2. Assessment of Data Adequacy for Surveillance (continued)	
However, the reporting of monetary and financial statistics (MFS) has been suspended since June 2009. An STA mission in March 2010 assisted authorities in advancing the introduction of standardized report forms of MFS and collecting data from commercial banks in accordance with the methodology in the MFSM.	
Balance of payments: Reporting is not comprehensive, and Fund staff prepare provisional balance of payments statistics for surveillance. Although some progress in the collecting and reporting of data has been made with STA support, there still remain several areas that need improvement: primary source data, compilation, and timeliness in data dissemination, especially for trade and services, foreign direct investment, government expenditures, remittances, and nonresident deposits data.	
3. Data Standards and Quality	
Participant in the General Data Dissemination System (GDDS) since October 2005.	Liberia has not yet received a mission to produce the Data Module of the Reports on the Observance of Standards and Codes (data ROSC).
4. Reporting to STA	
The authorities report annual balance of payments data and government finance statistics to the related publications (*IFS, GFSY,* and *BOPSY).*	

INTERNATIONAL MONETARY FUND

AND

INTERNATIONAL DEVELOPMENT ASSOCIATION

LIBERIA

JOINT IMF/WORLD BANK DEBT SUSTAINABILITY ANALYSIS[1]

Prepared by the staffs of the International Monetary Fund and the World Bank

Approved by Sean Nolan and Jan Kees Martijn (IMF)
And Marcelo Guigale and Jeffrey D. Lewis (World Bank)

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An update of the Debt Sustainability Analysis (DSA) indicates that Liberia has a low risk of debt distress. The macroeconomic assumptions include the restart of iron ore and timber exports in 2011/12, which will substantially improve the current account of the balance of payments over the medium term. However, in the immediate period ahead, the trade balance will deteriorate on account of large foreign direct investment (FDI) related imports for the mining sector. Since the 2010 DSA[2] there have been no changes in the debt management policy. Consistent with the debt management policy the DSA assumes a ceiling on annual foreign currency borrowing of 3 percent of GDP in NPV terms. The projected net present value of the external debt stock would remain low and sustainable with all debt indicators well below the policy-related thresholds.

I. KEY ASSUMPTION UNDER THE BASELINE SCENARIO

1. **The profile of external and public debt indicators is similar to the 2010 DSA, and confirms Liberia's low risk of debt distress**. Following the achievement of the HIPC completion point in June 2010, Paris Club creditors canceled in full the remaining outstanding debt. All but one of the related bilateral agreements were signed before the March 2011 deadline. Negotiations have advanced with the remaining non-Paris Club creditors, and an agreement was recently reached with Kuwait on comparable terms.

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[1] The LIC-DSA incorporates the following general assumptions: (i) the discount rate is fixed at 4 percent; (ii) the export denominator is based on the current year data for exports of goods and services; (iii) the exchange rates are based on WEO assumptions; and (iv) the risk of debt distress based on country-specific policy-dependent thresholds, based on the country's CPIA index, which for Liberia is 2.78. All data refer to the financial year which runs from July to June.

[2] IMF Country Report No. 10/192.

Discussions with ECOWAS, BADEA and the OPEC Fund for International Development (OFID) have also advanced somewhat.[3] The latest bilateral agreements further reduce the end-2010/11 external debt stock from 17 percent, projected in the 2010 DSA, to 10.6 percent of GDP.

2. **The key assumptions under the baseline scenario are broadly in line with those used in the 2010 DSA** (Box 1) although some adjustments were made to reflect delays that may result in a more gradual expansion of the mining and timber sectors, mainly due to difficulties in rehabilitating transport infrastructure.

3. **The baseline is subject to substantial upside and downside risks**. On the upside, the authorities have so far ratified four large long-term iron ore concession agreements and a fifth one is under negotiation. However, the baseline scenario cautiously assumes that only one concession operates over the forecast period. GDP and export earnings and fiscal revenues over the longer term are therefore conservative estimates. On the downside, the pace of implementation of the iron ore investment and the production profile is closely linked to global conditions, particularly commodity prices. Consequently, a decline in commodity prices, as occurred in 2009, could have an impact on the timing of investment implementation as well as on the level of production.

II. External Debt Sustainability

4. **Following the full cancelation of the debt owed to Paris Club creditors and final agreement with the remaining commercial creditors, Liberian nominal external debt declined further to 10.6 percent of GDP in 2010/11** (Table 1). Contrary to the 2010 DSA, in the first few years the debt dynamics are no longer dominated by repayments of the remaining debt to Paris Club creditors as this debt was cancelled under the September 2010 Paris Club agreement. Under the assumption of new borrowing at an annual average of 3 percent of GDP, the updated DSA confirms that all debt indicators are expected to remain below their policy-related thresholds[4]. The PV of the external debt-to-GDP ratio will gradually rise from roughly 8 percent in 2010/11 to 15 percent by 2019/2020, and remain below 20 percent up to 2029/30. Similarly, the ratios of debt and debt service to exports and to revenues are expected to remain well below their threshold values (Figure 1, Table 2).[5]

[3] Despite significant efforts, the authorities have not been able to reach agreement with Taiwan, Province of China.

[4] In the period 2014/15 to 2020/21, the large residuals are mainly related to the debt repayments of foreign investment projects.

[5] The Debt Sustainability Framework indicative ceilings for Liberia are (i) 30 percent of GDP for the PV of external debt; (ii) 100 percent for the ratio of PV of external debt to exports; and (iii) 200 percent for the ratio of PV of external debt to revenue.

Box 1. Key Baseline Macroeconomic Assumptions

Real GDP growth is assumed to accelerate in the next few years, supported by resumption of iron ore and timber exports, and by construction in the mining sector. Real annual growth is therefore expected to average 7¾ percent during 2011/12-2015/16 as production from the first iron ore mine rises to full capacity. Average annual growth rates would then slow to an average of 4¼ percent during 2016/17 to 2029/30. However, activity at any of the other iron ore concessions, the initiation of petroleum production, or higher non-mineral sector activity could raise annual growth rates substantially.

