



# LIBERIA

## STAFF REPORT FOR THE 2012 ARTICLE IV CONSULTATION AND REQUEST FOR THREE-YEAR ARRANGEMENT UNDER THE EXTENDED CREDIT FACILITY—DEBT SUSTAINABILITY ANALYSIS<sup>1</sup>

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The Debt Sustainability Analysis which incorporates an increase in borrowing and public investment indicates that Liberia continues to have a low risk of debt distress. The macroeconomic assumptions are underpinned by developments in the iron ore sector. In the near term, foreign financed investment provides a boost to growth and leads to a widening of the current account deficit. Going forward, an increase in iron ore exports and a winding down of import-intensive investments support a narrowing in the current account. Consistent with the Government of Liberia's debt management policy, the DSA assumes a ceiling on annual foreign currency borrowing of 4 percent of GDP in present value terms to support public investment, particularly in energy and transportation infrastructure. The projected present value of the external debt stock would remain low and sustainable with all debt indicators below the policy-related thresholds.

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<sup>1</sup>The LIC-DSA incorporates the following general assumptions: (i) the discount rate is fixed at 4 percent; (ii) the exchange rates are based on WEO assumptions; and (iii) the risk of debt distress based on country-specific policy-dependent thresholds, based on the country's CPIA index, which for Liberia is 3.0. All data refers to the fiscal year which runs from July to June.

## I. KEY ASSUMPTIONS UNDER THE BASELINE SCENARIO

1. **Liberia has recorded solid macroeconomic performance and is increasing external borrowing for key public investment projects while maintaining low debt vulnerabilities.**

Having achieved HIPC completion point in June 2010 and successful completion of the three-year IMF Extended-Credit Facility (ECF) Arrangement, the authorities are now focused on scaling-up much needed public investment, especially in energy and transport infrastructure. Increasing foreign currency borrowing to 4 percent of GDP in PV terms is in line with maintaining low debt vulnerabilities while providing room for higher public investment. External debt would rise to 27 percent of GDP in 2014/15, from 10 percent of GDP in 2011/12. Central government domestic debt at 17.6 percent of GDP in 2011/12, of which 95 percent is foreign currency denominated, is expected to gradually fall to 12.8 percent by 2014/15.<sup>2</sup>

2. **The key change in the baseline scenario compared with the previous DSA is a revision to the underlying level of GDP in line with new national accounts estimates (Box 1).**

Nominal GDP has been revised upwards by close to one third based on survey data which takes better account of the services sector. Growth rates between 2008 and 2012 have also been revised upward, by an average of 1.5 percentage points, because the services sector is estimated to be significantly faster growing than most non-service sectors. Overall, growth prospects in the medium-term are 1.4 percentage points higher on average than in the previous DSA, mostly related to faster than expected growth in the services sector and higher public investment in line with the authorities' draft second poverty reduction strategy (PRS2) (Boxes 2 and 3). This higher investment is financed through external borrowing in line with the agreed debt limit resulting in larger fiscal deficits in the near term. The current account is also expected to be larger than the previous DSA, by close to 5 percentage points of GDP on average in the medium term, related to lower export growth in the commodities sector.

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<sup>2</sup> Liberia is a highly dollarized economy. The de jure exchange rate regime is classified as 'managed float'. For more information see Article IV Consultation and the new ECF Arrangement, Informational Annex (2012).

3. **There are significant risks to the baseline scenario, particularly around developments in the concessions sector and in commodity prices.** The baseline scenario takes a cautious approach on the prospects for the initiation in iron ore production and only includes operations for one concession over the projection period. As a result economic growth, exports and fiscal revenues are relatively conservative estimates. At the same time, a decline in commodity prices, particularly in the iron ore sector, could have a significant impact on investment, the external position and revenues.

### Box 1. Key Baseline Macroeconomic Assumptions

**Real GDP growth** in the non-mining sector is assumed to accelerate in the next few years, supported by the public investment program and services sector. Real annual growth including the mining sector is expected to average 7 percent between 2012/13 and 2015/16 as production capacity in the mining sector increases. Growth then fluctuates around an average rate of 6 percent, ending at 5.5 percent at the end of the projection period. There are potential upsides to the growth projection if additional iron ore concessions begin production, ongoing petroleum exploration identifies commercially viable oil deposits, and the government succeeds in securing financing for the more ambitious development program.

**Inflation** in local currency (GDP deflator index) is expected to be 6 percent on average in 2012/13 and then averages 5 percent from 2014 onwards.

