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Joint World Bank/IMF Debt Sustainability Analysis

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Tanzania's risk of debt distress is low. Extensive debt relief in recent years greatly reduced the external debt burden and the long-term outlook under the baseline scenario is benign, even taking into account some non concessional borrowing to help finance a stepping up of government investment spending on infrastructure over the medium term. Sensitivity analysis based on standardized shocks support the conclusion that the risk of debt distress is low going forward. Alternative downside scenarios illustrate, however, that debt indicators would be sensitive to significantly less donor assistance or lower long-term growth. This highlights the importance of a sound debt management strategy and quality evaluation of infrastructure projects to ensure healthy rates of return on investment.

Background

1. **Tanzania has sustained high rates of broad-based economic growth with generally low inflation over the past decade.** Real GDP growth averaged about 7 percent a year during 2000–08. Inflation was kept solidly in check for much of this period, but accelerated in 2008 (13.5 percent at end year), driven mainly by lagged effects of the spike in international food and fuel prices,[1] and more recently, by adverse regional food supply shocks. In contrast, nonfood inflation remained modest (5.8 percent). Strong growth in tax revenues over the past 5 years, together with substantial donor support has enabled government spending to expand at a rapid pace with only limited recourse to domestic financing. Tanzania also achieved a large buildup in official international reserves, partly

[1] See "Impact of Rising International Food and Fuel Prices on Inflation in EAC Countries", in Rwanda and Uganda—Selected Issues (Country Report No. 09/36).

reflecting solid export growth over the years. As of end-2008, gross international reserves stood at about US$2.8 billion (more than 4 months of imports of goods and services).

2. **Tanzania has benefited from extensive debt relief under the HIPC Initiative and, more recently, the Multilateral Debt Relief Initiative (MDRI).** As of end-June 2008, Tanzania's public external debt stood at US$3.7 billion (20.9 percent of GDP), compared with US$7.2 billion (53.4 percent of GDP) at end-June 2006, before MDRI went into effect (Table 1).[2] Multilateral debt accounts for about one-half of the total external debt. Tanzania's public domestic debt increased from TSh 2.5 trillion (14.5 percent of GDP) at end-June 2006 to TSh 3.3 trillion (14.3 percent of GDP) at end-June 2008, about half of which was short-term Treasury bills (Table 2). Tanzania is classified as a strong performer according to the three-year moving average index of the World Bank's Country Performance and Institutional Assessment (CPIA).

Medium- to Long-Term Macroeconomic and Financing Assumptions

3. **The baseline scenario assumes that the Tanzanian economy gradually recovers from the current slowdown caused by the global economic and financial crisis** (Table 3)**.** After falling to 4-5 percent in 2009 (or 5.3 percent in 2009/10), real GDP growth is projected to increase gradually to 7.5 percent in 2012/13,[3] driven partly by a stepping up of government spending on infrastructure investment (by 2 percentage points of GDP) sustained over the medium term. Growth is assumed to remain at 7.5 percent for 5 years, before gradually declining to a long-run growth rate of 6 percent by 2019/20 and beyond, as the positive growth impact of the stepped-up infrastructure investment diminishes. Inflation (GDP deflator) is also projected to decelerate to the Bank of Tanzania's (BoT) medium-term objective of 5 percent by 2011/12—as the impact of high food and fuel prices subsides[4]—and then remain unchanged through 2028/29. Reflecting the projected path of CPI inflation, the annual average real exchange rate is projected to appreciate modestly in 2009/10 and 2010/11 and is then assumed to be constant throughout the remainder of the projection period. Both the export and import price index deflators are assumed to grow at 2 percent a year. In addition, the income elasticity used for export and import projections are 1.25 and 1.1,

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[2] The debt stock excludes the estimated amount of interest arrears of about US$560 million, which are expected to be canceled upon conclusion of formal agreements on HIPC debt relief. Most of these arrears are associated with bilateral debt. It also excludes the undisbursed committed debt of US$2.3 billion.

[3] Tables and Figures are in fiscal years (July-June). For example, 2009 refers to fiscal year 2009/10.

[4] Inflation accelerated over the past year (13.0 percent in March 2009), driven mainly by lagged effects of the spike in international food and fuel prices, and more recently by adverse regional food supply shocks. Nonfood inflation has however declined over the past year (4.3 percent in March 2009).

respectively, which contributes to a gradual narrowing of the external current account deficit over the long term, and a gradual increase in national saving (both private and public).

4. **To finance the additional infrastructure spending, the baseline incorporates additional domestic and external borrowing on non concessional terms.** Given the difficulty of accessing foreign credit markets during the current crisis, initially the additional borrowing is obtained from domestic sources (total projected net domestic finance (NDF) is 1.2 percent of GDP in 2008/09 and 1.6 percent of GDP in 2009/10). Thereafter, the additional borrowing needs (2 percent of GDP in 2010/11–2014/15) are assumed to be evenly split between domestic and foreign financing. The terms of domestic and foreign financing are assumed as follows: interest on new domestic borrowing is 12 percent (with automatic rollover of debt) and interest on foreign borrowing is 9 percent (with 1 year grace period and 10 year maturity).[5] The elevated infrastructure investment is reflected in an initial increase in development spending from 8.8 percent of GDP in 2008/09 to 10.9 percent of GDP in 2010/11. After that, development spending falls to about 10.5 percent of GDP on average during 2011/12-2014/15.[6] Following the period of stepped-up spending, public investment returns to about 9 percent of GDP for the rest of projection period. The baseline also accounts for annual maintenance cost of 5 percent of the total value of the accumulated additional infrastructure spending, which reaches about 0.2 percent of GDP in 2014/15, before gradually declining relative to GDP over the remainder of the projection period. These maintenance costs are added to recurrent costs.

