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INTERNATIONAL MONETARY FUND AND
INTERNATIONAL DEVELOPMENT ASSOCIATION

TONGA

Joint IMF/World Bank Debt Sustainability Analysis 2007¹

Prepared by the staffs of the International Monetary Fund and
The International Development Association

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The updated debt indicators suggest that Tonga's risk of debt distress has increased. With the anticipated increase in the external debt burden, the baseline scenario indicates a substantial breach of the threshold for NPV of debt-to-exports over the projection period. Alternative scenarios and stress tests demonstrate vulnerability of the debt profile to adverse shocks and highlight the importance of prudent fiscal policy management.

A. Background

Tonga's total external debt as a percentage of GDP has declined over the past few years. External public debt fell from 42 percent of GDP in 2003/04 to 35½ percent of GDP in 2004/05 and remained broadly stable in 2005/06, in line with the decline in loan disbursements following the completion of large projects financed by the ADB. Fiscal surpluses in 2003/04 and 2004/05 have also helped to reduce public debt, bringing it down to below 50 percent of GDP in 2005/06 from over 60 percent of GDP in 2003/04.² With the government's efforts to limit domestic financing, meantime, domestic public debt has declined substantially to 11¼ percent of GDP in 2005/06 from 19¾ percent in 2003/04.

¹ This supplement provides an updated debt sustainability analysis (DSA) for Tonga. The DSA was prepared jointly with the World Bank in accordance with the Debt Sustainability Framework for low-income countries approved by the Executive Boards of the IMF and IDA. The debt data underlying this exercise were provided by the Tongan authorities.

² Tonga was not included in the list of countries potentially eligible for debt relief under the HIPC initiative (See the joint Fund/Bank board paper "Review of Financing of the Fund's Concessional Assistance and Debt Relief to Low-Income Member Countries" March 2006, page 7).

Debt burden indicators have remained below indicative policy-based thresholds, with the exception of the NPV of debt-to-exports ratio.³ At end-2005/06, the stock of external public debt amounted to \$80.7 million, with a net present value of 20¾ percent of GDP. Most of the relevant indicators including the NPV of debt-to-GDP remained below the thresholds. However, the NPV of debt-to-exports ratio is estimated at 115 percent in 2005/06, higher than its threshold of 100 percent.

More recently, the civil unrest in November 2006 has increased risks of debt distress.

Economic activity was briefly disrupted: output growth, having slowed in 2005/06, is now projected to turn negative in 2006/07, with real GDP declining by 3½ percent, owing mainly to the direct and indirect impacts of the unrest. The public sector is also expected to play a large role in reconstruction and is attempting to secure a financing package from a donor of up to \$50.0 million (20 percent of GDP).

The medium-term framework assumes a fiscal adjustment to take place, with large loan disbursements in coming years posing an additional debt burden. A fully-tied project loan of \$50.0 million, mainly for reconstruction of the central business district, is expected to be disbursed in 2007/08 and 2008/09. A fiscal deficit of between 1 and 1½ percent is projected thereafter, with continued improvement in revenue administration and expenditure restraint. As external assistance is expected to gradually increase, the government will be able to allocate its resource to capital expenditure while successfully avoiding domestic financing, keeping inflation at about 6 percent. In this environment, GDP growth will remain at about 1¼ percent over the projection period.

Key Macroeconomic Assumptions
(In percent; unless otherwise indicated)

| Period average | 2001/02-05/06 | 2006/07-11/12 | 2012/13-26/27 |
|---|----------------------|----------------------|----------------------|
| Real GDP growth | 2.3 | 0.4 | 1.2 |
| Growth of exports of goods and services (U.S. dollar terms) | 12.8 | 3.7 | 5.4 |
| Current account (in percent of GDP) | -0.9 | -11.2 | -6.2 |
| Inflation | 10.0 | 5.7 | 6.0 |
| Overall fiscal balance (in percent of GDP) | -0.9 | -4.7 | -1.6 |

B. External Debt Sustainability Analysis

In the baseline scenario, the NPV of debt-to-exports breaches its indicative policy-based threshold by a large margin and increases substantially over the medium term (Table I.1).

The net present value of external public debt to exports is expected to rise steeply to above 245 percent in 2008/09, reflecting the planned large loan disbursement. While the indicator is projected to decline in subsequent years as the high level of remittances continue to have a countervailing effect, however, it remains above its indicative threshold of 100 percent. The

³ The debt thresholds for Tonga based on the World Bank's Country Policy and Institutional Assessment in 2005 are: NPV of debt-to-exports (100 percent), GDP (30 percent) and revenues (200 percent); and debt service in percent of exports (15 percent) and revenues (25 percent).

NPV of public external debt as a percent of GDP is projected to increase significantly over the next few years to 41⅓ percent in 2008/09, declining gradually but remaining above the policy-dependent threshold of 30 percent through 2023/24.

