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FOR AGENDA

SM/11/79
Supplement 2

April 21, 2011

To: Members of the Executive Board

From: The Secretary

Subject: **Tonga—Staff Report for the 2011 Article IV Consultation—Debt Sustainability Analysis**

The attached debt sustainability analysis for Tonga, prepared jointly by the staffs of the Fund and the World Bank, is being issued as a supplement to the staff report for the 2011 Article IV consultation with Tonga (SM/11/79, 4/21/11), which is tentatively scheduled for discussion on **Wednesday, May 4, 2011**. At the time of circulation of this paper to the Board, the authorities of Tonga have indicated that they need more time to consider whether they will consent to the Fund's publication of this paper. Publication will only proceed upon the receipt by the Fund of the member's explicit consent. Any requests for modifications for publication are expected to be received two days before the Board concludes its consideration.

Questions may be referred to Mr. N'Diaye (ext. 39751) and Ms. Geng (ext. 34097) in APD, and Mr. Matz, STA (ext. 37978).

Unless the Documents Section (ext. 36760) is otherwise notified, the document will be transmitted, in accordance with the procedures approved by the Executive Board and with the appropriate deletions, to the WTO Secretariat on Friday, April 29, 2011; and to the Asian Development Bank, and the European Commission, following its consideration by the Executive Board.

This document will shortly be posted on the extranet, a secure website for Executive Directors and member country authorities.

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INTERNATIONAL MONETARY FUND

TONGA

JOINT IMF/WORLD BANK DEBT SUSTAINABILITY ANALYSIS 2011[1]

April 20, 2011

Approved By
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Prepared By
The International Monetary Fund and
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Tonga remains at a high risk of debt distress based on the joint IMF-WB low-income country debt sustainability assessment (LIC DSA). Both the PV-of-debt to GDP, as well as the PV-of-debt to export ratios remain above the country-specific indicative thresholds for a prolonged period under the baseline scenario. The two loans from the China EXIM Bank (one for reconstruction of the central business district and one for road construction) total over TOP$200 million, close to 30% of GDP . The loans, denominated in renminbi, pose a currency risk to the government's balance sheet. Nonetheless, Tonga's very high and relatively stable remittance inflows (normally over 30 percent of GDP)—which are by far the largest source of foreign exchange earnings—help mitigate liquidity risks. Tonga's overall public sector debt indicators, are elevated in the short term, but are expected to show a decreasing trend over the longer run. Taking into account the cushion provided to the economy by the large workers' remittances, the projected debt profile is consistent with manageable—if high risk—debt dynamics. Additional debt will further heighten the already high risk of external debt distress, as well as risks to external sustainability, and significantly constrain the space available for social and developmental priorities, as outlined in the National Strategic Planning Framework (NSPF). These vulnerabilities underscore the importance of sound macroeconomic policies to improve Tonga's growth potential on a sustained basis, export diversification, and continued efforts in fiscal consolidation. The authorities have expressed a desire to receive technical assistance to develop a comprehensive debt management strategy.

[1] This DSA was prepared jointly with the World Bank, and in collaboration with the Asian Development 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.

BACKGROUND

1. The external and public debt sustainability analyses are based on the standard LIC DSA framework. [2] The DSA framework presents the projected path of Tonga's external and public sector debt burden indicators, and draws some conclusions on the forward-looking sustainability of debt.

2. Tonga's total public sector debt stock (including publicly guaranteed debt) is high and rose substantially during FY2008/09-FY2010/2011, reaching over 45 percent of GDP. Tonga contracted two loans from China's Exim Bank[3] with a combined face value of around 30 percent of GDP during that period. Work on Phase I of the reconstruction of the central business district has been completed and work on Phase II has begun. The loan financed two additional capital projects currently underway, an extension of the Royal Palace and the construction of a new wharf to attract cruise ships. Currently, the projection is for 60 percent of the reconstruction loan to be used to finance direct government capital spending while the remaining 40 percent will be on-lent to the private sector for office, residential, and retail construction. The road reconstruction loan agreement was signed in February 2010, and the first disbursement (30 percent) occurred shortly after the signing. The entire loan will be used to finance direct government capital spending on road improvements.

3. Despite the rise in overall debt, the government has continued to reduce its domestic debt level. Domestic debt has fallen from around 20 percent of GDP at the beginning of the decade to around a projected 5 percent of GDP by June 2011. All outstanding bank loans were repaid in 2007/08. This fiscal year, the government issued an additional, unplanned TOP$7 million in short-term domestic debt to fund operations while waiting for donor support. The new debt is expected to be repaid during this fiscal year once donor funds are received, but has already been rolled over for an additional three months. The remaining domestic debt reflects mainly government guarantees and unfunded obligations to the Retirement Fund Board.

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[2]See "Debt Sustainability in Low-Income Countries: Proposal for an Operational Framework and Policy Implications" (http://www.imf.org/external/np/pdr/sustain/2004/020304.htm and IDA/SECM2004/0035, 2/3/04), "Debt Sustainability in Low-Income Countries: Further Considerations on an Operational Framework and Policy Implications" (http://www.imf.org/external/np/pdr/sustain/2004/091004.htm and IDA/SECM2004/0629, 9/10/04), and reference to "Staff Guidance Note on the Application of the Joint Bank-Fund Debt Sustainability Framework for Low-Income Countries" (http://www.imf.org/external/pp/longres.aspx?id=4419).

[3] These loan commitments were signed in November 2007 (for reconstruction), and February 2010 (for roads), and bear a 2 percent interest rate, 5-year grace, and a 20-year maturity. The arrangement with the Chinese contractor performing the work associated with these loans requires an initial disbursement of 30 percent to cover the down payment, while outstanding disbursements are paid quarterly as work is completed and claims are filed.

4. **Tonga's DSA builds on the baseline scenario assumptions presented in Box 1.** It assumes that near-term GDP growth will recover to rates close to its 20-year historical average. The fiscal impulse provided by the two China loans has lifted growth in the short-term and the DSA conservatively assumes a return of private sector growth, remittance inflows, and bank credit activity in the long-term. The reconstruction and road infrastructure projects are assumed to take place over the period until 2014/15, although they will be drawn down over the period through 2012/13. Excluding reconstruction and road spending, public spending is assumed to grow more slowly than projected revenues and grants over the medium term, limiting the longer-term need for additional external borrowing. Remittances—which are the largest source of foreign exchange earnings (one-half of Tongans live abroad, mostly in Australia, New Zealand, and United States)—are assumed to recover in the medium and longer term and remain an important external cushion.