**The merchandise trade deficit** widens sharply over the next four years due to a strong increase mining-related imports. However, the strong pick-up in iron ore production in 2015 supports a gradual decline in the trade deficit.

**Export growth** in the near term is lower than in the previous DSA, due to lower commodity prices, particularly for rubber and iron ore. From 2012/13 to FY2014/15 export growth accelerates to a peak of 23 percent due to the initiation of iron ore exports. Exports of goods and services then slow, growing at an average of 4 percent from 2016/17 to 2029/30.

**Import growth**, largely driven by imports of capital goods related to the iron ore sector, is partially offset by lower imports by UNMIL as a result of the expected drawdown. Between 2012/13 and 2015/16 import growth in goods is 13 percent, while services imports fall by average of 10 percent. From 2018/19 onwards these effects are phased out and the average annual growth in goods and services is expected to be 5 percent.

**The current account deficit of the balance of payments** widens to 64 percent of GDP in 2013/14 in line with investment in the iron ore sector. Following this, the current account deficit narrows rapidly to 32 percent of GDP in 2015/16. Beyond this the current account narrows averaging 15 percent of GDP.

**Tax revenues** are projected to remain stable at around 19.5 percent of GDP during the projection period.

**The external borrowing policy** was agreed in the IMF ECF-supported program with annual external borrowing up to 4 percent of GDP in NPV terms on average between 2012/13-2014/15. The Government's Agenda for Transformation (PRS2) places emphasis on addressing the large infrastructure needs, particularly in the energy and transportation sectors. Part of this investment is expected to be financed through external borrowing raising external debt to GDP from 8 percent of GDP in 2011/12 to 22 percent of GDP in 2014/15. Beyond this, borrowing is expected to gradually 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 2016/17.

**External grants** (excluding UNMIL) are expected to progressively decline from 21 percent of GDP in 2012/13 to about 17 percent in 2015/16. Beyond this, grants are projected to decline to 10 percent of GDP by the end of the projection period.

### Box 2. Liberia: Agenda for Transformation (2012–17)

The Agenda for Transformation is a five-year development plan that underpins Vision 2030 to achieve middle-income status by 2030. The plan focuses on investments in five strategic pillars—at an estimated cost of \$3.3 billion over the five-year period—to increase productivity, boost economic growth, and improve social inclusion, particularly among youth. The pillars are

- *Economic transformation*, particularly rehabilitating the hydropower plant, roads, and ports, and updating information and communications technology;
- *Human development* especially education and health;
- *Peace, security, and the rule of law*;
- *Governance and public institutions* to modernize the public sector and enhance transparency and accountability; and
- *Cross-cutting issues* focussed on youth skills, child protection, gender equality, and human rights.

Financing the investment program

- The government plans to cover 12–15 percent of investments with its own resources and is planning a pledging donors' conference in late 2012 to secure loans and grants.

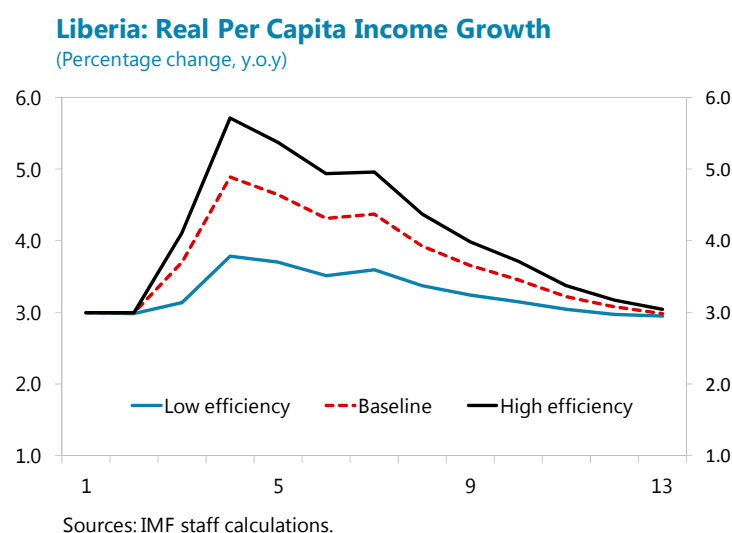
Liberia: Agenda for Transformation Costing Summary (million US dollars)

	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	Five year
Pillar 1. Economic Transformation	594.1	532.4	439.4	354.9	267.8	2,188.6
Pillar 2. Human Development	87.2	100.9	120.8	121.1	128.9	558.9
Pillar 3. Peace, Security, and Rule of Law	73.1	90.3	92.1	77.1	73.0	405.6
Pillar 4. Governance and Public Institutions	40.3	16.5	14.5	14.1	10.0	95.5
Pillar 5. Cross-cutting Issues	19.5	28.7	22.5	22.1	19.2	111.9
<b>Total</b>	<b>814.2</b>	<b>768.9</b>	<b>689.3</b>	<b>589.2</b>	<b>498.9</b>	<b>3,360.5</b>

Source: Ministry of Finance, Agenda for Transformation (As of August 30, 2012).

