

## UGANDA: JOINT BANK-FUND DEBT SUSTAINABILITY ANALYSIS

*Based on the joint Low-Income Country Debt Sustainability Framework of the World Bank and the IMF, Uganda is assessed to be at low risk of debt distress. Its debt ratios have improved substantially over the past few years (thanks to HIPC and MDRI debt relief) and are projected to do so over the medium term and beyond under the baseline scenario. Having achieved debt sustainability, the authorities plan to address infrastructure constraints aiming at reaching high economic growth. The Joint DSA assesses the challenges and trade-offs of increasing public investment while maintaining debt sustainability.*

### I. INTRODUCTION

1. **Uganda has achieved debt sustainability by implementing sound macroeconomic policies and receiving debt relief.** The HIPC and MDRI debt relief have improved Uganda's debt sustainability outlook substantially by leading to a drastic reduction in Uganda's debt burden indicators.<sup>1</sup> As a result, external debt was US\$1.5 billion (13 percent of GDP) at end-2006/07, compared with US\$4.5 billion (47 percent of GDP) a year earlier. Consequently, all debt burden indicators are currently below their policy-dependent thresholds.<sup>2</sup> The debt service-to-exports ratio, the key indicator of short-term external liquidity, fell from 15.3 percent in 2004/05 to 6.5 percent in 2006/07.
2. **With lack of infrastructure being one of the key constraints to growth, the authorities plan to increase spending on infrastructure.** Infrastructure development (in transportation, electricity, and water) has been given priority in the 2007/08 budget and in the medium term. The authorities plan to build the Bujagali hydroelectric plant to help ease power constraints. The project is being financed by a private consortium with participation from multilateral lenders. However, as of mid-November, the terms, conditions and guarantees for financing had not been finalized. The construction of one more hydroelectric plant, possibly at Karuma, and of infrastructure necessary for the development of the oil sector (such as a small refinery and pipelines) are still at the planning stage.
3. **The baseline DSA assesses the implications of the authorities' plans to increase spending on infrastructure.** The baseline DSA assumes that the government would contract

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<sup>1</sup> Total MDRI relief (including future interest) delivered in 2005/06 and 2006/07 approached US\$3.6 billion.

<sup>2</sup> The World Bank's Country Policy and Institutional Assessment (CPIA) ranks Uganda as a "strong performer." Debt burden thresholds for strong performers are NPV of debt to GDP ratio of 50 percent, NPV of debt-to-exports ratio of 200 percent, NPV of debt-to-revenue ratio of 300 percent, debt-service-to-exports ratio of 25 percent, and debt-service-to-revenue ratio of 35 percent.

or guarantee debt on non-concessional terms up to US\$400 million, with annual average disbursements of  $\frac{3}{4}$  percent of GDP.<sup>3</sup> The baseline scenario therefore shows the impact of partial public financing on non-concessional terms of the investment in infrastructure. In addition, the DSA assumes that multilateral and bilateral official debt would be contracted on concessional terms. However, the baseline DSA excludes a number of factors that are difficult to assess and quantify at this stage, specifically: (i) the construction of the Karuma hydroelectric plant; (ii) the investment in infrastructure in the oil sector; (iii) and oil production (expected to commence in 2009), as the scale of production is yet to be determined. Box 1 summarizes the key assumptions of the baseline DSA.

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<sup>3</sup> The investment in the Bujagali project is expected to reach US\$800 million. Plans call for the investment to be financed through equity participation in, and loans to the private consortium. The government intends to negotiate favorable financing terms in the event it ends up financing a portion of the project.

### Box 1. Key Assumptions Underlying the Baseline DSA

Under the baseline scenario, construction of the Bujagali hydroelectric plant begins in 2007/08 and will be completed by 2009/10.

Reflecting the higher investment in infrastructure and the subsequent increase in production, **real GDP growth** would average 7 percent between 2007/08 and 2012/13, before slowing to 6 percent by 2019/20.

**Exports of goods** are projected to grow 11½ percent on average between 2007/08 and 2026/27, driven largely by an increase in the export volume of non-traditional exports.

The **current account** deficit would be above its historical norm of 5 percent of GDP by 2½ percentage points on average between 2007/08 and 2012/13 (peaking at 9½ percent of GDP in 2008/09) on account of higher imports related to the construction of the Bujagali plant. Ongoing adjustment of the economy (reflected in a growing share of non-traditional exports) would help the current account deficit stabilize at 6 percent of GDP in the outer years. These trends would imply a gradual improvement in the current account deficit excluding official transfers from 8½ percent of GDP in 2006/07 to 7 percent of GDP in 2026/27.

**Fiscal revenues** are assumed to increase gradually from 13½ percent of GDP in 2006/07 to 16¾ percent of GDP in 2012/13. With grants declining below 3 percentage points of GDP in the medium term, non-interest expenditures are projected to decline slightly to about 19 percent of GDP, consistent with a primary balance close to zero in the outer years.

**Official external loans** are projected to amount to US\$485 million per year on average throughout the medium term, and US\$420 million per year in the outer years. The DSA assumes that IDA will support Uganda with lending operations throughout the projection period.

**Compared with the 2006 DSA**, the current baseline scenario assumes higher real GDP growth, higher imports (particularly over the next three years, owing to imports for the construction of the Bujagali plant), and higher exports (reflecting the recent good performance and improved prospects for the sector). Export projections in particular are driven by WEO forecasts of stronger growth of Uganda's partner country demand for non-oil imports, expected to average 8½ percent in real terms over 2007-13 and assumed to grow at the same rate up to 2027. These projections allow for small gains in export market shares over the medium term, and assume that the strong export performance over the past four years will not be reversed. On balance, the new assumptions result in a somewhat better current account. The current baseline scenario also includes an upward revision of the MDRI relief granted to Uganda (which now includes relief of US\$486 million from the AfDF not included in the 2006 DSA) and a downward revision to expected external loans in line with the authorities' projections. The fiscal assumptions remain broadly unchanged.