5. **Post mortem analysis** suggests a similar path for debt dynamics. As in the last DSA, Tonga is at high risk of debt distress, with the debt burden peaking early in the projection period and then gradually declining. The current DSA assumes similar longer-term growth and export prospects, but a better non-interest current account position due to smaller import base effects in 2009/10 and somewhat higher net transfers. Compared to last year, the current DSA assumes going forward that the Tongan government undertakes greater fiscal consolidation, resulting in a larger primary surplus and also undertakes less new borrowing as part of its medium-term fiscal strategy. Specifically, the current DSA assumes like last year primary surpluses of around 1 percent of GDP and new concessional external borrowing to finance capital construction of only US$4 million a year over the period 2016/17–2030/31.

Key Macroeconomic Assumptions

	Baseline		Historical	2010 DSA Baseline	
	2010/11-2015/16	2016/17-2030/31	Average	2009/10-2014/15	2015/16-2029/30
Real GDP growth (percent)	1.7	1.8	1.1	1.4	1.8
Growth of exports of goods and services (U.S. dollar terms)	4.0	4.7	6.4	3.8	4.9
Growth of remittance inflows (U.S. dollar terms)	6.5	4.5	4.0	5.9	5.2
Non-interest current account balance (in percent of GDP)	-9.0	-6.9	-4.9	-16.6	-10.4
GDP deflator growth (U.S. dollar terms)	1.9	2.8	5.0	0.5	2.9
Primary deficit (in percent of GDP)	1.0	-1.0	0.1	2.6	-0.9

EXTERNAL DSA

External Debt Indicators	Indicative Thresholds 1/	2009/10	2010/11
NPV of external debt			
In percent of GDP	30	31	37
In percent of exports	100	256	291
In percent of remittances and exports	90	89	109
In percent of revenue	200	149	211
Debt service			
In percent of exports	15	15	14
In percent of remittances and exports	14	5	5
In percent of revenue	25	9	10

1/ Represents Low Income Country DSA indicative thresholds for Tonga that is classified as a poor performer under the World Bank's Country Policy Institutional Assessment. The threshold for the ratios in percent of remittance and exports are modified by a 10 percent rule-of-thumb.

Baseline

6. Under the baseline, the external debt trajectory breaches several policy-dependent thresholds in 2010/11 before receding to lower levels over the medium term. The present value of public and publicly guaranteed (PPG) external debt is currently over 30 percent of GDP, the indicative threshold level. Given the drawdown of the Exim Bank loans the PV of PPG external debt is projected to increase to about 40 percent of GDP by 2012/13, 10 percentage points above the threshold, before dropping under the threshold by 2018/19 and declining to around 7 percent of GDP by 2030/31.

7. External debt remains well above the PV of debt-to-export distress threshold. Reflecting Tonga's low exports, the PV of PPG external debt-to-exports ratio is almost three times the indicative threshold of 100 percent, and is projected to remain above the threshold well past 2020. The PV of debt-to-revenue ratio also breaches the threshold until around and below the threshold thereafter.Tonga's remittances, which are the country's largest source of foreign exchange earnings (one half of Tongans live abroad), would help to reduce liquidity risks. Tonga's remittances have averaged more than twice export receipts over the past decade, and have provided a considerably more stable source of foreign exchange inflows.[4] Relative to remittances and exports the PV of PPG debt is projected to exceed 100 percent in 2010/11–2013/14, and is projected to remain above the (lower) modified threshold until around 2015/16, 10 years sooner than when remittances are ignored. Therefore, scenario analysis that take into account remittances have been added.

8. Debt and debt service are expected to stay above the exports threshold for most of

[4] Remittance income growth has historically been much more stable than export growth. The coefficient of variation of remittances has been 1.3, much lower than the coefficient of 2 for export receipts.

the projection period, but not when remittances are accounted for. Tonga will be unable to expand its very narrow export base in the short term, aggravating solvency and liquidity risks. The ratio of debt service to revenue remains well below the threshold of 25 percent throughout the projection period (Figure 1), albeit with a deterioration in the short to medium term. Relative to exports and remittances, external debt service remains well under 10 percent throughout the projection period to 2030/31. Remittances will decline in the short term, but they are expected to recover and stabilize at around 27 percent of GDP over the longer term. This level of remittances represents a recovery from the time of the global financial crisis but remains lower than the level of remittances received in the years before the crisis.

Sensitivity Analysis

9. **Stress tests show the vulnerability of the debt position to a slowdown in exports or a significant depreciation.** The export shock stress test causes the present value of debt to exceed 500 percent of exports and remain above the 100 percent threshold for the entire projection period. Similarly, the debt service-to-exports ratio rises even further above the 15 percent threshold, reaching almost 40 percent in 2017. A large one-time depreciation causes the present value of debt to rise to around over 55 percent of GDP and remain persistently above the 30 percent threshold even after 2020. Similarly a large depreciation also causes the present value of debt-to-revenue ratio to persistently breach its threshold. Several other potential shocks would also see debt levels remain above the indicative GDP and export thresholds for a prolonged period. Similar stresses emerge when remittances are considered. The future scenario is more risky than the historical trends would indicate because the recent China EXIM loan and donor financed construction projects have caused a larger current account balance than in the past. If the current account deficit were at historical levels, debt could be reduced more quickly, although these smaller current account deficits are unlikely in coming years as the remaining construction projects are rolled out and the existing projects are completed.

PUBLIC SECTOR DSA

Baseline

10. **The public sector DSA reinforces the conclusions of the external DSA**. The recent high level of public sector borrowing for road building and reconstruction of the capital raises the present value of debt to over 42 percent of GDP in 2011/12–2013/14 before it declines steadily thereafter under the baseline scenario. This highlights the importance of fiscal prudence, and a commitment to limit new PPG borrowing.

Alternative Scenario and Stress Tests

11. **Stress tests indicate that vulnerabilities remain throughout the projection period, especially to a sizable depreciation.** Among the stress tests performed, a 30 percent depreciation results in the largest rise in the overall public debt burden. The PV of public debt would rise and remain above 50 percent of GDP until 2017/18 and would be at 18½ percent of GDP in 2031.[5] Maintaining the primary balance at its 2010 level brings debt down faster because the defi given the large deficits implied by the Exim bank-financed construction. The externally financed capital expenditure will require larger longer-term primary surpluses (of around 1 percent of GDP) to ensure debt in line with our baseline.