Stress tests underscore that Tonga's debt profile is vulnerable to adverse shocks. (Table I.2, Figure I.1). One of the main risks identified in the set of stress tests is new public sector borrowings on less favorable terms. If this were to occur, the debt stock indicators would rise well above their threshold levels, although the debt service ratio would remain under its threshold. In contrast, a return of key variables including GDP and export growth to historical averages would imply an improvement in all ratios.

C. Public Debt Sustainability Analysis

The planned loan disbursements in 2007/08 and 2008/09 pose a significant risk to public debt sustainability (Table I.3). Total public debt is projected to increase over the next two years, reaching a high of 64⅓ percent in 2008/09 in nominal terms (52 percent in NPV terms). While total public debt is projected to gradually decline in subsequent years, mainly attributed to favorable fiscal management, it is expected to remain above 50 percent of GDP over the projection period. Domestic public debt is also projected to narrow gradually, in line with the recent policy commitments, to below 10 percent of GDP in 2011/12 and thereafter.

Alternative scenarios and stress tests highlight the vulnerability of the total public debt position (Table I.4, Figure I.2). The public debt trajectory is most sensitive to growth shocks, which would cause quite a sharp increase in the debt stock and debt service indicators. Furthermore, if other debt-creating flows increase or the exchange rate is depreciated in 2007/08, the public debt dynamics would look less favorable. On the other hand, a return of real GDP growth and primary fiscal balance to historical averages would see a marked improvement in all ratios.

D. Staff Assessment

Based on the LIC-DSA, staffs conclude that Tonga's debt dynamics are subject to a high risk of debt distress. The NPV of debt-to-exports remains above the threshold by a large margin over the projection period, and the threshold for the NPV of debt-to-GDP is also breached with the anticipated loan disbursement starting in 2007/08. Stress tests highlight vulnerabilities to debt sustainability, including the risks around lower growth and a sharp fall in the value of the currency, while the alternative scenario shows that a return of real GDP growth and primary fiscal balance to historical averages would strongly enhance debt sustainability. This emphasizes the critical importance of fiscal discipline and prudent debt management, and progress on key areas of the reform agenda to ensure economic recovery.

Table I.1. Tonga: External Debt Sustainability Framework, Baseline Scenario, 2003/04-2026/27 1/
(In percent of GDP, unless otherwise indicated)