### Box 3. Liberia: Assessing the impact from scaling up investment

A dynamic economic model, calibrated to Liberia specifics, was used to simulate the macroeconomic impact of scaling up infrastructure investment and improving project efficiency.<sup>1</sup> As the model focuses on identifying the return from public investment relative to a stable long-term trend and other modeling differences, the estimates are not directly comparable to the underlying macroeconomic framework used in the DSA. Starting from Liberia's low base of investment of close to 3 percent of GDP, a 5 percentage point of GDP increase in investment over a seven year period was modeled.



Estimates suggest public investment would contribute an additional 1 percentage point each year to real GDP per capita over ten years. The growth effect peaks 3–4 years after the initial investment and then gradually declines over time. The estimate assumes an efficiency rate of public investment of around 60 percent. Assuming an improvement in the efficiency rate to 80 percent, consistent with improved project selection and strengthened execution capacity, real per capita income growth could potentially increase by an additional half percentage point over the medium term. Given the caveats associated with this exercise, the simulation should be seen as an approximation rather than a forecast.

<sup>1</sup> The average for low income countries. The efficiency rate measures the rate at which executed public investment translates into productive capital. For more details see Buffie, E. A. Berg, C. Patillo, R. Portillo, and L. Zanna, 2012, "Public Investment, Growth, and Debt Sustainability: Putting Together the Pieces." IMF WP No. 12/144.

## II. EXTERNAL DEBT SUSTAINABILITY

4. **Following HIPC debt relief, Liberia’s external debt is forecast to rise steadily, due to increased new concessional borrowing to fund infrastructure development.** (Tables 1 and Figure 1). In the medium term, the PV of debt-to-GDP ratio is projected to rise steadily from 10.7 percent in 2012/13 to 16.1 percent by 2014/15, reaching 19.8 percent by 2018/17 and gradually declining thereafter. Debt service increases moderately over time, peaking in 2021/22. Due to the concessional nature of debt together with rising exports and revenues from iron ore production, debt and debt service indicators remain well below the country-specific debt burden thresholds. These thresholds are based on an assessment of country policies and institutions compiled annually by the World Bank (CPIA).<sup>3</sup>

5. **The sensitivity analysis shows that the debt indicators remain within sustainable limits** (Figure 1 and Tables 2a and 2b).

- **PV of external debt-to-GDP ratio.** Under the alternative scenario of less favorable borrowing terms the PV of external debt-to-GDP rises close to, but remains below, the 30 percent threshold. Given that the majority of debt is expected to be contracted on fixed interest rates, the impact of this scenario is likely to be more limited. The historical scenario shows that if key macroeconomic variables return to their average between 2004/05 to 2011/12 debt reaches close to the threshold of 30 percent of GDP towards the end of the projection period. However, as noted in the previous DSA the risk associated with this scenario is low due to very unreliable historical data following the end of an extensive period of political and social instability.<sup>4</sup> In addition, the historical scenario is relatively less severe than the previous DSA due to the revision to GDP data and higher private external financing flows.
- **PV of external debt and debt service-to-exports ratio.** The PV of external debt-to-exports ratio is most sensitive to the historical scenario, interest rate shock and export growth shock but remains below the threshold of 100 percent. The debt service ratio remains well below the threshold of 15 percent in all scenarios.

<sup>3</sup> See Classification of Low-Income Countries for the Purpose of Debt Limits in Fund-Supported Programs: 2011 Update (IMF, 2011). With a CPIA rating below 3.25 on average for the past three years, Liberia is classified as a “weak” policy performer. This implies debt burden thresholds of 30 percent for the PV of debt-to-GDP ratio, 100 percent for the PV of debt-to-exports ratio, 200 percent for the PV of debt-to-revenue ratio, 15 percent for debt service-to-exports ratio, and 18 percent for the debt service-to-revenue ratio.