## II. EXTERNAL DEBT SUSTAINABILITY ANALYSIS

### (a) Baseline scenario

4. **The external debt dynamics during the next 20 years would be favorable** (Tables 1, 1a, and 1b, and Figure 1). All three debt-burden indicators are expected to remain well below their policy-dependent thresholds throughout the period. Reflecting the borrowing for spending on infrastructure, the NPV of debt-to-GDP ratio is expected to rise from 5.9 percent in 2006/07 to 9.9 percent in 2012/13, but decline to 6.9 percent by 2026/27. The NPV of debt-to-exports is expected to peak at 61.4 percent in 2009/10 and decline substantially thereafter. The debt service-to-exports ratio is expected to continue along a downward trend, reflecting the delivery of HIPC and MDRI assistance.

Table 1. Uganda: Indicative External Debt Burden Indicators, 2006/07-2026/27  
(Percent)

	Indicative Thresholds <sup>1</sup>	Uganda				
		2006/07	2009/10	2012/13	2016/17	2026/27
<b>NPV of debt-to-GDP ratio</b>						
Baseline scenario	50	5.9	10.0	9.9	9.5	6.9
High investment scenario	50	5.9	13.9	13.8	11.5	7.4
<b>NPV of debt-to-exports ratio</b>						
Baseline scenario	200	37.8	61.4	48.8	43.7	27.1
High investment scenario	200	37.8	85.2	69.8	53.0	29.4
<b>Debt-service-to-exports ratio</b>						
Baseline scenario	25	6.5	4.1	3.2	2.0	1.7
High investment scenario	25	6.5	7.5	7.5	5.0	2.7

Source: Staff projections and calculations.

<sup>1</sup> Policy dependent thresholds for a strong performer according to the World Bank's CPIA.

### (b) Standardized sensitivity analysis

5. **The baseline scenario points to low risk of debt distress.** Under all the standardized stress tests (see Table 1b and Figure 1), the debt-to-GDP, debt-to-exports, and debt service-to-exports indicators remain below their threshold values throughout the next 20 years.

6. **However, a large macroeconomic shock could worsen Uganda's NPV of debt-to-exports ratio significantly.** A combined shock (by one-half standard deviation) to growth, exports, GDP deflator, and non-debt creating flows in 2007/08-2008/09, would raise Uganda's NPV of debt-to-exports ratio to 152.8 percent in 2008/09. Such a shock would have a significant impact on debt sustainability by putting the Ugandan economy at a high

indebtedness level for a prolonged period. Uganda's NPV of the debt-to-GDP and debt-service ratios would nonetheless remain well below the policy-dependent thresholds.

*(c) Customized sensitivity analysis—High investment scenario*

7. **An alternative scenario has been developed to reflect even higher public investment in infrastructure.** In addition to the investment envisaged in the baseline scenario, the alternative scenario includes investment in Karuma and the oil sector (a total of US\$422 million during 2007/08-2010/11), and in other infrastructure projects (US\$1.5 billion during the first decade, and US\$2 billion during the subsequent decade). Public financing for these investments is assumed to be through a blend of concessional (one quarter) and nonconcessional (three quarters) loans.

8. **Under this scenario, debt ratios will remain within their policy dependent thresholds** (Figure 2). Under all but one of the standardized stress tests, the NPV of debt-to-GDP and debt-to-exports as well as the debt service-to-exports ratio remain well below their threshold values throughout the next 20 years. However, under the combined shock to growth, exports, GDP deflator, and non-debt creating flows (most extreme stress test), the NPV of debt-to-exports threshold is breached in 2008/09-2010/11. This result is sensitive to the share of non-concessional borrowing in total borrowing (75 percent). The smaller this share is the lower are Uganda's debt indicators, including under the combined stress tests. Uganda could therefore become vulnerable to debt distress should it rely excessively on non-concessional borrowing.

### III. FISCAL DEBT SUSTAINABILITY ANALYSIS

9. **The fiscal DSA is based on the assumption of continued fiscal consolidation, though initially at a more moderate pace due to the power crisis, and on a gradual tapering off of grant inflows.** Specifically, it is assumed that emergency budget spending on the energy crisis will amount to about 2 percent of GDP cumulatively in the next two years, and that grants will continue to decline from 6.3 percent of GDP in FY 2006/07, before stabilizing at below 3 percent of GDP in the medium term. Domestic revenues are projected to increase gradually to some 16½ percent of GDP in 2012/13, in line with the authorities' policy objective. After a spike related to the energy crisis, non-interest expenditures will decline moderately as a percent of GDP, but then will increase again to about 19 percent of GDP, in line with projected improvement in domestic revenue collection, with primary balance close to zero.

10. **Under the baseline scenario, the NPV of public debt is projected to increase gradually after a sharp decline resulting from MDRI** (Tables 2a, 2b, and Figure 3). It will peak at about 19 percent of GDP in four years, and then decline gradually. Debt-service indicators remain manageable, with debt-service not exceeding 10 percent of revenues.

11. **Uganda's public debt will remain sustainable in case of shocks.** Even under the extreme stress test, the NPV of public debt will not exceed 30 percent of GDP over the projection period. Similarly, the stress tests do not indicate any debt-servicing problem.

