INTERNATONAL MONETARY FUND

INTERNATIONAL DEVELOPMENT ASSOCIATION

SIERRA LEONE

Joint IMF/World Bank Debt Sustainability Analysis

Prepared by the Staffs of the International Monetary Fund
And the International Development Association

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The Joint World Bank-IMF staff's debt sustainability analysis for low-income countries (LIC-DSA) shows that the risk of debt distress continues to be moderate for Sierra Leone.[1] *Under the baseline scenario, all external debt indicators are below their policy-dependent indicative thresholds*[2] *throughout the projection period (2012–32). The analysis indicates that the medium- to long-term debt outlook is vulnerable to adverse shocks to several macroeconomic variables notably growth, exports, inflation, FDI inflows and the fiscal primary balance. This underscores the need to sustain fiscal consolidation efforts, remove impediments to growth, enhance export diversification, and maintain prudent borrowing policies.*

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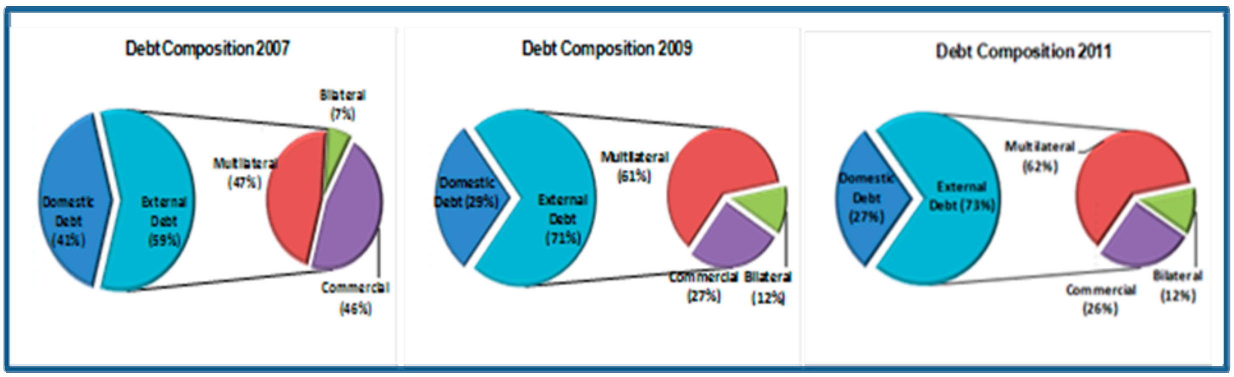
[1] This DSA was prepared by the IMF and World Bank staff using the debt sustainability framework for low-income countries (LIC DSF) approved by the Boards of both institutions.

[2] Sierra Leone is a weak performer under the World Bank's Country Policy and Institutional Assessment (CPIA) classification, with an average rating of 3.19 for 2008–10. As a weak performer, the debt and debt service thresholds under the joint IMF-WB DSA framework for LICs applied to Sierra Leone are: (i) 100 percent for the Present Value (PV) of debt-to-exports; (ii) 30 percent for the PV of debt-to-GDP; and (iii) 200 percent for the PV of debt-to-revenue. The relevant debt service thresholds are (i) 15 percent of exports; and (ii) 18 percent of revenue.

I. Background and Assumptions

1. **The nominal stock of public and publicly guaranteed external debt[3] amounted to US$ 0.9 billion at end-2011**. Multilateral creditors accounted for about 62 percent of the stock, while bilateral and commercial creditors accounted for 12 and 26 percent respectively. Figure 1 and Table 1 below show the composition of the stock of debt for 2007–11. Debt to commercial creditors consists of arrears accumulated before and during the civil war that ended in 2002. The authorities have been making goodwill payments to some commercial creditors to avoid litigation.[4]

Text Figure 1. Sierra Leone: Composition of Public Debt, 2007–11



Text Table 1. Sierra Leone: Debt Stock Evolution, 2007–11
(In indicated units)

	2007	2008	2009	2010	2011
			In million USD		
Domestic Debt	390.4	428.7	364.8	342.8	326.7
External Debt	552.3	620.2	896.3	881.5	866.1
Multilateral	258.6	326.0	550.2	545.1	535.0
Bilateral	38.8	48.3	106.2	105.2	104.3
Commercial	254.9	245.9	239.9	231.2	226.7
TOTAL DEBT	942.7	1048.9	1261.1	1224.3	1192.8

[3] Public sector refers to the Central Government and non-financial public sector.

[4] Commercial debt comprises US$226.7 million of un-reconciled debt, accumulated before and during the civil war. The government is making good faith efforts to resolve arrears to commercial creditors, and has been making goodwill payments to avoid litigation. It is anticipated that a debt-buy-back operation will be initiated in the period ahead with support from the World Bank.

Text Table 1. Sierra Leone: Debt Stock Evolution, 2007–11
(In indicated units) (concluded)

	2007	2008	2009	2010	2011
			In percent of GDP		
Domestic Debt	18.4	17.5	15.2	13.8	11.1
External Debt	25.9	25.8	36.9	32.3	29.9
Multilateral	12.2	13.3	23.0	21.4	18.4
Bilateral	1.8	2.0	4.4	4.1	3.6
Commercial	12.0	10.0	10.0	9.1	7.8