Inflation in local currency is assumed to decelerate starting 2010/11, and to stabilize at 5 percent by 2013/14. This outturn is supported by restrained monetary and fiscal policies over the projection period, with the fiscal deficit—averaging 3½ percent of GDP—used mainly to finance development projects with relatively high import contents.

The trade deficit is expected to initially weaken due to strong imports associated with mining-related construction, and then improve as the construction phase of mining winds down and exports of ore approach full capacity in FY2014/15.

Exports are expected to increase faster than assumed in the 2010 DSA, due to higher prices in the commodity sectors, particularly for rubber and iron ore. Exports of goods and services are projected to grow on average by 24 percent during the period 2010/11–2015/16 as mining exports increase to capacity. Thereafter, the export growth rate is to slow to an average of 4 percent over the period 2016/17 to 2029/30.

In line with the 2010 DSA, import trends would be dominated by FDI-related activity. Import growth is projected to average 15 percent for the period 2010/11–2012/13 due to the construction phase of the above-mentioned mining project, and then in 2018 slow down to about 4 percent growth.

The current account deficit is expected to increase during the construction of the big mining projects by reaching 68 percent in FY2012/13, to rapidly decline at the conclusion of the investment phase of these projects (31 percent in FY2014/15), and fluctuate at a around 10 percent afterwards.

Tax revenues are projected to decline to 20 percent of GDP in 2011/12 due to tax policy changes, and to broadly stabilize at this level throughout the period. The fiscal revenues associated with the single iron ore project in the projection are back loaded, with two thirds expected in the second half of the period.

The external borrowing policy is the same as that assumed in 2010 DSA, with annual borrowing (disbursement basis) in line with the medium-term fiscal anchor of annual borrowing in foreign currency of up to 3 percent of GDP in NPV terms. Given the large infrastructure needs, and limited domestic financing sources, nominal external borrowing is expected to restart in 2011/12 (1½ percent of GDP). It is assumed to rise to 5 percent of GDP by FY2014/15 (nominal terms) and then decline gradually to stabilize at 2 percent of GDP in 2022/23. All new external borrowing is assumed to be on concessional (IDA) terms. Domestic borrowing, supplied through a planned Treasury bill market, is assumed constant at 1 percent of GDP per year beginning in 2012/13.

External grants (excluding UNMIL) are expected to progressively decline from 37 percent of GDP in 2010/11 to about 28 percent in 2014/15 and to 16 percent by the end of the projections period.

5. **These results remain broadly unchanged under alternative scenarios and stress test, with the exception of the historical scenario**.[6]

- **The PV of external debt-to-GDP ratio** remains sensitive to lower exports and FDI, and to a larger extent, higher interest rates on new borrowing. Under the exports stress test (historical average minus one standard deviation), the PV of external debt-to-GDP ratio would increase from 12 percent in 2011/12 and stabilize at 22 percent in 2020/21. The stress test for FDI (historical average minus one standard deviation) shows a similar trend—the PV of the external debt-to-GDP ratio will rise from 10½ percent in 2011/12 to 16 percent in 2020/21, and further to 18 percent by the end of the projection period. Assuming less favorable terms for new loans (interest rate 2 percentage points higher than in the baseline), the PV of external debt will reach 25 percent in 2020/21, and 30 percent by the end of the projection period. The PV of external debt is only moderately sensitive to declines in growth: shocks to annual growth of one standard deviation from historical levels lead to a deterioration over the projection period from 8 to 18 percent of GDP, only one percentage point higher than in the baseline. A combined stress test (which assumes exports, FDI and GDP growth at historical values minus one-half a standard deviation) would raise the PV of external debt-to-GDP ratio to 24 percent in 2012/13, which would then peak at 27 percent in 2020/21. Staff does not consider the breach of the historical scenario test as a potential risk—mainly because the historical period was characterized by very low foreign direct investment levels, limited production, and large current account deficits following the end of an extensive period of political and social instability.

- **The external debt-to-exports ratio** is also sensitive to the above-mentioned combined stress test. Under this combined shock, this ratio will reach 42 percent in 2020/21 and gradually increase to 46 percent in 2028/29. Lower exports would also lead to a substantial deterioration of the ratio, which will reach 32 percent in 2020/21 and 36 percent by end-2029/30.

- **The PV of external debt-to-revenue ratio** follows a similar trend, showing some sensitivity to exports and less favorable borrowing terms, but with all indicators remaining below the applicable threshold.

[6] As stressed in the previous Debt Sustainability Analysis (IMF Country Report No. 10/192), given the lack of reliable historical data, the DSA uses only 2004/05 to 2009/10 data. The staffs do not consider the breach of the historical scenario test as a potential risk, mainly because the historical period was characterized by very low foreign direct investment levels, limited production, and large current account deficit following the end of an extensive period of political and social instability.

