INTERNATIONAL MONETARY FUND

TUVALU

STAFF REPORT FOR THE 2016 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

August 26, 2016

Approved By
Thomas Helbling and Peter Allum, and Satu Kahkonen (IDA)

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

The Debt Sustainability Analysis (DSA) concludes that Tuvalu remains at a high risk of debt distress. Although fiscal buffers have been replenished over the past four years, risks to debt sustainability remain high owing to the increased recurrent fiscal spending in 2015 and the 2016 budget. Under the baseline scenario, the fiscal position would move into a deficit from 2016 onwards as the spending is not sufficiently scaled back in the context of normalizing revenue. In the medium term, external and public debt-to-GDP are expected to fall below the indicative thresholds as fiscal buffers are drawn down to amortize existing debt and to finance the fiscal deficit. However, in the long run, the debt stock is expected to once again breach the indicative thresholds as fiscal buffers fall below prudent levels and external borrowing is renewed. This trajectory underscores the importance of targeting a small structural fiscal surplus to lower the risk of debt distress while maintaining fiscal space to improve climate change resilience. In an adjustment scenario, the risk of debt distress is lowered as recurrent spending is contained and a small structural surplus is achieved, allowing fiscal buffers to remain above prudent levels.

©International Monetary Fund. Not for Redistribution

RECENT DEBT DEVELOPMENTS

1. The government's external liabilities are a mix of concessional and commercial debt. As of end-2015, total public and publicly guaranteed debt is estimated at US$19million, equivalent to 58.2 percent of GDP. External debt stood at US$17.8 million (54.5 percent of GDP), and domestic debt — owed to domestic banks — at US$1.2 million (3.8 percent of GDP). Bilateral donors provide only grant assistance, while multilateral institutions, most notably the Asian Development Bank, have provided concessional loans as well as grants to the government. Meanwhile, loans contracted at nonconcessional terms by two fishing joint ventures established by the National Fishing Corporation of Tuvalu (NAFICOT) and Asian companies account for a significant share of public debt. These loans are guaranteed by the government, and constitute contingent government liabilities.[1] In recent years, one joint venture has been working on a new loan agreement to finance the expansion of its fishing capacity, which implies an addition of public debt.

Tuvalu Public Debt, End-2015

	Creditor	Outstanding amount (US$ million)	Outstanding amount (Percent of GDP)	Concessional
External Debt		**17.8**	**54.5**	
Central Government Debt	ADB	5.2	15.8	Yes
Development Bank Debt	EIB	1.1	3.5	No
Fishing Joint Venture Debt	Commercial bank	11.5	35.2	No
Domestic debt		**1.2**	3.8	No

2. External assets remain sizeable, but not fully sovereign. The Tuvalu Trust Fund (TTF), which was mainly capitalized by development partners in 1987, has grown from A$27 million to more than A$148 million (around 340 percent of GDP) in 2015. The TTF is not fully sovereign and cannot be drawn down freely: when its market value exceeds a "maintained value" indexed to Australian CPI, the TTF Board—representing both donors and Tuvalu government—can decide to transfer the excess to the budget. The transfers are deposited into the Consolidated Investment Fund (CIF), which is a fiscal buffer fund used to finance future budget expenditures. The TTF assets are invested abroad, mostly in Australia. Since access to the TTF by Tuvaluan government is conditional, this DSA analyzes public debt on gross rather than net basis.

UNDERLYING ASSUMPTIONS

3. The baseline macroeconomic framework can be summarized as follows:

[1] An effectively defunct and wholly government-owned public enterprise called the National Fishing Corporation of Tuvalu (NAFICOT) is party to the two fishing joint ventures (JV). NAFICOT owns 50 percent of the JV that was established together with a company of the Taiwan Province of China, and 40 percent of the Korean one.

(continued)

©International Monetary Fund. Not for Redistribution

- **Growth**. Real GDP is projected to grow by an average of 2.2 percent per annum over the medium term due to the implementation of a few large infrastructure projects financed by grants from development partners.[2] Over the long run, growth is projected to average 2 percent driven mainly by climate change infrastructure investment but would continue to be hampered by the dominance of inefficient public enterprises in the economy, capacity constraints, and weak competitiveness.

- **Inflation**. Owing to rapid increases of public spending and wages as well as reconstruction spending from Cyclone Pam and a weakening Australian dollar, inflation is projected to reach around 3 percent in the near term and moderate to 2.2 percent in the medium run, which is similar to the 2014 DSA.

- **Balance of payments.** In the baseline scenario, Tuvalu's current account deficit would average around 1 percent of GDP over the medium term, as revenues from fishing license fees return to their historical average of roughly $A20 million. Imports fall from their 2016 peak over the medium term but remain elevated relative to historical averages as a result of ongoing climate-proofing investment. Exports continue to hover around 55 percent of GDP in the medium and long term. The narrowing of the current account deficit vis-à-vis the 2014 DSA reflects the unexpected windfalls from fishing license fees. FDI inflows would be minimal and mostly include reinvestment of fishing joint venture earnings. Despite efforts of the authorities to privatize certain public enterprises, there has been little success in attracting foreign investors, and therefore no significant FDI inflows associated with privatization are assumed.

- **Fiscal.** Expenditure is assumed to be higher over the projection period (compared to the 2014 DSA) reflecting strong increases in social spending and subsidies. Fishing and internet licensing revenues are higher (compared to the 2014 DSA). They are assumed to be in line with recent 4-year averages and to remain buoyant in the medium term. Grants will gradually decline to around 18.5 percent of GDP in the long run as reform implementation reduces the flows of donor contributions to the budget. Given the weakening fishing license fees and foreign grants, expenditures would be compressed gradually from 116 percent of GDP in 2015 to 94 percent of GDP by 2036. On the expenditure side, recurrent spending, particularly toward the TMTS and scholarships, remain elevated, while climate-proofing investment spending remains around 2 percent of GDP. The baseline scenario projects an overall fiscal deficit 5 percent of GDP over the medium term. Concessional borrowing would remain small in the medium term as fiscal buffers are drawn down, but then gradually increase as buffers are depleted over the longer run.

4. Baseline assumptions: Under the baseline scenario, moderating fishing revenues and continued elevated recurrent spending pressures related to civil service wages, TMTS, scholarships, public enterprise subsidies, and other goods and services purchases, would result in persistent budget deficits over the medium term. On capital spending, the baseline scenario includes the cost

[2] These expenditures would be extrabudgetary and do not affect debt levels.

(continued)

©International Monetary Fund. Not for Redistribution

of bolstering sea walls and other "climate-proofing" measures, estimated at 2 percent of GDP per year over the long term, most of which will occur in the form of capital spending, but also maintenance of existing infrastructure.[3] Under this scenario, deficits will be financed through drawdowns of the CIF, causing balances to fall below 16 percent of the maintained value of the TTF over the medium term.