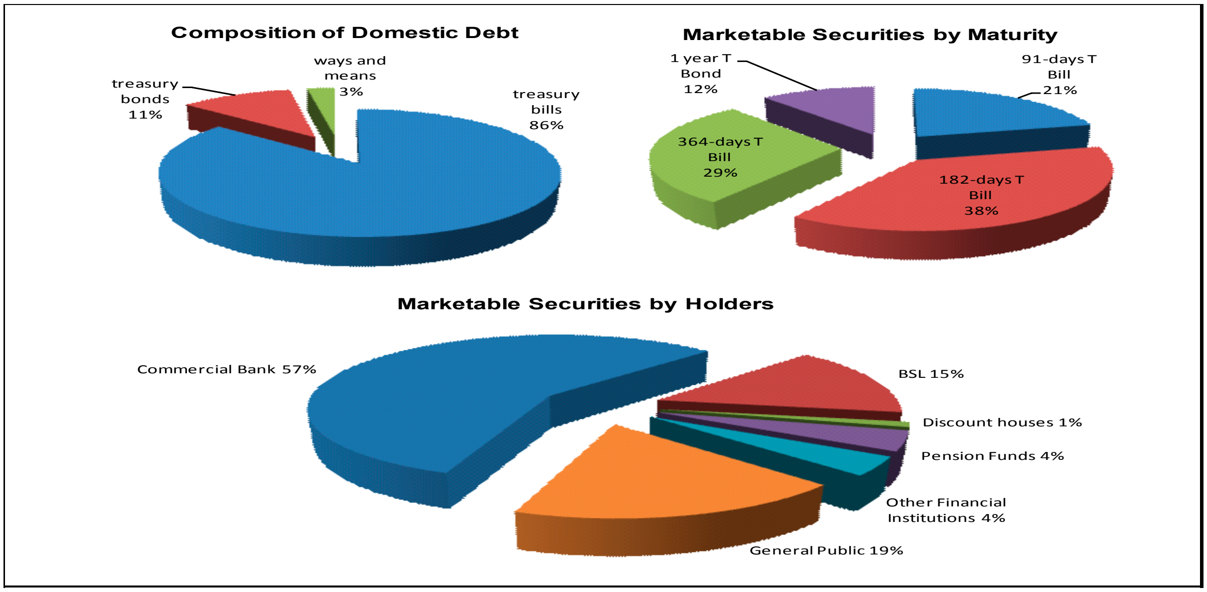
Source: Sierra Leone Authorities.

2. **Substantial debt relief in recent years has reduced Sierra Leone's debt burden.** Public sector nominal external debt declined from 142 percent of GDP at end-2005 to about 26 percent of GDP at end-2007, thanks to HIPC and MDRI debt relief.[5] It has since remained near that level, totaling about 30 percent of GDP at end-2011; and 125 percent of exports in present value (PV) terms. In 2011, debt service amounted to 1.5 percent of exports and 2 percent of government revenue.

3. **Domestic debt amounted to 11 percent of GDP at end-2011**. Government marketable securities accounted for about 67 percent of the stock, and the balance comprised the Government's overdraft facility at the BSL (Ways and Means advances) and domestic payments arrears. The stock of marketable securities increased by 6 percent in 2011, emanating mainly from the conversion of the 2010 stock of Ways and Means advances into marketable securities, particularly 182 day and 364 day treasury bills. Commercial banks, other financial institutions, and the pension fund, accounted for about 66 percent of total marketable securities. The general public held 19 percent and the balance was held by BSL. In 2011, domestic interest payments increased by 58 percent compared with 2010 because of the rise in average interest rate and the conversion of the 2010 stock of Ways and Means Advances. Although the stock of domestic debt declined in the last two years, its maturity structure, with some 78 percent in short-term securities, highlights significant rollover and refinancing risk.

[5] Sierra Leone has received debt relief under the MDRI Initiatives from the IMF, IDA, AfDB, EIB, IFAD, BADEA, IDB, and OPEC Fund. Under the HIPC Initiative, bilateral agreements have been signed with all participating creditors, except China, Kuwait, and Saudi Arabia.

Text Figure 2. Sierra Leone: Domestic Debt Stock, 2011



4. **The analysis in this report is based on the macroeconomic framework underlying the current ECF-supported program, and updates the 2010 DSA**[6]. The assumptions have been updated to take into account recent developments, notably the onset of iron ore production and exports in 2011/12. In addition, the previous DSA was based on the debt stock at end-2009, while the current DSA is based on the stock at end-2011. Medium- to long-term projections for the stock of debt reflect the authorities' resolve to scale up infrastructure investment and boost growth, while resorting mostly to grants and concessional borrowing to safeguard long-term debt sustainability. Regarding commercial debt, the external commercial debt buy-back, which the 2010 DSA assumed to take place in 2011, was not completed. Recently, the World Bank and the authorities reinitiated the preparation of a World Bank supported buyback operation.

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[6] IMF Country Report No. 10/370.

Comparison with the 2010 DSA

(Averages in percent of current GDP unless indicated)

	2011	2012-16		2017-21		2022-26		2027-29	
	Actual	DSA10	DSA12	DSA10	DSA12	DSA10	DSA12	DSA10	DSA12
Stock of external debt (eop, US$ million)	866.1	869.0	1227.7	28.8	1715.1	27.8	2436.5	27.3	2961.9
Stock of external debt (eop , percent of G	29.9	29.3	23.3	28.8	23.2	27.8	23.5	27.3	23.2
Debt service on external debt	0.7	3.4	3.8	3.8	5.0	6.1	6.4	7.4	9.9
Exports of goods and nonfactor services	15.3	21.4	35.6	24.8	32.4	28.7	29.8	31.0	28.5
Current account deficit	52.3	5.7	8.4	5.1	6.8	4.9	6.3	5.1	5.8
Primary deficit	2.7	2.0	1.2	1.5	1.6	1.5	1.3	1.9	1.1
Domestic government revenue	11.5	14.3	10.2	15.3	10.8	16.1	11.5	16.4	12.1
Domestic debt	11.1	10.8	9.2	9.7	12.0	8.4	14.9	8.2	16.4
Real GDP growth (percent)	6.0	5.0	10.3	5.0	5.1	5.0	5.3	5.0	5.4

Sources: Sierra Leone authorities; and staff projections.