III. Public Sector Debt Sustainability

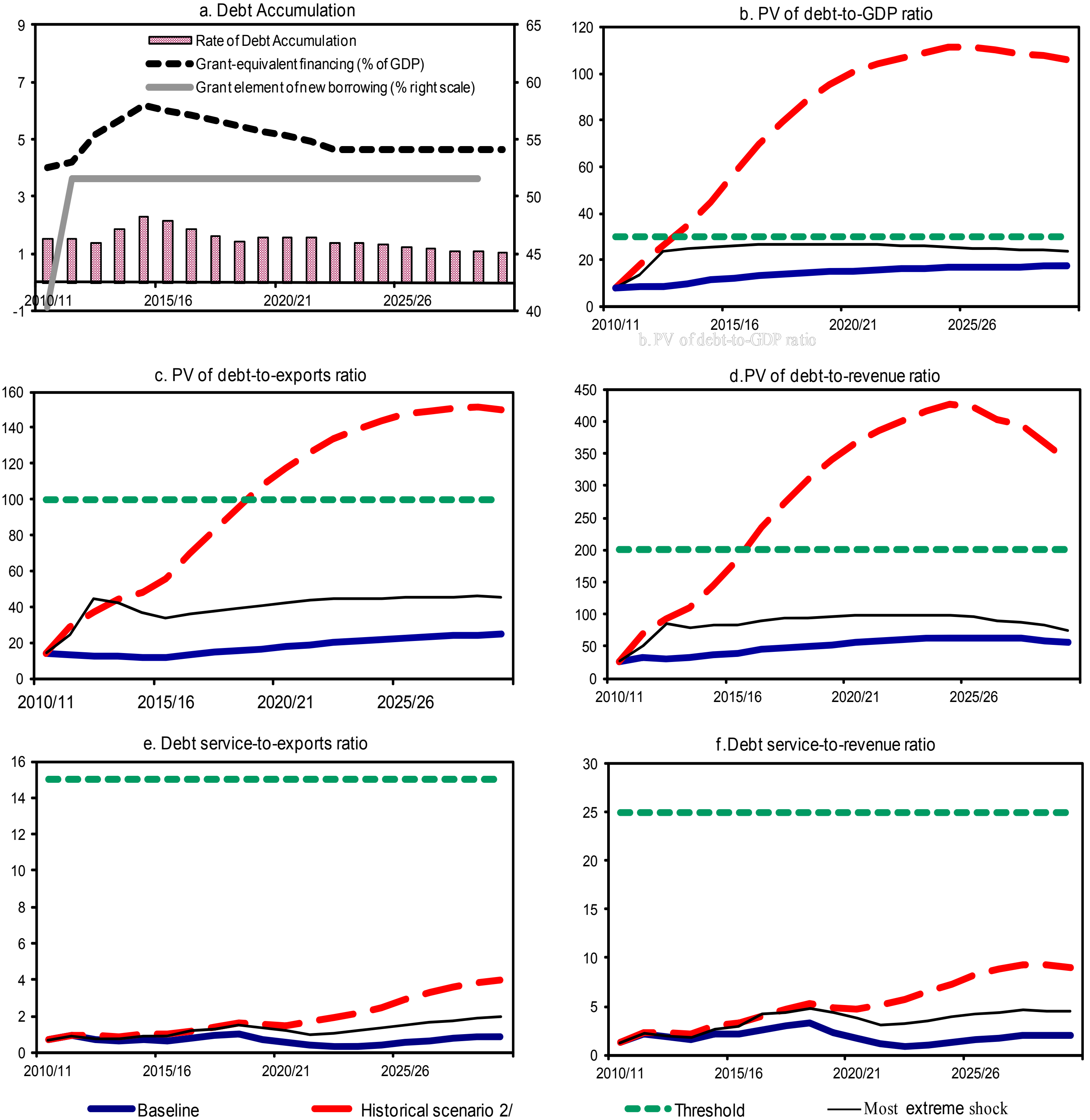
6. **Public debt indicators also benefited from the full cancellation of Paris Club debt** (Figure 2, Table 3). While starting from a lower base, the PV of public debt-to-GDP ratio follows similar dynamics to the 2010 DSA. In the baseline, the PV of public debt-to-GDP ratio rises from 11 percent in 2010/11 to 22 percent in 2019/20 and then continues to increase gradually, reaching 27 percent in 2029/30. The PV of debt-to-revenue ratio would rise steadily, reaching 85 percent in 2025/26 after which it begins a gradual decline. The debt service-to-revenue ratio will reach its peak of 5 percent only at the end of the projection period.

7. **Alternative and shock scenarios illustrate the potential vulnerability of public debt ratios** (Table 4). Under the alternative scenario of permanently lower annual GDP growth, the PV of debt-to-GDP ratio will increase from 11 percent in 2010/11 to 29 percent in 2020/21 and reach 47 percent by the end of the projection period. The PV of debt-to-GDP also deteriorates under the assumption of a 10 percent of GDP increase in debt accumulation, where the ratio will gradually increase from 11 percent in 2010/11 to 29 percent in 2020/21, and reach 33 percent in 2029/30. The PV of the public debt-to-revenue ratio will also worsen substantially under a permanently lower GDP growth scenario, reaching about 135 percent in 2020/21 and 174 percent in 2029/30. Finally, the debt service-to-revenue ratio will peak at 10 percent in 2029/30 under the lower permanent GDP growth scenario.

IV. Conclusion

8. **Following the additional debt relief provided by Paris Club creditors, Liberia's debt outlook has improved somewhat in the medium term, and its low risk of debt distress has been confirmed**. However, it continues to show some sensitivity to shocks, particularly to the assumption of higher interest rates on new external borrowing. In the baseline scenario, which includes annual average new external borrowing of 3 percent of GDP on concessional terms, Liberia's debt indicators remain well below the relevant indicative thresholds, and these are not breached under any of the relevant stress tests.