5. **Adjustment scenario assumptions:** Under an adjustment scenario, wage growth is aligned to productivity gains in the economy and public enterprise reform limits the budget subsidies. In addition, with increased efficiency in spending on TMTS and scholarships (with development partner assistance), buffers in the CIF are maintained above the sustainable threshold. The adjustment scenario would also maintain fiscal space for essential climate change capital investment and allow re-investment of TTF distributions to build up balances towards the A$200 million target by 2020.

DEBT SUSTAINABILITY

A. Baseline Scenario

6. **Under the baseline scenario, external and public debt breach the indicative threshold of the debt-to-GDP ratio.** The threshold for PV of Debt to GDP is determined by the CPIA index, a measure of the country's institutional capacity. The trajectory shows a decline in debt levels over the medium term reflecting amortization of existing loans and limited borrowing. Two spikes in the debt service profile in 2021 and 2027 are related to one-off repayments for the Korean joint venture fishing vessel and a DBT equity injection. Increased borrowing in the outer years as buffers fall below prudent levels (e.g. three months of current expenditures), implies that the debt trajectory begins to rise again and breaches the threshold by the end of the projection period (Figure 1). New borrowing would be mostly from external sources. Domestic financing will remain small due to severe asset quality problems in the domestic banking system.

7. **Stress tests show to both external and public sector debt indicate that the debt ratios are highly sensitive to exports and exchange rate shocks.** A one-time 30 percent nominal depreciation would cause the debt-to-GDP ratio to stay above the indicative threshold in most of the projection period. A standard shock to exports also results in a breach of the debt-to-export threshold.

B. Adjustment Scenario

8. **Under an adjustment scenario where fiscal policy is anchored by an appropriate fiscal balance target, the risk of debt distress is lowered while maintaining fiscal space for investment in climate change resilience.** Given the volatility of fishing license fees, targeting a structural balance would help reduce procyclicality—the structural balance is estimated on the basis

[3] There may also be an adverse growth impact from the vulnerability to natural disasters. See Cabezon et al (2015), *Enhancing Macroeconomic Resilience to Natural Disasters and Climate Change in the Small States of the Pacific*, IMF WP No 15/125; and Cabezon, Tumbarello and Wu (2015), *Strengthening Fiscal Frameworks and Improving the Spending Mix in Small States*, IMF WP No 15/12.

©International Monetary Fund. Not for Redistribution

of a moving average of fishing license fees. In an adjustment scenario targeting a small structural surplus (around 1 percent of GDP), recurrent spending is rationalized (including public enterprise subsidies and social spending), which will ensure adequate CIF buffers (16 percent of the maintained value of the TTF). The adjustment scenario includes the cost of climate change investment, as in the baseline scenario. The adjustment scenario entails reversing part of the recent recurrent spending increases through civil service wage restraint, scaling back the government subsidies (TMTS, scholarships and PEs) as well as goods and services purchases. With a small structural surplus over the medium to long run, CIF buffers would be maintained at a comfortable level, and debt indicators would improve significantly (see discussion in paragraph 17 of the Staff Report).

C. Authorities' View

9. The authorities broadly concurred with the overall assessment of the Debt-Sustainability Analysis, but made a couple of observations. First, the authorities, while recognizing the volatility of fishing revenues, are more optimistic about the near-term outcome, and expect revenues to be higher than staff projection in the next few years. Second, they indicated that the larger of the two fishing joint ventures has remained profitable, and the probability for the government to assume the company's debt obligation is small.

