Tuvalu: Table of Common Indicators Required for Surveillance

(As of June 13, 2012)

	Date of Latest Observation	Date Received	Frequency of Data[7]	Frequency of Reporting[7]	Frequency of Publication[7]
Exchange rates[1]	6/13/12	6/13/12	D	NA	NA
International reserve assets and reserve liabilities of the monetary authorities[2]	04/2012	05/2012	M	I	NA
Reserve/base money	NA	NA	NA	NA	NA
Broad money	NA	NA	NA	NA	NA
Central bank balance sheet	NA	NA	NA	NA	NA
Consolidated balance sheet of the banking system	04/2012	05/2012	M	I	NA
Interest rates	04/2012	05/2012	M	I	NA
Consumer price index	04/2012	05/2012	Q	Q	Q
Revenue, expenditure, balance and composition of financing[3]—general government[4]	NA	NA	NA	NA	NA
Revenue, expenditure, balance and composition of financing[3]—central government	04/2012	05/2012	A	A	A
Stocks of central government and central government-guaranteed debt[5]	12/2011	05/2012	A	A	A
External current account balance	12/2011	05/2012	A	A	NA
Exports and imports of goods and services	12/2011	05/2012	A	A	NA
GDP/GNP	12/2011	05/2012	A	A	NA
Gross external debt	12/2011	05/2012	A	A	A
International investment position[6]	12/2011	05/2012	A	A	NA

[1]Tuvalu uses the Australian dollar as its legal tender.

[2] Any reserve assets that are pledged or otherwise encumbered should be specified separately. Also, data should comprise short-term liabilities linked to a foreign currency but settled by other means as well as the notional values of financial derivatives to pay and to receive foreign currency, including those linked to a foreign currency but settled by other means.

Tuvalu does not have a monetary authority. Foreign assets of National Bank of Tuvalu and the Consolidated Investment Fund constitute the official reserves of Tuvalu.

[3] Foreign, domestic bank, and domestic nonbank financing.

[4] The general government consists of the central government (budgetary funds, extra budgetary funds, and social security funds) and state and local governments.

[5] Including currency and maturity composition.

[6] Includes external gross financial asset and liability positions vis-à-vis nonresidents.

[7] Daily (D); weekly (W); monthly (M); quarterly (Q); annually (A); irregular (I); and not available (NA).

INTERNATIONAL MONETARY FUND

TUVALU

STAFF REPORT FOR THE 2012 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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The conclusion of the first joint IMF/World Bank Debt Sustainability Analysis is that Tuvalu is at high risk of debt distress. Under baseline assumptions debt ratios are broadly stable in the long run, but are sensitive to changes in underlying assumptions. Ensuring debt risks remain contained while the country's development needs are addressed will require donors to continue to provide assistance only in the form of grants. [1]

[1] This DSA has been produced in consultation with the Asian Development Bank (ADB). It is based on the common standard LIC DSA framework. Under the Country Policy and Institutional Assessment (CPIA) Tuvalu has been provisionally rated a weak performer, and the DSA uses the indicative threshold indicators on the external public debt for countries in this category: 30 percent for the ratio of the present value (PV) of debt to GDP; 100 percent for the ratio of PV of debt to exports; 200 percent for the ratio of PV of debt to revenue; 15 percent for the ratio of debt service to exports; and 18 percent for the ratio of debt service to revenue.

BACKGROUND

1. **This is the first Joint IMF/World Bank DSA for Tuvalu.** Tuvalu joined the Bank and Fund in 2010; an Article IV consultation concluded in February 2011 did not incorporate a DSA due to data limitations. The analysis below is based on the most updated data available to Bank and Fund staff as of June 2012. Underlying macroeconomic data and debt data were updated during the 2012 Article IV mission to Funafuti, based on discussions with the authorities, donors and the Pacific Financial Technical Assistance Center (PFTAC).