#### IV. CONCLUSION

12. **The DSA analysis shows that Uganda's public debt remains sustainable under the baseline scenario.** Uganda's public debt has been reduced significantly as a result of the MDRI, and with a prudent borrowing strategy and the continuation of the stability-oriented fiscal policy, debt should remain comfortably low during the projection period. While the alternative scenario shows that Uganda can adopt a higher investment program, caution on borrowing is warranted and reliance on concessional financing remains essential.

**Table 1a. Uganda: External Debt Sustainability Framework, Baseline Scenario, 2003-2027<sup>1</sup>**  
(Percent of GDP, unless otherwise indicated)

	Actual				Historical Average <sup>2</sup>	Standard Deviation <sup>2</sup>	Projections									
	2003	2004	2005	2006			2007	2008	2009	2010	2011	2012	2007-12 Average	2017	2027	2013-27 Average
<b>External debt (nominal)<sup>1</sup></b>	<b>67.5</b>	<b>65.6</b>	<b>50.6</b>	<b>47.0</b>			<b>13.1</b>	<b>16.2</b>	<b>19.2</b>	<b>20.4</b>	<b>20.7</b>	<b>20.7</b>		<b>20.4</b>	<b>14.2</b>	
<i>Of which: public and publicly guaranteed (PPG)</i>	67.5	65.6	50.6	47.0			13.1	16.2	19.2	20.4	20.7	20.7		20.4	14.2	
Change in external debt	2.3	-1.8	-15.0	-3.6			-33.9	3.1	3.0	1.2	0.3	0.0		-0.3	-0.7	
Identified net debt-creating flows	-0.8	-6.7	-15.2	-4.0			-4.4	2.6	3.7	2.5	1.3	0.6		0.3	0.4	
<b>Non interest current account deficit</b>	<b>5.3</b>	<b>1.7</b>	<b>2.8</b>	<b>3.6</b>	<b>4.6</b>	<b>2.1</b>	<b>1.8</b>	<b>7.9</b>	<b>9.3</b>	<b>8.2</b>	<b>6.7</b>	<b>5.9</b>		<b>5.9</b>	<b>5.8</b>	
Deficit in balance of goods and services	14.7	13.3	13.1	15.2			16.3	18.6	18.6	17.4	15.1	13.7		11.9	9.7	
Exports	12.0	14.3	13.8	14.7			15.7	15.7	15.7	16.3	17.2	18.6		21.7	25.3	
Imports	26.7	27.6	26.9	29.9			32.0	34.2	34.3	33.7	32.3	32.3		33.6	35.0	
Net current transfers (negative = inflow)	-10.8	-14.0	-12.5	-13.7	-9.4	4.0	-16.2	-13.3	-12.1	-11.6	-10.7	-10.0		-8.4	-6.4	
Other current account flows (negative = net inflow)	1.5	2.3	2.3	2.1			1.7	2.7	2.8	2.4	2.3	2.2		2.4	2.4	
<b>Net FDI (negative = inflow)</b>	<b>-2.2</b>	<b>-3.4</b>	<b>-3.9</b>	<b>-3.9</b>	<b>-2.5</b>	<b>1.0</b>	<b>-3.9</b>	<b>-4.6</b>	<b>-4.7</b>	<b>-4.6</b>	<b>-4.2</b>	<b>-4.3</b>		<b>-4.6</b>	<b>-4.7</b>	
<b>Endogenous debt dynamics<sup>3</sup></b>	<b>-3.9</b>	<b>-5.0</b>	<b>-14.1</b>	<b>-3.7</b>			<b>-2.4</b>	<b>-0.7</b>	<b>-0.8</b>	<b>-1.0</b>	<b>-1.2</b>	<b>-1.0</b>		<b>-1.0</b>	<b>-0.7</b>	
Contribution from nominal interest rate	0.5	0.6	0.4	0.4			0.2	0.1	0.2	0.2	0.1	0.3		0.2	0.1	
Contribution from real GDP growth	-2.9	-3.3	-3.5	-2.4			-2.6	-0.8	-1.0	-1.2	-1.3	-1.3		-1.1	-0.8	
Contribution from price and exchange rate changes	-1.5	-2.3	-11.1	-1.7			...	...	...	...	...	...		...	...	
<b>Residual<sup>4</sup></b>	<b>3.0</b>	<b>4.9</b>	<b>0.2</b>	<b>0.4</b>			<b>-29.5</b>	<b>0.5</b>	<b>-0.8</b>	<b>-1.3</b>	<b>-1.0</b>	<b>-0.6</b>		<b>-0.6</b>	<b>-1.1</b>	
<i>Of which: exceptional financing</i>	-0.3	-0.1	0.0	0.3			0.2	0.3	0.2	0.1	0.0	0.0		0.0	0.0	
NPV of external debt <sup>5</sup>	...	...	...	...			5.9	7.6	9.2	10.0	10.2	9.9		9.5	6.9	
In percent of exports	...	...	...	...			37.8	48.8	58.6	61.4	58.9	53.3		43.7	27.1	
<b>NPV of PPG external debt</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>			<b>5.9</b>	<b>7.6</b>	<b>9.2</b>	<b>10.0</b>	<b>10.2</b>	<b>9.9</b>		<b>9.5</b>	<b>6.9</b>	
Percent of exports	...	...	...	...			37.8	48.8	58.6	61.4	58.9	53.3		43.7	27.1	
Debt service-to-exports ratio (percent)	20.1	17.3	15.3	9.7			6.5	2.7	3.6	4.1	3.9	3.6		2.0	1.7	
<b>PPG debt service-to-exports ratio (percent)</b>	<b>20.1</b>	<b>17.3</b>	<b>15.3</b>	<b>9.7</b>			<b>6.5</b>	<b>2.7</b>	<b>3.6</b>	<b>4.1</b>	<b>3.9</b>	<b>3.6</b>		<b>2.0</b>	<b>1.7</b>	
Total gross financing need (US\$ millions)	342.8	51.3	85.5	105.8			-116.4	470.3	750.6	669.1	558.5	438.9		477.7	905.8	
Non interest current account deficit that stabilizes debt ratio	3.1	3.5	17.8	7.2			35.7	4.8	6.3	7.0	6.4	6.0		6.2	6.5	
<b>Macroeconomic assumptions</b>																
Real GDP growth (percent)	4.7	5.4	6.8	5.1	5.6	1.2	6.5	7.1	7.0	7.0	7.0	7.0	6.9	6.0	6.0	
GDP deflator in US dollar terms (change in percent)	2.3	3.5	20.3	3.4	-0.3	9.6	11.0	6.5	6.4	2.4	2.0	2.4	5.1	1.9	1.9	
Effective interest rate (percent) <sup>6</sup>	0.8	0.9	0.8	0.8	1.0	0.2	0.5	1.2	1.2	1.1	0.5	1.4	1.0	0.9	0.8	
Growth of exports of G&S (US\$ terms, percent)	7.6	29.2	24.6	15.7	8.0	16.0	25.7	14.1	14.1	13.7	15.5	18.5	16.9	9.7	9.8	
Growth of imports of G&S (US\$ terms, percent)	7.7	12.6	25.2	20.9	7.5	11.8	26.2	22.3	13.9	7.7	4.8	9.4	14.1	8.5	8.5	
Grant element of new public sector borrowing (percent)	...	...	...	...	...	...	48.0	34.4	39.2	35.7	43.8	49.1	41.7	49.1	49.1	
<i>Memorandum item:</i>																
Nominal GDP (US\$ millions)	6,240	6,802	8,737	9,495			11,227	12,806	14,585	15,976	17,443	19,118		27,772	60,069	