<sup>4</sup> The historical scenario relies on averages between 2004/05 to 2011/12.

- **PV of external debt and debt service-to-revenue ratio.** The PV of external debt-to-revenue ratio is slightly sensitive under alternative and stress scenarios showing some sensitivity to exports and less favorable borrowing terms. Both the debt and debt service-to-revenue ratios are well below the policy thresholds in all scenarios throughout the projection period.

### III. PUBLIC SECTOR DEBT SUSTAINABILITY

6. **Following the resumption of new borrowing after debt relief, the baseline scenario of all public debt indicators will rise moderately** (Figure 2, Table 3). Under the baseline scenario the PV of public debt-to-GDP rises slightly to 25 percent of GDP and remains broadly stable. The PV of debt-to-revenue ratio rises to a peak of close to 90 percent of GDP and then follows a slight downward path towards the end of the projection period. The PV of debt service-to-revenue ratio follows a similar trajectory, rising to 5 percent of GDP over the projection period.

7. **Alternative and shock scenarios highlight the potential risks associated with a lower GDP growth** (Table 4). Under the alternative scenario of a shock to GDP growth in 2013/14 and 2014/15<sup>5</sup> the PV of debt-to-GDP ratio will increase from 10.8 percent in 2010/11 to about 90 percent by the end of the projection period. The PV of the public debt-to-revenue ratio also deteriorates under the growth shock scenario, reaching close to 300 percent by the end of the projection period. However, the debt service-to-revenue ratio will remain reach around 15 percent under an alternative scenario of lower GDP growth.