2. **A preliminary assessment tied to the 2010 IMF Article IV consultation concluded that Tuvalu was at high risk of debt distress.** External debt and debt service ratios breached many indicative thresholds under the baseline scenarios. Stress tests confirmed that Tuvalu's debt burden was highly vulnerable to deteriorating macroeconomic conditions or a weaker financing outlook. Overall, the DSA concluded that greater access to grants would be essential for Tuvalu to meet its development needs. Since 2010, the fiscal situation has improved somewhat as tax compliance has improved and spending has begun to be reined in, though the still-strong Australian dollar has widened trade imbalances.

3. **Tuvalu's small economy is highly dependent on external flows and vulnerable to shocks.** The smallest member of the Bank and Fund, Tuvalu's GDP in 2011 was only US$36 million. Almost all goods, and even many services, are imported; the country's main sources of foreign currency are donor assistance and earnings from Tuvaluans working abroad as seafarers; and the government budget is generally in deficit even in good times. The economy shrank after the global financial crisis and returned to growth only in 2011, while the strong Australian dollar has boosted imports.

4. **There are large external holdings of public assets, though these are not freely usable by the government.** The Tuvalu Trust Fund (TTF) was capitalized by donors in 1988 and by end-March 2012 had grown to 345 percent of GDP (A$122.9 million) through reinvestment of its own earnings and contributions by the government during surplus periods. The TTF is not fully sovereign: it can only be drawn down either with approval of its Board (where donors are represented) or when its market value exceeds a "maintained value" linked to Australian CPI. When it exceeds this value,

additional funds are deposited into the Consolidated Investment Fund (CIF), which the authorities may freely draw upon. As of mid-2012, the TTF remains around 3.6 percent below its maintained value, and the CIF holds A$6.1 million, including a A$4.0 million injection from Australia in 2012.

5. **With official borrowing halted since 2008, the main issue is Tuvalu's outstanding debt and new borrowings from unofficial sources.** Bilateral donors provide only grant assistance. Tuvalu's public and publicly guaranteed (PPG) debt stock has declined in the past two years, and amounted to A$17.3 million (50 percent of GDP) at end-2011. External PPG debt was A$14.9 million (36.7 percent of GDP in PV terms) at end-2011.The Asian Development Bank (accounting for 42 percent of the stock in PV terms) provided concessional loans until 2008; subsequent disbursements have been on a grant basis, as – on a provisional basis – was an initial World Bank disbursement in 2012. However, loans contracted at market rates by joint ventures -(JVs) signed in 2008 and 2010 with companies from Korea and Taiwan Province of China (TPOC) constitute a possible substantial contingent liability, and guarantees of domestic borrowing by both public and private enterprises have been made at market rates[2]. These loans account for half the debt stock in NPV terms, with the remainder owed to the European Investment Bank[3].

MACROECONOMIC FRAMEWORK

6. **Growth is expected to be close to historical averages.** Throughout the scenario, growth is estimated to average 1.2 percent, slightly below the average of the past ten years. Depressed seafarer employment, at levels that are likely to remain significantly below pre-crisis levels, is expected to have a negative impact on growth. With little scope for import substitution or export diversification, the trade balance will remain close to historic norms.

7. **The fiscal outlook is based on a continuation of current trends.** Taxes will stabilize at slightly above current levels, based on continued levels of compliance but with higher tax rates.

[2] An effectively defunct and wholly government-owned public enterprise called the National Fishing Corporation of Tuvalu (NAFICOT), is party to both JVs. NAFICOT owns 50 percent of the TPOC venture and 40 percent of the Korean one, and pays dividends to the government. Loans taken out by both JVs are on market terms. Tuvalu's share of the debts amounts to 28 percent of GDP.

[3]The EIB loan is a credit line to the Development Bank of Tuvalu, which is fully owned by the government. Overdrafts at the National Bank of Tuvalu, which the government uses for cash management but also for short-term financing, are not included in the debt stock.

