UGANDA

Joint IMF/World Bank Debt Sustainability Analysis[1]

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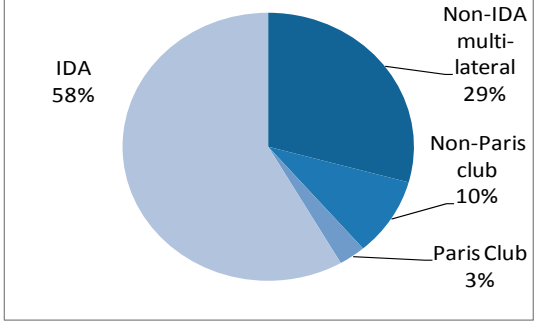
Based on the joint Low-Income Country Debt Sustainability Framework of the World Bank and the IMF, Uganda continues to be assessed as a low risk of debt distress. The authorities intend to continue to rely on concessional assistance to finance their public infrastructure investment in the coming years, but increase gradually their use of non-concessional funds as they build up their debt management capacity. Under these baseline assumptions, external debt is expected to remain well below the thresholds over the medium and long term, and public debt exhibits stable debt dynamics. The sensitivity of Uganda's debt indicators to a growth shock suggests that careful selection of public investment projects have a key role to play in the maintenance of debt sustainability over the near and medium term, requiring continued attention from the Ugandan authorities to improving investment planning processes and strengthening implementation capacity.

I. Background

1. **Sound macroeconomic policies and cautious public borrowing following debt relief have allowed Uganda to maintain a sustainable debt position**. HIPC (in 1999/2000) and MDRI (in 2005/06 and 2006/07) debt relief reduced Uganda's debt burden sharply, with all debt indicators declining to levels well below their policy-dependent thresholds.[2] Prudent fiscal management and modest public sector deficits further strengthened the debt position. Debt management has remained cautious since debt relief (Box 1). New external borrowing concentrated on financing for energy, roads and agricultural development, and was contracted on highly concessional terms, mostly from IDA and the AfDB. The authorities have guaranteed somewhat more than $100 million in private external loans over 2006-09, mostly as part of

Figure 1. Breakdown of the stock of external debt (end FY2008/09)



[1] Prepared by the IMF and World Bank staff in consultation with the authorities. This DSA replaces the one prepared in 2008 as a staff supplement in IMF Country Report No. 09/79. Its assumptions and results have been discussed with the authorities. All debt indicators refer to Uganda's fiscal year (July-June).

[2] 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.

the financing for the Bujagali hydropower dam[3] – the guarantee has remained uncalled. As a consequence, public and publicly guaranteed external debt has remained low as a percent of GDP (13.8 percent in 2008/09), and is mostly owed to multilaterals (IDA accounts for 58 percent of total debt – Figure 1). Domestic debt, issued exclusively for the conduct of monetary policy, amounts to less than 10 percent of GDP.

Box 1. Changes in Debt Indicators since the Last DSA

- **Public and publicly guaranteed external debt** increased from US$ 1.8 billion (11.8 percent of GDP) to US$ 2.0 billion (13.8 percent of GDP) between 2007/8 and 2008/09.
- **Debt service to exports**, the key indicator of external liquidity, fell from 6.0 percent to 3.5 percent over this period, partly on account of better recording of export data.
- With domestic debt declining from 10.7 percent in 2007/08 to 8.4 percent of GDP in 2008/09 (mostly on account of high growth), **total public debt** declined slightly to 22.2 percent of GDP, from 22.5 percent recorded in 2007/08. The **debt-service-to-revenue ratio** declined from 33.0 to 24.8 percent over this period.

2. **The backbone of the authorities' medium-term policies continues to be a sharp increase in public investment with a view to removing persistent growth bottlenecks.** Investment in infrastructure (mostly energy and transportation) is the main priority of the new National Development Plan, and a number of large 'flagship' projects have been identified, including the Karuma hydropower plant[4]. Capacity building is expected to raise implementation and absorptive capacity over the coming years, alleviating the main constraints to budget execution faced in the recent past.

3. **Financing is expected to come from a combination of domestic and external sources.** The authorities are committed to raise domestic revenue over the medium term, partly to make up for the expected decline in aid. While a large share of their financing needs will continue to be filled by concessional borrowing, they also intend to use limited amounts of non-concessional borrowing for large high-yield investments such as the Karuma hydropower project.

II. ASSUMPTIONS

4. **Long-term assumptions are consistent with the recent performance of the Ugandan economy and only slightly different from those in the previous DSA.** Growth is

[3] The Bujagali hydroelectric plant was financed through a US $800 million private consortium with participation from multilateral lenders, with a public sector guarantee of only US $115 million.

[4] See Uganda's *National Development Plan 2010/11-2014/15*, and the *Joint Staff Advisory Note on Uganda's National Development Plan 2010/11-2014/15* (http://www.imf.org).

expected to remain below potential in 2009/10 and 2010/11 on account of the prolonged effects of the global economic slowdown and of the regional drought, but rebound to around 7 percent (about the historical average of the past nine years[5]) thereafter, while improved monetary policy management would help keep inflation around 5 percent. The public sector deficit (including grants) increases in the near term on account on the public investment drive before stabilizing at about 2.5 percent of GDP. Compared with the 2008 Joint IMF-World Bank DSA, the current baseline scenario assumes a more marked slowdown in the near term and a less ambitious growth path over the medium term, reflecting a slightly scaled-down profile of infrastructure investment in light of capacity and implementation constraints (Box 2).