Source: Staff simulations.

<sup>1</sup> Public and publicly guaranteed external debt. Figures refer to Uganda's fiscal year ending in June of the year indicated.

<sup>2</sup> Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

<sup>3</sup> Derived as  $[r - g - r(1+g)] / (1+g+r+gr)$  times previous period debt ratio, with  $r$  = nominal interest rate;  $g$  = real GDP growth rate, and  $r$  = growth rate of GDP deflator in U.S. dollar terms.

<sup>4</sup> 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.

<sup>5</sup> Assumes that the NPV of private sector debt is equivalent to its face value.

<sup>6</sup> Current-year interest payments divided by previous period debt stock.

**Table 1b. Uganda: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2007-2027<sup>1</sup>**  
(Percent)

	Projections							2027
	2007	2008	2009	2010	2011	2012	2017	
<b>NPV of debt-to-GDP ratio</b>								
<b>Baseline</b>	5.9	7.6	9.2	10.0	10.2	9.9	<b>9.5</b>	6.9
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2008-27 <sup>2</sup>	5.9	7.5	8.3	8.7	8.9	9.2	<b>11.8</b>	14.0
A2. New public sector loans on less favorable terms in 2008-27 <sup>3</sup>	5.9	5.0	7.9	11.6	13.4	14.4	<b>17.7</b>	17.9
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	5.9	7.8	9.7	10.5	10.7	10.4	<b>10.0</b>	7.2
B2. Export value growth at historical average minus one standard deviation in 2008-09 <sup>4</sup>	5.9	9.2	13.4	14.0	14.0	13.6	<b>12.4</b>	7.9
B3. US\$ GDP deflator at historical average minus one standard deviation in 2008-09	5.9	9.0	12.8	14.0	14.2	13.8	<b>13.3</b>	9.6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 <sup>5</sup>	5.9	13.2	19.3	19.6	19.3	18.7	<b>16.3</b>	9.2
B5. Combination of B1-B4 using one-half standard deviation shocks	5.9	13.9	24.1	24.5	24.2	23.4	<b>20.5</b>	11.8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 <sup>6</sup>	5.9	10.6	12.8	13.9	14.1	13.8	<b>13.2</b>	9.6
<b>NPV of debt-to-exports ratio</b>								
<b>Baseline</b>	37.8	48.8	58.6	61.4	58.9	53.3	<b>43.7</b>	27.1
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2008-27 <sup>2</sup>	37.8	47.8	52.9	53.6	51.8	49.3	<b>54.1</b>	55.4
A2. New public sector loans on less favorable terms in 2008-27 <sup>3</sup>	37.8	31.8	50.5	71.2	77.9	77.5	<b>81.4</b>	71.0
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	37.8	48.8	58.6	61.4	58.9	53.3	<b>43.7</b>	27.1
B2. Export value growth at historical average minus one standard deviation in 2008-09 <sup>4</sup>	37.8	72.8	131.6	132.5	124.9	112.1	<b>87.6</b>	47.9
B3. US\$ GDP deflator at historical average minus one standard deviation in 2008-09	37.8	48.8	58.6	61.4	58.9	53.3	<b>43.7</b>	27.1
B4. Net non-debt-creating flows at historical average minus one standard deviation in 2008-09 <sup>5</sup>	37.8	84.6	123.2	120.6	112.3	100.2	<b>75.0</b>	36.5
B5. Combination of B1-B4 using one-half standard deviation shocks	37.8	88.3	152.8	150.1	139.9	125.0	<b>94.1</b>	46.5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 <sup>6</sup>	37.8	48.8	58.6	61.4	58.9	53.3	<b>43.7</b>	27.1
<b>Debt service ratio</b>								
<b>Baseline</b>	6.5	2.7	3.6	4.1	3.9	3.6	<b>2.0</b>	1.7
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2008-27 <sup>2</sup>	6.5	2.9	4.2	4.7	4.6	4.4	<b>2.3</b>	2.9
A2. New public sector loans on less favorable terms in 2008-27 <sup>3</sup>	6.5	2.4	3.6	2.6	1.8	1.6	<b>1.2</b>	0.4
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	6.5	2.7	3.6	4.1	3.9	3.6	<b>2.0</b>	1.7
B2. Export value growth at historical average minus one standard deviation in 2008-09 <sup>4</sup>	6.5	3.3	5.9	6.9	6.6	6.0	<b>4.6</b>	3.2
B3. US\$ GDP deflator at historical average minus one standard deviation in 2008-09	6.5	2.7	3.6	4.1	3.9	3.6	<b>2.0</b>	1.7
B4. Net non-debt-creating flows at historical average minus one standard deviation in 2008-09 <sup>5</sup>	6.5	2.7	4.2	5.1	4.8	4.4	<b>4.4</b>	2.6
B5. Combination of B1-B4 using one-half standard deviation shocks	6.5	3.0	5.3	6.5	6.1	5.6	<b>5.4</b>	3.3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 <sup>6</sup>	6.5	2.7	3.6	4.1	3.9	3.6	<b>2.0</b>	1.7
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) <sup>7</sup>	49.0	49.0	49.0	49.0	49.0	49.0	<b>49.0</b>	49.0