License revenue will be boosted in 2012 in line with the new .tv domain and fishing license agreements as well as the depressed U.S. dollar, but will stabilize at this level thereafter. Recurrent grants are expected to average 14 percent of GDP over the medium and long term. Under the assumption that other assistance will be provided in the form of grants and no new joint ventures will be signed, the only new stream of borrowing assumed in the DSA is term IDA borrowing of A$1¾ million annually. Annual financing needs will thus be covered by concessional financing and use of half the available CIF balance, with the rest of the CIF, along the lines of previous practice, being reinvested.

8. **The limited financing envelope forces a consolidation, but expenditure will eventually expand again.** With CIF financing limited and no scope for domestic borrowing, expenditure is projected to fall by 13 percent of GDP to around 80 percent of GDP in the next few years, with capital expenditure bearing some of the burden. This will bring the deficit to around A$3½ million (around 10 percent of GDP). But as the TTF recovers fully and disbursements into the CIF rise, additional financing will eventually permit the government to raise spending[4]. For this reason, beginning around 2016, expenditure will rise modestly, to around 85 percent of GDP.

9. **The current account deficit is expected to improve somewhat.** Tuvalu has only eleven years of balance of payments data, three years of which have been affected by the global financial crisis. During this time the country's external assets have grown strongly. Income from these assets should continue to rise, while employment from seasonal schemes replaces some seafarer income. Imports are expected to normalize in 2012, post one-off construction projects, and return to their historical average in the medium term. The current account is projected to settle at around a 4 percent surplus, slightly above its eleven-year average of 2 percent. Reserves rise gradually over time.

10. **Risks to the baseline are largely on the downside.** A slowdown in global growth, particularly if accompanied by a sudden financing stop that damages global trade, would severely affect Tuvalu. On the fiscal side, weak revenue performance, from poor tax compliance or from a decline in fishing or telecommunications licensing proceeds, is a serious risk to the baseline outlook.

[4] The scenario assumes TTF nominal returns of 7 percent, slightly below historical levels and in line with the authorities' targeted asset returns.

Finally, continued low demand for seafarers or an inability to place workers in seasonal employment schemes would depress earnings from abroad, weakening the current account.

Macroeconomic Assumptions for the DSF

					Projections							
(in percent)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2020	2025	2032
Baseline Scenario:												
Real GDP growth	7.6	-1.7	-2.9	1.1	1.2	1.3	1.2	1.2	1.2	1.2	1.3	1.5
CPI inflation	10.4	-0.3	-1.9	0.5	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Current account balance / GDP	-13.2	27.8	-3.8	-29.2	-8.5	-3.3	1.9	4.2	4.3	4.2	4.2	4.2
Revenue excluding grants/ GDP	55.3	59.6	52.0	56.2	59.6	59.6	59.6	59.6	56.4	56.4	56.4	56.4
Grants/ GDP	17.1	30.6	22.1	38.2	24.5	12.3	12.0	11.7	11.1	11.2	15.7	16.9
Expenditure/ GDP	75.9	93.3	104.1	93.3	79.8	82.0	80.6	81.2	81.2	81.2	85.2	85.2
Fiscal balance / GDP	-0.7	-3.1	-30.0	1.1	4.2	-10.1	-9.1	-10.0	-13.7	-13.6	-13.1	-11.9
Loan disbursements /GDP	0.0	0.0	0.0	0.0	0.0	4.1	4.1	4.6	5.4	4.6	4.2	3.4
Reform Scenario:												
Real GDP growth	7.6	-1.7	-2.9	1.1	1.2	2.0	2.0	1.9	1.9	1.9	2.0	2.2
CPI inflation	10.4	-0.3	-1.9	0.5	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Current account balance / GDP	-13.2	27.8	-3.8	-29.2	-8.5	7.0	9.8	9.9	8.4	6.4	6.4	6.4
Revenue excluding grants/ GDP	55.3	59.6	52.0	56.2	59.6	60.4	61.1	61.9	61.9	61.9	61.9	70.1
Grants/ GDP	17.1	30.6	22.1	38.2	24.5	23.9	22.7	21.5	20.4	14.2	11.4	6.0
Expenditure/ GDP	75.9	93.3	104.1	93.3	79.8	78.5	77.3	76.9	94.5	85.8	81.3	80.5
Fiscal balance / GDP	-0.7	-3.1	-30.0	1.1	4.2	5.7	6.6	6.5	-12.3	-9.8	-8.1	-4.3
Loan disbursements /GDP	0.0	0.0	0.0	0.0	0.0	4.0	3.9	4.3	4.8	3.4	2.7	1.4