STAFF ASSESSMENT

12. **Tonga remains at a high risk of external debt distress.** While Tonga benefits from very high and relatively stable remittance inflows, which clearly mitigate its liquidity risks, remittances are insufficient to limit risks from projected debt service payments. Additionally, the authorities have exposed themselves to a currency mismatch on the government's balance sheet which, if left unchecked, could pose an additional risk to Tonga's debt dynamics. Despite being at high risk, Tonga's debt dynamics are manageable. Tonga is able to service its current obligations, and the overall public sector debt situation, while elevated over the short term, shows a downward trend over the longer run assuming the authorities avoid taking on additional debt.

13. **Key medium-term vulnerabilities include lower GDP growth, major external shocks, currency mismatches, and credit risks to the government's balance sheet., and borrowing on less concessional terms** These vulnerabilities underscore the importance of sound macroeconomic policies to improve Tonga's growth potential on a sustained basis, export diversification, and continued efforts in fiscal consolidation. Moreover, increased utilization of donor grants and avoiding further new borrowing until the debt is put on a downward path is necessary to reduce the risk of external debt distress. Sound public debt management, anchored in a medium-term debt management strategy and in line with the medium-term fiscal framework, is also essential to guide future development financing in Tonga. Priority should be given to projects which would help generate high growth and employment, especially in the context of the NSPF, to help ensure debt service capacity in the future.

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[5] In the Fiscal Balance scenario, we assume a more ambitious medium-term fiscal program, where the primary surplus is kept at an average of 1 percent of GDP after 2010/11.

Box 1 Key Assumptions

- Real GDP growth is projected to average around 1.7 percent over the period 2010/11–2015/16, as the fiscal impulse provided by the two China loans is completed, the economy recovers from the global financial crisis, and remittances recover. Longer-term growth is expected to be marginally higher, reflecting a return on the ongoing capital projects but will remain around its long-run average because of structural impediments.

- As growth recovers, the current fiscal balance is assumed to narrow from a deficit about 2½ percent of GDP in 2010/11 to surplus of 1 percent by 2015/16. The surplus is projected to result from restraint in wage expenditures following the recent public sector restructuring, tax administration gains, and the alignment of government ministries under a medium-term budget framework. In addition, it is important for the government to ensure that the salary structure of civil servants adequately reflects performance and contributes to increasing efficiency in service delivery.

- A current fiscal balance of around 1 percent of GDP is assumed over the longer-term. Current revenue and expenditure are assumed to be broadly stable as a percent of GDP. The resulting primary fiscal balance will average around 1 percent of GDP.

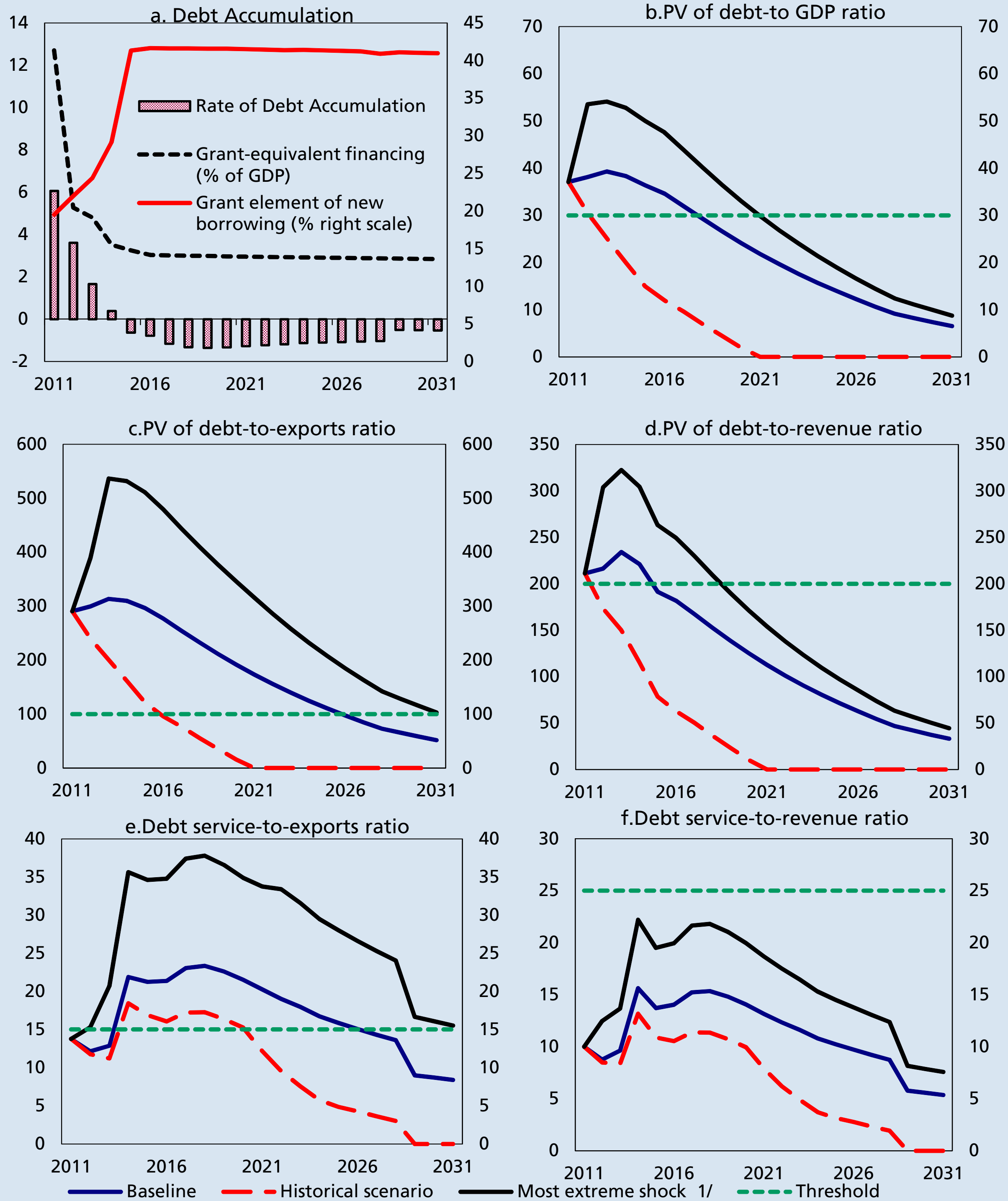
- Grants are projected to decline from current high levels of 5¼ percent of GDP, but remain significant at around 2½ percent of GDP over the longer term. Donor commitments are extremely important given the relatively small size of the Tongan economy and its vulnerability to external shocks. These grants, together with projected disbursements from concessional loans are assumed to be spent entirely on development projects and associated maintenance. Following the last disbursement of the current China Exim Bank loan (in 2012/13), we assume all future external borrowing is from concessional IFI (AsDB and World Bank) facilities. On the domestic front it is assumed no new domestic borrowing until 2014/15 as consolidation advances and the debt is brought down. Domestic borrowing is thereafter limited to filling any financing gap.