5. **The baseline macroeconomic assumptions underlying this DSA are summarized in Box 1**. They reflect the following:

- *Strong growth prospects*. Agriculture, mining, and services, as well as public investment in infrastructure remain the key drivers of economic growth under both DSAs. The non-iron ore economic growth projection remains at 6 percent in the long term, partly reflecting the expected increase in productivity in the agriculture sector, the impact of downstream activities from the Tonkilili iron ore project, and higher infrastructure investment. The current projections exclude iron ore production under phases II and III of the Tonkolili iron ore project, pending updated information on the scope of planned investment and commencement of operations.[7]

- *Improved fiscal position.* Government revenue is forecast to be higher than under the 2010 DSA on account of fiscal and tax administration reforms, stronger economic growth, and additional revenue from iron ore exports. PFM reforms are expected to enhance expenditure and treasury cash-flow management.

- *Price stability.* Monetary policy would continue to support price stability. In addition, continued adherence to the 2011 reform on government financing from the Central Bank[8] is expected to enhance coordination between monetary and fiscal policy and support macroeconomic stability in the medium term.

- *Improved external position in the long term*. Although import growth is forecast to remain strong given higher investment and domestic demand, the current account is set to benefit from increased exports of agriculture and extractive industries. In addition, the exchange rate policy is expected to remain flexible and facilitate adjustment to adverse exogenous shocks.

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[7] IMF Country Report No. 11/361.

[8] IMF Country Report No. 11/361.

Box 1. Baseline Macroeconomic Assumptions

Economic growth. Real GDP is projected to increase from 6 percent in 2011 to 21.3 percent in 2012 mainly on account of iron ore production. After this initial upshot, economic growth is projected to decelerate somewhat in 2013–17, and average 5.3 percent a year during 2018–32. Economic growth would be supported by the authorities' policies to consolidate macroeconomic stability, support productivity gains in agriculture, scale-up infrastructure investment, and create a business-friendly environment. Downside risks to the outlook include terms of trade shocks and a global economic slowdown. On the upside, additional investment in the extractive industries, notably iron ore and oil would enhance long-term growth prospects.

Inflation. Continued prudent monetary and fiscal policies are expected to support price stabilization. Average inflation is forecast to decline from 18.5 percent in 2011, to about 4.8 percent in 2017 and remain below 5 percent thereafter.

External current account. The external position is expected to strengthen. Exports are projected to surge almost 200 percent in 2012 on account of production expansion in the extractive industries. Under the current conservative assumptions for iron ore production, export growth is expected to stabilize at an average growth rate of 5.7 percent over the long run. That notwithstanding, the current account deficit is forecast to narrow from 52.3 percent of non-iron ore GDP in 2011 to 7.2 percent of non-iron ore GDP in 2017, and 4.8 percent in 2032. Import growth remains around 6 percent, slightly higher than non- iron ore GDP, and terms of trade are expected to improve slightly.

Fiscal position. Continued PFM reforms and revenue-enhancing measures are expected to improve the fiscal position over the long-term. The primary deficit is projected to narrow from 3.8 percent of non-iron ore GDP in 2011 and stabilize at 2.7 percent by 2017. Government revenue is forecast to increase from 11.5 percent of non-iron ore GDP in 2011 to 13.1 percent by 2032, while expenditure is projected to stabilize around 20 percent of non-iron ore GDP, with an increasing share allocated to domestically financing capital outlays.

External financing. To preserve long-term debt sustainability, financing needs would continue to be covered mainly through grants and highly concessional loans. The grant element of new borrowing is expected to remain above 35 percent.

Domestic debt. Domestic debt is projected to increase from 11.1 percent of GDP in 2011 to 17.7 percent in 2032, as the financial sector develops and allows for mobilization of domestic resources. The real interest rate in the securities market is forecast to increase, mostly reflecting the projected decline in inflation.

II. External Debt Sustainability

Baseline

6. **Under the baseline scenario, all debt indicators remain below the policy-dependent indicative thresholds** (Table 1 and Figure 1). The nominal external debt stock is forecast to increase over time, but, as a share of GDP, it stabilizes at about 23 percent over the long run mainly reflecting prudent borrowing policies. In PV terms, the debt-to-GDP ratio is projected to remain in the 15–17 percent range, while the PV of debt-to-exports ratio is expected to rise from about 47 percent in 2012 to some 60 percent in 2032, in line with the projected deceleration in export growth, while remaining below the indicative threshold. The PV of debt-to-revenue ratio is projected to decline slightly in 2012–17 before stabilizing in the long-term. Debt service ratios point to low liquidity risk as they are projected to remain significantly below their relevant policy-dependent indicative thresholds.

Alternative scenario and stress tests

7. **DSA results highlight Sierra Leone's vulnerability to adverse exogenous shocks affecting exports, exchange rate, real growth and non-debt creating flows** (Table 2a and Figure 1). Stress tests show that the most extreme shock is represented by the combination shocks with respect to the PV of debt-to-revenue[9] and lower export value growth[10] with respect to the PV of debt-to-exports. The latter indicator stays below its threshold throughout the projection period. Regarding the PV of debt-to-revenue, the threshold is breached in the medium term for more than one of the bound tests. Under the combination shocks, the PV of debt-to-revenue would rise from 152 percent in 2012 to 258 percent by 2014, before declining below the threshold to 163 percent in 2032. A one-time 30 percent nominal depreciation in 2013 would also lead to a temporary breach of the PV of debt-to-revenue threshold. Under an alternative scenario assuming less favorable borrowing terms,[11] all debt indicators increase over the long run while remaining below the policy-dependent indicative thresholds.

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[9] Mechanically, the DSA templates identifies net non-debt creating flows as the most extreme shock. However, this shock represents a sudden outflow of non-debt creating flows (FDI, official transfers, and remittances) equal to 12.8 percent of GDP. Since such a scenario is unlikely, the DSA results for the most extreme shock are based on a combination of lower GDP growth, export value growth, US dollar GDP deflator, and net non-debt creating flows.