Box 2. Ex post analysis of the 2008 DSA

- **Exports have over-performed compared to the last DSA**, mostly on account of better recording of informal cross-border trade and a stronger resilience to the impact of the global slowdown.
- Similarly, higher growth than initially envisaged has led to **more sustained imports**. Assumptions on the behavior of exports and imports over the long term are similar to the 2008 DSA, and the trade and current account balances are similar.
- **The current baseline scenario includes slightly less external borrowing** compared to the 2008 DSA, in line with the smoother public expenditure path.
- **On the fiscal side, both public revenue and expenditure have not performed as well as envisaged in the 2008 DSA**. They are assumed to grow smoothly over the projection period, as implementation and absorption capacity constraints are lifted and improved tax policy increases fiscal resources.

5. **The external position remains solid.** The external current account deficit widens somewhat in the early years, largely on account of the high import content of infrastructure investments, before stabilizing around 3 percent of GDP in the long run. Exports in 2009 were well above projections, largely on account of inclusion of cross-border informal trade.[6] They are subsequently assumed to grow in line with GDP before accelerating over the long term, reflecting the supply response to improved infrastructure. Imports pick up during the investment drive, reaching 35 percent of GDP before returning to their steady-state level of 30 percent of GDP over the long term. The trade deficit stabilizes over the long term at around 6 percent of GDP. Total transfers decline over time, from 9 to 4 percent of GDP.

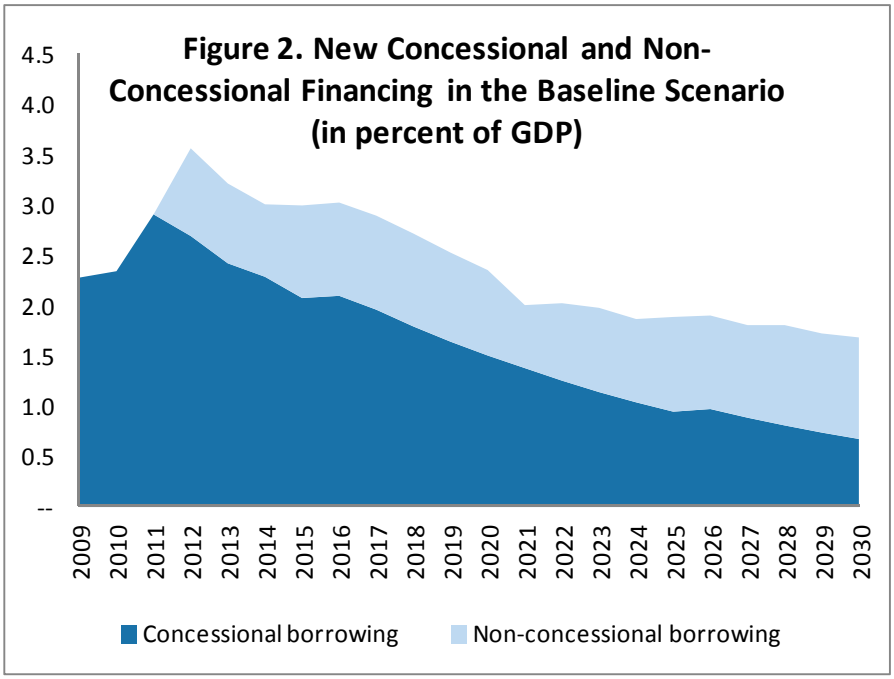
[5] Historical averages exclude FY1999/2000, where growth was abnormally high.

[6] Export grew at abnormally high levels of 57 percent and 19 percent during 2007/08 and 2008/09 as recording was adjusted to include the informal border trade that is usually not captured in the Customs data previously used to derive export figures.

Remittances are assumed to stabilize at about 3.5 percent of GDP over the long term, with a slowly declining trend, and FDI stabilizes at about 4 percent of GDP.

6. **Concessional donor inflows are projected to continue to contribute to budget financing but gradually taper off.** As concessional assistance decline, the use of non-concessional resources grows to provide about half the new external financing at the end of the projection period (Figure 2).[7] The grant element of new public borrowing declines over time, from over 40 percent to less than 10 percent by the end of the projection period. Public domestic debt grows in line with GDP, hovering over 8 percent of GDP. Financing projections are somewhat below those of the previous DSA, reflecting the slower projected growth in public investment

7. **The current scenario does not account for the impact of oil, given the uncertainties that continue to affect the medium-term prospects**. Recent oil exploration in Eastern Uganda suggest that oil will likely have a significant impact on growth as well as the fiscal and external accounts over the medium and long term. However, there remains a high degree of uncertainty regarding the scope, timing and pace of petroleum exploitation. The costs in terms of infrastructure development are also difficult to quantify at this point. Under the most recent estimates, production and commercialization cannot be expected before 2017. While the current analysis excludes oil, the next full DSA will explore this issue in detail, taking into account the additional information that will become available by then on the impact of oil on the economy.