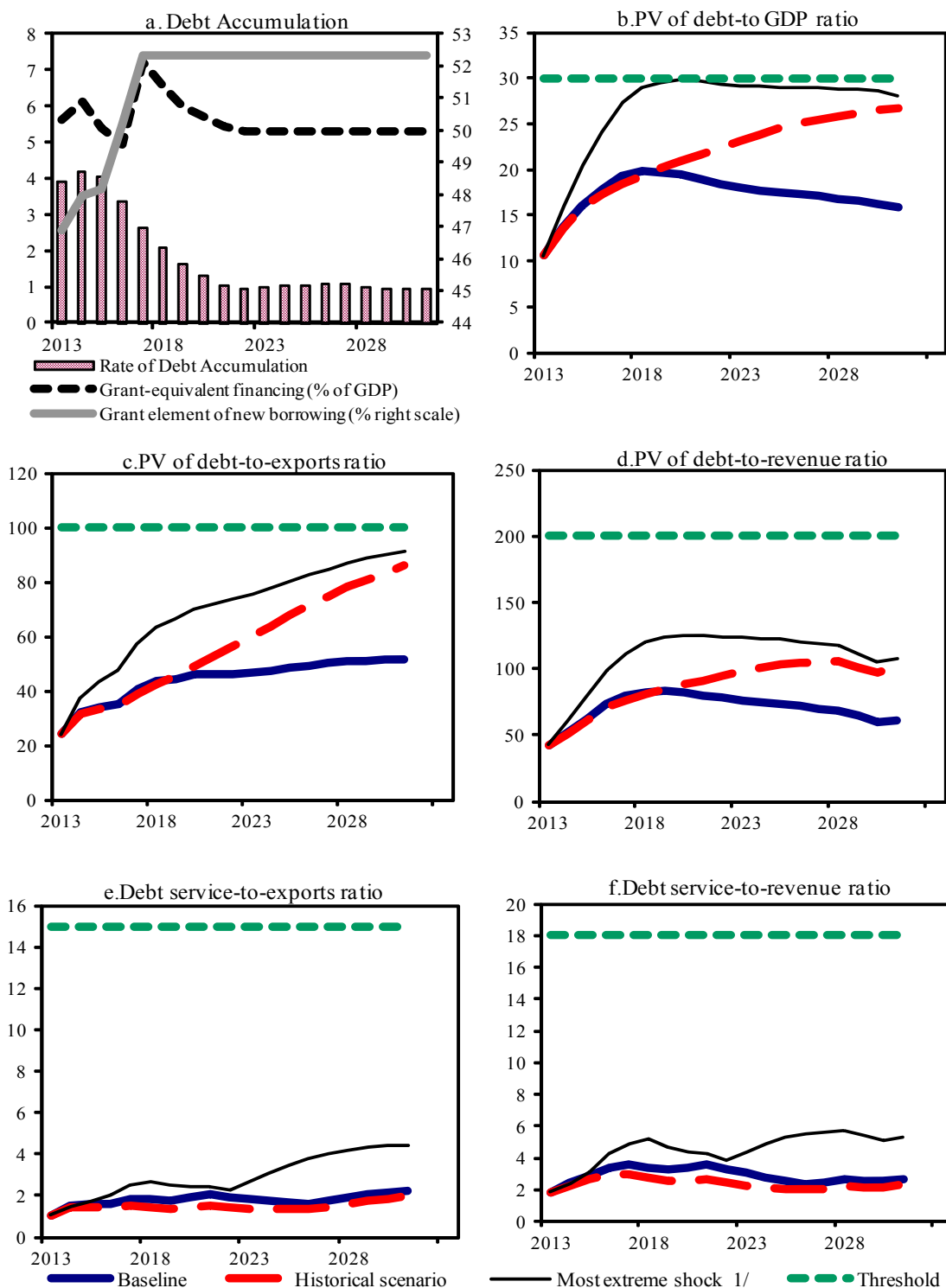
### IV. CONCLUSION

8. **The increase in debt in Liberia to finance much needed public infrastructure investments is consistent with maintaining low debt vulnerabilities.** The authorities are committed to borrow only for investment and to maintain debt sustainability. The underlying macroeconomic assumptions and DSA results were discussed with the authorities. In the baseline scenario, which assumes new foreign currency borrowing of 4 percent of GDP on concessional terms, increased investment, and moderate rates of growth, all external debt burden indicators remain below their policy-dependent thresholds. While there are risks to the baseline, particularly from adverse changes in commodity markets, the key debt and debt service indicators remain below the indicative thresholds.

<sup>5</sup> Defined as a one standard deviation shock to average GDP growth between 2004/05-2011/12, implying growth of -2.7 percent in both FY14 and FY15.



Figure 1. Liberia: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2013-2033 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2023. In each figure it corresponds to a terms shock where public sector loans are on less favourable terms.

Table 2a. Liberia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2013-2033  
(In percent)

	Projections							2033	2033
	2013	2014	2015	2016	2017	2018	2023		
<b>PV of debt-to GDP ratio</b>									
<b>Baseline</b>	11	14	16	18	19	20	<b>18</b>	14	
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2013-2033 1/	11	14	16	17	18	19	<b>23</b>	27	
A2. New public sector loans on less favorable terms in 2013-2033 2	11	16	20	24	27	29	<b>29</b>	26	
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	11	14	16	18	19	20	<b>18</b>	14	
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	11	15	22	23	25	25	<b>22</b>	16	
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	11	13	15	17	19	19	<b>17</b>	14	
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	11	22	21	22	23	24	<b>21</b>	15	
B5. Combination of B1-B4 using one-half standard deviation shocks	11	7	-5	-2	0	1	<b>3</b>	8	
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	11	19	23	25	27	28	<b>25</b>	20	
<b>PV of debt-to-exports ratio</b>									
<b>Baseline</b>	24	32	34	35	40	43	<b>47</b>	51	
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2013-2033 1/	24	32	33	34	39	42	<b>60</b>	95	
A2. New public sector loans on less favorable terms in 2013-2033 2	24	37	43	47	57	63	<b>76</b>	93	
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	24	32	33	35	40	43	<b>46</b>	50	
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	24	36	60	60	67	71	<b>74</b>	72	
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	24	32	33	35	40	43	<b>46</b>	50	
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	24	51	43	43	49	52	<b>55</b>	54	
B5. Combination of B1-B4 using one-half standard deviation shocks	24	17	-12	-5	-1	3	<b>9</b>	33	
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	24	32	33	35	40	43	<b>46</b>	50	
<b>PV of debt-to-revenue ratio</b>									
<b>Baseline</b>	43	52	62	73	79	83	<b>76</b>	63	
<b>A. Alternative Scenarios</b>									
A1. Key variables at their historical averages in 2013-2033 1/	43	51	61	71	76	81	<b>98</b>	118	
A2. New public sector loans on less favorable terms in 2013-2033 2	43	60	79	99	112	121	<b>123</b>	115	
<b>B. Bound Tests</b>									
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	43	52	63	73	80	83	<b>77</b>	64	
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	43	55	86	96	102	105	<b>94</b>	70	
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	43	50	60	70	76	79	<b>73</b>	60	
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	43	83	80	90	96	99	<b>89</b>	67	
B5. Combination of B1-B4 using one-half standard deviation shocks	43	27	-19	-9	-1	4	<b>12</b>	35	
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	43	73	87	102	111	116	<b>107</b>	88	