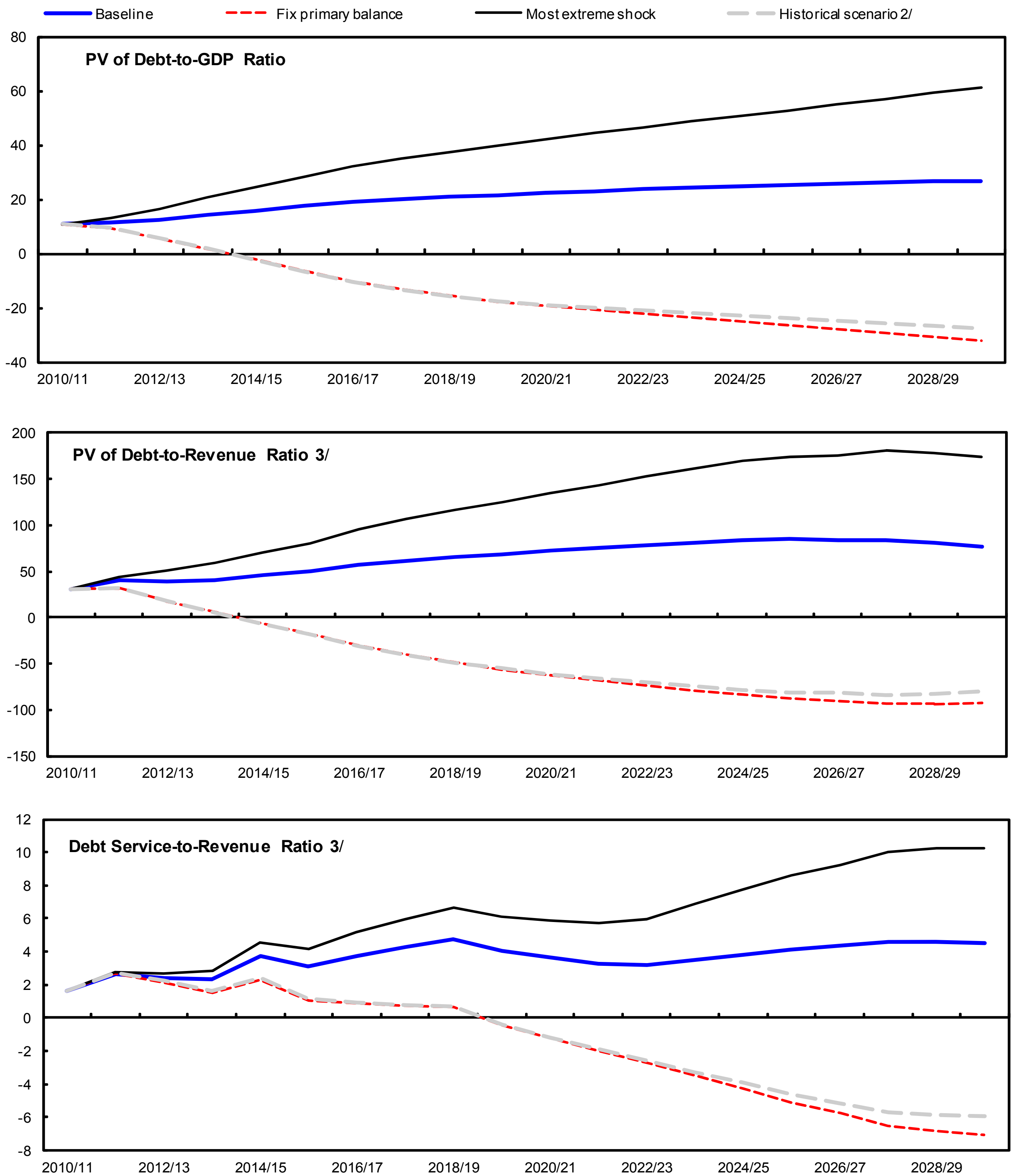
Figure 1. Liberia: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2010/11-2029/30 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2019/20. In figures b, d, e, and f it corresponds to loans on less favorable terms; in c. to export values growing at historical average minus one standard deviation.
2/ Given the lack of reliability of historical data, the DSA uses only FY2004/05 to FY2009/10 data. The historical scenario breaches the PV of debt to GDP threshold, but staff does not consider this a reliable indicator of potential debt distress, as it results mainly from the high current account deficits in the period following the return of political stability.

Figure 2 Liberia: Indicators of Public Debt Under Alternative Scenarios, 2010/11-2029/30 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2020/21.
2/ Given the lack of reliability of historical data, the DSA uses only FY2004/05 to FY2009/10 data . The historical scenario breaches the PV debt to GDP threshold, but staff does not consider this a reliable indicator of potential debt distress, as it results mainly from the high current account deficits in the period following the return of political stability.
3/ Revenues are defined inclusive of grants.

Table 1. Liberia : External Debt Sustainability Framework, Baseline Scenario, 2010/11-2029/30 1/
(In percent of GDP, unless otherwise indicated)