[10] Exports value growth at historical average minus one standard deviation in 2013–14.

[11] This scenario assumes that the interest rate on new borrowing is 200 basis points higher than in the baseline scenario, while the grace period and the maturity are the same as in the baseline scenario.

III. PUBLIC SECTOR DEBT SUSTAINABILITY

Baseline

8. **DSA results for public sector debt mirrors those of external debt** (Table 3). The stock of public debt is forecast to fall from 41 percent of GDP in 2011 to 34 percent in 2017, and to stabilize around 40 percent over the long run. The outlook shows a similar trend compared to the previous DSA, although the ratios are lower, consistent with the projected fiscal outlook. Domestic debt accumulation is expected to remain moderate, rising from 11 percent of GDP in 2011 to 18 percent of GDP over the long term. As the investor base broadens, the long-term fiscal projections assume that the domestic market can absorb about half of the public sector borrowing requirements at a sustainable interest cost. While this would be in line with expected progress under the financial sector development plan and improved fiscal management, domestic public debt needs to be carefully managed to avoid jeopardizing public debt sustainability.

Alternative scenario and stress tests

9. **Stress tests point to vulnerability to permanently lower GDP growth, a high primary fiscal deficit, and a large exchange rate shock** (Table 4 and Figure 2). Under an alternative scenario assuming permanently lower GDP growth,[12] the PV of public debt-to-GDP ratio, as well as the PV of public debt-to-revenue ratio, would increase continuously over the long term. The former would reach 59 percent by 2032 (34 percent in the baseline scenario), while the latter would rise from 218 percent in the baseline scenario to 363 percent at the end of the projection period. The results also show that the public debt outlook is vulnerable to adverse fiscal and exchange rate shocks. The PV of public debt ratios would rapidly and continuously increase in case of temporary shock to the primary fiscal balance.[13] Similarly, a one-time 30 percent real depreciation in 2013 would result in a deterioration of the debt ratios. These results underscore the importance of fiscal consolidation, and continued implementation of growth-enhancing policies.

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[12] This scenario assumes that real GDP growth is at baseline minus one standard deviation in 2013–14.

[13] Assuming that the primary balance is at its 10-year historical average minus one standard deviation in 2013–14.

IV. CONCLUSIONS

10. **The results of debt sustainability analysis based on the LIC-DSA framework indicate that the risk of debt distress remains moderate for Sierra Leone**. Under the baseline scenario, all debt indicators remain below their respective policy-dependent indicative thresholds. However, sensitivity analysis shows that the long-term debt outlook is vulnerable to various shocks: adverse fiscal and exchange rate developments, lower exports and growth, as well as reduced FDI inflows and less favorable borrowing conditions.[14] Consequently, to preserve long-term debt sustainability it will be important to sustain fiscal consolidation efforts, implement growth-enhancing policies, promote export diversification, and maintain prudent borrowing policies. The authorities agree with the staff's assessment.

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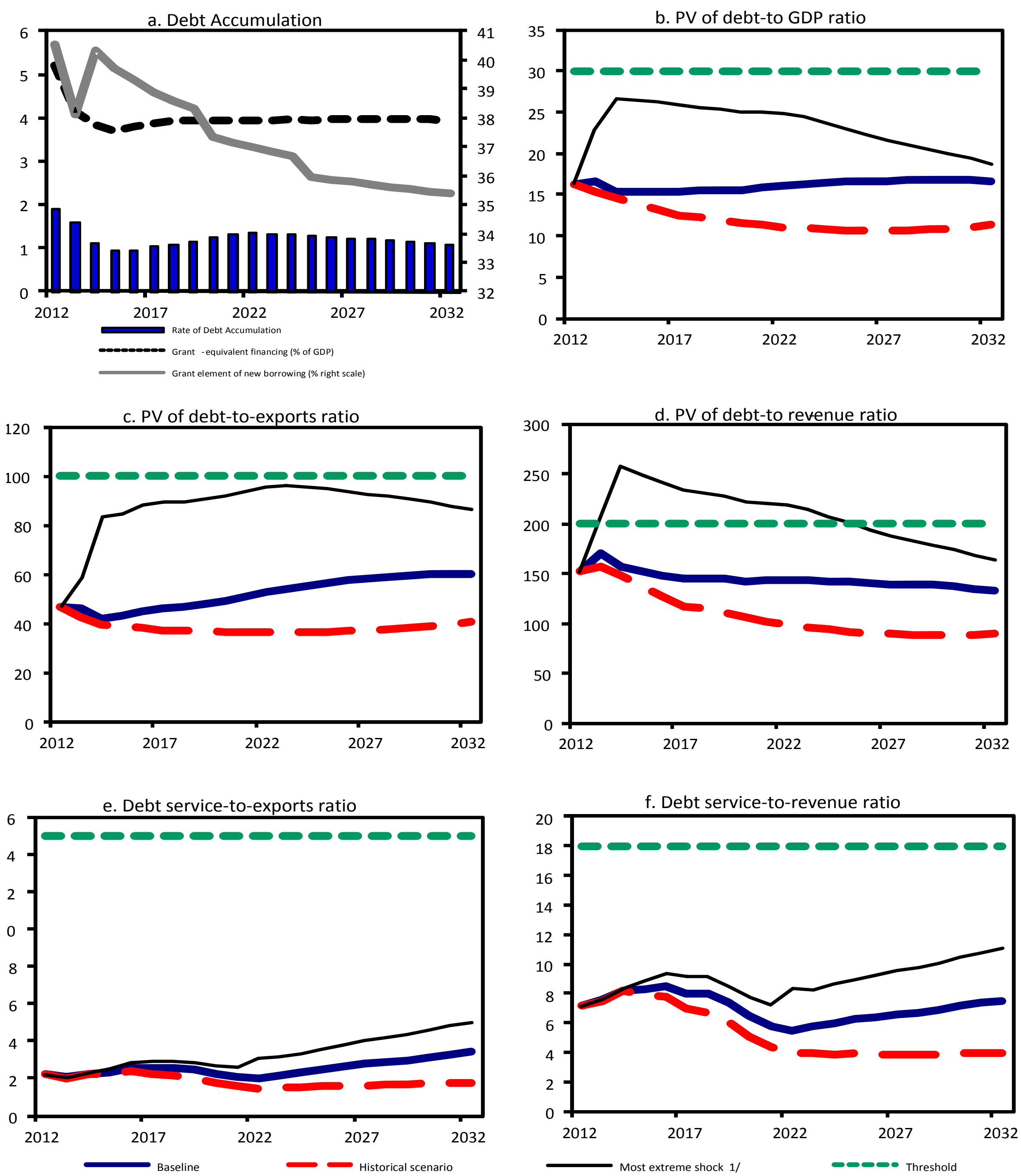
[14] The most extreme downside scenario with respect to external debt is generated with simulated combinations shocks, driven by growth, exports, and non-debt creating flows.