5. **Government revenues are assumed to increase—albeit more gradually than in recent years—while external grants decline.** Roughly in line with the Tanzania Revenue Authority's objective, government revenues are assumed to rise from 16 percent of GDP in 2009/10 to about 20 percent of GDP by 2017/18 and remain at this level. External grants are assumed to decline from 6 percent of GDP in 2009/10 to 4.5 percent of GDP by 2014/15 and remain at that level. Foreign concessional loans (in U.S. dollar terms) are assumed to grow at 4 percent a year. As a result, concessional loans fall from 4 percent of GDP in 2009/10 to 1.5 percent of GDP by 2028/29, representing a gradual reduction in Tanzania's aid dependency. Any residual financing need is assumed to be met initially from domestic borrowing up to a ceiling of 2.5 percent of GDP for NDF as a whole, with the remaining residual being met by foreign non concessional borrowing.

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[5] An interest parity between domestic and foreign borrowing is assumed only for new borrowing. Debt service figures on existing public sector debt (both domestic and foreign) are provided by the authorities.

[6] After 2010/11, it is expected that resources from MDRI that were available for pro-poor development spending will be exhausted, which explains the drop in development spending in the subsequent period.

External Debt Sustainability

6. **Tanzania's external debt level is low.** Tanzania's total external debt declined from US$7.7 billion, or 57.3 percent of GDP at end-June 2006, to US$4.5 billion, or 24.8 percent of GDP at end-June 2008 (Table 4). In PV terms, the public sector component of this debt stood at about 10½ percent of GDP at end-June 2008, or 45 percent of exports.[7] Public external debt service is around 1.7 percent of exports of goods and services. All these indicators are significantly below the indicative debt-burden thresholds that apply to Tanzania.

7. **Looking ahead, Tanzania's risk of external debt distress continues to be low.**[8] Even with substantial non concessional borrowing over the medium term in the baseline scenario, debt follows a benign path—rising gently over the medium term and then declining over the long term (Figure 1). An increase in non concessional external borrowing of about 1 percent of GDP a year for 5 years would lead to an accumulated total of about US$1.5 billion of outstanding non concessional debt by end-2014/15.[9] Total external debt would increase from 25 percent of GDP in 2007/08 to 27 percent in the medium-term, but would then fall to about 20 percent of GDP by the end of projection period. The PV of public external debt would increase from about 10½ percent of GDP to 15½ percent of GDP in the medium-term, but would then decline to about 7 percent of GDP. The standard alternative scenarios and bound tests indicate that Tanzania's external debt will remain sustainable under the individual defined shocks and their combination (Table 5 and Figure 1).[10] For all these cases, debt and debt-service indicators remain below thresholds for a low-income country DSA. As such, Tanzania is classified as "low risk" of debt distress.

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[7] The PV of debt is calculated after factoring in all the debt relief, including HIPC debt relief for which the final agreements on delivery have yet to be signed.

[8] Based on the 3-year average of the World Bank's Country Policy and Institutional Assessment Index, Tanzania is classified as a "strong performer". Its thresholds therefore are: 50 percent of NPV of debt-to-GDP ratio, 200 percent of NPV of debt-to-exports ratio, 300 percent of debt-to-revenue ratio, 25 percent of debt service-to-exports ratio, and 35 percent of debt service-to-revenue ratio.

[9] An increase in non concessional external borrowing also reduces the grant element schedule during the medium-term (Figure 1).

[10] Scenario A1 (key variables at historical averages) yields debt and debt-service indicators that are generally below those of the baseline scenario, suggesting that the baseline's economic assumptions (notably for real GDP growth, external current account deficit, and foreign direct investment) are conservative relative to past performance. Scenario A2 assumes a 2 percentage point increase in the interest rate on new borrowing, but does not lead to a substantial deterioration of the indicators. Bound tests are based on 7-year averages and standard deviations. Because of some discontinuities in the data the staffs did not use the standard 10-year historical period.

8. **An alternative Tanzania-specific downside scenario** (A3 in Table 5)**, indicates that Tanzania's future external debt sustainability is sensitive to the assumptions on real GDP growth and donor support.** Assuming annual real GDP growth of 6.0 percent over the projection period (i.e., the stepping up of investment over the next several years has no positive impact on real GDP growth above the assumed long-term growth rate), while leaving the baseline path of non-interest government spending unchanged in nominal terms, would imply a significant increase in debt indicators over time. If this lower growth scenario were to be coupled with grants falling as a share of GDP (more detail described below), the PV of external public debt-to-GDP ratio increases to 42 percent over the projection period. Indeed, the debt service indicators would generally approach the indicative thresholds towards the end of projection period. This highlights the importance of a sound debt management strategy—and possible fiscal adjustment—and quality evaluation of infrastructure projects to ensure healthy rates of return on investment.

Fiscal Sustainability

9. **Including domestic debt in the analysis, indicators continue to suggest a benign outlook for public debt and fiscal sustainability.** In the baseline scenario, the PV of public debt rises from 25½ percent to 30 percent of GDP over the medium-term, before falling to about 14 percent of GDP by the end of projection period (Table 6). The bound tests and alternative scenarios generally support the assessment that Tanzania's debt outlook is benign (Table 7 and Figure 2). For example, alternative scenario A3 (permanently lower GDP growth) suggests that the PV of public debt would reach about the same level in the medium-term before falling to about 18 percent of GDP by the end of projection period. While debt indicators are indeed sensitive to real GDP growth, all indicators suggest that debt remains sustainable.

10. **Taking into account contingent liabilities does not cause a significant deterioration to the debt indicators, although information is lacking on the full extent of such liabilities.** Based on partial information, current contingent liabilities are estimated to be about TSh 365 billion, or 1.2 percent of GDP, mainly reflecting the guaranteed debt of the government-owned electricity company (TANESCO). The bound test B5 shows only a modest increase in the debt indicators in 2009/10, at which the recognition of these contingent liabilities are assumed. As full information on the size of contingent liabilities become available, however, the sensitivity analysis may become less benign.