	Actual								Projections									
	Historical average 7/	Standard deviation 7/	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2010/11-2015/16 Average	2016/17	2019/20	2020/21	2021/22	2024/25	2025/26	2028/29	2029/30	2016/17-2029/30 Average
External debt (nominal) 1/			**10.6**	**11.4**	**12.7**	**15.5**	**18.8**	**21.4**		**23.9**	**27.5**	**28.2**	**28.7**	**29.1**	**29.2**	**29.5**	**29.5**	
o/w public and publicly guaranteed (PPG)			10.6	11.4	12.7	15.5	18.8	21.4		23.9	27.5	28.2	28.7	29.1	29.2	29.5	29.5	
Change in external debt			-176.0	0.8	1.3	2.9	3.3	2.6		2.5	0.9	0.7	0.5	0.1	0.1	0.1	0.0	
Identified net debt-creating flows			-8.3	0.7	2.2	1.8	-3.1	-9.7		-11.0	-8.0	-5.5	-3.2	-3.2	-0.4	1.4	1.6	
Non-interest current account deficit	**34.8**	**10.7**	**40.3**	**51.3**	**63.7**	**54.4**	**24.7**	**3.4**		**0.8**	**3.4**	**5.6**	**7.6**	**6.8**	**9.4**	**10.6**	**10.7**	`
Deficit in balance of goods and services			125.0	120.6	108.4	82.9	40.1	14.3		13.3	13.8	15.7	17.4	16.1	16.1	15.9	15.3	
Exports			58.2	63.9	71.3	78.2	94.0	103.8		100.2	88.9	85.5	82.3	77.1	75.2	70.8	70.7	
Imports			183.2	184.5	179.7	161.1	134.1	118.1		113.5	102.7	101.3	99.8	93.2	91.3	86.8	86.0	
Net current transfers (negative = inflow)	-147.1	29.8	-97.6	-80.5	-64.9	-55.1	-44.0	-35.5		-31.7	-26.9	-25.8	-24.8	-22.5	-21.8	-20.3	-19.9	-24.3
o/w official			-37.1	-33.7	-30.5	-29.4	-27.8	-26.1		-25.3	-22.2	-21.2	-20.3	-18.3	-17.7	-16.4	-16.0	
Other current account flows (negative = net inflow)			12.9	11.1	20.2	26.7	28.6	24.6		19.3	16.5	15.7	14.9	13.2	15.1	15.0	15.3	
Net FDI (negative = inflow)	**-15.0**	**13.0**	**-38.6**	**-49.9**	**-60.7**	**-51.9**	**-26.8**	**-12.0**		**-11.0**	**-10.3**	**-10.1**	**-9.8**	**-9.1**	**-8.9**	**-8.4**	**-8.3**	-9.5
Endogenous debt dynamics 2/			**-10.0**	**-0.6**	**-0.8**	**-0.7**	**-1.0**	**-1.1**		**-0.8**	**-1.0**	**-1.0**	**-1.1**	**-0.9**	**-0.9**	**-0.8**	**-0.8**	
Contribution from nominal interest rate			0.2	0.1	0.1	0.1	0.1	0.1		0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Contribution from real GDP growth			-10.1	-0.7	-0.9	-0.8	-1.1	-1.2		-0.9	-1.2	-1.2	-1.3	-1.1	-1.1	-1.1	-1.1	
Contribution from price and exchange rate changes			…	…	…	…	…	…		…	…	…	…	…	…	…	…	
Residual (3-4) 3/			**-167.7**	**0.1**	**-1.0**	**1.0**	**6.4**	**12.3**		**13.4**	**8.9**	**6.2**	**3.7**	**3.3**	**0.5**	**-1.3**	**-1.5**	
o/w exceptional financing			-5.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
PV of external debt			8.2	8.4	8.6	9.9	11.2	12.3		13.4	14.8	15.2	15.6	16.5	16.8	17.2	17.3	
In percent of exports			14.0	13.1	12.1	12.6	11.9	11.8		13.3	16.6	17.8	19.0	21.5	22.3	24.3	24.4	
PV of PPG external debt			**8.17**	**8.4**	**8.6**	**9.9**	**11.2**	**12.3**		**13.4**	**14.8**	**15.2**	**15.6**	**16.5**	**16.8**	**17.2**	**17.3**	
In percent of exports			**14.04**	**13.1**	**12.1**	**12.6**	**11.9**	**11.8**		**13.3**	**16.6**	**17.8**	**19.0**	**21.5**	**22.3**	**24.3**	**24.4**	
In percent of government revenues			**26.40**	**32.3**	**30.7**	**31.6**	**36.3**	**39.5**		**45.3**	**53.0**	**55.5**	**58.0**	**63.4**	**63.7**	**58.8**	**55.2**	
Debt service-to-exports ratio (in percent)			**0.69**	**0.9**	**0.7**	**0.6**	**0.7**	**0.7**		**0.8**	**0.7**	**0.6**	**0.4**	**0.4**	**0.5**	**0.8**	**0.9**	
PPG debt service-to-exports ratio (in percent)			**0.69**	**0.9**	**0.7**	**0.6**	**0.7**	**0.7**		**0.8**	**0.7**	**0.6**	**0.4**	**0.4**	**0.5**	**0.8**	**0.9**	
PPG debt service-to-revenue ratio (in percent)			**1.30**	**2.2**	**1.8**	**1.6**	**2.2**	**2.2**		**2.6**	**2.3**	**1.7**	**1.2**	**1.3**	**1.6**	**2.0**	**2.0**	
Total gross financing need (Millions of U.S. dollars)			22.0	23.8	50.1	45.7	-23.9	-141.9		-178.3	-148.7	-100.5	-50.9	-64.6	31.7	116.8	134.9	
Non-interest current account deficit that stabilizes debt ratio			216.3	50.5	62.4	51.6	21.4	0.8		-1.6	2.5	5.0	7.1	6.7	9.3	10.6	10.7	
Key macroeconomic assumptions																		
Real GDP growth (in percent)	6.4	1.8	6.2	8.3	8.6	6.8	7.7	7.2	7.5	4.6	4.9	4.9	4.8	4.1	4.1	3.8	3.8	4.3
GDP deflator in US dollar terms (change in percent)	6.7	3.4	7.9	8.1	4.3	-0.1	0.6	1.7	3.7	1.5	2.8	2.7	2.6	2.2	2.1	1.8	1.7	2.2
Effective interest rate (percent) 4/	0.0	0.0	0.1	1.2	1.0	0.9	0.8	0.7	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7
Growth of exports of G&S (US dollar terms, in percent)	15.1	19.2	22.7	28.4	26.4	17.0	30.2	20.3	24.2	2.5	3.5	3.6	3.6	4.6	3.6	3.7	5.4	3.8
Growth of imports of G&S (US dollar terms, in percent)	22.8	32.8	13.2	17.8	10.4	-4.4	-9.8	-4.1	3.9	2.1	4.6	6.2	6.0	4.2	4.2	3.8	4.6	4.3
Grant element of new public sector borrowing (in percent)	...	...	23.5	40.4	51.6	51.6	51.6	51.6	45.0	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6
Government revenues (excluding grants, in percent of GDP)			31.0	25.9	28.0	31.2	30.9	31.1		29.5	27.9	27.4	27.0	26.1	26.3	29.3	31.3	27.8
Aid flows (in Millions of US dollars) 5/			38.1	59.1	94.0	115.4	141.5	147.9		150.4	162.4	166.0	169.1	186.5	198.2	234.5	247.5	
o/w Grants			38.1	39.1	51.4	54.8	59.4	64.7		68.7	85.6	92.2	99.2	120.1	127.7	151.0	159.4	
o/w Concessional loans			0.0	20.0	42.6	60.6	82.1	83.2		81.7	76.9	73.9	69.9	66.4	70.6	83.5	88.1	
Grant-equivalent financing (in percent of GDP) 6/			4.0	4.2	5.2	5.7	6.2	6.0		5.8	5.3	5.1	4.9	4.6	4.6	4.6	4.6	5.0
Grant-equivalent financing (in percent of external financing) 6/			73.1	72.2	78.0	74.6	71.9	72.8		73.7	77.1	78.4	80.0	82.8	82.8	82.8	82.8	80.1
Memorandum items:																		
Nominal GDP (Millions of US dollars)			1071.5	1253.4	1420.5	1515.2	1641.9	1789.5		1899.9	2365.3	2547.8	2741.2	3321.0	3529.2	4173.9	4407.1	
Nominal dollar GDP growth			14.6	17.0	13.3	6.7	8.4	9.0	11.5	6.2	7.8	7.7	7.6	6.4	6.3	5.6	5.6	6.7
PV of PPG external debt (in Millions of US dollars)			86.3	102.8	120.2	146.9	181.5	216.6		250.1	344.2	381.7	422.3	541.3	582.6	707.5	750.5	
(PVt-PVt-1)/GDPt-1 (in percent)			1.5	1.5	1.4	1.9	2.3	2.1	1.8	1.9	1.6	1.6	1.6	1.3	1.2	1.1	1.0	1.4