[7] Non-concessional borrowing is assumed to be contracted on IBRD-like terms, with LIBOR rates, 10 years of grace and 20 years of repayment.

III. External Debt Sustainability Analysis

8. **The authorities agreed with the results of the DSA, which were similar to the results of their own DSA.** The authorities intend to rely primarily on concessional borrowing, and based their DSA on more conservative assumptions regarding non-concessional borrowing. They were however well aware that some non-concessional borrowing was likely and agreed that such a borrowing would remain consistent with debt sustainability under the joint IMF-World Bank DSA assumptions. In that context, the authorities are also considering the use of private public partnerships to ease pressure on government financing, and are strengthening the relevant regulatory framework to be able to better assess potential contingent liabilities.

9. **Public and publicly guaranteed external debt is expected to remain sustainable over the next 20 years** (Table 1 and Figure 3). All five debt-burden indicators remain well below their policy-dependent thresholds throughout the period. The PV of debt-to-GDP ratio is expected to rise in the first part of the period (from 8 percent in 2009/10 to 13 percent in 2014/15) in line with the public investment drive; it then stabilizes to about 14 percent in the outer years. The PV of debt-to-exports is expected to peak at 86 percent of GDP in 2019/20 before going down gradually to 70 percent at the end of the projection period. The debt service-to-exports ratio remains very low, reflecting the continued large share of highly concessional borrowing in the debt stock.

10. **External debt is expected to remain resilient to all standardized shocks** (Figure 2, Tables 2a and 2b). The stress tests point to a low risk of debt distress. Under all standardized stress tests, the debt-to-GDP, debt-to-exports, and debt service-to-exports indicators of public and publicly guaranteed external debt remain below their indicative threshold values throughout the next 20 years.

11. **Historical scenarios reflect to a large extent Uganda's uneven performance over the last ten years**, notably with respect to GDP and export growth, inflation, transfers, and FDI inflows. However, stronger performance since 2005 points to an increased resilience. In addition, Uganda has accumulated large foreign reserves in recent years – reserves stand at 5 months of imports in 2009/10 and are projected to remain close to this level providing a significant cushion in the event of a transitory foreign financing shock.

IV. Fiscal Debt Sustainability Analysis

12. **The path of total public debt, which includes external debt and domestic public debt, is sustainable under all stress tests.** (Tables 3 and 4, and Figure 4). Under the baseline, the PV of public debt to GDP and revenue increases in the medium term, but returns to a very low level over the long term. Debt service is broadly stable as a share of revenue.

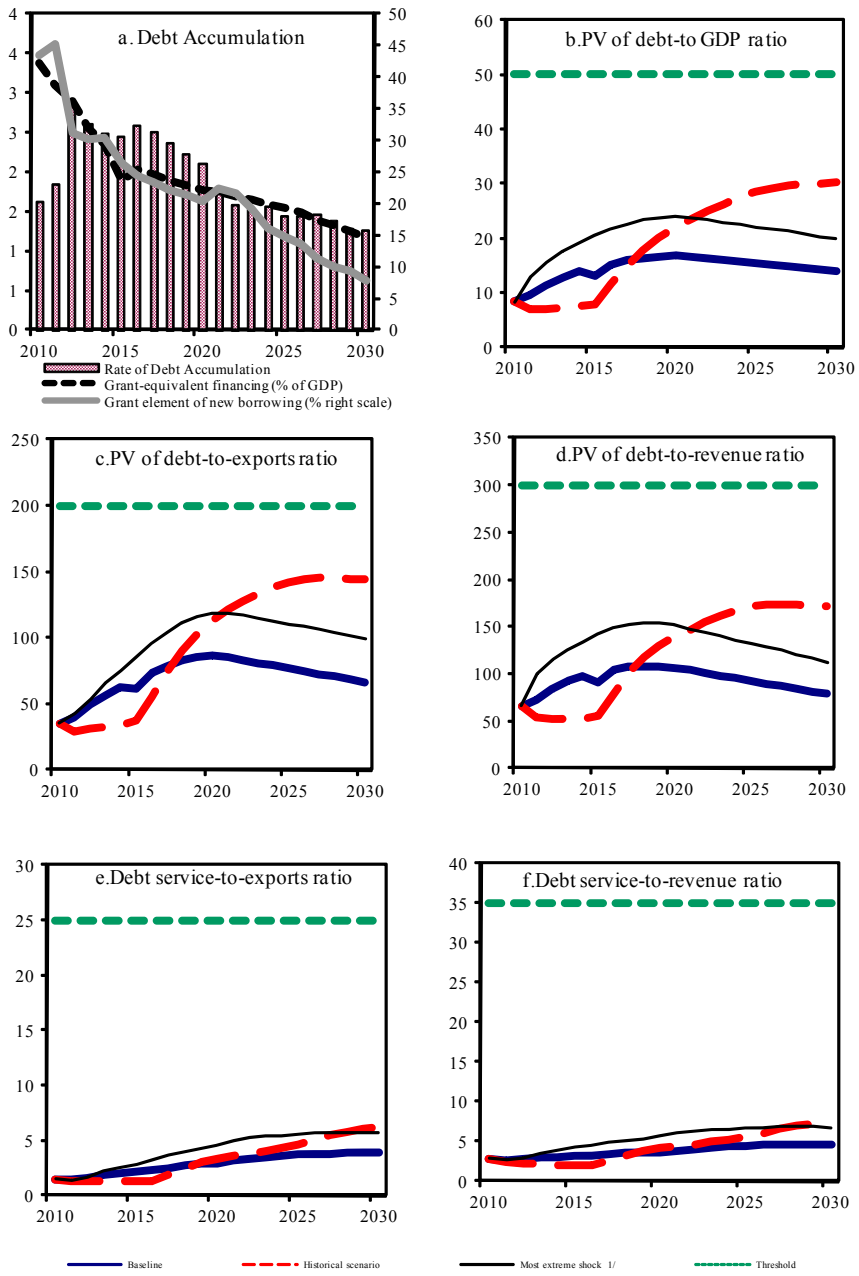
13. **Of all bound tests, a permanent shock to growth stands out as bearing the strongest impact on debt indicators.** The PV of debt to GDP is relatively unaffected by the