EXTERNAL AND PUBLIC DEBT SUSTAINABILITY ANALYSIS

A. External Debt

11. **External debt breaches stock thresholds under the baseline scenario.** The ratios of the present value (PV) of debt to GDP and of debt to exports both begin at high levels due to recently contracted JV debt. Levels than fall as new concessional lending comes online and older ADB debt is paid off. As grace periods for concessional loans come to a close, both ratios rise (Figure 1). The export ratio remains above thresholds throughout the simulation period, while the GDP ratio rises above only as repayments come into view. The debt service to exports ratio similarly falls from its current high level to a more sustainable level, but then rises back toward unsustainable levels as loan repayments come online.

12. **Stress tests show the debt burden is particularly sensitive to growth and exchange rate assumptions.** The PV of public sector external debt closes the simulation at 36 percent of GDP, but a one-time 30 percent nominal depreciation raises this ratio to 51 percent. Under the historical

scenario, in which the current account deficit does not recover in the medium term and financing needs remain large, all stock ratios rise throughout the simulation period, with the PV of public external debt reaching 108 percent of GDP around 2027.

B. Public Debt

13. **Public debt ratios are relatively stable under the baseline.** As concessional lending comes online, the ratios of debt PV to GDP and to revenue both remain close to current levels even as grace periods come to a close (Figure 2). The ratio of debt service to revenue mostly falls for the first half of the simulation period, but then rises gradually in the second half as more payments come due. Historical scenarios for public debt are generally more benign than the baseline.

14. **These ratios are also fragile to shifts in underlying assumptions.** GDP growth below baseline assumptions would raise the public debt burden well above sustainable levels: under the baseline the PV of public debt in 2032 reaches only 38 percent of GDP, but scenario with permanently lower GDP growth pushes this ratio to 113 percent. Similar dynamics are observed for the ratio of PV of debt to revenue, By contrast, given that all long-run debt is on IDA terms, debt service indicators are not as strongly affected under these scenarios.

IMPLEMENTATION OF THE POLICY REFORM MATRIX

15. **The authorities have presented to donors a Policy Reform Matrix (PRM) which aims, *inter alia*, at strengthening macroeconomic management.** The PRM is intended to be a reform roadmap as well as a streamlined list of potential triggers for budget support disbursements by donors. Its main targets in the areas of macroeconomic management are better tax compliance, reorientation of expenditure toward priority areas in health and education, and improving the business environment to strengthen growth. IMF staff estimates that full implementation would raise growth and investment in Tuvalu modestly, while allowing for some expansion of spending as the fiscal envelope is widened by better tax collection and additional donor support. Overall, the deficit is contained below 15 percent of GDP, and the current account surplus stabilizes at around 6 percent of GDP. Significantly, neither under the baseline nor under the alternative scenario is there any borrowing beyond new IDA disbursements, as there are no additional prospective lenders.

16. **Debt dynamics under the reform scenario are somewhat more benign.** Faster GDP growth would bring the ratio of the PV of external public debt to GDP below sustainability thresholds and keep it on a gradual downward trend; the relationship with exports is similar (Figure 3). Debt service ratios display similar dynamics to the baseline, but levels are lower. Public debt, which remained almost stable under the baseline, displays a gradual downward trend under the reform scenario.