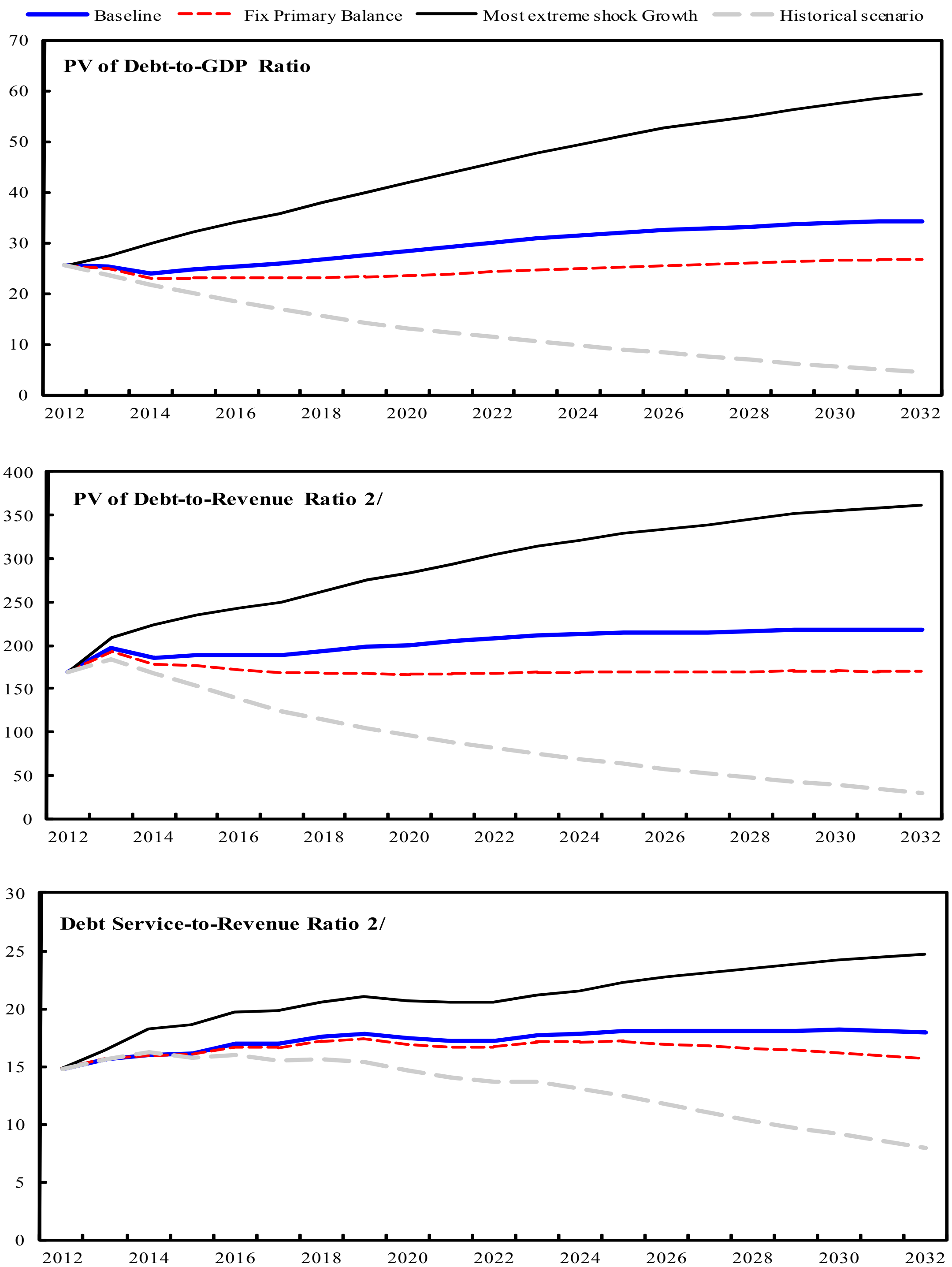
Figure 1. Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2012–32 1/



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 Non-debt flows shock; in c. to a Exports shock; in d. to a Combination shock; in e. to a Terms of trade shock and in figure f. to a Terms of trade shock