bound tests, and remains below 30 percent and close to the baseline under all scenarios. The PV of debt to revenue is relatively robust to most shocks, but is significantly affected by a shock to growth. Finally, a permanent shock to growth would raise the present value of the debt service-to-revenue ratio markedly, raising it to 30 percent and constraining fiscal spending significantly. This reveals how critical investment selection is to ensure long-term debt sustainability.

V. CONCLUSION

14. **Uganda's public and external debt are expected to remain sustainable under the baseline scenario as well as under alternative shock scenarios**, thanks to a cautious strategy that combines reliance to concessional borrowing (especially in the near future) to finance infrastructure projects and a prudent fiscal stance. Uganda's public debt indicators are however sensitive to a protracted adverse growth shock. This highlights the importance of ensuring that a shift towards non-concessional borrowing is combined with medium-term improvements in project selection, investment planning processes and implementation capacity.

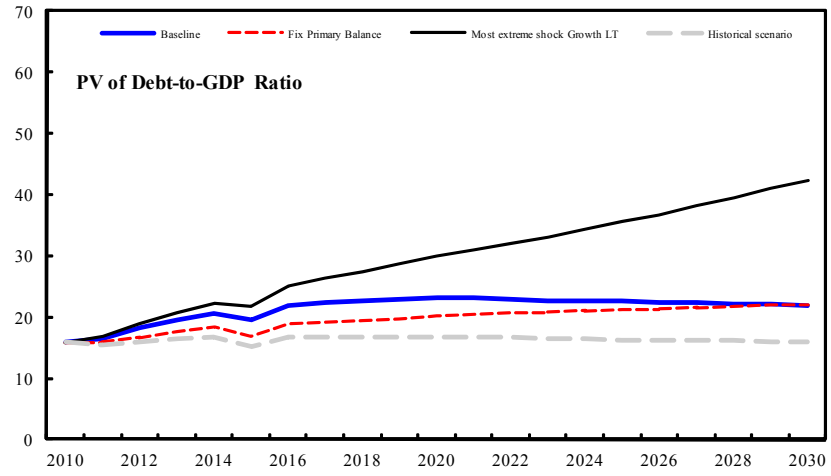
Figure 3. Uganda: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2010-2030 1/