Source: Staff projections and simulations.

<sup>1</sup> Figures refer to Uganda's fiscal year ending in June of the year indicated.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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).

<sup>5</sup> Includes official and private transfers and FDI.

<sup>6</sup> Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.

<sup>7</sup> Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 3.

**Table 2a. Uganda: Public Sector Debt Sustainability Framework, Baseline Scenario, 2005-2027**  
(Percent of GDP, unless otherwise indicated)

	Actual		Historical Average <sup>1</sup>	Standard Deviation <sup>1</sup>	Estimate						Projections			
	2005	2006			2007	2008	2009	2010	2011	2012	2007-12 Average	2017	2027	2013-27 Average
<b>Public sector debt<sup>2</sup></b>	59.4	55.9			21.7	24.8	27.8	28.9	29.3	29.1		28.8	22.6	
<i>Of which: foreign-currency denominated</i>	50.6	47.0			13.1	16.2	19.2	20.4	20.7	20.7		20.4	14.2	
Change in public sector debt	-14.2	-3.5			-34.2	3.1	2.9	1.2	0.4	-0.2		-0.3	-0.7	
Identified debt-creating flows	-7.2	-4.3			-37.8	1.8	1.6	1.0	0.3	-0.8		-1.1	-0.8	
Primary deficit	-0.9	-0.6	1.9	2.8	1.1	2.1	3.0	2.7	2.0	1.0	2.0	-0.1	-0.1	-0.4
Revenue and grants	20.7	19.6			19.6	18.4	18.5	18.5	18.6	20.3		20.2	22.2	
<i>Of which: grants</i>	7.9	6.5			6.3	4.3	3.9	3.4	3.0	4.2		2.4	2.4	
Primary (noninterest) expenditure	19.8	18.9			20.7	20.5	21.6	21.2	20.6	21.4		20.1	22.1	
Automatic debt dynamics	-5.9	-3.3			-12.1	0.0	-1.2	-1.5	-1.6	-1.7		-0.9	-0.6	
Contribution from interest rate/growth differential	-1.1	-3.0			-3.5	-0.5	-1.0	-1.4	-1.6	-1.7		-0.9	-0.6	
<i>Of which: contribution from average real interest rate</i>	3.5	-0.2			-0.1	0.9	0.6	0.4	0.3	0.3		0.7	0.7	
contribution from real GDP growth	-4.7	-2.9			-3.4	-1.4	-1.6	-1.8	-1.9	-1.9		-1.6	-1.3	
Contribution from real exchange rate depreciation	-4.7	-0.2			-8.7	0.6	-0.2	-0.1	0.0	-0.1		...	...	
Other identified debt-creating flows	-0.4	-0.4			-26.8	-0.3	-0.2	-0.2	-0.2	-0.2		-0.1	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	
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	
Debt relief (HIPC and other)	-0.4	-0.4			-26.8	-0.3	-0.2	-0.2	-0.2	-0.2		-0.1	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	
Residual, including asset changes	-7.0	0.8			3.6	1.3	1.4	0.2	0.1	0.6		0.8	0.0	
<b>NPV of public sector debt</b>	8.8	13.7			14.5	16.3	17.8	18.6	18.8	18.3		17.9	15.3	
<i>Of which: foreign-currency denominated</i>	...	4.8			5.9	7.6	9.2	10.0	10.2	9.9		9.5	6.9	
external	...	4.8			5.9	7.6	9.2	10.0	10.2	9.9		9.5	6.9	
NPV of contingent liabilities (not included in public sector debt)	...	...			...	...	...	...	...	...		...	...	
Gross financing need <sup>3</sup>	9.7	6.9			6.0	6.4	7.5	8.3	8.0	7.1		5.3	5.4	
NPV of public sector debt-to-revenue ratio (in percent) <sup>4</sup>	42.6	69.7			74.0	88.6	95.9	100.3	100.8	90.3		88.7	68.9	
<i>Of which: external</i>	...	...			30.2	41.5	49.5	54.0	54.5	48.8		47.0	30.9	
Debt service-to-revenue ratio (percent) <sup>4,5</sup>	18.7	12.9			12.1	7.6	9.8	9.5	9.1	7.8		7.1	7.0	
Primary deficit that stabilizes the debt-to-GDP ratio	13.3	2.9			35.4	-1.1	0.1	1.5	1.6	1.3		0.2	0.6	
<b>Macroeconomic and fiscal assumptions</b>														
Real GDP growth (percent)	6.8	5.1	5.6	1.2	6.5	7.1	7.0	7.0	7.0	7.0	6.9	6.0	6.0	6.0
Average nominal interest rate on forex debt (percent)	0.8	0.8	1.2	0.4	0.5	1.2	1.2	1.1	0.5	1.5	1.0	0.9	0.8	0.9
Average real interest rate on domestic currency debt (percent)	59.5	-0.4	-1.5	23.8	4.3	11.1	8.7	6.7	7.8	4.6	7.2	11.7	10.8	10.7
Real exchange rate depreciation (percent, + indicates depreciation)	-7.8	-0.5	2.1	8.5	-19.8	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, percent)	8.0	8.6	6.0	4.4	8.2	3.9	4.6	4.0	3.7	4.1	4.7	2.9	2.9	2.9
Growth of real primary spending (deflated by GDP deflator, percent)	-1.2	0.6			16.6	5.6	12.8	5.3	3.9	10.9	9.2	7.1	7.0	6.5
Grant element of new external borrowing (percent)	...	...			...	...	...	...	...	...	...	...	...	...