| | Actual | | | Historical Average 6/ | Standard Deviation 6/ | Projections | | | | | | 2006/07-11/12 | |
|---|--------------|-------------|-------------|--------------------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|
| | 2003/04 | 2004/05 | 2005/06 | | | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Average | 2016/17 |
| External debt (nominal) 1/ | 55.7 | 45.8 | 44.2 | | | 44.0 | 50.7 | 56.6 | 53.1 | 49.8 | 48.4 | | 45.9 |
| o/w public and publicly guaranteed (PPG) | 42.0 | 35.5 | 35.8 | | | 37.1 | 45.8 | 53.4 | 51.5 | 49.8 | 48.4 | | 45.9 |
| Change in external debt | 12.8 | -9.9 | -1.6 | | | -0.2 | 6.7 | 5.8 | -3.5 | -3.3 | -1.4 | | -0.2 |
| Identified net debt-creating flows | -22.3 | -9.6 | 0.3 | | | 7.2 | 13.7 | 11.9 | 2.4 | 2.0 | 1.9 | | 1.9 |
| Non-interest current account deficit | -4.7 | 1.6 | 7.3 | 3.0 | 5.7 | 9.7 | 18.3 | 16.6 | 7.1 | 6.5 | 6.2 | 10.7 | 5.6 |
| Deficit in balance of goods and services | 39.4 | 46.1 | 49.0 | | | 50.2 | 57.8 | 55.0 | 44.4 | 43.2 | 42.2 | | 40.5 |
| Exports | 21.8 | 18.4 | 18.0 | | | 17.7 | 17.0 | 16.7 | 16.6 | 16.5 | 16.4 | | 17.3 |
| Imports | 61.2 | 64.5 | 67.0 | | | 68.0 | 74.8 | 71.7 | 61.0 | 59.7 | 58.5 | | 57.8 |
| Net current transfers (negative = inflow) | -43.9 | -42.7 | -39.5 | -32.6 | 8.6 | -38.8 | -37.9 | -36.8 | -35.9 | -35.6 | -34.9 | -36.6 | -33.9 |
| Other current account flows (negative = net inflow) | -0.3 | -1.9 | -2.1 | | | -1.8 | -1.7 | -1.6 | -1.4 | -1.2 | -1.0 | | -1.0 |
| Net FDI (negative = inflow) | -12.7 | -3.6 | -5.9 | -2.8 | 4.0 | -4.9 | -4.9 | -4.6 | -4.4 | -4.2 | -4.0 | | -3.8 |
| Endogenous debt dynamics 2/ | -4.8 | -7.6 | -1.1 | | | 2.4 | 0.4 | 0.0 | -0.3 | -0.3 | -0.3 | 0.3 | 0.1 |
| Contribution from nominal interest rate | 0.5 | 1.1 | 0.9 | | | 0.8 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | | 0.6 |
| Contribution from real GDP growth | -0.5 | -1.1 | -0.6 | | | 1.5 | -0.3 | -0.6 | -0.7 | -0.6 | -0.6 | | -0.5 |
| Contribution from price and exchange rate changes | -4.8 | -7.6 | -1.4 | | | ... | ... | ... | ... | ... | ... | | ... |
| Residual (3-4) 3/ | 35.1 | -0.3 | -1.9 | | | -7.3 | -7.0 | -6.1 | -5.9 | -5.3 | -3.2 | | -2.1 |
| o/w exceptional financing | 0.0 | 0.0 | 0.0 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 |
| NPV of external debt 4/ | ... | ... | 29.1 | | | 28.0 | 36.6 | 44.4 | 41.4 | 38.4 | 37.3 | | 33.8 |
| In percent of exports | ... | ... | 161.6 | | | 157.8 | 215.4 | 265.0 | 249.2 | 233.3 | 228.2 | | 196.0 |
| NPV of PPG external debt | ... | ... | 20.7 | | | 21.1 | 31.7 | 41.2 | 39.8 | 38.4 | 37.3 | | 33.8 |
| In percent of exports | ... | ... | 115.0 | | | 118.9 | 186.1 | 245.9 | 239.9 | 233.3 | 228.2 | | 196.0 |
| Debt service-to-exports ratio (in percent) | 8.7 | 19.4 | 20.1 | | | 21.4 | 20.5 | 19.5 | 17.5 | 18.5 | 8.6 | | 13.7 |
| PPG debt service-to-exports ratio (in percent) | 8.7 | 8.3 | 9.3 | | | 10.5 | 9.8 | 9.3 | 7.8 | 9.4 | 8.6 | | 13.7 |
| Total gross financing need (billions of U.S. dollars) | -28.3 | 3.3 | 11.3 | | | 19.4 | 40.6 | 39.3 | 15.3 | 15.4 | 10.9 | | 15.9 |
| Non-interest current account deficit that stabilizes debt ratio | -17.6 | 11.5 | 8.9 | | | 9.8 | 11.5 | 10.8 | 10.6 | 9.8 | 7.6 | | 5.8 |
| Key macroeconomic assumptions | | | | | | | | | | | | | |
| Real GDP growth (in percent) | 1.4 | 2.3 | 1.3 | 2.2 | 2.2 | -3.5 | 0.8 | 1.3 | 1.3 | 1.2 | 1.2 | 0.4 | 1.2 |
| GDP deflator in US dollar terms (change in percent) | 12.7 | 15.7 | 3.2 | 0.8 | 9.4 | 3.8 | 6.1 | 5.5 | 4.9 | 4.7 | 4.4 | 4.9 | 2.5 |
| Effective interest rate (percent) 5/ | 1.3 | 2.3 | 2.0 | 1.4 | 0.5 | 1.9 | 1.7 | 1.2 | 0.8 | 0.6 | 0.6 | 1.1 | 1.3 |
| Growth of exports of G&S (US dollar terms, in percent) | -6.9 | 0.3 | 2.1 | 2.5 | 20.8 | -1.3 | 2.6 | 5.2 | 5.4 | 5.1 | 4.9 | 3.7 | 5.4 |
| Growth of imports of G&S (US dollar terms, in percent) | 6.3 | 24.9 | 8.6 | 7.2 | 16.7 | 1.7 | 17.8 | 2.5 | -9.7 | 3.7 | 3.7 | 3.3 | 4.0 |
| Grant element of new public sector borrowing (in percent) | ... | ... | ... | ... | ... | 56.9 | 44.3 | 44.4 | 56.9 | 56.9 | 56.9 | 52.7 | 56.9 |
| <i>Memorandum item:</i> | | | | | | | | | | | | | |
| Nominal GDP (millions of US dollars) | 181.8 | 215.3 | 225.3 | | | 225.6 | 241.3 | 257.9 | 274.2 | 290.4 | 306.8 | | 376.9 |

Source: Staff simulations.

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 NPV 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.