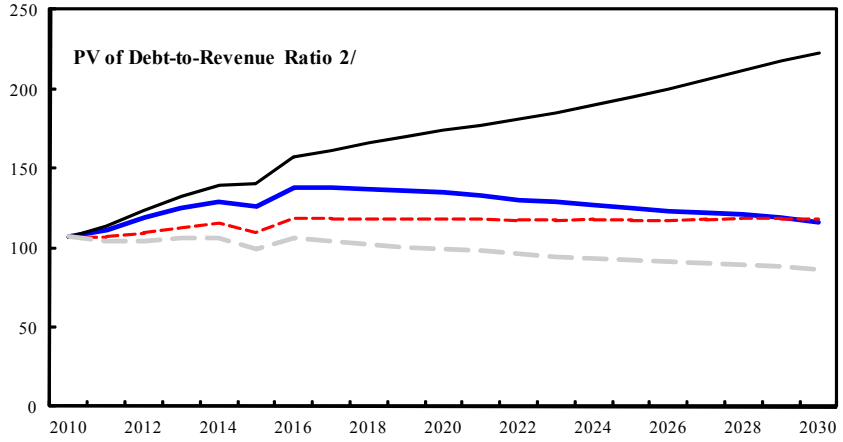


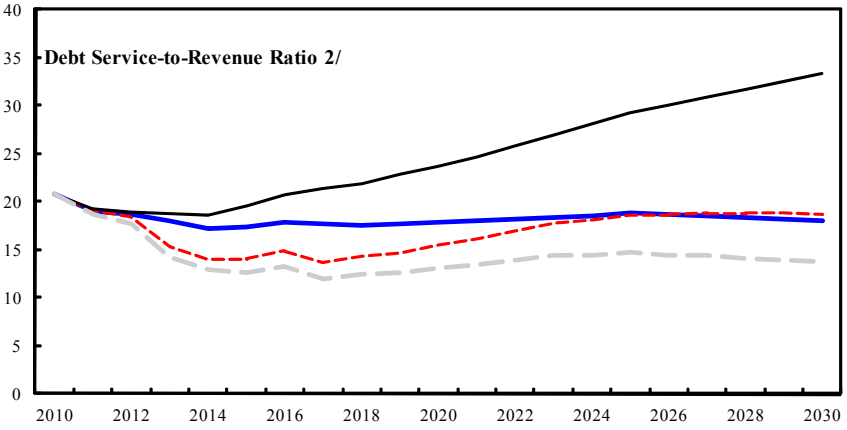
Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2020. In figure b. it corresponds to a One-time depreciation shock; in c. to a Terms shock; in d. to a One-time depreciation shock; in e. to a Terms shock and in figure f. to a Terms shock

Figure 4.Uganda: Indicators of Public Debt Under Alternative Scenarios, 2010-2030 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.
2/ Revenues are defined inclusive of grants.