11. **The public sector debt sustainability is also dependent on donor support.** In the baseline, grants were assumed to remain at 4.5 percent of GDP during the medium- and long-term. If grants were to grow at the same rate as foreign loans (i.e., 4 percent a year in U.S. dollar terms), the grants would fall from 4.5 percent to 2.4 percent of GDP by 2028/29. This would turn the primary surplus of 0.7 percent of GDP under the baseline into primary deficit of 1.4 percent by 2028/29. Replacing concessional loans and grants with non concessional

borrowing (evenly split between domestic and foreign financing) increases the PV of public debt-to-GDP ratio over time. The alternative Tanzania-specific downside scenario (A4 in Table 7) presents a case where the falling grants are combined with low growth (i.e., no return on investment). Under this scenario, the PV of public debt would reach 86 percent of GDP in 2028/29, of which the external debt portion would be 42 percent of GDP, below the relevant threshold. The debt service-to-revenue ratio would reach 71 percent, if no fiscal adjustments were to take place for the entire projection period.

Concluding remarks

12. **Tanzania's risk of debt distress is low.** Based on the debt sustainability analysis, there appears to be room for an increase in debt, even on non concessional terms, to finance a stepping up of infrastructure investment over the medium term. Tanzania's debt indicators are sensitive to a number of parameters, but in general the downside scenarios and standard sensitivity analysis support the assessment of a low risk of debt distress. Nevertheless, a sound debt management strategy and quality evaluation of investment projects are essential conditions for maintaining debt and fiscal sustainability. For example, should key variables such as donor support or real GDP growth deteriorate excessively, government spending would have to adjust to maintain sustainability.

Table 1. TANZANIA: External Debt Developments
(Millions of U.S. dollars, unless otherwise indicated)

	2004 2004/2005	2005 2005/2006	2006 2006/2007	2007 2007/2008
Overall Total Debt Committed	8345.1	8638.8	5212.4	6776.3
Disbursed Outstanding Debt (DOD)	6799.5	6971.1	3442.3	4483.1
Undisbursed Debt	1545.6	1667.7	1770.1	2293.2
Disbursed Debt by Creditor Category	6799.5	7733.9	3442.3	4483
Multilateral Debt	4626.3	5459.6	1772.6	2620.2
Bilateral Debt	1502.3	1506.2	910.5	934.1
Commercial Debt	416.4	462.2	437.3	617.9
Export credits	254.5	305.9	321.9	310.8
Disbursed Debt by Debtor Category	6799.5			
Central Government	5830.5	6724.5	2692	3582.5
Parastatal Companies	477.5	450	167.8	156.3
Private Sector	491.5	559.5	582.5	744.4
Total Debt (incl. Interest Arrears) by Creditor Category	8134.8	8994.0	4660.9	5846.5
Multilateral Debt	4649.7	5481.6	1800.3	2620.3
Bilateral Debt	2321.1	2190.2	1446.6	1545.4
Commercial Debt	750.1	835.1	877.3	1135.6
Export credits	413.9	487.1	536.7	545.1
Total Debt (excl. Interest Arrears) by Debtor Category				
Public Sector	6308.0	7174.5	2859.8	3738.8
Private Sector	491.5	559.5	582.5	744.4

Sources: Tanzanian authorities

Table 2. TANZANIA: Public Domestic Debt Developments
(Billions of Tanzania Shilling)

	2004 2004/05	2005 2005/06	2006 2006/07	2007 2007/08
Total Domestic Debt Stock	1701	2456	3228	3265
Short term (T-bills) 1/	919	1351	1769	1606
Medium term (Bonds)	781	1105	1459	1659

Sources: Tanzanian authorities

1/ Includes BOT Liquidity Papers.

Table 3. TANZANIA: Key Assumptions in the Baseline and Country-Specific Downside Scenarios

	Baseline	Low growth and grants falling
Real GDP growth rate 1/	At 5.3 percent (2009/10); increases to 7.5 percent (2012/13); remains at 7.5 percent (2013/14-2016/17); falls to 6 percent (2019/20); remains at 6 percent (2020/21-2028/29).	At 5.3 percent (2009/10); increases to 6.0 percent (2010/11); remains at 6.0 percent (2011/12-2028/29).
Inflation (GDP deflator)	5 percent (2011/12-28/29).	
Infrastructure investment	1 percent (NDF only) (2009/10); 2 percent (NDF and external borrowing) (2010/11-2014/15).	
Development spending	At 8.8 percent (2008/09); increases to 10.9 percent (2010/11); after MDRI, it falls to (on average) 10.5 percent (2011/12-2014/15); falls to 9 percent (2015/16) after the elevated investment period; remains at 9 percent (2017/18-2028/29).	
Maintenance costs	5 percent of total borrowing, or about additional 0.2 percent of GDP to noninterest recurrent costs.	
Interest rates 2/	12 percent (new domestic borrowing); 9 percent (new external borrowing).	
Domestic revenue (as a percent of GDP)	At 16 percent (2009/10); increases to 20 percent (2017/18); remains at 20 percent (2018/19-2028/29).	
Grants (as a percent of GDP)	At 6 percent (2009/10); falls to 4.5 percent (2014/15); remains at 4.5 percent (2015/16-2028/29).	At 6 percent (2009/10); falls to 4.5 percent (2014/15); continues to fall to 2.4 percent (2028/29).
Foreign (concessional) loans (as a percent of GDP)	4 percent (2009/10); falls to 1.5 percent (2028/29).	

1/ Includes the effect of infrastructure investment.