Table I.2. Tonga: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2006/07-2026/27
(In percent)

| | Projections | | | | | | | |
|--|-------------|---------|---------|---------|---------|---------|---------|---------|
| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2016/17 | 2026/27 |
| NPV of debt-to-GDP ratio | | | | | | | | |
| Baseline | 21 | 32 | 41 | 40 | 38 | 37 | 34 | 29 |
| A. Alternative Scenarios | | | | | | | | |
| A1. Key variables at their historical averages in 2007/08-26/27 1/ | 21 | 27 | 32 | 31 | 29 | 28 | 20 | 12 |
| A2. New public sector loans on less favorable terms in 2007/08-26/27 2/ | 21 | 37 | 52 | 51 | 50 | 49 | 49 | 51 |
| B. Bound Tests | | | | | | | | |
| B1. Real GDP growth at historical average minus one standard deviation in 2007/08-08/09 | 21 | 32 | 42 | 41 | 39 | 38 | 35 | 30 |
| B2. Export value growth at historical average minus one standard deviation in 2007/08-08/09 3/ | 21 | 33 | 46 | 44 | 43 | 41 | 38 | 31 |
| B3. US dollar GDP deflator at historical average minus one standard deviation in 2007/08-08/09 | 21 | 37 | 55 | 53 | 51 | 50 | 45 | 39 |
| B4. Net non-debt creating flows at historical average minus one standard deviation in 2007/08-08/09 4/ | 21 | 41 | 58 | 57 | 55 | 54 | 50 | 38 |
| B5. Combination of B1-B4 using one-half standard deviation shocks | 21 | 42 | 67 | 65 | 63 | 61 | 56 | 44 |
| B6. One-time 30 percent nominal depreciation relative to the baseline in 2007/08 5/ | 21 | 44 | 57 | 56 | 54 | 52 | 47 | 40 |
| NPV of debt-to-exports ratio | | | | | | | | |
| Baseline | 119 | 186 | 246 | 240 | 233 | 228 | 196 | 143 |
| A. Alternative Scenarios | | | | | | | | |
| A1. Key variables at their historical averages in 2007/08-26/27 1/ | 119 | 157 | 193 | 186 | 179 | 171 | 117 | 58 |
| A2. New public sector loans on less favorable terms in 2007/08-26/27 2/ | 119 | 219 | 310 | 306 | 302 | 299 | 281 | 251 |
| B. Bound Tests | | | | | | | | |
| B1. Real GDP growth at historical average minus one standard deviation in 2007/08-08/09 | 119 | 186 | 246 | 240 | 233 | 228 | 196 | 143 |
| B2. Export value growth at historical average minus one standard deviation in 2007/08-08/09 3/ | 119 | 245 | 440 | 430 | 419 | 410 | 355 | 250 |
| B3. US dollar GDP deflator at historical average minus one standard deviation in 2007/08-08/09 | 119 | 186 | 246 | 240 | 233 | 228 | 196 | 143 |
| B4. Net non-debt creating flows at historical average minus one standard deviation in 2007/08-08/09 4/ | 119 | 239 | 349 | 342 | 334 | 328 | 288 | 189 |
| B5. Combination of B1-B4 using one-half standard deviation shocks | 119 | 249 | 418 | 409 | 399 | 392 | 343 | 229 |
| B6. One-time 30 percent nominal depreciation relative to the baseline in 2007/08 5/ | 119 | 186 | 246 | 240 | 233 | 228 | 196 | 143 |
| Debt service ratio | | | | | | | | |
| Baseline | 10 | 10 | 9 | 8 | 9 | 9 | 14 | 12 |
| A. Alternative Scenarios | | | | | | | | |
| A1. Key variables at their historical averages in 2007/08-26/27 1/ | 11 | 10 | 11 | 11 | 13 | 12 | 12 | 7 |
| A2. New public sector loans on less favorable terms in 2007/08-26/27 2/ | 11 | 10 | 14 | 16 | 18 | 17 | 21 | 17 |
| B. Bound Tests | | | | | | | | |
| B1. Real GDP growth at historical average minus one standard deviation in 2007/08-08/09 | 11 | 10 | 11 | 11 | 13 | 12 | 13 | 10 |
| B2. Export value growth at historical average minus one standard deviation in 2007/08-08/09 3/ | 11 | 12 | 18 | 19 | 21 | 20 | 21 | 18 |
| B3. US dollar GDP deflator at historical average minus one standard deviation in 2007/08-08/09 | 11 | 10 | 11 | 11 | 13 | 12 | 13 | 10 |
| B4. Net non-debt creating flows at historical average minus one standard deviation in 2007/08-08/09 4/ | 11 | 10 | 12 | 13 | 14 | 13 | 16 | 14 |
| B5. Combination of B1-B4 using one-half standard deviation shocks | 11 | 11 | 15 | 16 | 18 | 17 | 19 | 17 |
| B6. One-time 30 percent nominal depreciation relative to the baseline in 2007/08 5/ | 11 | 10 | 11 | 11 | 13 | 12 | 13 | 10 |
| <i>Memorandum item:</i> | | | | | | | | |
| Grant element assumed on residual financing (i.e., financing required above baseline) 6/ | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |

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.