Table 1.: External Debt Sustainability Framework, Baseline Scenario, 2007-2030 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 0 Average	Standard 0 Deviation	Projections									
	2007	2008	2009			2010	2011	2012	2013	2014	2015	2010-2015 Average	2020	2030	2016-2030 Average
External debt (nominal) 1/	**18.3**	**17.7**	**19.6**			**19.8**	**22.5**	**24.8**	**25.4**	**25.6**	**23.1**		**26.8**	**22.7**	
o/w public and publicly guaranteed (PPG)	11.4	11.8	13.8			13.3	15.1	17.2	18.7	19.9	18.2		21.8	16.2	
Change in external debt	-35.3	-0.6	1.9			0.2	2.7	2.3	0.6	0.3	-2.6		0.0	0.5	
Identified net debt-creating flows	-10.6	-5.4	-1.3			-0.2	0.2	-0.2	-0.8	-1.1	-1.8		-4.9	-4.3	
Non-interest current account deficit	**3.2**	**2.6**	**4.2**	**2.5**	**1.9**	**4.8**	**5.4**	**5.3**	**4.8**	**4.5**	**4.0**		**0.6**	**0.4**	0.4
Deficit in balance of goods and services	11.1	10.2	11.5			10.1	10.8	10.7	9.9	9.4	8.4		6.8	5.4	
Exports	16.9	21.9	23.8			23.6	23.7	23.2	22.8	22.3	21.6		19.5	21.0	
Imports	27.9	32.0	35.3			33.6	34.5	33.9	32.6	31.6	30.0		26.3	26.5	
Net current transfers (negative = inflow)	-9.0	-8.9	-8.8	-10.2	1.8	-7.3	-7.0	-6.7	-6.4	-6.1	-5.6		-5.2	-4.0	-4.8
o/w official	-3.7	-3.0	-3.3			-2.4	-1.8	-1.8	-1.6	-1.4	-1.1		-1.3	-1.0	
Other current account flows (negative = net inflow)	1.1	1.3	1.5			2.0	1.6	1.3	1.3	1.2	1.2		-1.0	-1.1	
Net FDI (negative = inflow)	**-5.8**	**-5.4**	**-4.6**	**-3.6**	**1.6**	**-4.5**	**-4.8**	**-4.8**	**-4.9**	**-4.9**	**-5.0**		**-4.8**	**-4.3**	-4.7
Endogenous debt dynamics 2/	**-8.0**	**-2.6**	**-0.9**			**-0.4**	**-0.5**	**-0.6**	**-0.7**	**-0.7**	**-0.7**		**-0.7**	**-0.3**	
Contribution from nominal interest rate	0.8	0.6	0.6			0.6	0.7	0.8	0.9	1.0	1.0		1.0	1.1	
Contribution from real GDP growth	-3.9	-1.3	-1.1			-1.0	-1.2	-1.4	-1.6	-1.7	-1.7		-1.7	-1.4	
Contribution from price and exchange rate changes	-4.9	-1.9	-0.3			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**-24.7**	**4.8**	**3.2**			**0.4**	**2.5**	**2.5**	**1.4**	**1.4**	**-0.8**		**4.9**	**4.7**	
o/w exceptional financing	-28.6	0.1	0.1			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	13.5			14.9	17.0	19.0	19.6	19.8	17.9		21.8	20.4	
In percent of exports	...	...	56.6			63.1	71.6	82.1	86.0	89.0	83.2		112.1	96.9	
PV of PPG external debt	**...**	**...**	**7.7**			**8.3**	**9.5**	**11.4**	**12.9**	**14.0**	**13.1**		**16.9**	**13.9**	
In percent of exports	**...**	**...**	**32.5**			**35.3**	**40.3**	**49.3**	**56.6**	**63.1**	**60.8**		**86.5**	**66.0**	
In percent of government revenues	**...**	**...**	**61.8**			**66.4**	**73.0**	**84.9**	**92.3**	**97.3**	**91.1**		**106.8**	**78.4**	
Debt service-to-exports ratio (in percent)	**9.8**	**6.0**	**3.5**			**4.3**	**6.1**	**6.5**	**7.5**	**8.2**	**8.4**		**10.2**	**12.0**	
PPG debt service-to-exports ratio (in percent)	**4.0**	**2.4**	**0.7**			**1.5**	**1.4**	**1.6**	**1.9**	**2.0**	**2.1**		**3.0**	**3.9**	
PPG debt service-to-revenue ratio (in percent)	**5.4**	**4.1**	**1.3**			**2.8**	**2.6**	**2.7**	**3.1**	**3.1**	**3.2**		**3.6**	**4.6**	
Total gross financing need (Billions of U.S. dollars)	-0.1	-0.2	0.1			0.2	0.4	0.4	0.4	0.4	0.2		-1.1	-2.0	
Non-interest current account deficit that stabilizes debt ratio	38.5	3.2	2.4			4.6	2.8	3.0	4.2	4.2	6.5		0.6	-0.1	
Key macroeconomic assumptions															
Real GDP growth (in percent)	8.6	8.5	7.1	9.1	5.0	5.6	6.4	7.0	7.2	7.4	7.5	6.8	7.0	7.0	7.0
GDP deflator in US dollar terms (change in percent)	10.1	11.8	1.8	1.5	10.4	6.5	-0.4	2.4	2.4	2.4	2.7	2.7	4.2	4.2	4.2
Effective interest rate (percent) 5/	1.7	4.3	3.4	2.4	0.8	3.2	3.9	3.9	4.0	4.2	4.3	3.9	4.3	5.5	4.7
Growth of exports of G&S (US dollar terms, in percent)	30.2	57.1	18.9	19.1	19.2	11.1	6.7	7.1	7.6	7.6	6.9	7.9	10.9	12.5	11.3
Growth of imports of G&S (US dollar terms, in percent)	24.5	39.1	20.2	15.1	13.4	7.1	8.8	7.5	5.7	6.6	4.7	6.7	10.5	12.0	10.6
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	43.5	45.1	31.1	30.3	30.4	26.3	34.4	20.4	7.8	17.2
Government revenues (excluding grants, in percent of GDP)	12.6	12.8	12.5			12.5	13.1	13.5	14.0	14.4	14.4		15.8	17.7	16.3
Aid flows (in Billions of US dollars) 7/	0.5	0.8	0.5			0.7	0.8	0.8	0.8	0.8	0.7		1.1	1.9	
o/w Grants	0.5	0.4	0.5			0.4	0.3	0.4	0.4	0.4	0.3		0.6	1.5	
o/w Concessional loans	0.0	0.4	0.0			0.3	0.5	0.5	0.4	0.4	0.4		0.5	0.5	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			3.4	3.1	2.9	2.5	2.3	1.9		1.8	1.2	1.6
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			71.9	66.1	54.2	53.2	52.9	46.1		48.8	45.0	49.0
Memorandum items:															
Nominal GDP (Billions of US dollars)	11.9	14.4	15.7			17.7	18.8	20.5	22.5	24.8	27.4		47.3	140.7	
Nominal dollar GDP growth	19.6	21.3	9.0			12.5	6.0	9.5	9.8	10.0	10.4	9.7	11.5	11.5	11.5
PV of PPG external debt (in Billions of US dollars)			1.1			1.4	1.7	2.2	2.8	3.3	4.0		8.0	19.5	
(PVt-PVt-1)/GDPt-1 (in percent)						1.6	1.8	2.9	2.6	2.5	2.4	2.3	2.1	1.2	1.8
Gross remittances (Billions of US dollars)	0.3	0.6	0.7			0.8	0.8	0.9	1.0	1.0	1.1		1.9	5.1	
PV of PPG external debt (in percent of GDP + remittances)	...	...	7.4			8.0	9.1	10.9	12.3	13.5	12.6		16.2	13.4	
PV of PPG external debt (in percent of exports + remittances)	...	...	27.1			29.8	33.8	41.4	47.6	53.0	50.9		71.8	56.3	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	0.6			1.3	1.2	1.3	1.6	1.7	1.8		2.5	3.3	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

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

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

4/ Assumes that PV of private sector debt is equivalent to its face value.