Sources: Country authorities; and staff estimates and projections.

<sup>1</sup> Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

<sup>2</sup> Gross debt of the central government; excludes domestic arrears.

<sup>3</sup> 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.

<sup>4</sup> Revenues including grants.

<sup>5</sup> Debt service is defined as the sum of interest and amortization of medium and long-term debt.

Table 2b. Uganda: Sensitivity Analysis for Key Indicators of Public Debt, 2007-2027

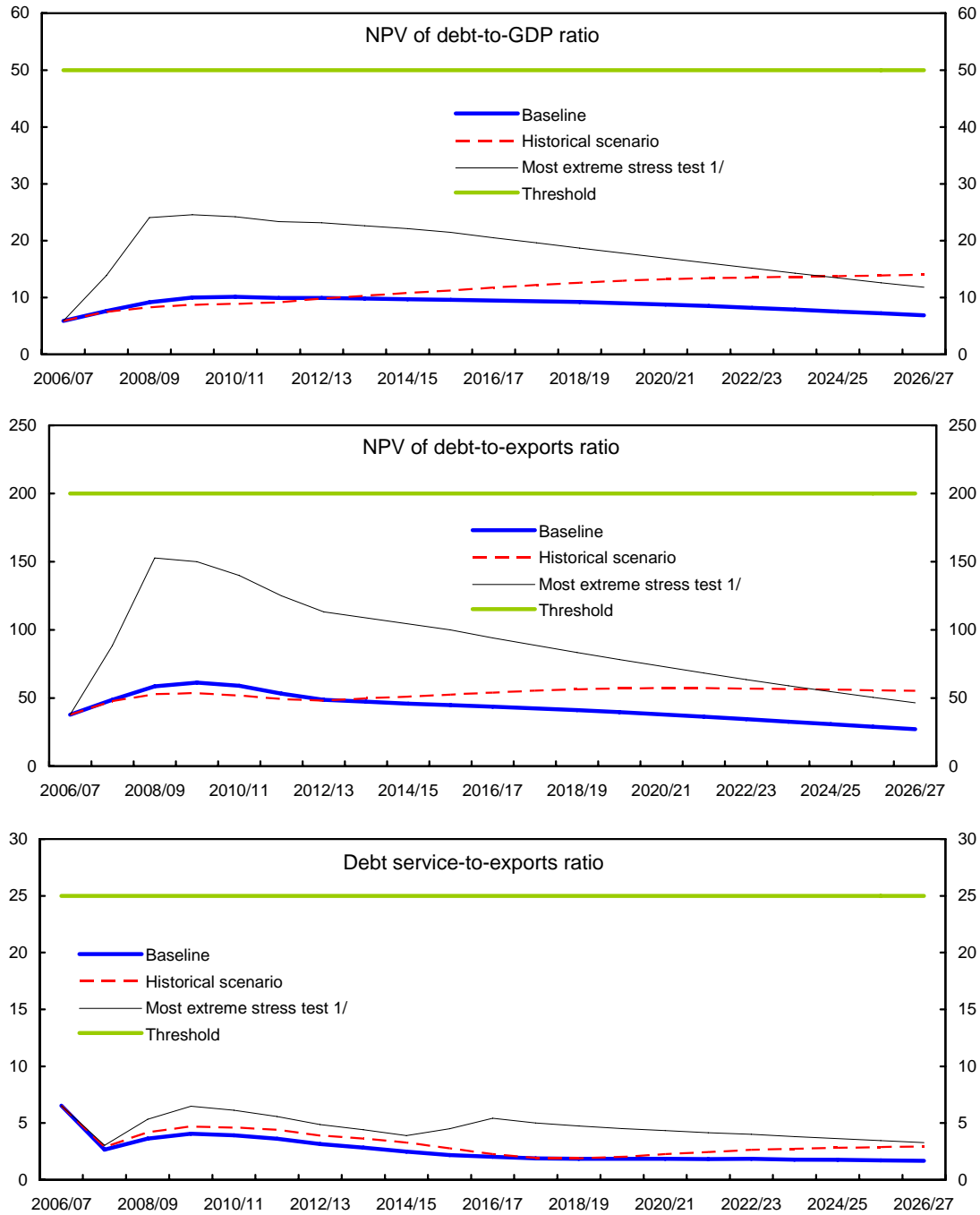
	Projections							
	2007	2008	2009	2010	2011	2012	2017	2027
<b>NPV of Debt-to-GDP Ratio</b>								
<b>Baseline</b>	15	16	18	19	19	18	18	15
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	16	20	20	20	20	20	30	39
A2. Primary balance is unchanged from 2007	16	20	20	20	20	20	29	36
A3. Permanently lower GDP growth <sup>1</sup>	16	19	20	21	21	22	21	24
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	16	20	22	24	24	26	26	29
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	16	22	25	25	25	26	22	18
B3. Combination of B1-B2 using one-half standard deviation shocks	16	22	23	24	23	24	20	17
B4. One-time 30 percent real depreciation in 2008	16	22	22	22	21	22	18	16
B5. 10 percent of GDP increase in other debt-creating flows in 2008	16	29	29	30	29	28	25	19
<b>NPV of Debt-to-Revenue Ratio <sup>2</sup></b>								
<b>Baseline</b>	85	92	108	111	112	110	98	76
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	85	101	109	108	108	109	152	175
A2. Primary balance is unchanged from 2007	85	100	107	105	104	105	145	163
A3. Permanently lower GDP growth <sup>1</sup>	85	96	110	113	114	119	106	110
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	85	99	119	125	128	136	129	130
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	85	114	135	136	135	137	112	84
B3. Combination of B1-B2 using one-half standard deviation shocks	85	109	125	125	124	127	102	75
B4. One-time 30 percent real depreciation in 2008	85	110	119	118	115	117	91	71
B5. 10 percent of GDP increase in other debt-creating flows in 2008	83	145	159	159	157	151	125	84
<b>Debt Service-to-Revenue Ratio <sup>2</sup></b>								
<b>Baseline</b>	12	8	10	10	9	8	7	7
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	11	8	10	9	8	7	11	15
A2. Primary balance is unchanged from 2007	11	8	10	9	8	7	10	14
A3. Permanently lower GDP growth <sup>1</sup>	11	8	9	10	9	7	8	10
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	11	8	10	11	10	8	9	12
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	11	8	12	12	10	8	8	8
B3. Combination of B1-B2 using one-half standard deviation shocks	11	8	11	11	9	8	8	7
B4. One-time 30 percent real depreciation in 2008	11	9	10	11	9	8	8	8
B5. 10 percent of GDP increase in other debt-creating flows in 2008	11	8	17	12	11	9	8	9