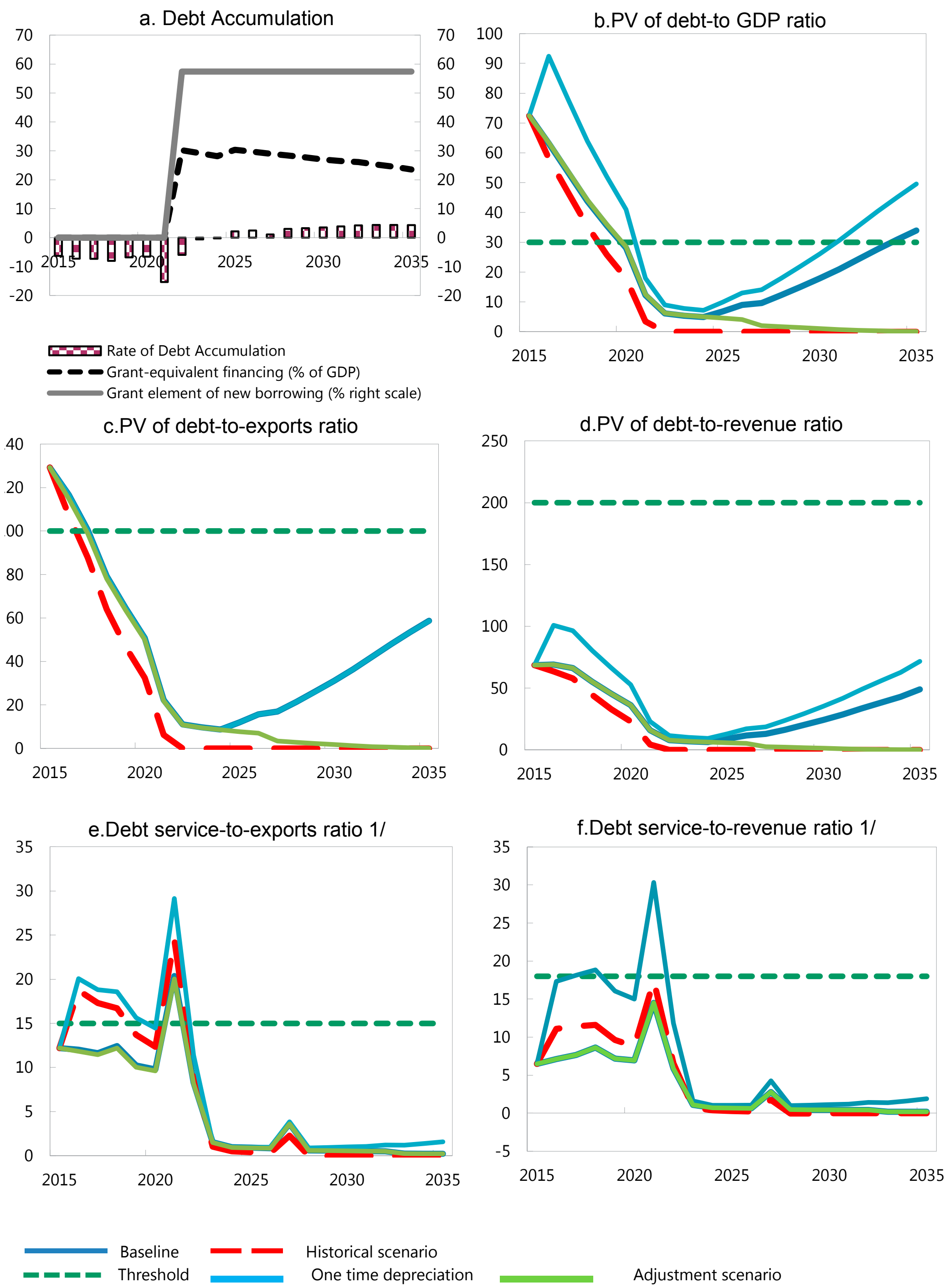
D. Conclusions

10. Tuvalu's DSA points to a high risk of debt distress, which is the same conclusion that was drawn in the 2014 DSA. Under the baseline scenario, the budget would move into a deficit from 2016 onwards as spending is not sufficiently scaled back in the context of normalizing revenues. In the medium term, public and external debt-to-GDP levels fall below the indicative thresholds but would breach the thresholds again in the long run once the CIF balance falls below prudent levels and external borrowing is renewed. The debt trajectory highlights the importance of targeting a small structural fiscal surplus to lower the risk of debt distress while maintaining fiscal space to improve climate change resilience.

11. Stress tests show that Tuvalu's external and public sector debt dynamics are susceptible to shocks. Standard shocks in DSA, particularly one-time 30 percent nominal depreciation and slowing growth and exports, would cause certain external debt indicators to breach their respective thresholds for prolonged periods. Public debt indicators also worsen dramatically under bound tests.

©International Monetary Fund. Not for Redistribution

Figure 1. Tuvalu: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2016-2035 1/

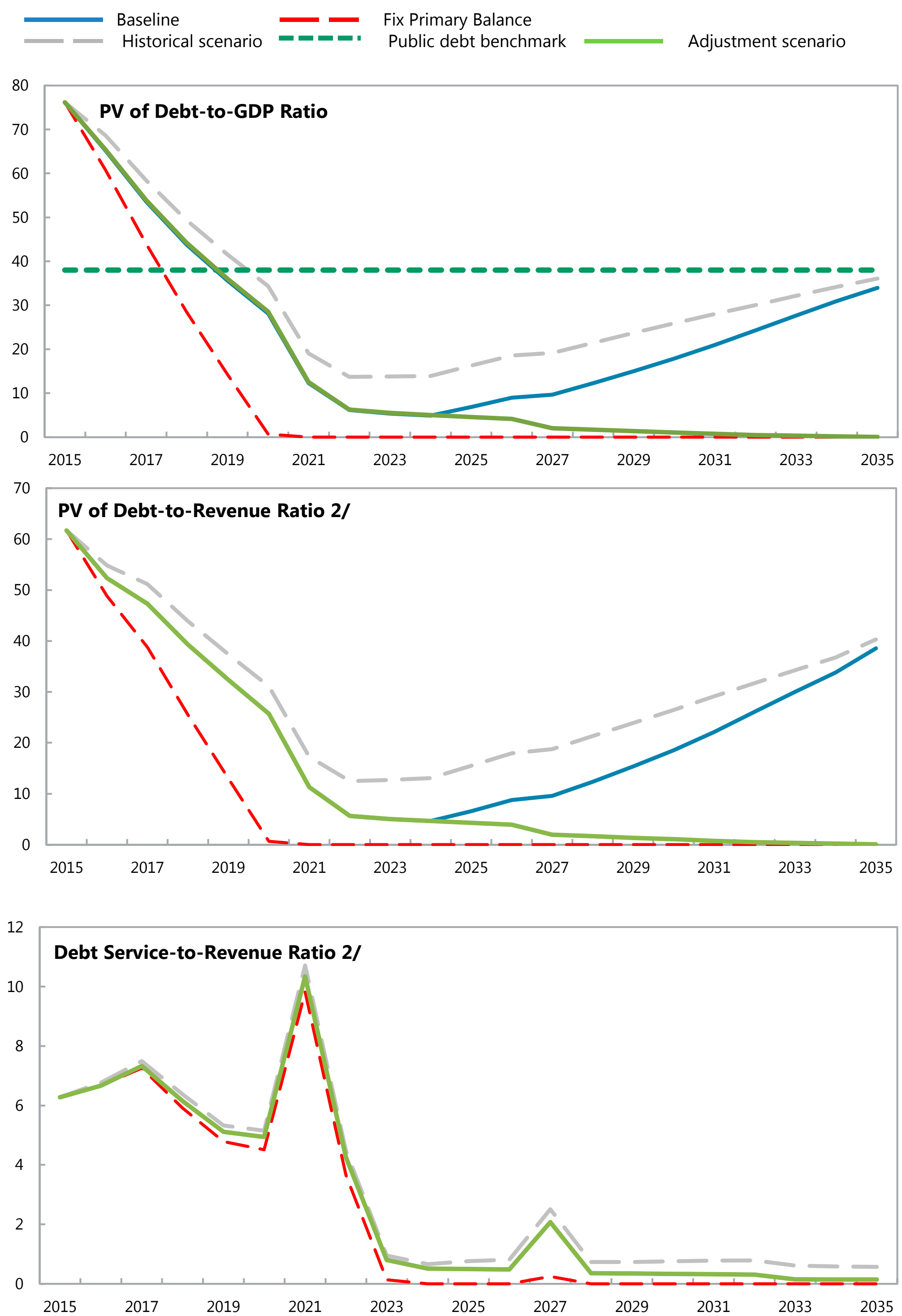


Sources: Country authorities; and staff estimates and projections.

1/ Two spikes in the debt service profile in 2021 and 2027 are related to one-off repayments for the Korean joint venture fishing vessel and a DBT equity injection, respectively.

©International Monetary Fund. Not for Redistribution

Figure 2. Tuvalu: Indicators of Public Debt Under Alternative Scenarios, 2015-2035 1/



Sources: Country authorities; and staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.

2/ Revenues are defined inclusive of grants.