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

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

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

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 2a.Uganda: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2010-2030
(In percent)

	Projections							
	2010	2011	2012	2013	2014	2015	**2020**	2030
PV of debt-to GDP ratio								
Baseline	8	10	11	13	14	13	**17**	14
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	8	7	7	7	8	8	**22**	30
A2. New public sector loans on less favorable terms in 2010-2030 2	8	10	13	15	17	18	**23**	21
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	8	9	11	12	14	15	**17**	14
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	8	9	12	13	14	15	**17**	14
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	8	10	13	14	16	17	**19**	16
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	8	9	12	13	14	15	**17**	14
B5. Combination of B1-B4 using one-half standard deviation shocks	8	7	6	8	9	11	**15**	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	8	13	16	18	19	21	**24**	20
PV of debt-to-exports ratio								
Baseline	35	40	49	57	63	61	**86**	66
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	35	29	31	32	34	37	**113**	144
A2. New public sector loans on less favorable terms in 2010-2030 2	35	43	54	65	75	85	**119**	99
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	35	38	47	54	60	66	**86**	66
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	35	40	52	60	66	72	**92**	69
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	35	38	47	54	60	66	**86**	66
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	35	40	50	56	63	69	**88**	66
B5. Combination of B1-B4 using one-half standard deviation shocks	35	28	23	30	36	42	**63**	55
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	35	38	47	54	60	66	**86**	66
PV of debt-to-revenue ratio								
Baseline	66	73	85	92	97	91	**107**	78
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	66	53	53	53	53	56	**140**	172
A2. New public sector loans on less favorable terms in 2010-2030 2	66	77	93	107	116	128	**146**	117
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	66	70	82	89	94	101	**108**	79
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	66	72	87	94	98	105	**110**	79
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	66	74	94	102	108	115	**123**	91
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	66	73	85	92	97	103	**109**	79
B5. Combination of B1-B4 using one-half standard deviation shocks	66	54	46	57	65	74	**93**	77
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	66	100	116	126	133	143	**153**	112

Table 2b.Uganda: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2010-2030 (continued)
(In percent)

Debt service-to-exports ratio								
Baseline	2	1	2	2	2	2	**3**	4
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	2	1	1	1	1	1	**3**	6
A2. New public sector loans on less favorable terms in 2010-2030 2	2	1	2	2	3	3	**5**	6
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	2	1	2	2	2	2	**3**	4
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	2	1	2	2	2	2	**3**	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	2	1	2	2	2	2	**3**	4
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	2	1	2	2	2	2	**3**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	2	1	1	1	1	1	**2**	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	2	1	2	2	2	2	**3**	4
Debt service-to-revenue ratio								
Baseline	3	3	3	3	3	3	**4**	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2010-2030 1/	3	2	2	2	2	2	**4**	7
A2. New public sector loans on less favorable terms in 2010-2030 2	3	3	3	4	4	4	**6**	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2011-2012	3	3	3	3	3	3	**4**	5
B2. Export value growth at historical average minus one standard deviation in 2011-2012 3/	3	3	3	3	3	3	**4**	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2011-2012	3	3	3	4	4	4	**4**	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2011-2012 4/	3	3	3	3	3	3	**4**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	3	3	2	2	2	2	**3**	4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2011 5/	3	4	4	4	4	4	**5**	7
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	19	19	19	19	19	19	**19**	19