Table 2b.Liberia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2013-2033 (continued)

(In percent)

**Debt service-to-exports ratio**

<b>Baseline</b>	1	2	2	2	2	2	2	2
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2013-2033 1/	1	1	1	1	2	1	1	2
A2. New public sector loans on less favorable terms in 2013-2033 2	1	2	2	2	3	3	3	5
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	1	2	2	2	2	2	2	2
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	1	2	2	2	3	3	3	3
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	1	2	2	2	2	2	2	2
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	1	2	2	2	2	2	2	3
B5. Combination of B1-B4 using one-half standard deviation shocks	1	1	2	1	1	1	2	1
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	1	2	2	2	2	2	2	2

**Debt service-to-revenue ratio**

<b>Baseline</b>	2	2	3	3	4	3	3	3
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2013-2033 1/	2	2	3	3	3	3	2	3
A2. New public sector loans on less favorable terms in 2013-2033 2	2	2	3	4	5	5	4	6
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	2	2	3	3	4	4	3	3
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	2	2	3	4	4	4	3	3
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	2	2	3	3	3	3	3	3
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	2	2	3	4	4	4	3	3
B5. Combination of B1-B4 using one-half standard deviation shocks	2	2	2	2	2	2	2	1
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	2	3	4	5	5	5	4	4
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	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.

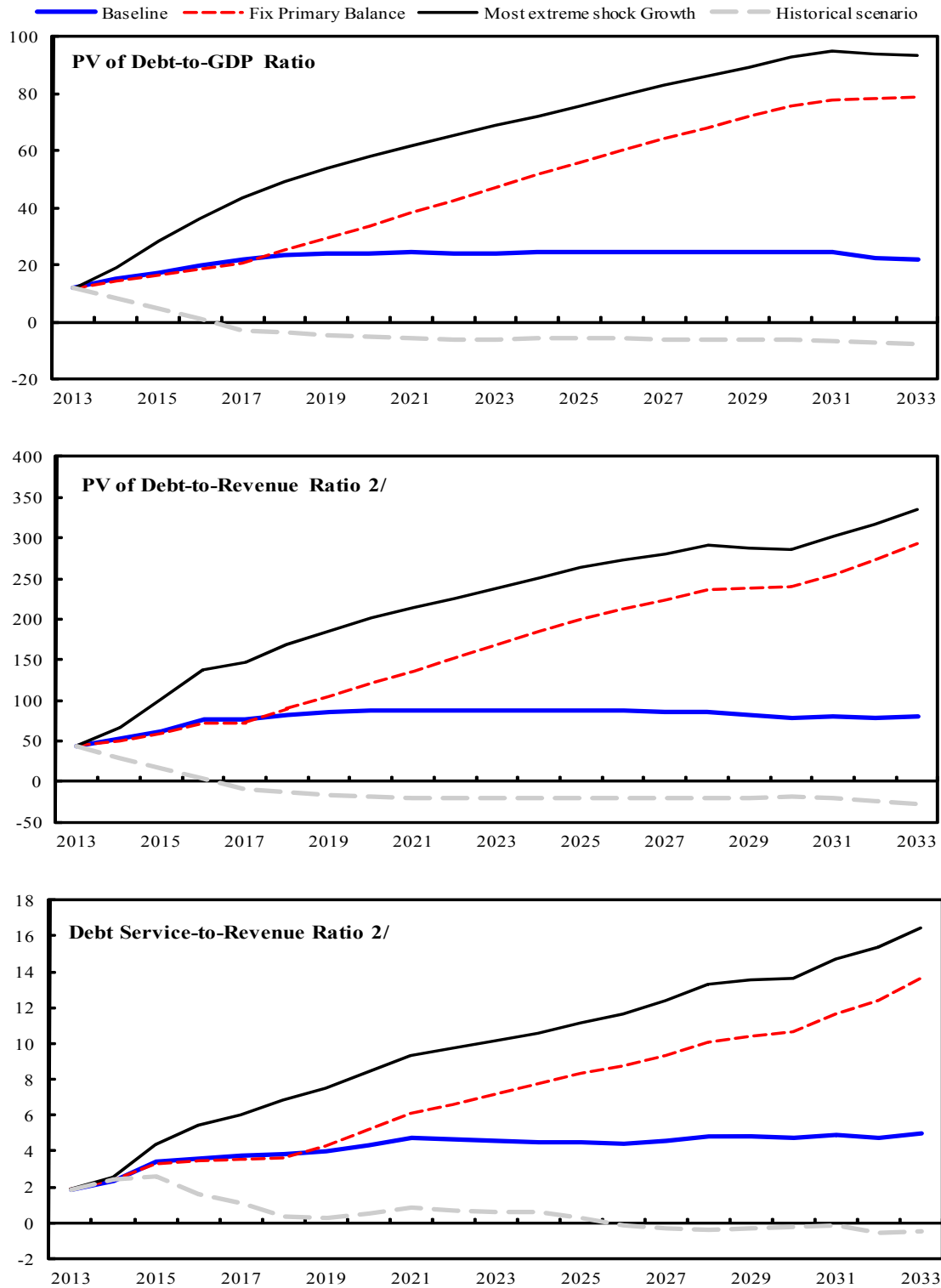
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).