Figure 2. Indicators of Public Debt under Alternative Scenarios, 2012–32[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 1.: External Debt Sustainability Framework, Baseline Scenario, 2009-2032 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/	Standard 6/	Projections									
				Average	Deviation							2012-2017			2018-2032
	2009	2010	2011			2012	2013	2014	2015	2016	2017	Average	2022	2032	Average
External debt (nominal) 1/	**32.6**	**32.3**	**29.9**			**25.2**	**25.4**	**23.5**	**23.4**	**23.3**	**23.2**		**23.3**	**22.8**	
o/w public and publicly guaranteed (PPG)	32.6	32.3	29.9			25.2	25.4	23.5	23.4	23.3	23.2		23.3	22.8	
Change in external debt	7.3	-0.3	-2.5			-4.6	0.2	-1.9	-0.1	-0.1	-0.1		0.1	-0.2	
Identified net debt-creating flows	3.9	-0.1	6.0			-2.4	1.0	-0.7	0.8	1.3	1.3		1.2	0.1	
Non-interest current account deficit	**6.3**	**19.2**	**52.2**	**10.2**	**15.7**	**12.9**	**9.1**	**6.5**	**6.2**	**6.5**	**6.4**		**6.6**	**4.4**	5.9
Deficit in balance of goods and services	10.4	24.6	55.6			14.0	11.2	8.6	7.9	8.4	8.5		9.2	7.4	
Exports	13.5	16.6	15.3			34.8	36.0	36.8	36.0	34.2	33.4		30.6	27.8	
Imports	23.9	41.2	70.9			48.8	47.2	45.4	43.9	42.7	42.0		39.8	35.2	
Net current transfers (negative = inflow)	-5.4	-7.3	-5.7	-7.6	3.1	-4.4	-4.2	-4.4	-4.4	-4.4	-4.5		-4.5	-3.6	-4.0
o/w official	-3.5	-5.2	-2.4			-1.2	-1.0	-1.2	-1.2	-1.2	-1.2		-1.2	-0.3	
Other current account flows (negative = net inflow)	1.3	1.8	2.2			3.2	2.1	2.4	2.8	2.6	2.4		1.9	0.6	
Net FDI (negative = inflow)	**-3.1**	**-17.5**	**-42.3**	**-8.4**	**12.8**	**-10.6**	**-6.5**	**-4.5**	**-4.5**	**-4.4**	**-4.2**		**-4.4**	**-3.4**	-4.1
Endogenous debt dynamics 2/	**0.6**	**-1.7**	**-3.9**			**-4.7**	**-1.6**	**-2.7**	**-0.9**	**-0.9**	**-0.9**		**-0.9**	**-1.0**	
Contribution from nominal interest rate	0.1	0.2	0.1			0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Contribution from real GDP growth	-0.8	-1.6	-1.7			-4.8	-1.8	-2.9	-1.1	-1.1	-1.1		-1.1	-1.2	
Contribution from price and exchange rate changes	1.3	-0.3	-2.4			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**3.4**	**-0.2**	**-8.4**			**-2.2**	**-0.9**	**-1.2**	**-0.9**	**-1.4**	**-1.4**		**-1.1**	**-0.3**	
o/w exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	19.1			16.2	16.5	15.4	15.4	15.4	15.4		16.1	16.6	
In percent of exports	...	...	125.3			46.7	45.9	41.8	42.8	44.9	45.9		52.5	59.9	
PV of PPG external debt	**...**	**...**	**19.1**			**16.2**	**16.5**	**15.4**	**15.4**	**15.4**	**15.4**		**16.1**	**16.6**	
In percent of exports	**...**	**...**	**125.3**			**46.7**	**45.9**	**41.8**	**42.8**	**44.9**	**45.9**		**52.5**	**59.9**	
In percent of government revenues	**...**	**...**	**166.1**			**148.8**	**169.5**	**156.2**	**151.5**	**147.9**	**144.3**		**143.5**	**132.2**	
Debt service-to-exports ratio (in percent)	**4.3**	**3.3**	**1.5**			**2.2**	**2.1**	**2.2**	**2.3**	**2.6**	**2.5**		**2.0**	**3.4**	
PPG debt service-to-exports ratio (in percent)	**4.3**	**3.3**	**1.5**			**2.2**	**2.1**	**2.2**	**2.3**	**2.6**	**2.5**		**2.0**	**3.4**	
PPG debt service-to-revenue ratio (in percent)	**6.4**	**5.5**	**2.0**			**7.0**	**7.6**	**8.2**	**8.3**	**8.5**	**8.0**		**5.4**	**7.5**	
Total gross financing need (Billions of U.S. dollars)	0.3	0.1	0.3			0.1	0.1	0.1	0.1	0.2	0.2		0.2	0.3	
Non-interest current account deficit that stabilizes debt ratio	-1.0	19.5	54.7			17.5	9.0	8.4	6.3	6.7	6.5		6.4	4.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	3.2	5.3	6.0	7.9	6.8	21.3	7.5	13.0	4.9	4.9	5.0	9.4	5.2	5.5	5.3
GDP deflator in US dollar terms (change in percent)	-5.0	0.9	7.9	2.8	6.7	8.2	0.8	1.4	0.9	1.4	1.8	2.4	1.8	1.7	1.7
Effective interest rate (percent) 5/	0.5	0.5	0.4	1.0	0.5	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.9	0.9	0.9
Growth of exports of G&S (US dollar terms, in percent)	-3.4	30.6	5.2	14.0	14.3	198.7	12.1	17.3	3.4	1.3	4.4	39.5	5.4	6.5	5.7
Growth of imports of G&S (US dollar terms, in percent)	-3.6	83.2	96.5	26.2	35.8	-9.6	4.7	10.2	2.3	3.4	5.1	2.7	5.5	5.6	5.8
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	40.5	38.1	40.4	39.7	39.3	38.9	39.5	37.0	35.4	36.5
Government revenues (excluding grants, in percent of GDP)	9.2	9.9	11.5			10.9	9.7	9.8	10.2	10.4	10.6		11.2	12.6	11.6
Aid flows (in Billions of US dollars) 7/	0.2	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.2		0.3	0.6	
o/w Grants	0.1	0.1	0.2			0.2	0.1	0.1	0.1	0.2	0.2		0.3	0.5	
o/w Concessional loans	0.1	0.1	0.0			0.0	0.0	0.0	0.0	0.0	0.1		0.1	0.1	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			5.2	4.1	3.8	3.7	3.8	3.9		4.0	3.9	4.0
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			76.2	71.9	76.0	76.1	75.9	75.7		75.2	74.6	75.1
Memorandum items:															
Nominal GDP (Billions of US dollars)	2.4	2.5	2.9			3.8	4.1	4.8	5.0	5.3	5.7		8.0	15.9	
Nominal dollar GDP growth	-1.9	6.2	14.4			31.2	8.4	14.7	5.8	6.4	6.8	12.2	7.0	7.3	7.1
PV of PPG external debt (in Billions of US dollars)			0.6			0.6	0.7	0.7	0.8	0.8	0.9		1.3	2.6	
(PVt-PVt-1)/GDPt-1 (in percent)						1.9	1.6	1.1	0.9	0.9	1.0	1.3	1.4	1.1	1.2
Gross workers' remittances (Billions of US dollars)	0.0	0.0	0.1			0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.3	
PV of PPG external debt (in percent of GDP + remittances)	...	...	18.8			16.0	16.2	15.1	15.1	15.1	15.1		15.8	16.3	
PV of PPG external debt (in percent of exports + remittances)	...	...	111.9			44.4	43.7	39.8	40.7	42.6	43.5		49.5	56.2	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	1.4			2.1	2.0	2.1	2.2	2.5	2.4		1.9	3.2	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