Table I.3. Tonga: Public Sector Debt Sustainability Framework, Baseline Scenario, 2003/04-2026/27
(In percent of GDP, unless otherwise indicated)

| | Actual | | | Historical Average 5/ | Standard Deviation 5/ | Estimate | | | | | Projections | | |
|--|---------|---------|---------|--------------------------|--------------------------|----------|---------|---------|---------|---------|-------------|--------------------------------|---------|
| | 2003/04 | 2004/05 | 2005/06 | | | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2006/07- 2011/12 Average | 2016/17 |
| Public sector debt 1/ | 60.9 | 50.5 | 48.0 | | | 48.9 | 57.2 | 64.3 | 62.0 | 59.6 | 57.8 | | 53.9 |
| o/w foreign-currency denominated | 41.1 | 35.4 | 36.7 | | | 36.9 | 45.7 | 53.5 | 51.8 | 50.0 | 48.8 | | 46.4 |
| Change in public sector debt | -4.9 | -10.4 | -2.5 | | | 0.9 | 8.2 | 7.1 | -2.3 | -2.4 | -1.8 | | -0.5 |
| Identified debt-creating flows | -8.3 | -12.1 | 1.8 | | | 0.9 | 8.2 | 7.1 | -2.3 | -2.4 | -1.8 | | -0.5 |
| Primary deficit | -1.8 | -3.4 | 2.6 | 0.6 | 2.2 | 1.6 | 10.6 | 10.0 | 0.9 | 0.6 | 0.8 | 4.1 | 0.8 |
| Revenue and grants | 29.9 | 29.3 | 34.1 | | | 33.8 | 34.2 | 34.3 | 34.3 | 34.4 | 34.4 | | 34.4 |
| of which : grants | 1.4 | 1.3 | 2.2 | | | 3.0 | 3.0 | 3.0 | 3.1 | 3.1 | 3.2 | | 3.2 |
| Primary (noninterest) expenditure | 28.1 | 25.8 | 36.7 | | | 35.4 | 44.8 | 44.3 | 35.2 | 35.0 | 35.3 | | 35.3 |
| Automatic debt dynamics | -5.8 | -7.0 | -1.0 | | | -0.7 | -2.3 | -2.9 | -3.2 | -3.0 | -2.6 | | -1.4 |
| Contribution from interest rate/growth differential | -2.0 | -3.3 | -1.9 | | | 0.8 | -1.0 | -1.5 | -1.8 | -1.7 | -1.6 | | -1.1 |
| of which : contribution from average real interest rate | -1.1 | -1.9 | -1.3 | | | -1.0 | -0.6 | -0.8 | -1.0 | -1.0 | -0.9 | | -0.5 |
| of which : contribution from real GDP growth | -0.9 | -1.4 | -0.7 | | | 1.7 | -0.4 | -0.7 | -0.8 | -0.7 | -0.7 | | -0.6 |
| Contribution from real exchange rate depreciation | -3.8 | -3.7 | 0.9 | | | -1.4 | -1.4 | -1.4 | -1.3 | -1.3 | -1.0 | | ... |
| Other identified debt-creating flows | -0.7 | -1.7 | 0.3 | | | 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 |
| Recognition of implicit or contingent liabilities | -0.7 | -1.7 | 0.3 | | | 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 |
| 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 | 3.4 | 1.7 | -4.3 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 |
| NPV of public sector debt | 19.8 | 15.1 | 32.5 | | | 33.0 | 43.1 | 52.0 | 50.2 | 48.2 | 46.6 | | 41.8 |
| o/w foreign-currency denominated | ... | ... | 21.2 | | | 21.0 | 31.6 | 41.3 | 40.0 | 38.7 | 37.7 | | 34.4 |
| o/w external | ... | ... | 21.2 | | | 21.0 | 31.6 | 41.3 | 40.0 | 38.7 | 37.7 | | 34.4 |
| NPV of contingent liabilities (not included in public sector debt) | ... | ... | ... | | | ... | ... | ... | ... | ... | ... | | ... |
| Gross financing need 2/ | 1.9 | -0.1 | 5.9 | | | 4.9 | 13.4 | 12.7 | 3.3 | 3.2 | 3.2 | | 3.9 |
| NPV of public sector debt-to-revenue ratio (in percent) 3/ | 66.4 | 51.5 | 95.3 | | | 97.5 | 125.8 | 151.9 | 146.3 | 140.2 | 135.3 | | 121.5 |
| o/w external | ... | ... | ... | | | 62.0 | 92.4 | 120.4 | 116.6 | 112.4 | 109.3 | | 99.9 |
| Debt service-to-revenue ratio (in percent) 3/ 4/ | 7.6 | 7.0 | 6.0 | | | 6.5 | 5.7 | 5.4 | 4.6 | 5.3 | 4.9 | | 7.6 |
| Primary deficit that stabilizes the debt-to-GDP ratio | 3.2 | 6.9 | 5.1 | | | 0.7 | 2.4 | 2.9 | 3.2 | 3.0 | 2.6 | | 1.4 |
| Key macroeconomic and fiscal assumptions | | | | | | | | | | | | | |
| Real GDP growth (in percent) | 1.4 | 2.3 | 1.3 | 1.9 | 2.2 | -3.5 | 0.8 | 1.3 | 1.3 | 1.2 | 1.2 | 0.4 | 1.2 |
| Average nominal interest rate on forex debt (in percent) | 1.3 | 1.1 | 1.1 | 1.3 | 0.3 | 1.1 | 1.0 | 0.8 | 0.6 | 0.6 | 0.6 | 0.8 | 1.4 |
| Average real interest rate on domestic currency debt (in percent) | -3.2 | -6.1 | -4.0 | -2.3 | 4.0 | -2.5 | -2.8 | -2.8 | -2.8 | -2.8 | -2.8 | -2.7 | -2.6 |
| Real exchange rate depreciation (in percent, + indicates depreciation) | -9.4 | -9.4 | 2.6 | 2.7 | 12.0 | -3.8 | ... | ... | ... | ... | ... | ... | ... |
| Inflation rate (GDP deflator, in percent) | 5.0 | 9.7 | 7.0 | 5.3 | 3.6 | 5.9 | 5.3 | 5.6 | 5.7 | 5.8 | 6.0 | 5.7 | 6.0 |
| Growth of real primary spending (deflated by GDP deflator, in percent) | -7.4 | -6.0 | 44.1 | 5.8 | 17.6 | -6.9 | 27.5 | 0.2 | -19.5 | 0.6 | 2.0 | 0.6 | 1.2 |