Sources: Country authorities; and staff estimates and projections.

<sup>1</sup> Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of 20 (i.e., the length of the projection period).

<sup>2</sup> Revenues are defined inclusive of grants.

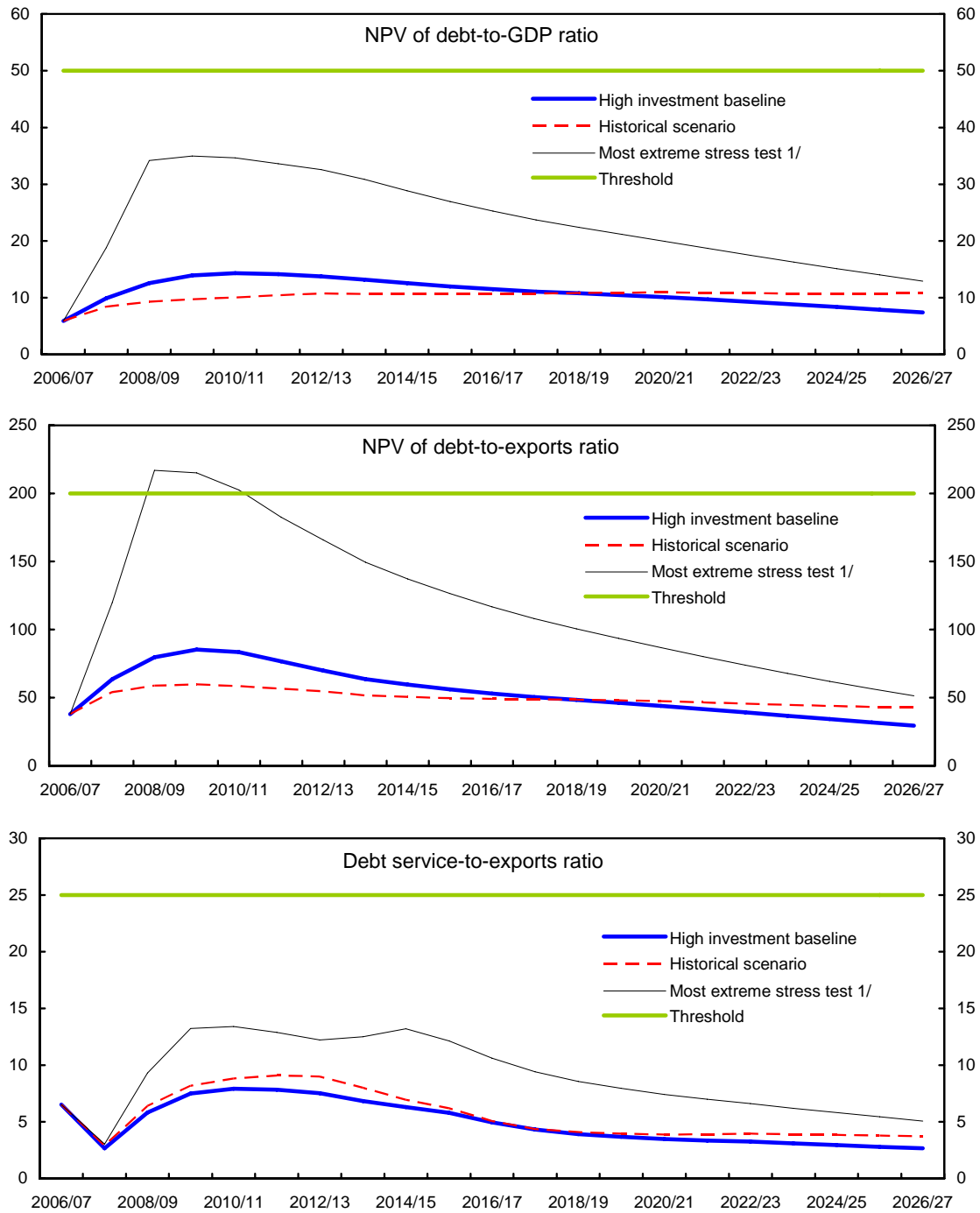
Figure 1. Uganda: Indicators of Public and Publicly Guaranteed External Debt  
Baseline Scenario  
(Percent)