©International Monetary Fund. Not for Redistribution

Table 1a. Tuvalu: External Debt Sustainability Framework, Baseline Scenario, 2012-2035
(in percent of GDP, unless otherwise indicated)

	Actual				Historical 6/	Standard 6/	Estimate					Projections			
					Average	Deviation						2016-2020			2021-2035
	2012	2013	2014	2015			2016	2017	2018	2019	2020	Average	2025	2035	Average
External debt (nominal) 1/	**19.7**	**51.8**	**59.8**	**54.5**			**51.7**	**44.3**	**36.6**	**30.3**	**24.6**		**11.7**	**71.2**	
of which: public and publicly guaranteed (PPG)	19.7	51.8	59.8	54.5			51.7	44.3	36.6	30.3	24.6		11.7	71.2	
Change in external debt	0.5	32.1	8.0	-5.3			-2.8	-7.4	-7.7	-6.2	-5.8		5.0	5.6	
Identified net debt-creating flows	-13.3	-2.0	-16.9	-8.5			2.6	5.3	5.2	5.0	3.1		3.3	10.2	
Non-interest current account deficit	**-17.5**	**-1.7**	**-19.8**	**-8.7**	**-0.2**	**15.8**	**2.9**	**4.7**	**4.6**	**4.3**	**2.3**		**2.6**	**10.8**	6.1
Deficit in balance of goods and services	61.9	95.6	75.9	97.0			116.3	111.1	106.7	102.6	98.7		90.3	87.7	
Exports	62.8	58.0	57.2	56.0			54.2	53.4	55.3	55.2	55.3		57.0	57.9	
Imports	124.7	153.5	133.1	153.0			170.5	164.4	162.0	157.8	154.1		147.3	145.7	
Net current transfers (negative = inflow)	-55.2	-45.4	-61.9	-34.3	-38.9	20.8	-50.2	-54.0	-51.8	-49.9	-48.2		-40.5	-30.4	-37.5
of which: official	-58.7	-45.3	-61.8	-34.2			-50.1	-54.0	-51.8	-49.8	-48.1		-40.5	-30.3	
Other current account flows (negative = net inflow)	-24.3	-51.8	-33.8	-71.4			-63.1	-52.3	-50.3	-48.5	-48.3		-47.2	-46.5	
Net FDI (negative = inflow)	**4.2**	**-1.5**	**0.7**	**0.7**	**1.3**	**2.4**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**		**0.7**	**0.7**	0.7
Endogenous debt dynamics 2/	**0.0**	**1.2**	**2.1**	**-0.6**			**-1.1**	**-0.2**	**-0.1**	**0.0**	**0.1**		**0.0**	**-1.4**	
Contribution from nominal interest rate	0.3	0.5	0.5	1.2			1.1	0.9	0.9	0.8	0.7		0.2	0.0	
Contribution from real GDP growth	0.0	-0.3	-1.2	-1.8			-2.2	-1.1	-1.0	-0.8	-0.6		-0.1	-1.4	
Contribution from price and exchange rate changes	-0.2	1.0	2.8	...			...	...	...	...	...		...	...	
Residual (3-4) 3/	**13.8**	**34.0**	**24.9**	**3.2**			**-5.3**	**-12.7**	**-12.9**	**-11.3**	**-8.9**		**1.7**	**-4.6**	
of which: 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/	...	...	73.9	72.4			63.2	53.6	43.8	35.6	28.1		6.8	34.0	
In percent of exports	...	...	129.1	129.2			116.6	100.4	79.3	64.6	50.8		12.0	58.6	
PV of PPG external debt	**...**	**...**	**73.9**	**72.4**			**63.2**	**53.6**	**43.8**	**35.6**	**28.1**		**6.8**	**34.0**	
In percent of exports	**...**	**...**	**129.1**	**129.2**			**116.6**	**100.4**	**79.3**	**64.6**	**50.8**		**12.0**	**58.6**	
In percent of government revenues	**...**	**...**	**99.7**	**68.6**			**69.0**	**66.2**	**55.1**	**45.4**	**36.1**		**8.9**	**49.0**	
Debt service-to-exports ratio (in percent)	**2.0**	**2.9**	**2.9**	**12.2**			**12.0**	**11.6**	**12.4**	**10.2**	**9.8**		**0.9**	**0.2**	
PPG debt service-to-exports ratio (in percent)	**2.0**	**2.9**	**2.9**	**12.2**			**12.0**	**11.6**	**12.4**	**10.2**	**9.8**		**0.9**	**0.2**	
PPG debt service-to-revenue ratio (in percent)	**2.2**	**2.0**	**2.3**	**6.5**			**7.1**	**7.7**	**8.6**	**7.2**	**6.9**		**0.7**	**0.2**	
Total gross financing need (Millions of U.S. dollars)	-4.8	-0.6	-6.5	-0.4			3.3	3.9	4.3	3.9	3.2		1.7	7.6	
Non-interest current account deficit that stabilizes debt ratio	-17.9	-33.7	-27.8	-3.4			5.7	12.1	12.3	10.6	8.1		-2.4	5.2	
Key macroeconomic assumptions															
Real GDP growth (in percent)	0.2	1.3	2.2	2.6	1.9	4.5	4.0	2.3	2.3	2.2	2.0	2.6	2.1	2.2	2.1
GDP deflator in US dollar terms (change in percent)	1.3	-4.9	-5.2	-14.6	2.4	9.9	-4.8	2.3	1.6	1.6	1.6	0.4	1.6	1.6	1.6
Effective interest rate (percent) 5/	1.5	2.3	0.9	1.8	1.5	0.4	1.9	1.9	2.0	2.2	2.4	2.1	2.5	0.0	1.0
Growth of exports of G&S (US dollar terms, in percent)	68.5	-11.0	-4.3	-14.2	32.2	55.7	-4.3	3.0	7.7	3.7	3.9	2.8	4.7	3.9	4.0
Growth of imports of G&S (US dollar terms, in percent)	-7.3	18.6	-16.0	0.8	6.9	16.0	10.2	0.9	2.4	1.2	1.1	3.2	2.4	3.7	3.3
Government revenues (excluding grants, in percent of GDP)	56.6	82.9	74.1	105.5			91.7	80.9	79.5	78.5	77.9		76.7	69.3	74.8
Aid flows (in Millions of US dollars) 7/	11.1	9.4	18.2	5.9			10.6	11.0	11.3	11.6	11.9		14.8	17.8	
of which: Grants	11.1	9.4	18.2	5.9			10.6	11.0	11.3	11.6	11.9		12.3	12.3	
of which: Concessional loans	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0		2.5	5.5	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...	...			...	...	...	...	...		30.4	23.6	27.6
Grant-equivalent financing (in percent of external financing) 8/	...	...	...	...			...	...	...	...	...		92.7	86.8	91.6
Memorandum items:															
Nominal GDP (Millions of US dollars)	39.9	38.4	37.3	32.7			32.3	33.8	35.1	36.5	37.8		45.1	65.3	
Nominal dollar GDP growth	1.5	-3.6	-3.1	-12.3			-1.1	4.6	4.0	3.8	3.6	3.0	3.7	3.8	3.7
PV of PPG external debt (in Millions of US dollars)			25.2	22.8			20.5	18.1	15.4	13.0	10.6		3.1	22.2	
(PVt-PVt-1)/GDPt-1 (in percent)				-6.3			-7.3	-7.3	-8.0	-6.8	-6.5	-7.2	2.2	4.3	1.0
Gross workers' remittances (Millions of US dollars)	0.4	0.3	0.3	0.2			0.2	0.2	0.2	0.3	0.3		0.3	0.4	
PV of PPG external debt (in percent of GDP + remittances)	...	...	73.4	71.9			62.8	53.2	43.5	35.4	27.9		6.8	33.7	
PV of PPG external debt (in percent of exports + remittances)	...	...	127.6	127.6			115.1	99.2	78.3	63.8	50.2		11.8	58.0	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.9	12.1			11.9	11.5	12.3	10.1	9.6		0.9	0.2	

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; drawdowns of the CIF; 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).