- The external current account deficit is projected to reach 10¾ percent of GDP in 2012/13, up from 7¾ percent of GDP in 2009/10, driven primarily by the large construction-related imports. Over the medium term, the deficit should return to around 7½ percent of GDP.

- Net FDI is projected to stabilize at around 5½ percent of GDP.

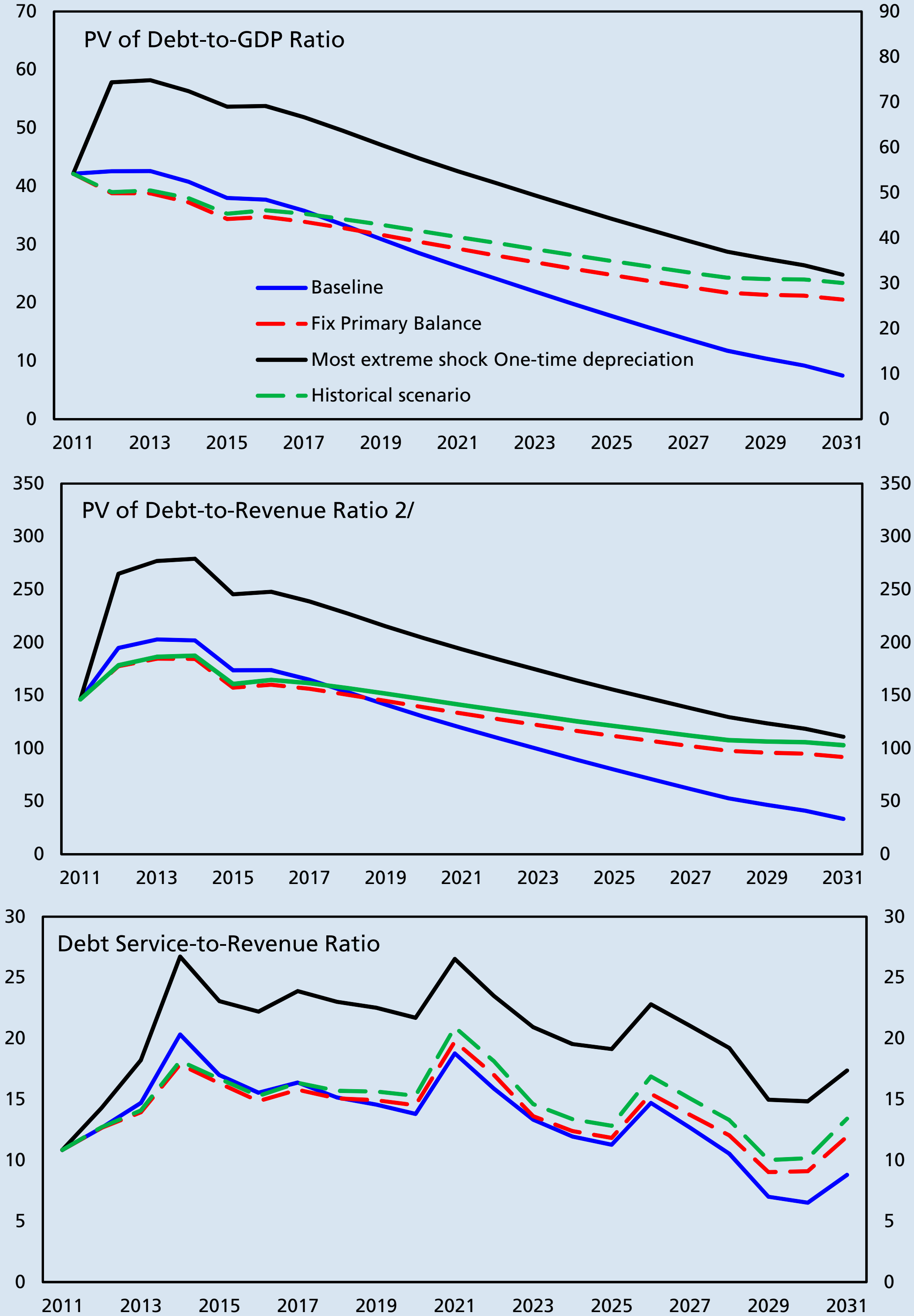
- The decline in remittances appears to have bottomed out as economic activity in the United States, Australia, and New Zealand has begun to recover. These three countries are the source of the vast majority of Tonga's remittances. Remittances are expected to recover along with the economies in these three countries and as Australia reviews its seasonal worker program for Pacific Islanders to facilitate greater utilization of the scheme. The export base is projected to remain narrow and relatively undiversified with a focus on agricultural products. The proper operation of the fumigation facility should help gradually increase exports as the products will meet New Zealand's bio-security requirements.

