8	1.3	4.4	3.8	7.0	4.9
Growth of imports of G&S (US dollar terms, in percent)	-25.3	33.6	2.1	14.8	21.8	-5.1	7.2	9.5	3.4	3.2	5.4	3.9	5.0	9.5	5.9
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	25.8	26.2	26.5	26.9	26.9	26.9	26.6	26.9	26.9	26.9
Government revenues (excluding grants, in percent of GDP)	17.1	17.3	17.2			17.5	18.0	18.2	18.3	18.4	18.4		18.8	20.8	19.4
Aid flows (in Billions of US dollars) 7/	0.8	0.6	0.8			0.2	0.3	0.7	0.8	0.8	0.9		1.3	2.6	
of which: Grants	0.4	0.3	0.4			0.1	0.1	0.4	0.4	0.4	0.4		0.6	1.3	
of which: Concessional loans	0.4	0.3	0.3			0.1	0.2	0.4	0.4	0.4	0.5		0.6	1.3	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			1.0	1.6	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			57.6	53.0	64.2	64.1	64.1	64.1		64.1	64.1	64.1
Memorandum items:															
Nominal GDP (Billions of US dollars)	9.0	9.4	10.7			10.1	10.6	11.5	12.3	13.1	14.1		20.1	41.5	
Nominal dollar GDP growth	2.4	5.0	13.0			-5.1	5.1	7.8	7.2	6.9	7.5	4.9	7.5	6.8	7.5
PV of PPG external debt (in Billions of US dollars)			2.2			2.3	2.4	2.6	2.8	3.0	3.3		4.9	10.6	
(PVt-PVt-1)/GDPt-1 (in percent)						1.3	1.1	1.8	1.8	1.8	1.8	1.6	2.1	1.9	2.0
Gross workers' remittances (Billions of US dollars)	0.5	0.5	0.5			0.5	0.5	0.5	0.5	0.5	0.5		0.8	1.7	
PV of PPG external debt (in percent of GDP + remittances)	...	...	20.7			22.5	22.0	22.0	22.1	22.3	22.4		23.4	24.3	
PV of PPG external debt (in percent of exports + remittances)	...	...	70.6			65.6	65.0	67.4	70.9	74.9	79.4		96.5	115.7	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	3.2			2.6	2.6	2.6	2.6	2.6	2.7		2.6	2.5	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes

4/ 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, 2012-2032
(In percent)

	Projections							
	2012	2013	2014	2015	2016	2017	**2022**	2032
PV of debt-to GDP ratio								
Baseline	24	23	23	23	23	23	**24**	25
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	24	20	19	17	16	15	**11**	14
A2. New public sector loans on less favorable terms in 2012-2032 2	24	24	22	23	24	25	**30**	38
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	24	23	24	24	24	24	**25**	27
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	24	24	27	27	27	27	**27**	27
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	24	23	23	23	24	24	**25**	26
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	24	25	26	26	26	26	**27**	26
B5. Combination of B1-B4 using one-half standard deviation shocks	24	22	22	22	22	22	**23**	25
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	24	33	33	33	33	33	**35**	36
PV of debt-to-exports ratio								
Baseline	76	75	77	81	86	91	**115**	143
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	76	66	63	60	59	57	**54**	78
A2. New public sector loans on less favorable terms in 2012-2032 2	76	76	74	81	90	99	**143**	214
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	76	74	77	81	86	91	**114**	144
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	76	84	102	107	112	118	**144**	169
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	76	74	77	81	86	91	**114**	144
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	76	80	89	93	98	103	**125**	149
B5. Combination of B1-B4 using one-half standard deviation shocks	76	73	75	79	83	88	**111**	140
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	76	74	77	81	86	91	**114**	144
PV of debt-to-revenue ratio								
Baseline	135	127	126	126	126	126	**130**	122
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	135	112	102	94	86	79	**61**	66
A2. New public sector loans on less favorable terms in 2012-2032 2	135	130	121	126	132	137	**162**	183
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	135	129	131	131	131	131	**135**	128
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	135	135	148	146	146	145	**144**	128
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	135	127	128	128	128	128	**131**	125
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	135	136	145	144	143	142	**142**	127
B5. Combination of B1-B4 using one-half standard deviation shocks	135	123	121	121	121	121	**124**	118
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	135	181	180	180	180	180	**185**	176