©International Monetary Fund. Not for Redistribution

Table 1b. Tuvalu: External Debt Sustainability Framework, Adjustment Scenario, 2012-2035

(in percent of GDP, unless otherwise indicated)

	Actual				Historical 6/	Standard 6/	Estimate					Projections			
					Average	Deviation						2016-2020			2021-2035
	2012	2013	2014	2015			2016	2017	2018	2019	2020	Average	2025	2035	Average
External debt (nominal) 1/	**19.7**	**51.8**	**59.8**	**54.5**			**51.7**	**44.3**	**36.6**	**30.3**	**24.6**		**6.1**	**0.9**	
of which: public and publicly guaranteed (PPG)	19.7	51.8	59.8	54.5			51.7	44.3	36.6	30.3	24.6		6.1	0.9	
Change in external debt	0.5	32.1	8.0	-5.3			-2.8	-7.4	-7.7	-6.2	-5.8		-0.6	-0.2	
Identified net debt-creating flows	-13.3	-2.0	-16.9	-8.5			2.6	5.3	5.2	5.0	3.1		3.3	11.5	
Non-interest current account deficit	**-17.5**	**-1.7**	**-19.8**	**-8.7**	**-0.2**	**15.8**	**2.9**	**4.7**	**4.6**	**4.3**	**2.3**		**2.6**	**10.8**	6.1
Deficit in balance of goods and services	61.9	95.6	75.9	97.0			116.3	111.1	106.7	102.6	98.7		90.3	87.7	
Exports	62.8	58.0	57.2	56.0			54.2	53.4	55.3	55.2	55.3		57.0	57.9	
Imports	124.7	153.5	133.1	153.0			170.5	164.4	162.0	157.8	154.1		147.3	145.7	
Net current transfers (negative = inflow)	-55.2	-45.4	-61.9	-34.3	-38.9	20.8	-50.2	-54.0	-51.8	-49.9	-48.2		-40.5	-30.4	-37.5
of which: official	-58.7	-45.3	-61.8	-34.2			-50.1	-54.0	-51.8	-49.8	-48.1		-40.5	-30.3	
Other current account flows (negative = net inflow)	-24.3	-51.8	-33.8	-71.4			-63.1	-52.3	-50.3	-48.5	-48.3		-47.2	-46.5	
Net FDI (negative = inflow)	**4.2**	**-1.5**	**0.7**	**0.7**	**1.3**	**2.4**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**		**0.7**	**0.7**	0.7
Endogenous debt dynamics 2/	**0.0**	**1.2**	**2.1**	**-0.6**			**-1.1**	**-0.2**	**-0.1**	**0.0**	**0.1**		**0.0**	**0.0**	
Contribution from nominal interest rate	0.3	0.5	0.5	1.2			1.1	0.9	0.9	0.8	0.7		0.2	0.0	
Contribution from real GDP growth	0.0	-0.3	-1.2	-1.8			-2.2	-1.1	-1.0	-0.8	-0.6		-0.1	0.0	
Contribution from price and exchange rate changes	-0.2	1.0	2.8	...			...	...	...	...	...		...	...	
Residual (3-4) 3/	**13.8**	**34.0**	**24.9**	**3.2**			**-5.3**	**-12.7**	**-12.9**	**-11.3**	**-8.9**		**-3.9**	**-11.7**	
of which: 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/	...	...	73.9	72.4			63.2	53.6	43.8	35.6	28.1		4.5	0.1	
In percent of exports	...	...	129.1	129.2			116.6	100.4	79.3	64.6	50.8		7.8	0.1	
PV of PPG external debt	**...**	**...**	**73.9**	**72.4**			**63.2**	**53.6**	**43.8**	**35.6**	**28.1**		**4.5**	**0.1**	
In percent of exports	**...**	**...**	**129.1**	**129.2**			**116.6**	**100.4**	**79.3**	**64.6**	**50.8**		**7.8**	**0.1**	
In percent of government revenues	**...**	**...**	**99.7**	**68.6**			**69.0**	**66.2**	**55.1**	**45.4**	**36.1**		**5.8**	**0.1**	
Debt service-to-exports ratio (in percent)	**2.0**	**2.9**	**2.9**	**12.2**			**12.0**	**11.6**	**12.4**	**10.2**	**9.8**		**0.9**	**0.2**	
PPG debt service-to-exports ratio (in percent)	**2.0**	**2.9**	**2.9**	**12.2**			**12.0**	**11.6**	**12.4**	**10.2**	**9.8**		**0.9**	**0.2**	
PPG debt service-to-revenue ratio (in percent)	**2.2**	**2.0**	**2.3**	**6.5**			**7.1**	**7.7**	**8.6**	**7.2**	**6.9**		**0.7**	**0.2**	
Total gross financing need (Millions of U.S. dollars)	-4.8	-0.6	-6.5	-0.4			3.3	3.9	4.3	3.9	3.2		1.7	7.6	
Non-interest current account deficit that stabilizes debt ratio	-17.9	-33.7	-27.8	-3.4			5.7	12.1	12.3	10.6	8.1		3.2	11.0	
Key macroeconomic assumptions															
Real GDP growth (in percent)	0.2	1.3	2.2	2.6	1.9	4.5	4.0	2.3	2.3	2.2	2.0	2.6	2.1	2.2	2.1
GDP deflator in US dollar terms (change in percent)	1.3	-4.9	-5.2	-14.6	2.4	9.9	-4.8	2.3	1.6	1.6	1.6	0.4	1.6	1.6	1.6
Effective interest rate (percent) 5/	1.5	2.3	0.9	1.8	1.5	0.4	1.9	1.9	2.0	2.2	2.4	2.1	2.5	0.3	1.6
Growth of exports of G&S (US dollar terms, in percent)	68.5	-11.0	-4.3	-14.2	32.2	55.7	-4.3	3.0	7.7	3.7	3.9	2.8	4.7	3.9	4.0
Growth of imports of G&S (US dollar terms, in percent)	-7.3	18.6	-16.0	0.8	6.9	16.0	10.2	0.9	2.4	1.2	1.1	3.2	2.4	3.7	3.3
Government revenues (excluding grants, in percent of GDP)	56.6	82.9	74.1	105.5			91.7	80.9	79.5	78.5	77.9		76.7	69.3	74.8
Aid flows (in Millions of US dollars) 7/	11.1	9.4	18.2	5.9			10.6	11.0	11.3	11.6	11.9		12.3	12.3	
of which: Grants	11.1	9.4	18.2	5.9			10.6	11.0	11.3	11.6	11.9		12.3	12.3	
of which: Concessional loans	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...	...			...	...	...	...	...		...	...	
Grant-equivalent financing (in percent of external financing) 8/	...	...	...	...			...	...	...	...	...		...	...	
Memorandum items:															
Nominal GDP (Millions of US dollars)	39.9	38.4	37.3	32.7			32.3	33.8	35.1	36.5	37.8		45.1	65.3	
Nominal dollar GDP growth	1.5	-3.6	-3.1	-12.3			-1.1	4.6	4.0	3.8	3.6	3.0	3.7	3.8	3.7
PV of PPG external debt (in Millions of US dollars)			25.2	22.8			20.5	18.1	15.4	13.0	10.6		2.0	0.0	
(PVt-PVt-1)/GDPt-1 (in percent)				-6.3			-7.3	-7.3	-8.0	-6.8	-6.5	-7.2	-0.3	-0.1	-1.8
Gross workers' remittances (Millions of US dollars)	0.4	0.3	0.3	0.2			0.2	0.2	0.2	0.3	0.3		0.3	0.4	
PV of PPG external debt (in percent of GDP + remittances)	...	...	73.4	71.9			62.8	53.2	43.5	35.4	27.9		4.4	0.1	
PV of PPG external debt (in percent of exports + remittances)	...	...	127.6	127.6			115.1	99.2	78.3	63.8	50.2		7.7	0.1	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.9	12.1			11.9	11.5	12.3	10.1	9.6		0.9	0.2	