Figure 1 Tonga: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2011–31 1/



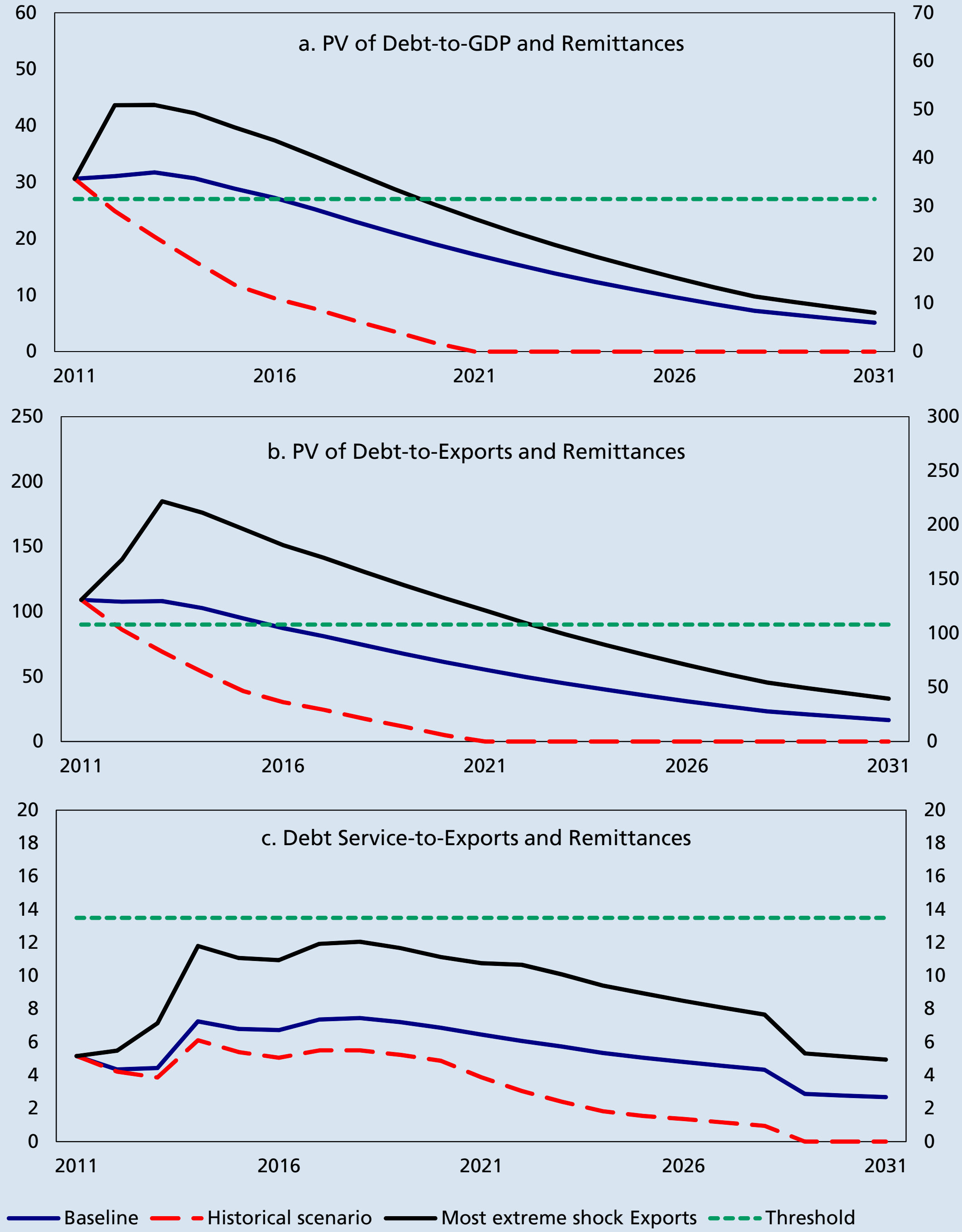
Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2020. In figure b. it corresponds to a Non-debt flows shock; in c. to a Exports shock; in d. to a Non-debt flows shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock. Data refers to last date in fiscal year (e.g., 2011, refers to FY ending June 30, 2011).

Figure 2 Tonga: Indicators of Public Debt under Alternative Scenarios, 2011–31 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. Data refers to last date in fiscal year (e.g., 2011, refers to FY ending June 30, 2011).
2/ Revenues are defined inclusive of grants.

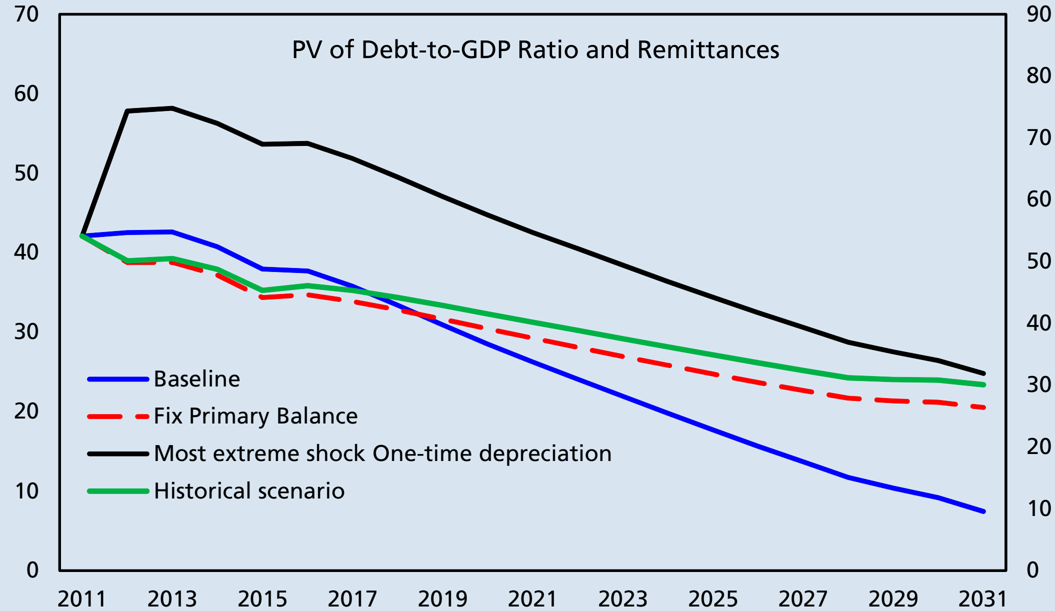
Figure 3 Tonga: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2011–31 1/



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 a, it corresponds to a non-debt flows shock; in b, to exports shock; in c, to exports shock. Data refers to last date in fiscal year (e.g., 2011, refers to FY ending June 30, 2011).

Figure 4 Tonga: Indicators of Public Debt under Alternative Scenarios, 2011–31 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. Data refers to last date in fiscal year (e.g., 2011, refers to FY ending June 30, 2011).