2/ A real interest parity is assumed.

Table 4.Tanzania: External Debt Sustainability Framework, Baseline Scenario, 2005-2028 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 0	0 Standard Deviation	Projections									
	2005	2006	2007			2008	2009	2010	2011	2012	2013	2008-2013 Average	2018	2028	2014-2028 Average
	2005/06	2006/07	2007/08			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14		2018/19	2028/29	
External debt (nominal) 1/	**57.3**	**20.5**	**24.8**			**25.1**	**25.3**	**26.7**	**26.8**	**26.9**	**26.9**		**23.2**	**20.1**	
o/w public and publicly guaranteed (PPG)	53.4	16.6	20.9			21.6	21.9	23.0	23.3	23.5	23.5		18.7	11.7	
Change in external debt	4.6	-36.8	4.3			0.3	0.2	1.4	0.0	0.1	0.0		-0.8	-0.1	
Identified net debt-creating flows	1.7	2.3	2.7			3.4	5.8	3.6	2.2	2.1	1.4		1.1	-0.6	
Non-interest current account deficit	**7.4**	**9.7**	**10.3**	**6.4**	**2.8**	**8.8**	**9.2**	**8.6**	**7.8**	**7.7**	**7.3**		**7.0**	**6.5**	6.9
Deficit in balance of goods and services	10.9	13.0	14.0			11.7	12.1	11.7	10.6	10.6	10.0		9.1	8.0	
Exports	21.8	24.5	23.6			23.6	21.5	20.3	20.0	19.1	19.2		20.2	23.4	
Imports	32.7	37.4	37.6			35.3	33.6	32.0	30.6	29.7	29.2		29.3	31.4	
Net current transfers (negative = inflow)	-3.7	-3.5	-3.6	-3.4	0.6	-3.3	-3.4	-3.6	-3.3	-3.1	-2.9		-2.3	-1.6	-2.1
o/w official	-3.0	-3.3	-3.5			-3.2	-3.3	-3.5	-3.2	-3.0	-2.8		-2.2	-1.5	
Other current account flows (negative = net inflow)	0.2	0.2	-0.1			0.4	0.5	0.6	0.4	0.2	0.1		0.1	0.1	
Net FDI (negative = inflow)	**-3.8**	**-4.3**	**-3.7**	**-3.8**	**0.3**	**-2.8**	**-2.2**	**-3.3**	**-3.5**	**-3.7**	**-3.9**		**-4.4**	**-6.0**	-4.9
Endogenous debt dynamics 2/	**-1.9**	**-3.0**	**-4.0**			**-2.7**	**-1.2**	**-1.7**	**-2.0**	**-2.0**	**-1.9**		**-1.4**	**-1.1**	
Contribution from nominal interest rate	0.4	0.2	0.2			0.1	0.1	0.2	0.2	0.3	0.4		0.4	0.4	
Contribution from real GDP growth	-3.6	-3.8	-1.2			-1.4	-1.3	-1.5	-1.8	-1.8	-1.8		-1.4	-1.1	
Contribution from price and exchange rate changes	1.3	0.5	-3.0			-1.4	0.0	-0.4	-0.4	-0.5	-0.5		-0.4	-0.4	
Residual (3-4) 3/	**2.9**	**-39.1**	**1.7**			**-4.5**	**-5.6**	**-2.6**	**-2.6**	**-2.4**	**-1.8**		**-2.3**	**0.1**	
o/w exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	14.5			14.5	15.2	16.9	17.5	18.3	18.9		17.1	15.5	
In percent of exports	...	...	61.5			61.5	70.8	83.1	87.8	95.6	98.5		84.7	66.4	
PV of PPG external debt	**...**	**...**	**10.6**			**11.0**	**11.7**	**13.1**	**14.1**	**14.8**	**15.4**		**12.6**	**7.1**	
In percent of exports	**...**	**...**	**44.9**			**46.6**	**54.6**	**64.7**	**70.5**	**77.7**	**80.6**		**62.3**	**30.2**	
In percent of government revenues	**...**	**...**	**66.8**			**69.6**	**72.0**	**78.1**	**82.2**	**85.2**	**87.2**		**62.2**	**35.0**	
Debt service-to-exports ratio (in percent)	**4.4**	**2.0**	**4.2**			**4.5**	**3.6**	**3.8**	**3.5**	**4.1**	**4.9**		**7.4**	**6.6**	
PPG debt service-to-exports ratio (in percent)	**4.3**	**1.1**	**1.7**			**1.1**	**1.2**	**1.6**	**2.1**	**3.0**	**4.0**		**6.3**	**4.8**	
PPG debt service-to-revenue ratio (in percent)	**7.6**	**1.9**	**2.6**			**1.6**	**1.6**	**1.9**	**2.5**	**3.3**	**4.3**		**6.2**	**5.5**	
Total gross financing need (Billions of U.S. dollars)	0.7	0.9	1.4			1.5	1.7	1.5	1.3	1.4	1.4		2.0	2.2	
Non-interest current account deficit that stabilizes debt ratio	2.8	46.5	6.0			8.5	9.0	7.3	7.7	7.6	7.3		7.8	6.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	7.0	6.9	7.3	7.1	0.3	6.2	5.3	6.4	7.3	7.5	7.5	6.7	6.5	6.0	6.4
GDP deflator in US dollar terms (change in percent)	-2.4	-0.9	16.9	2.0	7.3	5.9	0.0	1.4	1.6	1.7	1.8	2.1	1.9	1.9	1.8
Effective interest rate (percent) 5/	0.8	0.3	1.1	0.8	0.3	0.4	0.5	0.7	0.9	1.3	1.5	0.9	2.0	2.1	2.0
Growth of exports of G&S (US dollar terms, in percent)	11.7	19.1	21.0	18.1	9.4	12.4	-4.1	1.9	7.3	4.6	9.8	5.3	9.2	9.7	9.7
Growth of imports of G&S (US dollar terms, in percent)	22.2	21.5	25.8	19.2	9.1	5.6	0.3	2.7	4.3	6.2	7.5	4.4	8.7	8.7	8.8
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	51.4	56.2	32.5	24.7	21.9	19.1	34.3	35.2	26.6	31.1
Government revenues (excluding grants, in percent of GDP)	12.5	14.1	15.9			15.8	16.3	16.8	17.1	17.4	17.7		20.2	20.2	19.9
Aid flows (in Billions of US dollars) 7/	0.8	0.7	1.3			1.2	1.8	1.8	1.7	1.8	1.8		2.6	5.4	
o/w Grants	0.8	0.7	1.3			1.2	1.3	1.3	1.4	1.4	1.4		2.2	4.7	
o/w Concessional loans	0.0	0.0	0.0			0.0	0.5	0.5	0.4	0.4	0.4		0.5	0.7	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			7.0	7.1	6.5	5.7	5.3	4.9		5.0	4.8	4.9
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			83.8	87.2	76.2	75.5	73.5	71.3		84.8	85.3	83.9
Memorandum items:															
Nominal GDP (Billions of US dollars)	14.3	15.2	19.0			21.4	22.5	24.3	26.6	29.0	31.8		48.6	104.6	
Nominal dollar GDP growth	4.4	6.0	25.4			12.4	5.3	8.0	9.1	9.3	9.4	8.9	8.5	8.0	8.3
PV of PPG external debt (in Billions of US dollars)			2.0			2.4	2.6	3.2	3.7	4.3	4.9		6.1	7.4	
(PVt-PVt-1)/GDPt-1 (in percent)						1.8	1.4	2.4	2.2	2.2	2.1	2.0	0.3	0.1	0.4