Table 1b.Mali: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012-2032 (continued)

(In percent)

Debt service-to-exports ratio

Baseline	3	3	3	3	3	3	**3**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	3	3	3	4	3	3	**2**	2
A2. New public sector loans on less favorable terms in 2012-2032 2	3	4	4	5	5	5	**7**	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	3	4	4	4	5	5	**5**	7
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	3	4	5	5	5	6	**6**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	3	4	4	4	5	5	**5**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	3	4	4	5	5	5	**5**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	3	4	4	4	4	5	**5**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	3	4	4	4	5	5	**5**	7

Debt service-to-revenue ratio

Baseline	5	5	5	5	4	4	**4**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	5	6	6	6	5	5	**3**	2
A2. New public sector loans on less favorable terms in 2012-2032 2	5	6	7	7	7	8	**7**	9
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	5	6	7	7	7	7	**6**	6
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	5	6	7	7	7	7	**6**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	5	6	7	7	7	7	**6**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	5	6	7	7	7	7	**6**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	5	6	6	7	6	6	**5**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	5	9	9	10	10	10	**8**	8
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	24	24	24	24	24	24	**24**	24

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, 2009-2032

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2009	2010	2011	Average 5/	Standard Deviation 5/	2012	2013	2014	2015	2016	2017	2012-17 Average	2022	2032	2018-32 Average
Public sector debt 1/	24.7	28.7	32.9			34.9	33.7	33.4	33.2	33.2	33.1		33.5	33.5	
of which: foreign-currency denominated	22.6	24.3	28.1			29.9	29.0	29.0	29.2	29.5	29.6		31.1	32.4	
Change in public sector debt	2.1	4.0	4.2			2.1	-1.2	-0.3	-0.1	0.0	-0.1		0.1	-0.2	
Identified debt-creating flows	-4.4	1.7	0.5			1.7	-0.6	-0.8	-0.6	-0.5	-0.7		-0.7	-0.8	
Primary deficit	3.9	2.3	3.1	2.4	0.9	1.5	1.7	1.7	1.7	1.8	1.8	1.7	1.8	1.8	1.8
Revenue and grants	21.7	20.1	21.1			18.2	19.1	21.4	21.5	21.6	21.6		22.0	24.0	
of which: grants	4.6	2.9	3.9			0.7	1.1	3.2	3.2	3.2	3.2		3.2	3.2	
Primary (noninterest) expenditure	25.6	22.4	24.2			19.7	20.8	23.1	23.2	23.3	23.4		23.8	25.8	
Automatic debt dynamics	-2.6	0.1	-1.5			1.0	-1.7	-1.9	-1.7	-1.6	-1.8		-1.8	-2.0	
Contribution from interest rate/growth differential	-0.8	-1.3	-0.7			0.4	-1.5	-1.8	-1.7	-2.4	-1.7		-1.7	-1.3	
of which: contribution from average real interest rate	0.1	0.0	0.1			-0.1	0.1	0.0	0.0	-0.8	-0.1		-0.1	0.2	
of which: contribution from real GDP growth	-1.0	-1.4	-0.8			0.5	-1.6	-1.9	-1.7	-1.6	-1.6		-1.6	-1.6	
Contribution from real exchange rate depreciation	-1.8	1.5	-0.8			0.6	-0.3	0.0	0.0	0.7	-0.1		...	...	
Other identified debt-creating flows	-5.6	-0.7	-1.1			-0.9	-0.6	-0.7	-0.7	-0.7	-0.7		-0.7	-0.7	
Privatization receipts (negative)	-4.3	0.0	0.0			-0.6	-0.4	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)	-1.4	-0.7	-1.1			-0.2	-0.2	-0.7	-0.7	-0.7	-0.7		-0.7	-0.7	
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	6.5	2.3	3.7			0.4	-0.6	0.5	0.5	0.5	0.5		0.8	0.7	
Other Sustainability Indicators															
PV of public sector debt	...	...	26.4			28.6	27.7	27.3	27.1	27.0	26.8		26.8	26.6	
of which: foreign-currency denominated	...	...	21.6			23.6	23.0	23.0	23.1	23.2	23.3		24.4	25.4	
of which: external	...	...	21.6			23.6	23.0	23.0	23.1	23.2	23.3		24.4	25.4	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	4.8	4.2	6.2			5.5	5.4	5.2	5.0	4.8	4.6		3.9	3.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	125.0			157.2	144.6	127.9	126.2	125.2	123.9		122.0	110.8	
PV of public sector debt-to-revenue ratio (in percent)	...	...	153.0			163.6	153.3	150.3	148.2	146.8	145.2		142.7	127.7	
of which: external 3/	...	...	125.6			134.7	127.2	126.4	126.1	126.3	126.2		129.6	122.0	
Debt service-to-revenue and grants ratio (in percent) 4/	1.7	6.3	9.8			9.4	8.3	7.1	6.7	6.3	6.0		4.7	3.0	
Debt service-to-revenue ratio (in percent) 4/	2.2	7.3	12.0			9.8	8.7	8.3	7.8	7.4	7.0		5.5	3.4	
Primary deficit that stabilizes the debt-to-GDP ratio	1.8	-1.7	-1.1			-0.5	3.0	2.0	1.9	1.7	1.9		1.7	2.0	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	4.5	5.8	2.7	4.8	1.6	-1.5	4.8	5.8	5.3	5.0	5.0	4.1	5.0	4.9	5.0
Average nominal interest rate on forex debt (in percent)	1.6	0.7	1.2	1.3	0.4	1.3	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
Average real interest rate on domestic debt (in percent)	0.9	2.5	1.7	0.2	3.1	-1.6	3.2	1.5	1.5	1.5	1.3	1.2	1.3	1.0	1.3
Real exchange rate depreciation (in percent, + indicates depreciation)	-9.1	6.9	-3.2	-4.8	9.2	2.0	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	3.6	4.2	4.9	3.7	3.1	5.9	2.7	2.2	2.2	2.2	2.4	2.9	2.4	2.7	2.4
Growth of real primary spending (deflated by GDP deflator, in percent)	28.3	-7.3	10.9	7.1	11.3	-19.6	10.7	17.2	5.9	5.5	5.2	4.2	5.5	6.4	5.7
Grant element of new external borrowing (in percent)	...	...	...	...	...	25.8	26.2	26.5	26.9	26.9	26.9	26.6	26.9	26.9	...