CONCLUSIONS

17. **Tuvalu's weak capacity to service debt means renewed loan disbursements are unlikely to lead to a sustainable outcome.** Even when the only new disbursements are those provided by the development partners on IDA terms, indicators of public and publicly guaranteed external debt stocks remain well above indicative thresholds, indicating high levels of debt distress. Tuvalu's revenue base (including licensing income) is relatively high, but its small export base and GDP mean that even small disbursements result in a long-term reduction in sustainability. While stock indicators do not rise strongly under the baseline scenario, Tuvalu's current fiscal situation is unsustainable, and maintaining its current level of debt service is unlikely to improve it even as it is able later in the simulation period to take advantage of its external asset holdings.

18. **Implementation of the PRM would bring debt sustainability somewhat closer.** While debt ratios remain fragile even under the PRM scenario, a stronger fiscal position and modestly faster GDP growth would make the current debt position more sustainable, and improve debt dynamics.

19. **Moreover, the most damaging risks – a slowdown in GDP and a nominal depreciation– are not low-probability events.** GDP growth in Tuvalu is highly volatile and may not return to historical levels without a significant effort to improve macroeconomic management, the business climate and human capital. Donor assistance can help growth and resilience, by building policymaking capacity and by supporting infrastructure investment. But a slowdown of the magnitude presented in this scenario, while not a baseline event, cannot be ruled out. Similarly, the current strength of the Australian dollar cannot be guaranteed: a return of the Australian dollar to levels seen only eight years ago would cause a dangerous increase in Tuvalu's debt ratios.