Source: Staff simulations.

1/ Includes both public and private sector external debt.
2/ 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.
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 5.Tanzania: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2008-2028
(In percent)

	Projections							
	2008 2008/09	2009 2009/10	2010 2010/11	2011 2011/12	2012 2012/13	2013 2013/14	**2018** **2018/19**	2028 2028/29
PV of debt-to GDP ratio								
Baseline	11	12	13	14	15	15	**13**	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	11	8	7	6	6	7	**5**	11
A2. New public sector loans on less favorable terms in 2008-2028 2	11	12	14	16	17	19	**18**	16
A3. Tanzania-Specific Downside Scenario : Low growth and grants falling 7/	11	12	13	14	16	17	21	42
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	11	12	13	14	15	15	**12**	7
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	11	9	7	8	9	10	**9**	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	11	12	15	16	17	17	**14**	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	11	11	13	14	15	15	**12**	7
B5. Combination of B1-B4 using one-half standard deviation shocks	11	7	4	5	7	8	**7**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	11	17	19	20	21	22	**18**	10
PV of debt-to-exports ratio								
Baseline	47	55	65	70	78	81	**62**	30
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	47	35	33	32	33	34	**23**	47
A2. New public sector loans on less favorable terms in 2008-2028 2	47	58	69	78	90	97	**90**	67
A3. Tanzania-Specific Downside Scenario : Low growth and grants falling 7/	47	55	65	72	81	87	103	181
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	47	55	65	70	78	80	**62**	30
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	47	38	29	35	41	44	**36**	19
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	47	55	65	70	78	80	**62**	30
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	47	52	64	70	77	80	**62**	30
B5. Combination of B1-B4 using one-half standard deviation shocks	47	29	14	20	25	29	**25**	15
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	47	55	65	70	78	80	**62**	30
PV of debt-to-revenue ratio								
Baseline	70	72	78	82	85	87	**62**	35
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	70	47	40	38	36	37	**23**	55
A2. New public sector loans on less favorable terms in 2008-2028 2	70	76	83	91	98	105	**90**	77
A3. Tanzania-Specific Downside Scenario : Low growth and grants falling 7/	70	72	78	84	89	94	103	209
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	70	71	77	81	84	86	**61**	34
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	70	57	43	49	54	58	**43**	27
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	70	76	88	93	96	98	**70**	39
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	70	68	78	82	85	87	**62**	35
B5. Combination of B1-B4 using one-half standard deviation shocks	70	46	23	31	37	43	**34**	23
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	70	103	112	117	122	124	**88**	50

Table 5.Tanzania: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2008-2028 (continued)
(In percent)

Debt service-to-exports ratio

Baseline	1	1	2	2	3	4	**6**	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	1	1	1	1	2	2	**3**	4
A2. New public sector loans on less favorable terms in 2008-2028 2	1	1	2	2	3	3	**6**	7
A3. Tanzania-Specific Downside Scenario : Low growth and grants falling 7/	1	1	2	2	3	4	10	27
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	1	1	2	2	3	4	**6**	5
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	1	1	1	1	2	2	**4**	3
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	1	1	2	2	3	4	**6**	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	1	1	1	2	3	4	**6**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	1	1	1	0	1	2	**3**	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	1	1	2	2	3	4	**6**	5

Debt service-to-revenue ratio

Baseline	2	2	2	2	3	4	**6**	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	2	2	1	1	2	2	**3**	4
A2. New public sector loans on less favorable terms in 2008-2028 2	2	2	2	2	3	4	**6**	8
A3. Tanzania-Specific Downside Scenario : Low growth and grants falling 7/	2	2	2	2	3	5	10	32
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	2	2	2	2	3	4	**6**	5
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	2	2	1	1	2	3	**5**	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	2	2	2	3	4	5	**7**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	2	2	2	2	3	4	**6**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	2	2	1	0	1	3	**4**	4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	2	2	3	4	5	6	**9**	8
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	16	16	16	16	16	16	**16**	16

Source: Staff projections and simulations.