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.Uganda: Public Sector Debt Sustainability Framework, Baseline Scenario, 2007-2030
(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2007	2008	2009	Average	Standard Deviation	2010	2011	2012	2013	2014	2015	2010-15 Average	2020	2030	2016-30 Average
Public sector debt 1/	23.6	22.5	22.2			20.9	22.1	23.9	25.3	26.3	24.6		28.0	24.1	
o/w foreign-currency denominated	11.4	11.8	13.8			13.3	15.1	17.2	18.7	19.9	18.2		21.8	16.2	
Change in public sector debt	-31.7	-1.1	-0.3			-1.4	1.2	1.8	1.4	1.0	-1.7		0.0	-0.5	
Identified debt-creating flows	-37.2	-1.0	0.4			-0.7	1.5	1.5	0.9	0.6	-1.5		-0.3	-0.5	
Primary deficit	0.0	1.1	0.8	1.2	1.5	1.3	2.3	2.6	2.3	2.1	2.5	2.2	1.4	0.7	1.3
Revenue and grants	17.1	15.5	15.9			14.9	14.9	15.3	15.5	15.9	15.5		17.1	18.7	
of which: grants	4.5	2.7	3.4			2.4	1.8	1.8	1.6	1.4	1.1		1.3	1.0	
Primary (noninterest) expenditure	17.1	16.6	16.7			16.2	17.2	17.9	17.8	18.0	17.9		18.5	19.5	
Automatic debt dynamics	-11.3	-2.1	-0.5			-2.0	-0.8	-1.1	-1.4	-1.5	-4.0		-1.8	-1.2	
Contribution from interest rate/growth differential	-5.0	-1.5	-1.8			-1.0	-0.7	-1.0	-1.3	-1.4	-1.5		-1.3	-0.9	
of which: contribution from average real interest rate	-0.6	0.4	-0.3			0.1	0.5	0.4	0.3	0.3	0.3		0.5	0.7	
of which: contribution from real GDP growth	-4.4	-1.9	-1.5			-1.2	-1.3	-1.4	-1.6	-1.7	-1.8		-1.8	-1.6	
Contribution from real exchange rate depreciation	-6.4	-0.6	1.3			-0.9	-0.1	-0.1	-0.1	-0.1	-2.5		...	...	
Other identified debt-creating flows	-25.8	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	
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)	-25.8	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	
Residual, including asset changes	5.5	-0.1	-0.7			-0.7	-0.3	0.4	0.5	0.4	-0.2		0.3	0.0	
Other Sustainability Indicators															
PV of public sector debt	12.2	10.7	16.2			15.9	16.6	18.2	19.5	20.5	19.5		23.1	21.8	
o/w foreign-currency denominated	0.0	0.0	7.7			8.3	9.5	11.4	12.9	14.0	13.1		16.9	13.9	
o/w external	...	...	7.7			8.3	9.5	11.4	12.9	14.0	13.1		16.9	13.9	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	11.1	10.8	8.4			8.1	8.7	8.6	8.1	7.8	8.1		6.6	7.2	
PV of public sector debt-to-revenue and grants ratio (in percent)	71.3	69.1	101.5			107.1	111.5	119.1	125.4	129.2	126.0		135.0	116.2	
PV of public sector debt-to-revenue ratio (in percent)	96.9	83.6	128.9			127.3	126.7	135.0	139.5	142.1	135.6		146.1	123.1	
o/w external 3/	…	…	61.8			66.4	73.0	84.9	92.3	97.3	91.1		106.8	78.4	
Debt service-to-revenue and grants ratio (in percent) 4/	41.7	27.3	19.6			20.8	19.0	18.6	18.0	17.3	17.4		17.8	18.0	
Debt service-to-revenue ratio (in percent) 4/	56.7	33.0	24.8			24.7	21.6	21.1	20.0	19.0	18.7		19.3	19.0	
Primary deficit that stabilizes the debt-to-GDP ratio	31.7	2.2	1.1			2.7	1.1	0.8	0.9	1.1	4.1		1.4	1.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	8.6	8.5	7.1	9.1	5.0	5.6	6.4	7.0	7.2	7.4	7.5	6.8	7.0	7.0	7.0
Average nominal interest rate on forex debt (in percent)	0.5	1.7	1.4	1.0	0.4	0.9	0.9	1.0	1.3	1.5	1.6	1.2	2.1	2.8	2.3
Average real interest rate on domestic debt (in percent)	3.6	3.7	-3.5	5.2	4.8	0.9	6.9	7.7	6.9	6.7	6.5	5.9	8.4	8.1	8.3
Real exchange rate depreciation (in percent, + indicates depreciatior	-15.5	-5.5	11.9	2.1	11.0	-7.2	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	7.4	6.5	14.3	4.5	5.2	11.3	4.2	5.4	5.4	5.3	5.5	6.2	3.7	3.7	3.5
Growth of real primary spending (deflated by GDP deflator, in perce	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	…	…	43.5	45.1	31.1	30.3	30.4	26.3	34.4	20.4	7.8	...

Sources: Country authorities; and staff estimates and projections.
1/ Public sector refers to general government (gross debt).
2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.
3/ Revenues excluding grants.
4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 4.Uganda: Sensitivity Analysis for Key Indicators of Public Debt 2010-2030

	Projections							
	2010	2011	2012	2013	2014	2015	2020	2030
PV of Debt-to-GDP Ratio								
Baseline	16	17	18	19	20	20	23	22
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	16	15	16	16	17	15	17	16
A2. Primary balance is unchanged from 2010	16	16	17	18	18	17	20	22
A3. Permanently lower GDP growth 1/	16	17	19	21	22	22	30	42
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	16	17	20	22	23	22	27	28
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	16	17	18	20	21	20	23	22
B3. Combination of B1-B2 using one half standard deviation shocks	16	16	17	19	20	19	23	22
B4. One-time 30 percent real depreciation in 2011	16	20	21	22	22	20	23	22
B5. 10 percent of GDP increase in other debt-creating flows in 2011	16	23	24	24	25	23	26	23
PV of Debt-to-Revenue Ratio 2/								
Baseline	107	111	119	125	129	126	135	116
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	107	104	104	106	107	99	100	87
A2. Primary balance is unchanged from 2010	107	107	109	113	115	109	118	118
A3. Permanently lower GDP growth 1/	107	113	123	132	140	140	174	223
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	107	115	129	138	144	143	159	147
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	107	113	121	127	130	127	136	116
B3. Combination of B1-B2 using one half standard deviation shocks	107	110	115	122	126	124	134	117
B4. One-time 30 percent real depreciation in 2011	107	132	136	139	141	131	136	116
B5. 10 percent of GDP increase in other debt-creating flows in 2011	107	156	160	157	158	149	150	122
Debt Service-to-Revenue Ratio 2/								
Baseline	21	19	19	18	17	17	18	18
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	21	19	18	14	13	13	13	14
A2. Primary balance is unchanged from 2010	21	19	18	15	14	14	15	19
A3. Permanently lower GDP growth 1/	21	19	19	19	19	20	24	33
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	21	19	20	20	20	20	21	22
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	21	19	19	19	17	18	18	18
B3. Combination of B1-B2 using one half standard deviation shocks	21	19	19	17	16	17	18	18
B4. One-time 30 percent real depreciation in 2011	21	20	20	20	19	19	20	21
B5. 10 percent of GDP increase in other debt-creating flows in 2011	21	19	21	40	19	25	18	19

Sources: Country authorities; and staff estimates and projections.
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.
2/ Revenues are defined inclusive of grants.