Sources: Country authorities; and 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 2b.Mali: Sensitivity Analysis for Key Indicators of Public Debt 2012-2032

	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
PV of Debt-to-GDP Ratio								
Baseline	29	28	27	27	27	27	27	27
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	29	28	29	29	29	30	31	33
A2. Primary balance is unchanged from 2012	29	28	27	27	26	26	25	24
A3. Permanently lower GDP growth 1/	29	28	28	28	28	28	30	37
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	29	28	29	30	30	30	33	36
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	29	29	30	29	29	29	29	28
B3. Combination of B1-B2 using one half standard deviation shocks	29	29	30	30	30	30	31	33
B4. One-time 30 percent real depreciation in 2013	29	37	36	35	35	34	31	28
B5. 10 percent of GDP increase in other debt-creating flows in 2013	29	36	35	34	34	34	32	30
PV of Debt-to-Revenue Ratio 2/								
Baseline	157	145	128	126	125	124	122	111
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	157	147	134	135	136	137	142	139
A2. Primary balance is unchanged from 2012	157	144	126	124	122	120	115	99
A3. Permanently lower GDP growth 1/	157	145	129	129	129	129	137	153
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	157	148	136	137	139	140	148	149
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	157	151	139	137	136	134	130	115
B3. Combination of B1-B2 using one half standard deviation shocks	157	150	139	138	139	139	142	137
B4. One-time 30 percent real depreciation in 2013	157	195	169	164	160	156	143	119
B5. 10 percent of GDP increase in other debt-creating flows in 2013	157	187	164	161	158	155	146	124
Debt Service-to-Revenue Ratio 2/								
Baseline	9	8	7	7	6	6	5	3
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	9	9	7	7	7	6	5	4
A2. Primary balance is unchanged from 2012	9	9	7	7	6	6	5	3
A3. Permanently lower GDP growth 1/	9	9	7	7	6	6	5	4
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	9	9	7	7	7	6	5	4
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	9	9	7	7	7	6	5	3
B3. Combination of B1-B2 using one half standard deviation shocks	9	9	7	7	7	6	5	4
B4. One-time 30 percent real depreciation in 2013	9	10	9	8	8	8	6	4
B5. 10 percent of GDP increase in other debt-creating flows in 2013	9	9	8	8	7	7	6	4

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.