Table 1.: External Debt Sustainability Framework, Baseline Scenario, 2009-2032 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections									
	2009	2010	2011			2012	2013	2014	2015	2016	2017	2012-2017 Average	2022	2032	2018-2032 Average
External debt (nominal) 1/	**53.0**	**49.1**	**41.7**			**36.1**	**35.8**	**36.1**	**36.8**	**38.5**	**40.7**		**49.7**	**63.2**	
o/w public and publicly guaranteed (PPG)	53.0	49.1	41.7			36.1	35.8	36.1	36.8	38.5	40.7		49.7	63.2	
Change in external debt	4.7	-3.9	-7.5			-5.6	-0.3	0.3	0.8	1.7	2.2		2.3	0.2	
Identified net debt-creating flows	-21.4	-3.8	23.7			8.1	2.9	-2.3	-4.6	-4.7	-4.6		-4.8	-5.2	
Non-interest current account deficit	**-29.4**	**2.7**	**27.7**	**-14.8**	**18.7**	**7.2**	**2.2**	**-2.9**	**-5.1**	**-5.0**	**-4.9**		**-4.6**	**-4.7**	-4.7
Deficit in balance of goods and services	109.6	119.3	139.3			109.1	103.4	100.5	100.3	100.3	100.3		100.3	100.3	
Exports	10.7	12.0	11.6			11.6	11.6	11.6	11.6	11.6	11.6		11.6	11.6	
Imports	120.3	131.3	150.9			120.7	115.0	112.2	112.0	112.0	112.0		112.0	112.0	
Net current transfers (negative = inflow)	-57.1	-53.9	-56.0	-45.1	8.0	-32.6	-31.7	-33.7	-35.6	-35.6	-35.6		-35.6	-35.6	-35.6
o/w official	-49.7	-46.8	-49.1			-26.1	-24.8	-26.8	-28.7	-28.7	-28.7		-28.7	-28.7	
Other current account flows (negative = net inflow)	-81.9	-62.7	-55.6			-69.3	-69.5	-69.7	-69.8	-69.7	-69.6		-69.3	-69.4	
Net FDI (negative = inflow)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		**0.0**	**0.0**	0.0
Endogenous debt dynamics 2/	**8.0**	**-6.5**	**-4.0**			**0.8**	**0.7**	**0.6**	**0.4**	**0.3**	**0.2**		**-0.1**	**-0.4**	
Contribution from nominal interest rate	2.0	1.0	1.4			1.3	1.2	1.0	0.9	0.7	0.6		0.4	0.5	
Contribution from real GDP growth	0.9	1.3	-0.5			-0.5	-0.5	-0.4	-0.4	-0.4	-0.4		-0.5	-0.9	
Contribution from price and exchange rate changes	5.0	-8.8	-4.9			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**26.1**	**0.0**	**-31.2**			**-13.7**	**-3.1**	**2.6**	**5.4**	**6.3**	**6.9**		**7.1**	**5.4**	
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/	…	…	36.7			31.4	29.1	27.4	25.9	25.2	25.4		26.8	35.6	
In percent of exports	…	…	316.9			269.6	249.8	235.2	223.0	216.9	218.7		230.8	306.4	
PV of PPG external debt	**…**	**…**	**36.7**			**31.4**	**29.1**	**27.4**	**25.9**	**25.2**	**25.4**		**26.8**	**35.6**	
In percent of exports	**…**	**…**	**316.9**			**269.6**	**249.8**	**235.2**	**223.0**	**216.9**	**218.7**		**230.8**	**306.4**	
In percent of government revenues	**…**	**…**	**65.3**			**52.6**	**48.8**	**45.9**	**43.5**	**44.8**	**45.1**		**47.6**	**63.2**	
Debt service-to-exports ratio (in percent)	**-15.2**	**79.9**	**75.7**			**49.9**	**45.3**	**40.1**	**39.2**	**33.7**	**22.7**		**11.3**	**14.3**	
PPG debt service-to-exports ratio (in percent)	**-15.2**	**79.9**	**75.7**			**49.9**	**45.3**	**40.1**	**39.2**	**33.7**	**22.7**		**11.3**	**14.3**	
PPG debt service-to-revenue ratio (in percent)	**-2.7**	**18.4**	**15.6**			**9.7**	**8.8**	**7.8**	**7.7**	**7.0**	**4.7**		**2.3**	**3.0**	
Total gross financing need (Millions of U.S. dollars)	-8.5	3.9	13.1			4.8	2.7	0.7	-0.2	-0.4	-0.8		-1.5	-1.8	
Non-interest current account deficit that stabilizes debt ratio	-34.1	6.5	35.2			12.9	2.5	-3.2	-5.9	-6.6	-7.1		-7.0	-4.9	
Key macroeconomic assumptions															
Real GDP growth (in percent)	-1.7	-2.9	1.1	1.2	4.5	1.2	1.3	1.2	1.2	1.2	1.0	1.2	1.2	1.5	1.3
GDP deflator in US dollar terms (change in percent)	-9.4	19.9	11.1	9.6	9.7	0.5	-0.7	-0.9	-0.8	-0.6	1.5	-0.1	1.7	1.7	1.7
Effective interest rate (percent) 5/	3.7	2.1	3.2	2.6	0.8	3.2	3.2	2.8	2.4	2.0	1.6	2.6	0.9	0.8	0.9
Growth of exports of G&S (US dollar terms, in percent)	-16.8	30.8	8.8	13.7	16.4	2.1	0.6	0.3	0.4	0.6	2.5	1.1	2.9	3.2	3.0
Growth of imports of G&S (US dollar terms, in percent)	-21.7	27.1	29.2	10.3	25.1	-18.6	-4.2	-2.2	0.2	0.6	2.5	-3.6	2.9	3.2	3.0
Grant element of new public sector borrowing (in percent)	…	…	…	…	…	…	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3
Government revenues (excluding grants, in percent of GDP)	59.6	52.0	56.2			59.6	59.6	59.6	59.6	56.4	56.4		56.4	56.4	56.4
Aid flows (in Millions of US dollars) 7/	8.4	7.0	13.7			8.9	6.0	5.9	6.0	6.1	6.1		6.9	12.0	
o/w Grants	8.4	7.0	13.7			8.9	4.5	4.4	4.3	4.1	4.1		4.9	10.0	
o/w Concessional loans	0.0	0.0	0.0			0.0	1.5	1.5	1.7	2.0	2.0		2.0	2.0	
Grant-equivalent financing (in percent of GDP) 8/	…	…	…			24.5	14.4	14.1	14.1	13.9	13.6		13.6	18.7	16.3
Grant-equivalent financing (in percent of external financing) 8/	…	…	…			99.9	88.2	87.9	86.5	84.4	84.4		86.2	92.0	88.7
Memorandum items:															
Nominal GDP (Millions of US dollars)	27.4	31.9	35.8			36.5	36.7	36.8	36.9	37.2	38.1		43.7	59.0	
Nominal dollar GDP growth	-11.0	16.4	12.3			1.8	0.6	0.3	0.4	0.6	2.5	1.0	2.9	3.2	3.0
PV of PPG external debt (in Millions of US dollars)			12.9			11.3	10.5	10.0	9.5	9.4	9.7		11.7	21.0	
(PVt-PVt-1)/GDPt-1 (in percent)						-4.5	-2.1	-1.6	-1.3	-0.3	0.9	-1.5	1.9	1.4	1.6
Gross workers' remittances (Millions of US dollars)	4.1	3.1	3.4			4.0	4.1	4.1	4.2	4.2	4.3		4.9	6.7	
PV of PPG external debt (in percent of GDP + remittances)	…	…	33.5			28.2	26.1	24.6	23.3	22.7	22.8		24.1	32.0	
PV of PPG external debt (in percent of exports + remittances)	…	…	173.6			138.2	127.6	119.7	113.1	110.0	110.8		117.0	155.3	
Debt service of PPG external debt (in percent of exports + remittances)	…	…	41.5			25.6	23.2	20.4	19.9	17.1	11.5		5.7	7.3	