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.

Figure 2. Liberia: Indicators of Public Debt Under Alternative Scenarios, 2013-2033 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2033.

2/ Revenues are defined inclusive of grants.

Table 3. Liberia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2010-2033  
(In percent of GDP, unless otherwise indicated)

	Actual			Average <sup>5/</sup>	Standard Deviation <sup>5/</sup>	Estimate						Projections			
	2010	2011	2012			2013	2014	2015	2016	2017	2018	2013-18 Average		2023	2033
<b>Public sector debt 1/</b>	142.8	10.0	11.7			17.1	23.4	28.0	32.6	36.9	38.8			38.3	32.4
o/w foreign-currency denominated	142.7	10.0	11.7			17.1	23.4	28.0	31.6	35.0	36.1			32.6	25.2
Change in public sector debt	-131.4	-132.8	1.7			5.4	6.2	4.6	4.6	4.3	1.9			-0.4	-1.3
Identified debt-creating flows	-37.6	-133.0	1.8			4.8	5.4	3.9	4.2	4.7	0.2			-1.6	-1.4
Primary deficit	-0.5	0.4	3.1	-0.3	2.1	5.9	6.5	6.0	6.5	6.1	2.6	5.6		0.6	1.1
Revenue and grants	23.5	26.4	27.8			27.3	28.8	27.6	26.0	28.7	28.2			27.9	27.0
of which: grants	1.1	2.8	1.7			2.4	2.3	1.8	1.6	4.3	4.3			4.3	4.3
Primary (noninterest) expenditure	23.0	26.9	31.0			33.2	35.3	33.6	32.5	34.8	30.8			28.5	28.1
Automatic debt dynamics	-3.9	-21.4	-1.3			-1.0	-1.1	-2.1	-2.3	-1.4	-2.3			-2.1	-2.5
Contribution from interest rate/growth differential	-17.6	-11.7	-0.9			-0.9	-1.1	-1.5	-1.8	-1.9	-2.6			-2.2	-1.8
of which: contribution from average real interest rate	-2.8	-2.1	-0.1			0.0	0.0	-0.1	-0.2	-0.2	-0.2			0.0	-0.1
of which: contribution from real GDP growth	-14.8	-9.6	-0.8			-0.9	-1.1	-1.4	-1.6	-1.7	-2.4			-2.1	-1.7
Contribution from real exchange rate depreciation	13.8	-9.7	-0.4			-0.1	0.1	-0.6	-0.5	0.5	0.3			...	...
Other identified debt-creating flows	-33.2	-112.0	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
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)	-33.2	-112.0	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
Residual, including asset changes	-93.8	0.2	-0.1			0.6	0.9	0.7	0.4	-0.5	1.7			1.2	0.1
<b>Other Sustainability Indicators</b>															
<b>PV of public sector debt</b>	...	...	9.5			12.0	15.0	17.0	19.6	22.0	23.3			24.2	21.7
o/w foreign-currency denominated	...	...	9.5			12.0	15.0	17.0	18.6	20.1	20.6			18.6	14.6
o/w external	...	...	7.9			10.6	13.8	16.1	17.8	19.3	19.8			18.0	14.3
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...			...	...
Gross financing need 2/	-0.3	0.9	3.6			6.4	7.1	6.9	7.4	7.2	3.7			1.8	2.5
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	34.1			44.0	52.1	61.8	75.6	76.8	82.5			86.6	80.5
PV of public sector debt-to-revenue ratio (in percent)	...	...	36.3			48.3	56.7	66.1	80.6	90.3	97.2			102.3	95.6
o/w external 3/	...	...	30.2			42.7	51.9	62.4	73.0	79.1	82.7			76.2	63.1
Debt service-to-revenue and grants ratio (in percent) 4/	0.9	1.6	1.8			1.9	2.4	3.4	3.6	3.7	3.9			4.6	5.0
Debt service-to-revenue ratio (in percent) 4/	1.0	1.8	1.9			2.1	2.6	3.6	3.8	4.4	4.6			5.4	5.9
Primary deficit that stabilizes the debt-to-GDP ratio	130.9	133.2	1.4			0.5	0.2	1.4	1.9	1.8	0.6			1.0	2.5
<b>Key macroeconomic and fiscal assumptions</b>															
Real GDP growth (in percent)	5.7	7.2	8.5	5.0	7.7	8.6	6.9	6.4	6.1	5.6	7.1	6.8	5.8	5.4	5.8
Average nominal interest rate on forex debt (in percent)	0.0	0.1	1.1	0.4	0.5	1.4	1.2	1.0	0.9	0.8	0.8	1.0	0.8	0.8	0.8
Average real interest rate on domestic debt (in percent)	3.0	-7.5	-6.5	-5.8	6.3	-4.8	...	...	...	17.1	11.2	7.8	6.7	3.0	6.1
Real exchange rate depreciation (in percent, + indicates depreciation)	5.4	-7.4	-4.7	-4.3	4.4	-0.9	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	0.4	11.4	9.7	10.1	4.3	6.0	4.3	7.6	6.8	3.3	4.2	5.4	5.1	8.2	5.5
Growth of real primary spending (deflated by GDP deflator, in percent)	0.1	0.2	0.3	0.2	0.4	0.2	0.1	0.0	0.0	0.1	-0.1	0.1	0.0	0.0	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	46.9	48.0	48.2	50.2	52.3	52.3	49.6	52.3	52.3	...