Sources: Country authorities; and staff estimates and projections.

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

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

6/ 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).

7/ Historical averages and standard deviations are derived over 2004/05-2009/10.

Table 2.Liberia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009/10-2029/30
(In percent)

	Projections													
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2019/20	**2020/21**	2021/22	2024/25	2025/26	2028/29	2029/30
							PV of debt-to GDP ratio							
Baseline	8.2	8.4	8.6	9.9	11.2	12.3	13.4	14.8	**15.2**	15.6	16.5	16.8	17.2	17.3
A. Alternative Scenarios														
A1. Key variables at their historical averages in 2010/11-2030-31 1/	8.2	18.1	26.3	34.6	44.8	57.4	69.5	95.3	**100.6**	104.1	111.1	111.3	107.4	106.1
A2. New public sector loans on less favorable terms in 2010/11-2030-31 2	8.2	9.1	10.3	12.8	15.7	18.0	20.3	24.1	**25.1**	25.9	27.6	28.1	29.6	30.0
B. Bound Tests														
B1. Real GDP growth at historical average minus one standard deviation in 2011/12-2012/13	8.2	8.5	9.1	10.4	11.9	13.0	14.2	15.6	**16.1**	16.6	17.5	17.7	18.2	18.3
B2. Export value growth at historical average minus one standard deviation in 2011/12-2012/13 3/	8.2	11.7	18.6	19.5	20.4	20.9	21.8	22.2	**22.3**	22.4	21.7	21.5	20.9	20.7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011/12-2012/13	8.2	8.6	8.9	10.2	11.7	12.8	13.9	15.4	**15.8**	16.3	17.2	17.4	17.9	18.0
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011/12-2012/13 4/	8.2	10.6	10.5	11.7	13.0	13.9	14.9	16.1	**16.5**	16.8	17.4	17.5	17.7	17.7
B5. Combination of B1-B4 using one-half standard deviation shocks	8.2	13.4	23.7	24.6	25.4	25.8	26.6	26.8	**26.8**	26.7	25.5	25.1	24.0	23.7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011/12 5/	8.2	11.4	11.7	13.4	15.3	16.8	18.2	20.1	**20.7**	21.3	22.5	22.8	23.4	23.5
							PV of debt-to-exports ratio							
Baseline	14.0	13.1	12.1	12.6	11.9	11.8	13.3	16.6	**17.8**	19.0	21.5	22.3	24.3	24.4
A. Alternative Scenarios														
A1. Key variables at their historical averages in 2010/11-2030-31 1/	14.0	28.4	36.9	44.2	47.7	55.4	69.4	107.1	**117.7**	126.4	144.1	148.0	151.7	150.1
A2. New public sector loans on less favorable terms in 2010/11-2030-31 2	14.0	14.2	14.5	16.4	16.7	17.3	20.2	27.2	**29.3**	31.5	35.9	37.4	41.7	42.4
B. Bound Tests														
B1. Real GDP growth at historical average minus one standard deviation in 2011/12-2012/13	14.0	12.8	11.9	12.4	11.8	11.7	13.1	16.4	**17.5**	18.7	21.1	21.9	23.9	24.1
B2. Export value growth at historical average minus one standard deviation in 2011/12-2012/13 3/	14.0	20.4	31.9	30.5	26.6	24.8	26.7	30.6	**32.0**	33.3	34.6	35.1	36.2	35.8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011/12-2012/13	14.0	12.8	11.9	12.4	11.8	11.7	13.1	16.4	**17.5**	18.7	21.1	21.9	23.9	24.1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011/12-2012/13 4/	14.0	16.6	14.8	15.0	13.8	13.4	14.9	18.1	**19.3**	20.4	22.5	23.3	25.0	25.1
B5. Combination of B1-B4 using one-half standard deviation shocks	14.0	24.2	44.9	42.4	36.5	33.6	35.9	40.6	**42.3**	43.7	44.6	45.0	45.8	45.2
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011/12 5/	14.0	12.8	11.9	12.4	11.8	11.7	13.1	16.4	**17.5**	18.7	21.1	21.9	23.9	24.1
							PV of debt-to-revenue ratio							
Baseline	26.4	32.3	30.7	31.6	36.3	39.5	45.3	53.0	**55.5**	58.0	63.4	63.7	58.8	55.2
A. Alternative Scenarios														
A1. Key variables at their historical averages in 2010/11-2030-31 1/	26.4	70.0	93.9	110.8	145.1	184.5	235.9	341.4	**366.8**	385.9	425.8	422.8	367.2	338.9
A2. New public sector loans on less favorable terms in 2010/11-2030-31 2	26.4	35.0	36.8	41.0	50.7	57.8	68.7	86.5	**91.5**	96.1	105.9	106.9	101.0	95.7
B. Bound Tests														
B1. Real GDP growth at historical average minus one standard deviation in 2011/12-2012/13	26.4	32.8	32.5	33.4	38.5	41.8	48.0	56.1	**58.7**	61.4	67.1	67.4	62.2	58.4
B2. Export value growth at historical average minus one standard deviation in 2011/12-2012/13 3/	26.4	45.1	66.2	62.4	65.9	67.3	73.9	79.6	**81.4**	82.9	83.3	81.8	71.4	66.0
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011/12-2012/13	26.4	33.1	31.9	32.8	37.8	41.1	47.1	55.0	**57.6**	60.3	65.9	66.2	61.1	57.4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011/12-2012/13 4/	26.4	41.0	37.6	37.5	41.9	44.7	50.6	57.8	**60.1**	62.2	66.5	66.4	60.5	56.6
B5. Combination of B1-B4 using one-half standard deviation shocks	26.4	51.8	84.5	78.8	82.2	83.0	90.4	95.9	**97.6**	98.9	97.6	95.3	82.1	75.6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011/12 5/	26.4	43.8	41.8	43.0	49.5	53.8	61.8	72.2	**75.6**	79.0	86.4	86.7	80.1	75.2