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 project grants (1.5 to 3 percent of GDP annualy), exceptional financing (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 2a.Sierra Leone: 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	16	17	15	15	15	15	**16**	17
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	16	15	15	14	13	12	**11**	11
A2. New public sector loans on less favorable terms in 2012-2032 2	16	17	16	17	17	18	**20**	24
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	16	17	18	18	18	18	**19**	19
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	16	19	23	23	23	22	**22**	18
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	16	17	17	17	17	17	**17**	18
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	16	23	27	26	26	26	**25**	19
B5. Combination of B1-B4 using one-half standard deviation shocks	16	20	25	25	25	25	**24**	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	16	23	21	22	22	22	**23**	23
PV of debt-to-exports ratio								
Baseline	47	46	42	43	45	46	**52**	60
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	47	42	39	39	38	37	**36**	41
A2. New public sector loans on less favorable terms in 2012-2032 2	47	47	44	47	50	53	**67**	86
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	47	45	41	42	44	45	**52**	59
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	47	59	83	85	88	89	**95**	86
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	47	45	41	42	44	45	**52**	59
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	47	64	73	74	76	77	**81**	67
B5. Combination of B1-B4 using one-half standard deviation shocks	47	56	69	70	73	74	**80**	74
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	47	45	41	42	44	45	**52**	59
PV of debt-to-revenue ratio								
Baseline	152	170	156	152	148	144	**143**	132
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	152	157	148	137	126	117	**99**	90
A2. New public sector loans on less favorable terms in 2012-2032 2	152	173	165	165	166	166	**182**	189
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	152	177	182	177	173	169	**168**	155
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	152	192	235	226	219	211	**197**	143
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	152	174	169	165	161	157	**156**	144
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	152	235	271	261	252	243	**222**	149
B5. Combination of B1-B4 using one-half standard deviation shocks	152	205	258	248	241	233	**218**	163
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	152	237	218	212	207	202	**201**	185

Table 2b.Sierra Leone: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012-2032 (continued)
(In percent)

	Projections							
	2012	2013	2014	2015	2016	2017	**2022**	2032
Debt service-to-exports ratio								
Baseline	2	2	2	2	3	3	**2**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	2	2	2	2	2	2	**1**	2
A2. New public sector loans on less favorable terms in 2012-2032 2	2	2	2	2	3	3	**3**	5
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	2	2	2	2	3	3	**2**	3
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	2	2	3	4	4	4	**3**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	2	2	2	2	3	3	**2**	3
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	2	2	2	3	3	3	**2**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	2	2	3	3	3	3	**3**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	2	2	2	2	3	3	**2**	3
Debt service-to-revenue ratio								
Baseline	7	8	8	8	9	8	**5**	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	7	7	8	8	8	7	**4**	4
A2. New public sector loans on less favorable terms in 2012-2032 2	7	8	8	9	9	9	**8**	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	7	8	10	10	10	10	**6**	9
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	7	8	9	9	10	9	**6**	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	7	8	9	9	9	9	**6**	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	7	8	9	10	10	9	**6**	11
B5. Combination of B1-B4 using one-half standard deviation shocks	7	8	10	11	11	10	**7**	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	7	11	12	12	12	11	**8**	11
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	37	37	37	37	37	37	**37**	37

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 3.Sierra Leone: Public Sector Debt Sustainability Framework, Baseline Scenario, 2009-2032
(In percent of GDP, unless otherwise indicated)