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.
7/ Assumes that real GDP growth remains at 6 percent during the medium- and long-term. It also assumes that grants (in US dollars) grow at 4 percent during 2015-29.

Table 6.Tanzania: Public Sector Debt Sustainability Framework, Baseline Scenario, 2005-2028
(In percent of GDP, unless otherwise indicated)

	Actual			Average	Standard Deviation	Estimate	Projections								
	2005	2006	2007			2008	2009	2010	2011	2012	2013	2008-13 Average	2018	2028	2014-28 Average
	2005/06	2006/07	2007/08			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14		2018/19	2028/29	
Public sector debt 1/	71.6	38.7	35.2			35.4	35.7	36.5	36.5	36.9	37.5		30.3	18.6	
o/w foreign-currency denominated	53.4	16.6	20.9			21.6	21.9	23.0	23.3	23.5	23.5		18.7	11.7	
Change in public sector debt	7.1	-33.0	-3.5			0.2	0.3	0.7	0.1	0.4	0.6		-2.1	-0.6	
Identified debt-creating flows	0.8	-9.9	-3.9			1.0	1.7	2.2	1.4	1.5	1.5		-1.4	-0.2	
Primary deficit	3.6	2.7	-1.2	1.3	1.5	3.8	3.8	4.1	3.4	3.4	3.3	3.6	-0.6	-0.7	-0.2
Revenue and grants	17.9	19.0	22.8			21.3	22.0	22.3	22.2	22.2	22.1		24.7	24.7	
of which: grants	5.4	4.9	6.9			5.5	5.7	5.5	5.1	4.8	4.4		4.5	4.5	
Primary (noninterest) expenditure	21.5	21.7	21.6			25.1	25.8	26.4	25.6	25.6	25.4		24.2	24.1	
Automatic debt dynamics	-2.6	-12.7	-2.8			-2.6	-2.1	-1.8	-2.0	-1.9	-1.7		-0.8	0.5	
Contribution from interest rate/growth differential	-5.1	-5.8	-3.6			-2.1	-1.6	-1.8	-2.1	-1.9	-1.7		-0.9	0.5	
of which: contribution from average real interest rate	-0.9	-1.2	-1.0			0.0	0.2	0.4	0.4	0.6	0.8		1.1	1.6	
of which: contribution from real GDP growth	-4.2	-4.7	-2.6			-2.0	-1.8	-2.2	-2.5	-2.5	-2.6		-2.0	-1.1	
Contribution from real exchange rate depreciation	2.5	-6.9	0.8			-0.5	-0.5	0.0	0.0	0.0	0.0		...	...	
Other identified debt-creating flows	-0.2	0.0	0.0			-0.2	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.2	0.0	0.0			-0.2	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	6.3	-23.0	0.5			-0.8	-1.3	-1.5	-1.3	-1.1	-1.0		-0.7	-0.4	
Other Sustainability Indicators															
PV of public sector debt	37.7	37.8	25.6			25.7	26.1	27.0	27.8	28.7	29.9		24.3	14.1	
o/w foreign-currency denominated	19.5	15.8	11.3			11.9	12.2	13.6	14.5	15.3	15.9		12.8	7.2	
o/w external	19.5	15.8	11.3			11.9	12.2	13.6	14.5	15.3	15.9		12.8	7.2	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	14.6	14.4	12.6			11.6	12.2	12.5	11.7	11.8	12.1		8.5	5.7	
PV of public sector debt-to-revenue and grants ratio (in percent)	210.7	198.9	112.2			120.5	118.1	121.1	125.0	129.6	135.0		98.3	57.2	
PV of public sector debt-to-revenue ratio (in percent)	301.1	268.2	161.0			162.6	159.7	160.9	162.2	165.0	168.8		120.1	69.9	
o/w external 3/	155.5	111.9	71.1			75.4	74.8	80.7	84.9	87.9	89.9		63.1	35.5	
Debt service-to-revenue and grants ratio (in percent) 4/	10.9	7.6	6.2			8.6	8.1	7.5	7.6	8.7	10.3		11.7	11.8	
Debt service-to-revenue ratio (in percent) 4/	15.6	10.2	8.9			11.7	11.0	9.9	9.8	11.0	12.8		14.3	14.4	
Primary deficit that stabilizes the debt-to-GDP ratio	-3.5	35.7	2.3			3.6	3.4	3.3	3.4	3.1	2.7		1.5	0.0	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	7.0	6.9	7.3	6.5	1.3	6.2	5.3	6.4	7.3	7.5	7.5	6.7	6.5	6.0	6.4
Average nominal interest rate on forex debt (in percent)	0.8	0.3	1.0	0.8	0.3	-0.2	0.1	0.3	0.7	1.2	1.6	0.6	2.2	2.7	2.2
Average real interest rate on domestic debt (in percent)	1.5	0.1	-3.9	-0.6	2.4	2.2	4.0	5.2	5.3	6.1	7.3	5.0	9.1	22.5	13.3
Real exchange rate depreciation (in percent, + indicates depreciation)	5.6	-14.1	5.4	1.4	8.4	...	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	5.8	7.2	9.7	6.5	2.8	10.6	8.2	5.4	5.0	5.0	5.0	6.5	5.0	5.0	5.0
Growth of real primary spending (deflated by GDP deflator, in percent)	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	51.4	56.2	32.5	24.7	21.9	19.1	34.3	35.2	26.6	31.1