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

1/ Central government. Debt is gross and includes government-guaranteed 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 including 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 I.4.Tonga: Sensitivity Analysis for Key Indicators of Public Debt 2006/07-2026/27

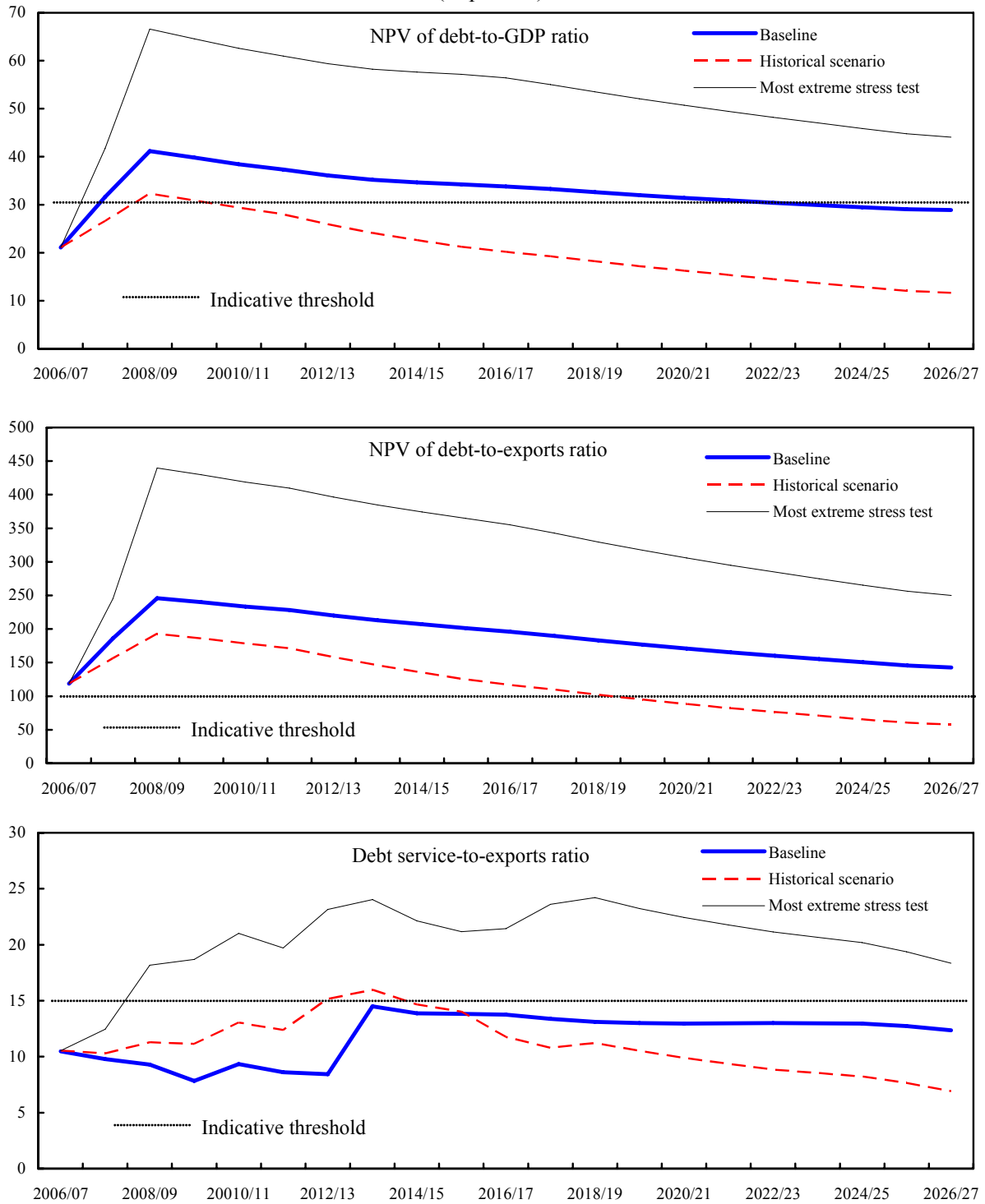
| | Projections | | | | | | | |
|---|-------------|---------|---------|---------|---------|---------|---------|---------|
| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2016/17 | 2026/27 |
| NPV of Debt-to-GDP Ratio | | | | | | | | |
| Baseline | 33 | 43 | 52 | 50 | 48 | 47 | 42 | 35 |
| A. Alternative scenarios | | | | | | | | |
| A1. Real GDP growth and primary balance are at historical averages | 33 | 34 | 34 | 32 | 30 | 28 | 22 | 12 |
| A2. Primary balance is unchanged from 2006/07 | 33 | 35 | 36 | 36 | 35 | 34 | 32 | 33 |
| A3. Permanently lower GDP growth 1/ | 33 | 43 | 53 | 52 | 51 | 50 | 52 | 71 |
| B. Bound tests | | | | | | | | |
| B1. Real GDP growth is at historical average minus one standard deviations in 2007/08-2008/09 | 33 | 44 | 55 | 54 | 52 | 51 | 51 | 52 |
| B2. Primary balance is at historical average minus one standard deviations in 2007/08-2008/09 | 33 | 36 | 39 | 37 | 35 | 34 | 28 | 21 |
| B3. Combination of B1-B2 using one half standard deviation shocks | 33 | 35 | 37 | 35 | 33 | 32 | 26 | 19 |
| B4. One-time 30 percent real depreciation in 2007/08 | 33 | 52 | 61 | 59 | 56 | 55 | 50 | 43 |
| B5. 10 percent of GDP increase in other debt-creating flows in 2007/08 | 33 | 52 | 61 | 59 | 57 | 55 | 51 | 44 |
| NPV of Debt-to-Revenue Ratio 2/ | | | | | | | | |
| Baseline | 98 | 126 | 152 | 146 | 140 | 135 | 121 | 101 |
| A. Alternative scenarios | | | | | | | | |
| A1. Real GDP growth and primary balance are at historical averages | 98 | 98 | 100 | 94 | 88 | 83 | 63 | 36 |