Source: Staff projections and simulations.

1/ Combination of historical averages of real GDP growth, export value growth, US\$ GDP deflator, and net non-debt-creating flows, using one-half standard deviation shocks.

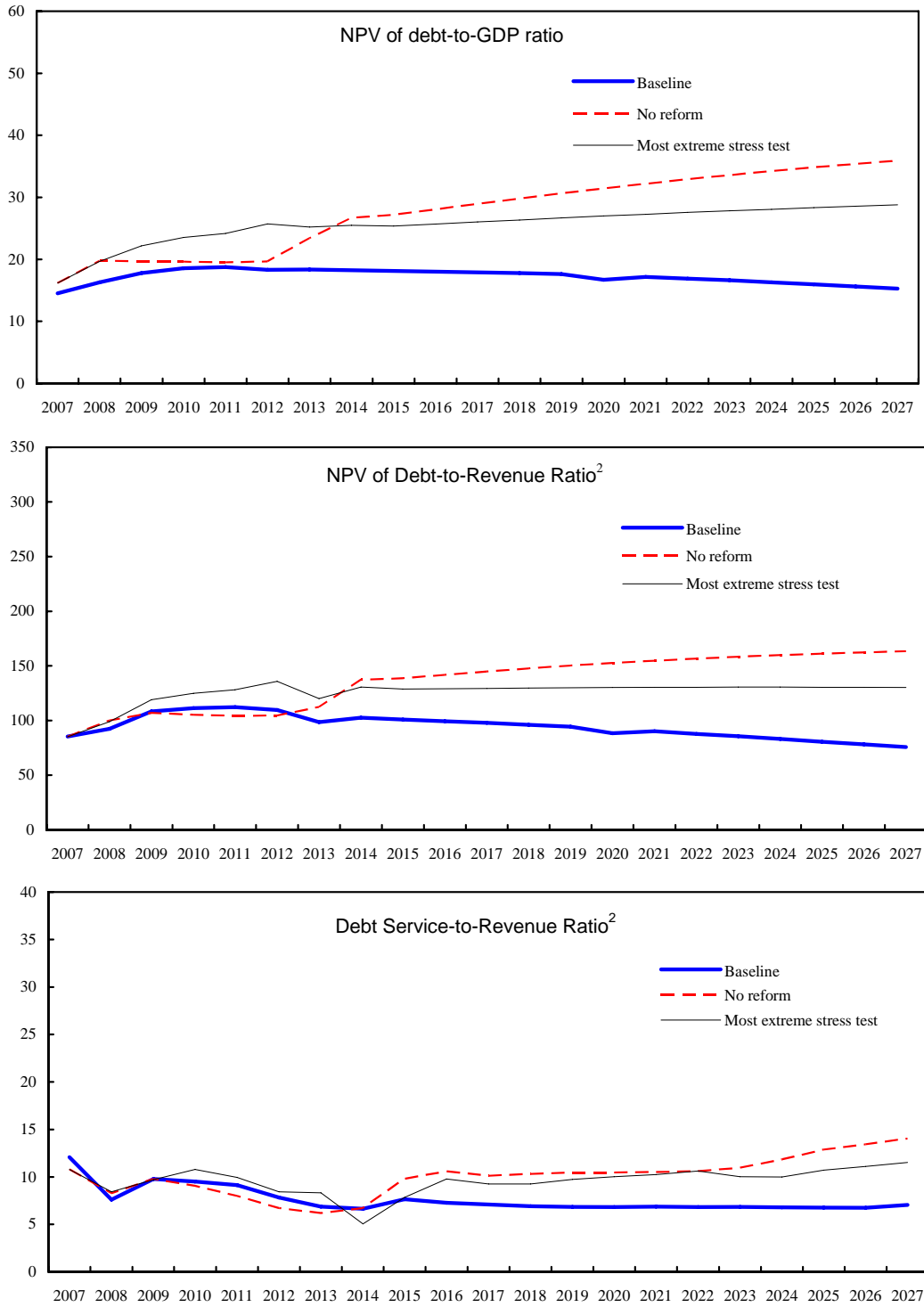
Figure 2. Uganda: Indicators of Public and Publicly Guaranteed External Debt  
High Investment Scenario  
(Percent)



Source: Staff projections and simulations.

1/ Combination of historical averages of real GDP growth, export value growth, US\$ GDP deflator, and net non-debt-creating flows, using one-half standard deviation shocks.

Figure 3. Uganda: Indicators of Public Debt Under Alternative Scenarios, 2007-2027<sup>1</sup>



Source: Staff projections and simulations.

<sup>1</sup> Most extreme stress test is the test that yields the highest ratio in 2017.

<sup>2</sup> Revenue including grants.