Table 2.Liberia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009/10-2029/30 (Concluded)
(In percent)

	Projections													
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2019/20	**2020/21**	2021/22	2024/25	2025/26	2028/29	2029/30
							Debt service-to-exports ratio							
Baseline	0.7	0.9	0.7	0.6	0.7	0.7	0.8	0.7	**0.6**	0.4	0.4	0.5	0.8	0.9
A. Alternative Scenarios														
A1. Key variables at their historical averages in 2010/11-2030-31 1/	0.7	0.9	0.9	0.9	1.0	1.0	1.2	1.5	**1.5**	1.7	2.5	2.9	3.8	4.0
A2. New public sector loans on less favorable terms in 2010/11-2030-31 2	0.7	0.9	0.8	0.7	0.9	0.9	1.2	1.4	**1.2**	1.0	1.3	1.5	1.9	2.0
B. Bound Tests														
B1. Real GDP growth at historical average minus one standard deviation in 2011/12-2012/13	0.7	0.9	0.7	0.6	0.7	0.7	0.8	0.7	**0.6**	0.4	0.4	0.5	0.8	0.9
B2. Export value growth at historical average minus one standard deviation in 2011/12-2012/13 3/	0.7	1.0	1.0	1.0	1.0	1.0	1.1	1.0	**0.8**	0.7	1.1	1.2	1.5	1.6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011/12-2012/13	0.7	0.9	0.7	0.6	0.7	0.7	0.8	0.7	**0.6**	0.4	0.4	0.5	0.8	0.9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011/12-2012/13 4/	0.7	0.9	0.8	0.7	0.7	0.7	0.8	0.8	**0.6**	0.5	0.5	0.6	0.9	1.0
B5. Combination of B1-B4 using one-half standard deviation shocks	0.7	1.1	1.2	1.2	1.3	1.2	1.3	1.3	**1.0**	1.0	1.5	1.7	2.0	2.1
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011/12 5/	0.7	0.9	0.7	0.6	0.7	0.7	0.8	0.7	**0.6**	0.4	0.4	0.5	0.8	0.9
							Debt service-to-revenue ratio							
Baseline	1.3	2.2	1.8	1.6	2.2	2.2	2.6	2.3	**1.7**	1.2	1.3	1.6	2.0	2.0
A. Alternative Scenarios														
A1. Key variables at their historical averages in 2010/11-2030-31 1/	1.3	2.3	2.3	2.2	3.0	3.3	4.1	4.9	**4.7**	5.2	7.4	8.3	9.3	9.0
A2. New public sector loans on less favorable terms in 2010/11-2030-31 2	1.3	2.2	2.0	1.9	2.7	3.0	4.2	4.3	**3.9**	3.0	3.9	4.2	4.6	4.5
B. Bound Tests														
B1. Real GDP growth at historical average minus one standard deviation in 2011/12-2012/13	1.3	2.3	2.0	1.7	2.3	2.4	2.8	2.5	**1.9**	1.2	1.4	1.7	2.2	2.2
B2. Export value growth at historical average minus one standard deviation in 2011/12-2012/13 3/	1.3	2.2	2.0	2.0	2.6	2.6	3.0	2.7	**2.0**	1.8	2.7	2.8	3.0	2.9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011/12-2012/13	1.3	2.3	1.9	1.7	2.3	2.3	2.8	2.5	**1.8**	1.2	1.4	1.6	2.1	2.1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011/12-2012/13 4/	1.3	2.2	1.9	1.7	2.3	2.3	2.7	2.4	**1.8**	1.5	1.6	1.8	2.2	2.2
B5. Combination of B1-B4 using one-half standard deviation shocks	1.3	2.3	2.2	2.3	2.9	2.9	3.4	3.0	**2.3**	2.2	3.4	3.5	3.6	3.4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011/12 5/	1.3	3.1	2.6	2.2	3.0	3.1	3.6	3.2	**2.4**	1.6	1.8	2.2	2.8	2.8
Memorandum item:														
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	48	48	48	48	48	48	48	48	**48**	48	48	48	48	48