Table 1a Tonga: External Debt Sustainability Framework, Baseline Scenario, 2008–31 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average	Standard Deviation	Projections									
												2011-2016 Average			2017-2031 Average
	2008	2009	2010			2011	2012	2013	2014	2015	2016		2021	2031	
External debt (nominal) 1/	23.7	31.1	35.3			42.0	43.1	44.2	43.3	40.8	38.7		24.4	9.2	
o/w public and publicly guaranteed (PPG)	23.7	31.1	35.3			42.0	43.1	44.2	43.3	40.8	38.7		24.4	9.2	
Change in external debt	-3.1	7.4	4.2			6.7	1.1	1.1	-0.9	-2.4	-2.1		-2.5	-0.8	
Identified net debt-creating flows	-1.4	5.1	0.3			7.8	9.5	7.9	6.1	4.4	1.2		1.0	1.7	
Non-interest current account deficit	8.5	14.2	7.2	4.9	5.8	10.2	10.9	9.9	8.9	8.0	6.0		6.7	7.4	6.9
Deficit in balance of goods and services	37.1	40.0	30.1			38.4	35.9	33.1	33.6	33.8	33.0		32.8	33.2	
Exports	14.2	14.3	12.2			12.8	12.7	12.5	12.4	12.3	12.5		12.6	12.6	
Imports	51.2	54.3	42.4			51.2	48.7	45.7	45.9	46.1	45.5		45.4	45.8	
Net current transfers (negative = inflow)	-27.2	-23.8	-21.6	-28.4	4.3	-26.8	-23.6	-21.7	-22.9	-24.3	-25.5		-24.7	-24.7	-24.7
o/w official	-0.1	-0.2	-0.3			-7.4	-2.7	0.3	0.2	-0.1	-0.1		0.3	0.3	
Other current account flows (negative = net inflow)	-1.3	-2.0	-1.3			-1.4	-1.4	-1.6	-1.8	-1.5	-1.5		-1.3	-1.0	
Net FDI (negative = inflow)	-7.0	-11.9	-4.3	-4.8	4.0	-2.8	-1.5	-2.1	-3.0	-3.6	-4.9		-5.8	-6	-5.8
Endogenous debt dynamics 2/	-3.0	2.8	-2.6			0.3	0.1	0.1	0.3	0.0	0.0		0.1	0.1	
Contribution from nominal interest rate	0.3	0.5	0.5			0.7	0.8	0.9	1.0	0.8	0.7		0.5	0.3	
Contribution from real GDP growth	-0.6	0.0	0.1			-0.4	-0.7	-0.8	-0.8	-0.8	-0.7		-0.5	-0.2	
Contribution from price and exchange rate changes	-2.7	2.2	-3.2			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	-1.7	2.4	3.9			-1.1	-8.4	-6.9	-7.1	-6.8	-3.3		-3.5	-2.5	
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/	…	…	31.3			37.1	38.1	39.3	38.3	36.4	34.6		21.8	6.5	
In percent of exports	…	…	255.9			290.6	299.6	313.6	309.9	296.4	276.9		173.2	51.8	
PV of PPG external debt	…	…	31			37.1	38.1	39.3	38.3	36.4	34.6		21.8	6.5	
In percent of exports	…	…	256			291	300	314	310	296	277		173	52	
In percent of government revenues	…	…	149			211	217	234	221	191	182		113	33	
Debt service-to-exports ratio (in percent)	10.0	8.7	15.0			13.8	12.1	12.9	21.9	21.3	21.4		20.2	8.4	
PPG debt service-to-exports ratio (in percent)	10.0	8.7	15.0			13.8	12.1	12.9	21.9	21.3	21.4		20.2	8.4	
PPG debt service-to-revenue ratio (in percent)	5.8	5.4	8.8			10.0	8.8	9.6	15.6	13.7	14.0		13.2	5.4	
Total gross financing need (Millions of U.S. dollars)	10.3	11.3	16.7			34.2	42.1	37.4	35.1	29.8	16.7		18.9	22.8	
Non-interest current account deficit that stabilizes debt ratio	11.6	6.8	3.0			3.6	9.8	8.8	9.8	10.4	8.2		9.3	8.2	
Key macroeconomic assumptions															
Real GDP growth (in percent)	2.7	-0.1	-0.5	1.1	1.9	1.2	1.7	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.8
GDP deflator in US dollar terms (change in percent)	11.1	-8.5	11.6	5.0	10.0	4.3	1.2	1.5	1.7	1.8	0.9	1.9	2.8	2.8	2.8
Effective interest rate (percent) 5/	1.5	2.0	1.9	1.2	0.5	2.2	2.0	2.1	2.4	1.8	1.9	2.0	2.1	3.0	2.4
Growth of exports of G&S (US dollar terms, in percent)	50.6	-7.4	-5.2	6.4	25.1	10.0	2.5	1.7	2.2	2.8	4.8	4.0	4.6	4.6	4.7
Growth of imports of G&S (US dollar terms, in percent)	22.2	-3.0	-13.4	7.5	14.7	27.5	-2.2	-3.1	4.1	4.0	1.5	5.3	4.6	4.8	4.7
Grant element of new public sector borrowing (in percent)	…	…	…	…	…	19.5	22.0	24.4	29.1	41.3	41.6	29.7	41.5	41.0	41.3
Government revenues (excluding grants, in percent of GDP)	24.6	22.9	21.0			17.6	17.6	16.8	17.3	19.0	19.1		19.4	19.7	19.4
Aid flows (in Millions of US dollars) 7/	4.6	21.8	18.4			41.8	18.2	18.8	15.7	16.1	15.6		18.5	26.8	
o/w Grants	4.6	21.8	18.4			41.8	16.2	16.8	11.7	12.1	11.6		14.5	22.8	
o/w Concessional loans	0.0	0.0	0.0			0.0	2.0	2.0	4.0	4.0	4.0		4.0	4.0	
Grant-equivalent financing (in percent of GDP) 8/	…	…	…			12.7	5.3	4.8	3.5	3.3	3.0		3.0	2.8	2.9
Grant-equivalent financing (in percent of external financing) 8/	…	…	…			67.3	58.8	73.1	68.6	85.2	84.9		87.2	90.9	88.3
Memorandum items:															
Nominal GDP (Millions of US dollars)	348.0	318.0	353.2			372.8	383.4	396.1	410.0	425.0	436.7		547.6	860.8	
Nominal dollar GDP growth	14.1	-8.6	11.1			5.5	2.9	3.3	3.5	3.6	2.8	3.6	4.6	4.6	4.6
PV of PPG external debt (in Millions of US dollars)			109.6			131.0	144.5	150.8	152.4	149.8	146.5		115.6	54.4	
(PVt-PVt-1)/GDPt-1 (in percent)						6.1	3.6	1.7	0.4	-0.6	-0.8	1.7	-1.3	-0.5	-1.1
Gross remittances (Millions of US dollars)	106.7	84.0	81.7			79.2	87.1	94.5	102.4	110.7	118.8		147.1	231.2	
PV of PPG external debt (in percent of GDP + remittances)	…	…	25.5			30.6	31.1	31.7	30.7	28.8	27.2		17.2	5.1	
PV of PPG external debt (in percent of exports + remittances)	…	…	88.6			109.0	107.6	108.0	102.6	94.9	87.2		55.3	16.5	
Debt service of PPG external debt (in percent of exports + remittances)	…	…	5.2			5.2	4.4	4.4	7.2	6.8	6.7		6.5	2.7	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.
2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) 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 1b Tonga: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–31