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; drawdowns of the CIF; 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).

©International Monetary Fund. Not for Redistribution

Table 2a. Tuvalu: Public Sector Debt Sustainability Framework, Baseline Scenario, 2012-2035
(In percent of GDP, unless otherwise indicated)

	Actual						Estimate					Projections				
	2012	2013	2014	2015	Average 5/	Standard Deviation 5/	2016	2017	2018	2019	2020	2021	2016-21 Average	2025	2035	2021-35 Average
Public sector debt 1/	25.9	57.2	64.4	58.2			53.7	44.3	36.6	30.3	24.6	13.1		11.7	71.2	
of which: foreign-currency denominated	19.7	51.8	59.8	54.5			51.7	44.3	36.6	30.3	24.6	13.1		11.7	71.2	
Change in public sector debt	2.1	31.2	7.2	-6.2			-4.5	-9.4	-7.7	-6.2	-5.8	-11.5		5.0	5.6	
Identified debt-creating flows	-10.0	-24.0	-34.3	-2.6			1.1	2.0	3.6	4.2	4.6	3.6		1.2	0.2	
Primary deficit	-9.9	-27.3	-37.2	-8.6	4.9	23.0	1.5	3.1	4.4	4.8	4.9	3.8	3.8	5.2	8.4	6.5
Revenue and grants	84.3	107.5	123.1	123.5			124.5	113.3	111.5	110.2	109.4	109.2		103.9	88.1	
of which: grants	27.8	24.6	49.0	18.0			32.9	32.4	32.0	31.7	31.5	31.3		27.2	18.8	
Primary (noninterest) expenditure	74.4	80.2	85.9	114.8			126.0	116.4	115.9	115.0	114.3	113.0		109.1	96.5	
Automatic debt dynamics	-0.1	3.2	2.8	6.1			-0.4	-1.1	-0.9	-0.6	-0.4	-0.2		-0.1	-2.4	
Contribution from interest rate/growth differential	-0.1	-0.2	-1.8	-1.4			-2.0	-1.0	-0.9	-0.7	-0.5	-0.3		-0.1	-2.6	
of which: contribution from average real interest rate	-0.1	0.2	-0.5	0.3			0.2	0.2	0.1	0.1	0.2	0.2		0.0	-1.2	
of which: contribution from real GDP growth	0.0	-0.3	-1.3	-1.7			-2.2	-1.2	-1.0	-0.8	-0.6	-0.5		-0.1	-1.4	
Contribution from real exchange rate depreciation	0.0	3.4	4.6	7.4			1.7	0.0	0.1	0.1	0.1	0.1		...	...	
Other identified debt-creating flows	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		-3.9	-5.9	
Privatization receipts (negative)	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	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	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		-3.9	-5.9	
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	0.0	
Residual, including asset changes	12.1	55.3	41.5	-3.6			-5.6	-11.4	-11.3	-10.5	-10.4	-15.1		3.8	5.5	
Other Sustainability Indicators																
PV of public sector debt	...	...	78.5	76.2			65.2	53.6	43.8	35.6	28.1	12.3		6.8	34.0	
of which: foreign-currency denominated	...	...	73.9	72.4			63.2	53.6	43.8	35.6	28.1	12.3		6.8	34.0	
of which: external	...	...	73.9	72.4			63.2	53.6	43.8	35.6	28.1	12.3		6.8	34.0	
PV of contingent liabilities (not included in public sector debt)	...	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	-7.7	-24.5	-34.5	-0.9			9.8	11.4	11.3	10.5	10.4	15.1		5.7	8.5	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	63.8	61.7			52.4	47.3	39.3	32.3	25.7	11.3		6.6	38.6	
PV of public sector debt-to-revenue ratio (in percent)	...	...	105.9	72.2			71.1	66.2	55.1	45.4	36.1	15.8		8.9	49.0	
of which: external 3/	...	...	99.7	68.6			69.0	66.2	55.1	45.4	36.1	15.8		8.9	49.0	
Debt service-to-revenue and grants ratio (in percent) 4/	2.6	2.6	2.2	6.3			6.7	7.3	6.2	5.1	4.9	10.3		0.5	0.1	
Debt service-to-revenue ratio (in percent) 4/	3.9	3.4	3.6	7.3			9.1	10.3	8.6	7.2	6.9	14.5		0.7	0.2	
Primary deficit that stabilizes the debt-to-GDP ratio	-12.0	-58.5	-44.3	-2.5			6.0	12.5	12.1	11.1	10.7	15.3		0.2	2.8	
Key macroeconomic and fiscal assumptions																
Real GDP growth (in percent)	0.2	1.3	2.2	2.6	1.9	4.5	4.0	2.3	2.3	2.2	2.0	2.1	2.5	2.1	2.2	2.1
Average nominal interest rate on forex debt (in percent)	1.5	2.3	0.9	1.8	1.5	0.4	1.9	1.9	2.0	2.2	2.4	2.7	2.2	2.5	0.0	1.0
Average real interest rate on domestic debt (in percent)	5.0	5.4	5.2	4.5	5.0	0.4	4.9	7.7	...	...	...	...	6.3	...	...	
Real exchange rate depreciation (in percent, + indicates depreciation) 6/	0.1	17.6	9.3	12.7	2.0	14.2	...	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	0.9	1.8	1.9	2.5	1.8	1.3	1.9	2.1	2.0	1.8	1.6	1.5	1.8	1.6	1.6	1.6
Growth of real primary spending (deflated by GDP deflator, in percent)	-3.9	9.2	9.5	37.2	5.2	12.0	14.1	-5.5	1.9	1.4	1.4	0.9	2.4	1.0	-1.6	0.9
Grant element of new external borrowing (in percent)	...	...	...	...	...	...	...	...	...	...	...	...	...	57.4	57.4	...