	Actual			Average 5/	Standard Deviation 5/	Estimate	Projections								
	2009	2010	2011			2012	2013	2014	2015	2016	2017	2012-17 Average	2022	2032	2018-32 Average
Public sector debt 1/	47.8	46.5	41.1			34.6	34.4	32.3	33.0	33.6	34.1		37.4	40.5	
o/w foreign-currency denominated	33.3	32.7	30.0			25.3	25.4	23.5	23.4	23.3	23.2		23.3	22.8	
Change in public sector debt	5.0	-1.3	-5.4			-6.5	-0.2	-2.1	0.7	0.6	0.5		0.7	0.0	
Identified debt-creating flows	3.8	-2.0	-4.3			-8.6	-0.5	-1.9	0.9	0.9	0.8		0.8	-0.1	
Primary deficit	1.3	3.6	2.7	-1.5	7.7	0.6	1.1	1.4	1.6	1.6	1.6	1.3	1.5	1.0	1.3
Revenue and grants	15.3	15.3	17.1			14.8	12.9	12.9	13.1	13.4	13.7		14.4	15.8	
of which: grants	6.1	5.3	5.6			4.1	3.1	3.0	2.9	3.0	3.1		3.2	3.2	
Primary (noninterest) expenditure	16.5	18.9	19.8			15.5	14.0	14.2	14.6	15.0	15.3		15.9	16.8	
Automatic debt dynamics	3.0	-5.4	-6.3			-8.1	-1.5	-3.3	-0.6	-0.7	-0.7		-0.7	-1.1	
Contribution from interest rate/growth differential	-1.6	-3.3	-3.3			-6.9	-1.7	-3.2	-0.7	-0.7	-0.7		-0.7	-1.1	
of which: contribution from average real interest rate	-0.2	-0.9	-0.7			0.3	0.8	0.7	0.8	0.8	0.9		1.1	1.0	
of which: contribution from real GDP growth	-1.3	-2.4	-2.6			-7.2	-2.4	-4.0	-1.5	-1.5	-1.6		-1.8	-2.1	
Contribution from real exchange rate depreciation	4.6	-2.1	-2.9			-1.2	0.2	0.0	0.1	0.0	0.0		...	...	
Other identified debt-creating flows	-0.4	-0.2	-0.7			-1.1	-0.2	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.1	0.0	-0.3			-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	0.0	
Debt relief (HIPC and other)	-0.3	-0.2	-0.5			-0.9	-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	0.0	
Residual, including asset changes	1.1	0.7	-1.0			2.0	0.4	-0.2	-0.3	-0.3	-0.3		-0.1	0.1	
Other Sustainability Indicators															
PV of public sector debt	...	...	30.4			25.6	25.5	24.2	24.9	25.6	26.3		30.1	34.3	
o/w foreign-currency denominated	...	...	19.3			16.3	16.5	15.4	15.4	15.4	15.4		16.1	16.6	
o/w external	...	...	19.1			16.2	16.5	15.4	15.4	15.4	15.4		16.1	16.6	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	13.2	5.5	4.7			2.8	3.2	3.5	3.7	3.9	3.9		4.0	3.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	…	…	177.8			172.7	198.3	187.9	190.5	191.4	191.2		209.5	217.9	
PV of public sector debt-to-revenue ratio (in percent)	…	…	264.0			239.0	262.3	245.5	245.3	246.9	246.8		269.2	272.8	
o/w external 3/	…	…	166.1			151.6	169.5	156.2	151.5	147.9	144.3		143.5	132.2	
Debt service-to-revenue and grants ratio (in percent) 4/	10.9	12.7	11.8			15.0	16.0	16.3	16.5	17.2	17.3		17.4	18.0	
Debt service-to-revenue ratio (in percent) 4/	18.3	19.6	17.5			20.7	21.1	21.2	21.2	22.2	22.3		22.3	22.5	
Primary deficit that stabilizes the debt-to-GDP ratio	-3.7	4.9	8.1			7.2	1.3	3.5	0.9	1.0	1.0		0.8	1.0	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	3.2	5.3	6.0	7.9	6.8	21.3	7.5	13.0	4.9	4.9	5.0	9.4	5.2	5.5	5.3
Average nominal interest rate on forex debt (in percent)	0.8	0.5	0.4	1.2	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.9	0.9	0.9
Average real interest rate on domestic debt (in percent)	-1.1	-5.1	-1.5	-1.8	3.8	6.3	10.9	11.0	11.4	11.3	10.9	10.3	10.2	6.9	9.2
Real exchange rate depreciation (in percent, + indicates depreciation)	18.0	-6.6	-9.7	-0.8	8.8	-4.7	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	8.6	17.9	17.9	11.1	6.6	10.6	4.5	5.3	4.4	4.6	4.8	5.7	4.8	4.7	4.7
Growth of real primary spending (deflated by GDP deflator, in percent)	0.1	0.2	0.1	0.1	0.2	-0.1	0.0	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	…	…	40.5	38.1	40.4	39.7	39.3	38.9	39.5	37.0	35.4	...

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 4.Sierra Leone: 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	26	26	24	25	26	26	30	34
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	26	24	22	20	19	17	11	4
A2. Primary balance is unchanged from 2012	26	25	23	24	24	24	25	28
A3. Permanently lower GDP growth 1/	26	26	25	26	28	29	40	66
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	26	28	30	32	34	36	46	59
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	26	29	30	30	31	31	35	37
B3. Combination of B1-B2 using one half standard deviation shocks	26	27	28	30	31	32	40	49
B4. One-time 30 percent real depreciation in 2013	26	32	30	30	30	30	33	36
B5. 10 percent of GDP increase in other debt-creating flows in 2013	26	32	30	30	31	31	34	37
PV of Debt-to-Revenue Ratio 2/								
Baseline	173	198	188	191	191	191	210	218
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	173	185	169	154	140	126	83	30
A2. Primary balance is unchanged from 2012	173	196	182	181	178	174	177	181
A3. Permanently lower GDP growth 1/	173	201	194	200	206	211	268	395
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	173	211	225	237	245	252	306	363
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	173	222	232	233	232	229	240	234
B3. Combination of B1-B2 using one half standard deviation shocks	173	208	213	221	226	230	270	307
B4. One-time 30 percent real depreciation in 2013	173	250	231	229	225	221	229	230
B5. 10 percent of GDP increase in other debt-creating flows in 2013	173	246	231	232	230	228	240	233
Debt Service-to-Revenue Ratio 2/								
Baseline	15	16	16	16	17	17	17	18
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	15	16	17	16	16	16	14	8
A2. Primary balance is unchanged from 2012	15	16	16	16	17	17	17	16
A3. Permanently lower GDP growth 1/	15	16	17	17	18	18	20	25
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	15	17	19	19	20	20	21	25
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	15	16	17	17	18	18	18	19
B3. Combination of B1-B2 using one half standard deviation shocks	15	16	18	18	19	19	19	22
B4. One-time 30 percent real depreciation in 2013	15	17	19	19	20	20	19	21
B5. 10 percent of GDP increase in other debt-creating flows in 2013	15	16	17	18	18	18	18	19

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.