(In percent)

	Projections											
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2031**
PV of debt-to GDP ratio												
Baseline	37	38	39	38	36	35	32	29	27	24	**22**	7
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2011-2031 1/	37	31	25	20	15	12	10	7	4	2	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2	37	39	40	39	38	36	34	32	29	27	**25**	12
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	37	39	40	39	37	35	32	30	27	24	**22**	6
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	37	39	43	42	40	38	35	33	30	28	**25**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	37	40	43	42	40	38	35	32	29	26	**24**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	37	38	37	36	35	33	30	28	25	23	**20**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	37	37	38	37	35	33	30	27	25	22	**20**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	37	54	54	53	50	48	44	40	36	33	**30**	9
PV of debt-to-exports ratio												
Baseline	291	300	314	310	296	277	254	232	211	192	**173**	52
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2011-2031 1/	291	240	201	161	122	96	77	55	36	15	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2	291	304	317	319	308	291	271	252	234	216	**200**	95
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	291	296	304	300	287	267	245	224	204	185	**167**	49
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	291	390	537	532	511	480	443	410	377	346	**316**	103
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	291	296	304	300	287	267	245	224	204	185	**167**	49
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	291	297	299	295	282	262	240	219	199	180	**162**	47
B5. Combination of B1-B4 using one-half standard deviation shocks	291	311	335	331	315	293	267	242	218	196	**175**	47
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	291	296	304	300	287	267	245	224	204	185	**167**	49
PV of debt-to-revenue ratio												
Baseline	211	217	234	221	191	182	168	153	138	125	**113**	33
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2011-2031 1/	211	173	150	115	78	63	51	36	23	10	**0**	0
A2. New public sector loans on less favorable terms in 2011-2031 2	211	220	237	227	199	191	179	166	153	141	**130**	61
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	211	219	238	225	195	185	170	155	140	127	**114**	33
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	211	223	254	241	209	200	186	171	157	143	**130**	42
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	211	228	258	244	210	200	184	168	152	137	**123**	36
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	211	214	223	211	182	172	159	144	130	117	**105**	30
B5. Combination of B1-B4 using one-half standard deviation shocks	211	211	224	211	182	172	157	142	128	114	**102**	27
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	211	304	322	305	263	250	230	209	190	171	**154**	44

Table 1b Tonga: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–31 (continued)

(In percent)

Debt service-to-exports ratio												
Baseline	14	12	13	22	21	21	23	23	23	22	**20**	8
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2011-2031 1/	14	12	11	18	17	16	17	17	16	15	**12**	0
A2. New public sector loans on less favorable terms in 2011-2031 2	14	12	12	22	22	22	23	22	22	20	**19**	8
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	14	12	13	22	21	21	23	23	23	22	**20**	8
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	14	15	21	36	35	35	37	38	37	35	**34**	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	14	12	13	22	21	21	23	23	23	22	**20**	8
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	14	12	13	22	21	21	23	23	23	21	**20**	8
B5. Combination of B1-B4 using one-half standard deviation shocks	14	13	15	25	25	25	27	27	26	25	**23**	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	14	12	13	22	21	21	23	23	23	22	**20**	8
Debt service-to-revenue ratio												
Baseline	10	9	10	16	14	14	15	15	15	14	**13**	5
A. Alternative Scenarios												
A1. Key variables at their historical averages in 2011-2031 1/	10	8	8	13	11	11	11	11	11	10	**8**	0
A2. New public sector loans on less favorable terms in 2011-2031 2	10	9	9	16	14	14	15	15	14	13	**12**	5
B. Bound Tests												
B1. Real GDP growth at historical average minus one standard deviation in 2012-2013	10	9	10	16	14	15	16	16	16	15	**14**	6
B2. Export value growth at historical average minus one standard deviation in 2012-2013 3/	10	9	10	16	14	14	16	16	15	14	**14**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2012-2013	10	9	11	18	16	16	17	17	17	16	**15**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2012-2013 4/	10	9	10	16	14	14	15	15	15	14	**13**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	10	9	10	16	14	15	16	16	15	15	**13**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	10	12	14	22	19	20	22	22	21	20	**19**	8
Memorandum item:												
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	36	36	36	36	36	36	36	36	36	36	**36**	36

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 2a Tonga: Public Sector Debt Sustainability Framework, Baseline Scenario, 2008–31 1/