Sources: Country authorities; and staff estimates and projections.
1/ Central government gross debt
2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.
3/ Revenues excluding grants.
4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.
6/ The exhange rate projections use WEO data and are fixed after 2021.

©International Monetary Fund. Not for Redistribution

Table 2b. Tuvalu: Public Sector Debt Sustainability Framework, Adjustment Scenario, 2012-2035
(In percent of GDP, unless otherwise indicated)

	Actual				Average 5/	Standard Deviation 5/	Estimate			Projections						
	2012	2013	2014	2015			2016	2017	2018	2019	2020	2021	2016-21 Average	2025	2035	2021-35 Average
Public sector debt 1/	25.9	57.2	64.4	58.2			53.7	44.3	36.6	30.3	24.6	13.1		6.1	0.9	
of which: foreign-currency denominated	19.7	51.8	59.8	54.5			51.7	44.3	36.6	30.3	24.6	13.1		6.1	0.9	
Change in public sector debt	2.1	31.2	7.2	-6.2			-4.5	-9.4	-7.7	-6.2	-5.8	-11.5		-0.6	-0.2	
Identified debt-creating flows	-10.0	-24.0	-34.3	-2.6			-3.0	-2.9	-2.1	-2.2	-1.5	-2.3		-2.3	-1.3	
Primary deficit	-9.9	-27.3	-37.2	-8.6	4.9	23.0	-2.6	-1.8	-1.3	-1.6	-1.1	-2.1	-1.8	-2.2	-1.3	-1.7
Revenue and grants	84.3	107.5	123.1	123.5			124.5	113.3	111.5	110.2	109.4	109.2		103.9	88.1	
of which: grants	27.8	24.6	49.0	18.0			32.9	32.4	32.0	31.7	31.5	31.3		27.2	18.8	
Primary (noninterest) expenditure	74.4	80.2	85.9	114.8			121.9	111.5	110.2	108.6	108.3	107.1		101.7	86.8	
Automatic debt dynamics	-0.1	3.2	2.8	6.1			-0.4	-1.1	-0.9	-0.6	-0.4	-0.2		-0.1	0.0	
Contribution from interest rate/growth differential	-0.1	-0.2	-1.8	-1.4			-2.0	-1.0	-0.9	-0.7	-0.5	-0.3		-0.1	0.0	
of which: contribution from average real interest rate	-0.1	0.2	-0.5	0.3			0.2	0.2	0.1	0.1	0.2	0.2		0.0	0.0	
of which: contribution from real GDP growth	0.0	-0.3	-1.3	-1.7			-2.2	-1.2	-1.0	-0.8	-0.6	-0.5		-0.1	0.0	
Contribution from real exchange rate depreciation	0.0	3.4	4.6	7.4			1.7	0.0	0.1	0.1	0.1	0.1		...	...	
Other identified debt-creating flows	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	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	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	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	0.0	
Residual, including asset changes	12.1	55.3	41.5	-3.6			-1.5	-6.5	-5.6	-4.1	-4.3	-9.2		1.7	1.1	
Other Sustainability Indicators																
PV of public sector debt	...	...	78.5	76.2			65.2	53.6	43.8	35.6	28.1	12.3		4.5	0.1	
of which: foreign-currency denominated	...	...	73.9	72.4			63.2	53.6	43.8	35.6	28.1	12.3		4.5	0.1	
of which: external	...	...	73.9	72.4			63.2	53.6	43.8	35.6	28.1	12.3		4.5	0.1	
PV of contingent liabilities (not included in public sector debt)	...	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	-7.7	-24.5	-34.5	-0.9			5.7	6.5	5.6	4.1	4.3	9.2		-1.7	-1.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	63.8	61.7			52.4	47.3	39.3	32.3	25.7	11.3		4.3	0.1	
PV of public sector debt-to-revenue ratio (in percent)	...	...	105.9	72.2			71.1	66.2	55.1	45.4	36.1	15.8		5.8	0.1	
of which: external 3/	...	...	99.7	68.6			69.0	66.2	55.1	45.4	36.1	15.8		5.8	0.1	
Debt service-to-revenue and grants ratio (in percent) 4/	2.6	2.6	2.2	6.3			6.7	7.3	6.2	5.1	4.9	10.3		0.5	0.1	
Debt service-to-revenue ratio (in percent) 4/	3.9	3.4	3.6	7.3			9.1	10.3	8.6	7.2	6.9	14.5		0.7	0.2	
Primary deficit that stabilizes the debt-to-GDP ratio	-12.0	-58.5	-44.3	-2.5			1.9	7.6	6.5	4.7	4.6	9.4		-1.6	-1.1	
Key macroeconomic and fiscal assumptions																
Real GDP growth (in percent)	0.2	1.3	2.2	2.6	1.9	4.5	4.0	2.3	2.3	2.2	2.0	2.1	2.5	2.1	2.2	2.1
Average nominal interest rate on forex debt (in percent)	1.5	2.3	0.9	1.8	1.5	0.4	1.9	1.9	2.0	2.2	2.4	2.7	2.2	2.5	0.3	1.6
Average real interest rate on domestic debt (in percent)	5.0	5.4	5.2	4.5	5.0	0.4	4.9	7.7	...	...	...	...	6.3	...	...	
Real exchange rate depreciation (in percent, + indicates depreciation) 6/	0.1	17.6	9.3	12.7	2.0	14.2	...	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	0.9	1.8	1.9	2.5	1.8	1.3	1.9	2.1	2.0	1.8	1.6	1.5	1.8	1.6	1.6	1.6
Growth of real primary spending (deflated by GDP deflator, in percent)	-3.9	9.2	9.5	37.2	5.2	12.0	10.4	-6.5	1.2	0.7	1.7	1.0	1.4	0.6	-1.6	0.6
Grant element of new external borrowing (in percent)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Sources: Country authorities; and staff estimates and projections.