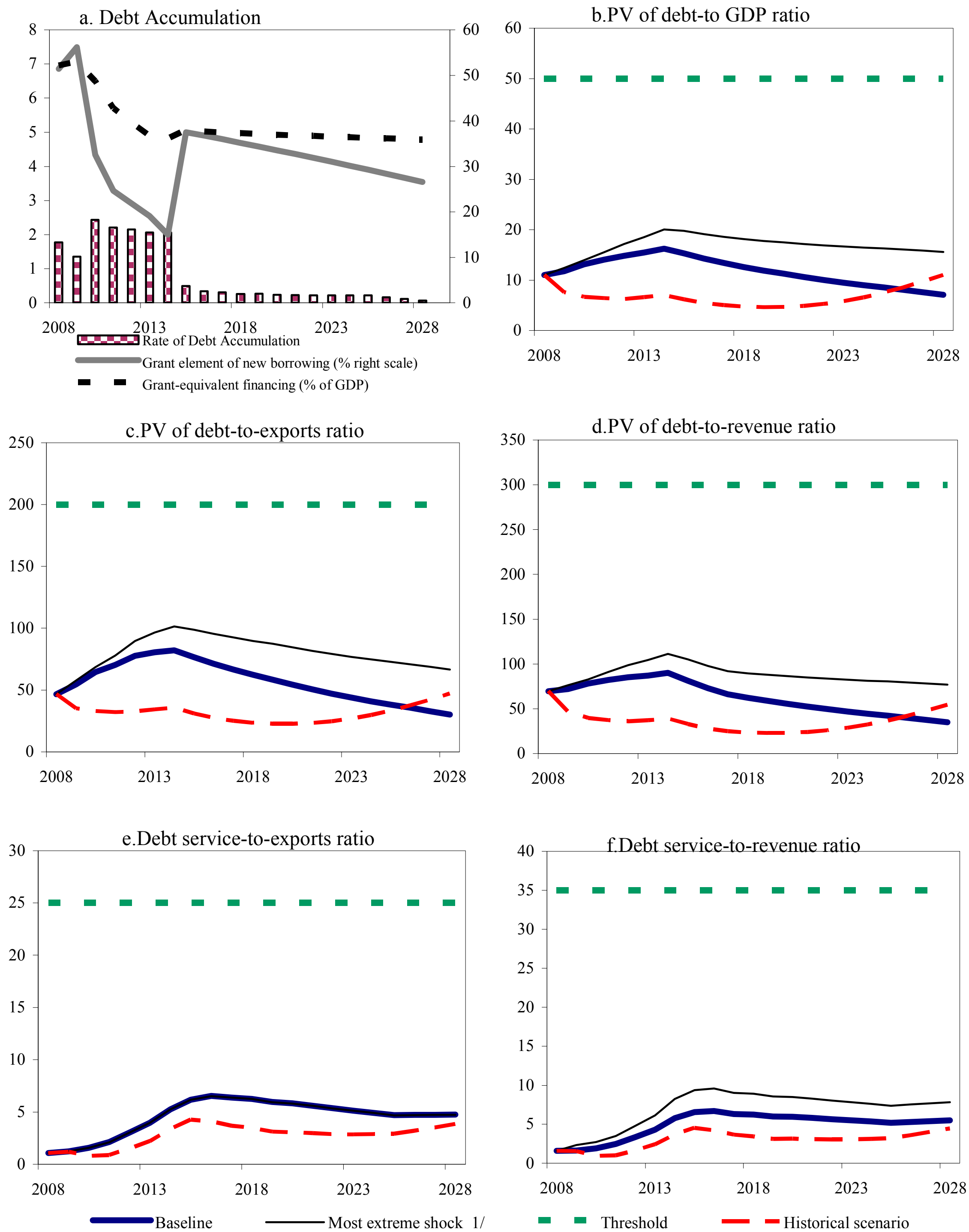
Sources: Country authorities; and Fund staff estimates and projections.
1/ [Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.]
2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.
3/ Revenues excluding grants.
4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 7.Tanzania: Sensitivity Analysis for Key Indicators of Public Debt 2008-2028

	Projections							
	2008 2008/09	2009 2009/10	2010 2010/11	2011 2011/12	2012 2012/13	2013 2013/14	2018 2018/19	2028 2028/29
PV of Debt-to-GDP Ratio								
Baseline	26	26	27	28	29	30	24	14
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	26	23	21	20	18	18	16	26
A2. Primary balance is unchanged from average of 2008 and 2009	26	23	21	20	18	17	14	24
A3. Permanently lower GDP growth 3/	26	26	27	28	29	30	25	18
A4. Tanzania-Specific Downside Scenario : Low growth and grants falling 4/	26	26	27	29	31	34	43	86
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	26	25	26	26	27	28	20	5
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	26	25	25	26	27	28	22	11
B3. Combination of B1-B2 using one half standard deviation shocks	26	24	23	23	24	24	16	0
B4. One-time 30 percent real depreciation in 2009	26	31	31	32	32	34	29	24
B5. 1.2 percent of GDP increase in other debt-creating flows in 2009	26	27	28	29	30	31	26	16
PV of Debt-to-Revenue Ratio 2/								
Baseline	120	118	121	125	130	135	98	57
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	120	105	95	89	84	80	63	107
A2. Primary balance is unchanged from average of 2008 and 2009	120	106	95	88	82	77	57	99
A3. Permanently lower GDP growth 3/	120	118	121	126	130	136	102	73
A4. Tanzania-Specific Downside Scenario : Low growth and grants falling 4/	120	118	122	129	139	152	180	378
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	120	116	117	119	122	126	82	19
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	120	115	112	116	121	126	89	45
B3. Combination of B1-B2 using one half standard deviation shocks	120	109	103	105	108	111	66	0
B4. One-time 30 percent real depreciation in 2009	120	139	139	142	146	152	117	98
B5. 1.2 percent of GDP increase in other debt-creating flows in 2009	120	124	127	131	136	141	104	66
Debt Service-to-Revenue Ratio 2/								
Baseline	9	8	7	8	9	10	12	12
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	9	8	6	4	3	3	1	19
A2. Primary balance is unchanged from average of 2008 and 2009	9	8	6	4	3	2	0	17
A3. Permanently lower GDP growth 3/	9	8	7	8	9	10	12	15
A4. Tanzania-Specific Downside Scenario : Low growth and grants falling 4/	9	8	7	8	9	12	22	71
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	9	8	7	7	8	9	9	4
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	9	8	7	6	7	9	10	9
B3. Combination of B1-B2 using one half standard deviation shocks	9	8	7	5	5	6	6	0
B4. One-time 30 percent real depreciation in 2009	9	8	8	9	10	12	17	23
B5. 1.2 percent of GDP increase in other debt-creating flows in 2009	9	8	8	9	10	11	13	14