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2008	2009	2010	Average	Standard Deviation	2011	2012	2013	2014	2015	2016	2011-16 Average	2021	2031	2017-31 Average
Public sector debt 2/	32.2	38.5	42.8			47.0	47.6	47.5	45.7	42.4	41.8		28.8	10.1	
o/w foreign-currency denominated	23.7	31.1	35.3			42.0	43.1	44.2	43.3	40.8	38.7		24.4	9.2	
Change in public sector debt	-4.7	6.3	4.3			4.3	0.5	-0.1	-1.8	-3.3	-0.6		-2.4	-1.6	
Identified debt-creating flows	-6.0	6.6	2.6			2.9	2.0	0.7	-0.3	-0.4	-0.6		-1.7	-1.2	
Primary deficit	-2.3	-1.2	4.6	0.1	2.3	2.9	3.8	0.0	-0.3	0.1	-0.6	1.0	-1.0	-1.1	-1.0
Revenue and grants	25.9	29.8	26.3			28.8	21.8	21.0	20.2	21.9	21.7		22.0	22.3	
of which: grants	1.3	6.9	5.2			11.2	4.2	4.2	2.9	2.9	2.6		2.6	2.6	
Primary (noninterest) expenditure	23.6	28.6	30.8			31.7	25.7	21.0	19.9	21.9	21.1		21.0	21.3	
Automatic debt dynamics	-3.4	3.1	-0.8			0.3	-1.8	0.7	0.0	-0.5	0.0		-0.7	-0.1	
Contribution from interest rate/growth differential	-1.4	0.7	0.8			-0.2	-0.2	-0.1	0.1	-0.5	-0.4		-0.4	0.0	
of which: contribution from average real interest rate	-0.4	0.6	0.6			0.3	0.6	0.7	0.9	0.3	0.4		0.2	0.2	
of which: contribution from real GDP growth	-1.0	0.0	0.2			-0.5	-0.8	-0.8	-0.8	-0.8	-0.8		-0.6	-0.2	
Contribution from real exchange rate depreciation	-2.0	2.4	-1.7			0.5	-1.6	0.8	-0.1	0.0	0.4		...	...	
Other identified debt-creating flows	-0.3	4.7	-1.2			-0.3	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	4.7	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	-0.3	0.0	-1.2			-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	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	1.3	-0.2	1.7			1.4	-1.5	-0.7	-1.6	-2.9	0.0		-0.8	-0.4	
Other Sustainability Indicators															
PV of public sector debt	8.5	7.4	38.8			42.1	42.5	42.6	40.7	37.9	37.7		26.2	7.5	
o/w foreign-currency denominated	0.0	0.0	31.3			37.1	38.1	39.3	38.3	36.4	34.6		21.8	6.5	
o/w external	...	...	31.3			37.1	38.1	39.3	38.3	36.4	34.6		21.8	6.5	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	-0.5	1.6	8.0			6.0	6.6	3.1	3.8	3.8	2.8		3.1	0.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	32.8	24.9	147.6			146.3	194.8	202.8	201.9	173.6	173.8		119.3	33.4	
PV of public sector debt-to-revenue ratio (in percent)	34.6	32.3	184.2			239.6	241.7	254.0	235.2	199.7	197.9		135.6	37.9	
o/w external 4/	…	…	148.9			211.1	216.6	234.2	221.2	191.3	181.8		112.6	33.1	
Debt service-to-revenue and grants ratio (in percent) 5/	6.9	9.5	13.0			10.8	12.7	14.7	20.3	17.0	15.6		18.8	8.8	
Debt service-to-revenue ratio (in percent) 5/	7.2	12.4	16.2			17.8	15.7	18.4	23.7	19.5	17.7		21.4	10.0	
Primary deficit that stabilizes the debt-to-GDP ratio	2.4	-7.5	0.3			-1.4	3.3	0.1	1.6	3.4	0.1		1.4	0.6	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	2.7	-0.1	-0.5	1.1	1.9	1.2	1.7	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.8
Average nominal interest rate on forex debt (in percent)	1.5	2.0	1.9	1.2	0.5	2.2	2.0	2.1	2.4	1.8	1.9	2.0	2.1	3.0	2.4
Average real interest rate on domestic debt (in percent)	-1.5	5.9	4.4	-2.4	5.7	-0.8	6.8	10.5	17.3	13.0	21.5	11.4	1.3	4.0	1.9
Real exchange rate depreciation (in percent, + indicates depreciation)	-7.7	10.1	-5.3	-1.8	11.5	1.3	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	5.4	0.4	3.2	6.4	4.8	9.2	5.8	3.9	6.0	6.0	6.0	6.2	6.0	6.0	6.0
Growth of real primary spending (deflated by GDP deflator, in percent)	-0.1	0.2	0.1	0.1	0.1	0.0	-0.2	-0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Grant element of new external borrowing (in percent)	...	...	...	…	…	19.5	22.0	24.4	29.1	41.3	41.6	29.7	41.5	41.0	...

Sources: Country authorities; and staff estimates and projections.
1/ Data refers to last date in fiscal year (e.g., 2011 refers to FY ending June 30, 2011).
2/ Data covers general government and nonfinancial public enterprises. Gross debt is used.
3/ 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.
4/ Revenues excluding grants.
5/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 2b Tonga: Sensitivity Analysis for Key Indicators of Public Debt, 2011–31 1/

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
PV of Debt-to-GDP Ratio								
Baseline	42	43	43	41	38	38	26	7
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	42	39	39	38	35	36	31	23
A2. Primary balance is unchanged from 2010	42	39	39	37	34	35	29	21
A3. Permanently lower GDP growth 2/	42	43	43	42	39	40	32	25
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	42	44	46	45	43	44	37	26
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	42	41	43	42	39	39	27	8
B3. Combination of B1-B2 using one half standard deviation shocks	42	40	42	41	39	39	30	17
B4. One-time 30 percent real depreciation in 2011	42	58	58	56	54	54	43	25
B5. 10 percent of GDP increase in other debt-creating flows in 2011	42	53	53	51	48	48	36	17
PV of Debt-to-Revenue Ratio 3/								
Baseline	146	195	203	202	174	174	119	33
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	146	178	186	187	161	165	141	103
A2. Primary balance is unchanged from 2010	146	178	185	184	157	160	133	92
A3. Permanently lower GDP growth 2/	146	196	205	206	179	182	143	110
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	146	201	217	221	196	201	165	116
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	146	188	207	206	177	178	123	37
B3. Combination of B1-B2 using one half standard deviation shocks	146	185	200	202	176	179	137	75
B4. One-time 30 percent real depreciation in 2011	146	265	277	279	245	248	193	111
B5. 10 percent of GDP increase in other debt-creating flows in 2011	146	241	252	253	221	222	166	77

Table 2b Tonga: Sensitivity Analysis for Key Indicators of Public Debt, 2011–31 1/ (continued)

	Projections							
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2021**	**2031**
Debt Service-to-Revenue Ratio 3/								
Baseline	11	13	15	20	17	16	19	9
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	11	13	14	18	17	15	21	13
A2. Primary balance is unchanged from 2010	11	13	14	18	16	15	20	12
A3. Permanently lower GDP growth 2/	11	13	15	21	17	16	20	14
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2011-2012	11	13	15	22	19	17	22	15
B2. Primary balance is at historical average minus one standard deviations in 2011-2012	11	13	14	20	18	16	19	9
B3. Combination of B1-B2 using one half standard deviation shocks	11	13	15	19	18	16	20	12
B4. One-time 30 percent real depreciation in 2011	11	14	18	27	23	22	27	17
B5. 10 percent of GDP increase in other debt-creating flows in 2011	11	13	17	27	19	18	21	14

Sources: Country authorities; and staff estimates and projections.
1/ Data refers to last date in fiscal year (e.g., 2011 refers to FY ending June 30, 2011).
2/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.
3/ Revenues are defined inclusive of grants.