| A2. Primary balance is unchanged from 2006/07 | 98 | 102 | 106 | 104 | 101 | 98 | 94 | 95 |
| A3. Permanently lower GDP growth 1/ | 98 | 127 | 154 | 151 | 147 | 144 | 150 | 203 |
| B. Bound tests | | | | | | | | |
| B1. Real GDP growth is at historical average minus one standard deviations in 2007/08-2008/09 | 98 | 128 | 159 | 156 | 151 | 149 | 146 | 151 |
| B2. Primary balance is at historical average minus one standard deviations in 2007/08-2008/09 | 98 | 105 | 113 | 108 | 102 | 97 | 83 | 62 |
| B3. Combination of B1-B2 using one half standard deviation shocks | 98 | 102 | 107 | 102 | 97 | 92 | 77 | 55 |
| B4. One-time 30 percent real depreciation in 2007/08 | 98 | 152 | 178 | 172 | 164 | 158 | 144 | 125 |
| B5. 10 percent of GDP increase in other debt-creating flows in 2007/08 | 98 | 152 | 178 | 172 | 165 | 160 | 147 | 127 |
| Debt Service-to-Revenue Ratio 2/ | | | | | | | | |
| Baseline | 7 | 6 | 5 | 5 | 5 | 5 | 8 | 8 |
| A. Alternative scenarios | | | | | | | | |
| A1. Real GDP growth and primary balance are at historical averages | 7 | 6 | 2 | 0 | 3 | 3 | 5 | 1 |
| A2. Primary balance is unchanged from 2006/07 | 7 | 6 | 2 | 1 | 3 | 3 | 6 | 5 |
| A3. Permanently lower GDP growth 1/ | 7 | 6 | 5 | 5 | 6 | 5 | 9 | 15 |
| B. Bound tests | | | | | | | | |
| B1. Real GDP growth is at historical average minus one standard deviations in 2007/08-2008/09 | 7 | 6 | 6 | 5 | 6 | 6 | 9 | 12 |
| B2. Primary balance is at historical average minus one standard deviations in 2007/08-2008/09 | 7 | 6 | 3 | 1 | 3 | 3 | 6 | 3 |
| B3. Combination of B1-B2 using one half standard deviation shocks | 7 | 6 | 2 | 1 | 3 | 3 | 6 | 2 |
| B4. One-time 30 percent real depreciation in 2007/08 | 7 | 6 | 6 | 5 | 6 | 5 | 9 | 9 |
| B5. 10 percent of GDP increase in other debt-creating flows in 2007/08 | 7 | 6 | 9 | 6 | 6 | 6 | 9 | 11 |

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

1/ 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).