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 to 2009/10.

Table 4. Liberia: Sensitivity Analysis for Key Indicators of Public Debt 2013-2033  
(In percent of GDP, unless otherwise indicated)

	Projections							
	2013	2014	2015	2016	2017	2018	2023	2033
<b>PV of Debt-to-GDP Ratio</b>								
<b>Baseline</b>	12	15	17	20	22	23	24	22
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	12	8	5	1	-3	-4	-6	-8
A2. Primary balance is unchanged from 2013	12	14	16	18	21	25	47	79
A3. Permanently lower GDP growth 1/	12	16	19	23	28	31	49	109
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	12	19	28	36	44	49	69	93
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	12	10	8	12	14	16	18	17
B3. Combination of B1-B2 using one half standard deviation shocks	12	10	7	13	19	23	37	53
B4. One-time 30 percent real depreciation in 2014	12	19	19	20	22	23	25	24
B5. 10 percent of GDP increase in other debt-creating flows in 2014	12	25	26	29	31	32	31	26
<b>PV of Debt-to-Revenue Ratio 2/</b>								
<b>Baseline</b>	44	52	62	76	77	82	87	80
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	44	29	16	4	-10	-13	-21	-28
A2. Primary balance is unchanged from 2013	44	50	59	71	72	89	168	293
A3. Permanently lower GDP growth 1/	44	54	68	89	95	109	172	380
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	44	66	101	137	147	169	239	335
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	44	36	31	45	49	56	64	65
B3. Combination of B1-B2 using one half standard deviation shocks	44	34	25	51	65	80	129	194
B4. One-time 30 percent real depreciation in 2014	44	64	68	78	77	81	88	87
B5. 10 percent of GDP increase in other debt-creating flows in 2014	44	87	96	110	108	113	112	98
<b>Debt Service-to-Revenue Ratio 2/</b>								
<b>Baseline</b>	2	2	3	4	4	4	5	5
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	2	2	3	2	1	0	1	-1
A2. Primary balance is unchanged from 2013	2	2	3	3	4	4	7	14
A3. Permanently lower GDP growth 1/	2	2	4	4	4	5	8	17
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	2	3	4	5	6	7	10	16
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	2	2	3	2	3	3	4	4
B3. Combination of B1-B2 using one half standard deviation shocks	2	2	3	2	3	4	6	10
B4. One-time 30 percent real depreciation in 2014	2	3	5	5	5	5	6	7
B5. 10 percent of GDP increase in other debt-creating flows in 2014	2	2	5	5	5	5	6	6

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.