Sources: Country authorities; and Fund staff estimates and projections.
1/ Assumes that real GDP growth remains at 5.3 percent during the medium- and long-term (no boost in growth from the infrastructure investment).
2/ Revenues are defined inclusive of grants.
3/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.
4/ Assumes that real GDP growth remains at 6 percent during the medium- and long-term. It also assumes that grants (in US dollars) grow at 4 percent during 2015-29.

Figure 1. Tanzania: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2008-2028 1/

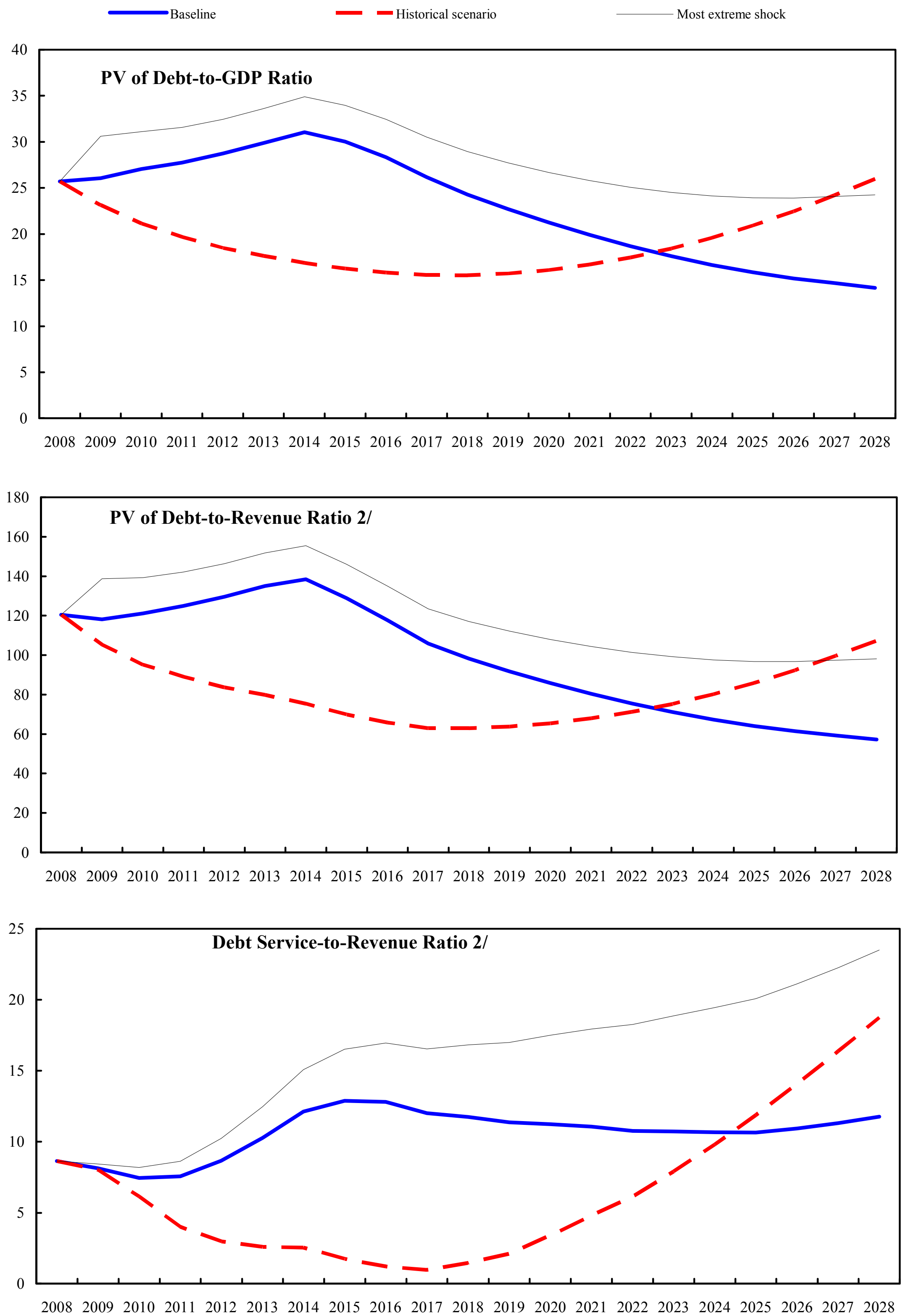


Source: Staff projections and simulations.

1/ The most extreme stress test is the test that yields the highest ratio in 2018. In figure b. it corresponds to a Terms shock; in c. to a Terms shock; in d. to a Terms shock; in e. to a Growth shock and in picture f. to a One-time depreciation shock

2/ Assumes that real GDP growth remains at 6 percent during the medium- and long-term. It also assumes that grants (in US dollars) grow at 4 percent during 2015-29.

Figure 2.Tanzania: Indicators of Public Debt Under Alternative Scenarios, 2008-2028 1/



Sources: Country authorities; and Fund staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2018.

2/ Revenues are defined inclusive of grants.