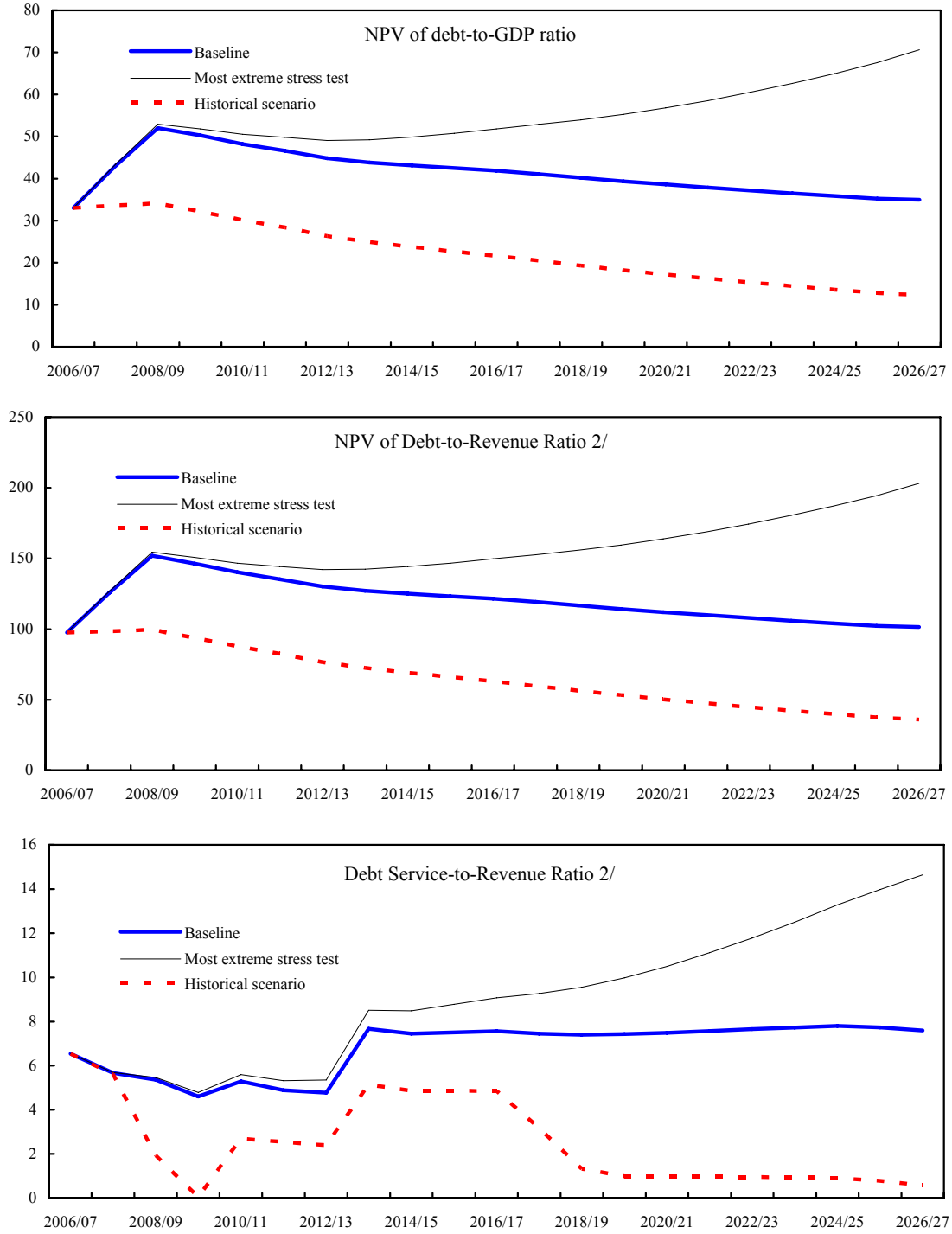
2/ Revenues are defined inclusive of grants.

Figure I.1. Tonga: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2006/07-2026/27 (In percent)



Source: Staff projections and simulations.

Figure I.2.Tonga: Indicators of Public Debt
Under Alternative Scenarios, 2006/07-2026-27
(In percent)



Source: Staff projections and simulations.

1/ Most extreme stress test is test that yields highest ratio in 2016/17.

2/ Revenue including grants.