1/ Central government gross debt

2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.

3/ Revenues excluding grants.

4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.

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

6/ The exhange rate projections use WEO data and are fixed after 2021.

©International Monetary Fund. Not for Redistribution

Table 3. Tuvalu: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015-2035
(In percent)

	Projections							
	2015	2016	2017	2018	2019	2020	**2025**	2035
PV of debt-to GDP ratio								
Baseline	72	63	54	44	36	28	**7**	34
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	72	58	47	35	26	18	**0**	0
A2. New public sector loans on less favorable terms in 2015-2035 2	72	63	54	44	36	28	**8**	57
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	72	68	60	49	40	32	**8**	38
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	72	67	64	54	46	39	**18**	40
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	72	63	57	47	38	30	**7**	36
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	72	79	87	77	69	61	**40**	54
B5. Combination of B1-B4 using one-half standard deviation shocks	72	70	70	60	52	44	**22**	44
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	72	92	78	64	52	41	**10**	50
PV of debt-to-exports ratio								
Baseline	129	117	100	79	65	51	**12**	59
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	129	107	88	64	47	32	**0**	0
A2. New public sector loans on less favorable terms in 2015-2035 2	129	117	100	79	65	51	**15**	98
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	129	117	100	79	65	51	**12**	59
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	129	143	175	144	123	103	**45**	102
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	129	117	100	79	65	51	**12**	59
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	129	146	162	139	125	111	**71**	93
B5. Combination of B1-B4 using one-half standard deviation shocks	129	112	101	84	72	61	**29**	59
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	129	117	100	79	65	51	**12**	59
PV of debt-to-revenue ratio								
Baseline	69	69	66	55	45	36	**9**	49
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	69	63	58	44	33	23	**0**	0
A2. New public sector loans on less favorable terms in 2015-2035 2	69	69	66	55	45	36	**11**	82
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	69	74	75	62	51	41	**10**	55
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	69	73	79	69	59	50	**23**	58
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	69	69	70	59	48	38	**9**	52
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	69	86	107	97	88	79	**53**	77
B5. Combination of B1-B4 using one-half standard deviation shocks	69	76	87	76	66	56	**28**	64
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	69	101	97	80	66	53	**13**	72

©International Monetary Fund. Not for Redistribution

Table 3. Tuvalu: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015-2035 (concluded)

(In percent)

Debt service-to-exports ratio 1/

Baseline	12	12	12	12	10	10	**1**	0
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	12	19	17	17	14	12	**0**	0
A2. New public sector loans on less favorable terms in 2015-2035 2	12	20	19	19	16	14	**1**	4
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	12	20	19	19	16	14	**1**	2
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	12	23	28	28	23	22	**2**	4
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	12	20	19	19	16	14	**1**	2
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	12	20	19	20	17	15	**3**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	12	17	15	15	13	12	**2**	2
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	12	20	19	19	16	14	**1**	2

Debt service-to-revenue ratio 1/

Baseline	6	7	8	9	7	7	**1**	0
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	6	11	11	12	10	9	**0**	0
A2. New public sector loans on less favorable terms in 2015-2035 2	6	12	12	13	11	10	**1**	3
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	6	13	14	15	12	12	**1**	1
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	6	12	12	13	11	10	**1**	2
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	6	12	13	14	12	11	**1**	1
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	6	12	13	14	12	11	**2**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	6	12	13	14	12	11	**1**	2
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	6	17	18	19	16	15	**1**	2
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	56	56	56	56	56	56	**56**	56

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 a
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.

©International Monetary Fund. Not for Redistribution

Table 4. Tuvalu: Sensitivity Analysis for Key Indicators of Public Debt 2015-2035

	Projections							
	2015	2016	2017	2018	2019	2020	2025	2035
PV of Debt-to-GDP Ratio								
Baseline	76	65	54	44	36	28	7	34
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	76	69	58	49	42	34	16	36
A2. Primary balance is unchanged from 2015	76	61	44	28	14	1	0	0
A3. Permanently lower GDP growth 1/	76	66	56	47	41	35	28	120
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-2017	76	73	68	62	57	53	51	118
B2. Primary balance is at historical average minus one standard deviations in 2016-2017	76	78	78	68	60	52	32	54
B3. Combination of B1-B2 using one half standard deviation shocks	76	75	72	64	57	52	43	91
B4. One-time 30 percent real depreciation in 2016	76	94	79	67	56	46	16	26
B5. 10 percent of GDP increase in other debt-creating flows in 2016	76	70	58	48	40	32	11	37
PV of Debt-to-Revenue Ratio 2/								
Baseline	62	52	47	39	32	26	7	39
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	62	55	51	44	37	31	15	40
A2. Primary balance is unchanged from 2015	62	49	39	26	13	1	0	0
A3. Permanently lower GDP growth 1/	62	53	49	42	37	32	27	130
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-2017	62	57	58	53	50	46	48	131
B2. Primary balance is at historical average minus one standard deviations in 2016-2017	62	62	69	61	54	48	30	61
B3. Combination of B1-B2 using one half standard deviation shocks	62	60	62	56	51	47	40	102
B4. One-time 30 percent real depreciation in 2016	62	75	70	60	51	42	16	30
B5. 10 percent of GDP increase in other debt-creating flows in 2016	62	56	51	43	36	30	11	43
Debt Service-to-Revenue Ratio 2/								
Baseline	6	7	7	6	5	5	0	0
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	6	7	7	6	5	5	1	1
A2. Primary balance is unchanged from 2015	6	7	7	6	5	5	0	0
A3. Permanently lower GDP growth 1/	6	7	7	6	5	5	1	3
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-2017	6	7	8	7	6	6	1	4
B2. Primary balance is at historical average minus one standard deviations in 2016-2017	6	7	8	7	6	5	1	2
B3. Combination of B1-B2 using one half standard deviation shocks	6	7	8	7	6	6	1	3
B4. One-time 30 percent real depreciation in 2016	6	8	10	9	7	7	1	1
B5. 10 percent of GDP increase in other debt-creating flows in 2016	6	7	7	6	5	5	1	0

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

©International Monetary Fund. Not for Redistribution