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. Liberia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2010/11- 2029/30
(In percent of GDP, unless otherwise indicated)

	Average	Standard Deviation	Estimate	Projections											
			2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2019/20	2020/21	2021/22	2024/25	2025/26	2028/29	2029/30
Public sector debt 1/			13.2	14.6	16.4	19.9	23.5	26.6	34.4	35.3	36.1	37.4	37.8	38.8	39.1
o/w foreign-currency denominated			13.2	13.6	14.5	17.2	20.1	22.6	28.4	29.0	29.4	29.8	29.8	30.0	30.0
Change in public sector debt			-173.4	1.4	1.8	3.5	3.6	3.1	1.2	1.0	0.8	0.4	0.4	0.3	0.3
Identified debt-creating flows			-174.4	-0.8	1.8	3.5	3.7	3.4	0.8	0.5	0.3	0.0	0.0	0.0	0.0
Primary deficit	-1.5	2.2	-1.5	0.8	3.2	4.2	4.9	4.9	2.6	2.3	2.1	1.5	1.4	1.2	1.1
Revenue and grants			34.5	29.0	31.7	34.8	34.5	34.7	31.5	31.0	30.6	29.7	29.9	32.9	34.9
of which: grants			3.6	3.1	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Primary (noninterest) expenditure			33.0	29.8	34.9	39.0	39.4	39.6	34.1	33.3	32.7	31.2	31.3	34.1	36.1
Automatic debt dynamics			-24.9	-1.6	-1.5	-0.7	-1.2	-1.5	-1.8	-1.8	-1.8	-1.4	-1.4	-1.2	-1.2
Contribution from interest rate/growth differential			-12.4	-0.9	-1.1	-0.9	-1.3	-1.5	-1.6	-1.6	-1.6	-1.4	-1.4	-1.2	-1.2
of which: contribution from average real interest rate			-1.5	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2
of which: contribution from real GDP growth			-10.9	-1.0	-1.2	-1.0	-1.4	-1.6	-1.5	-1.6	-1.6	-1.5	-1.5	-1.4	-1.4
Contribution from real exchange rate depreciation			-12.5	-0.7	-0.4	0.2	0.1	0.0	-0.2	...	...	...	...	...	...
Other identified debt-creating flows			-148.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Privatization receipts (negative)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recognition of implicit or contingent liabilities			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt relief (HIPC and other)			-148.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other (specify, e.g. bank recapitalization)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Residual, including asset changes			1.0	2.2	0.1	0.1	-0.2	-0.3	0.4	0.5	0.5	0.4	0.4	0.3	0.3
Other Sustainability Indicators															
PV of public sector debt			10.8	11.6	12.4	14.3	15.9	17.5	21.6	22.4	23.1	24.9	25.3	26.5	26.8
o/w foreign-currency denominated			10.7	10.5	10.5	11.6	12.5	13.5	15.7	16.0	16.4	17.2	17.4	17.7	17.8
o/w external			8.2	8.4	8.6	9.9	11.2	12.3	14.8	15.2	15.6	16.5	16.8	17.2	17.3
PV of contingent liabilities (not included in public sector debt)			...	...	...	...	...	...	...	...	...	...	...	...	...
Gross financing need 2/			-0.9	1.6	4.0	5.0	6.2	6.0	3.9	3.4	3.1	2.6	2.6	2.7	2.7
PV of public sector debt-to-revenue and grants ratio (in percent)			31.2	39.9	39.1	41.0	46.1	50.3	68.6	72.1	75.5	83.6	84.6	80.7	76.8
PV of public sector debt-to-revenue ratio (in percent)			34.7	44.7	44.1	45.7	51.5	56.1	77.5	81.6	85.6	95.2	96.2	90.7	85.7
o/w external 3/			26.4	32.3	30.7	31.6	36.3	39.5	53.0	55.5	58.0	63.4	63.7	58.8	55.2
Debt service-to-revenue and grants ratio (in percent) 4/			1.7	2.7	2.4	2.3	3.7	3.1	4.0	3.6	3.3	3.8	4.1	4.6	4.5
Debt service-to-revenue ratio (in percent) 4/			1.8	3.0	2.8	2.6	4.1	3.5	4.5	4.1	3.7	4.3	4.7	5.1	5.0
Primary deficit that stabilizes the debt-to-GDP ratio			172.0	-0.6	1.4	0.7	1.3	1.8	1.4	1.3	1.3	1.1	1.0	0.9	0.9
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.4	1.8	6.2	8.3	8.6	6.8	7.7	7.2	4.9	4.9	4.8	4.1	4.1	3.8	3.8
Average nominal interest rate on forex debt (in percent)	0.1	0.2	0.1	1.1	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Average real interest rate on domestic debt (in percent)	-5.2	6.4	-8.0	490.5	12.3	11.8	9.7	8.0	5.9	5.9	5.9	6.1	6.2	6.4	6.4
Real exchange rate depreciation (in percent, + indicates depreciation)	-3.3	5.0	-7.2	...	...	...	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	9.5	4.5	12.0	12.0	8.5	3.5	4.0	4.9	6.0	5.9	5.8	5.4	5.3	4.9	4.9
Growth of real primary spending (deflated by GDP deflator, in percent)	0.3	0.4	0.2	0.0	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Grant element of new external borrowing (in percent)	…	…	23.5	40.4	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6

Sources: Country authorities; and staff estimates and projections.

1/ The public sector comprises the central government, the Central Bank of Liberia (CBL), public enterprises, and other official entities.
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 derived over 2004/05-2009/10.