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 changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes (the hight voltility of the AUD)
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. Median used for current account.
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 2.Tuvalu: Public Sector Debt Sustainability Framework, Baseline Scenario, 2009-2032
(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2009	2010	2011	Average 5/	Standard Deviation 5/	2012	2013	2014	2015	2016	2017	2012-17 Average	2022	2032	2018-32 Average
Public sector debt 1/	65.6	61.7	50.0			43.4	42.2	41.6	41.6	42.5	44.6		53.1	65.7	
o/w foreign-currency denominated	53.0	49.1	41.7			36.1	35.8	36.1	36.8	38.5	40.7		49.7	63.2	
Change in public sector debt	5.2	-3.9	-11.7			-6.5	-1.2	-0.6	-0.1	0.9	2.1		2.2	0.2	
Identified debt-creating flows	-1.8	59.6	10.8			3.4	15.3	15.9	18.6	22.8	23.1		22.7	19.8	
Primary deficit	1.2	28.6	-2.9	6.8	10.0	-5.8	8.8	7.9	9.0	13.0	13.4	7.7	13.2	11.5	12.7
Revenue and grants	90.2	74.0	94.5			84.1	71.9	71.5	71.2	67.5	67.2		67.6	73.3	
of which: grants	30.6	22.1	38.2			24.5	12.3	12.0	11.7	11.1	10.8		11.2	16.9	
Primary (noninterest) expenditure	91.4	102.7	91.5			78.3	80.7	79.5	80.2	80.4	80.6		80.8	84.8	
Automatic debt dynamics	-8.8	-3.7	0.8			0.3	0.9	0.8	0.7	0.1	-0.5		-1.0	-1.6	
Contribution from interest rate/growth differential	4.5	1.3	1.8			0.3	0.1	0.0	-0.1	-0.3	-0.5		-1.0	-1.6	
of which: contribution from average real interest rate	3.5	-0.7	2.5			0.9	0.7	0.5	0.3	0.2	-0.1		-0.4	-0.6	
of which: contribution from real GDP growth	1.1	2.0	-0.7			-0.6	-0.5	-0.5	-0.5	-0.5	-0.4		-0.6	-1.0	
Contribution from real exchange rate depreciation	-13.3	-5.0	-1.0			0.0	0.8	0.8	0.8	0.4	0.0		...	...	
Other identified debt-creating flows	5.8	34.6	13.0			9.0	5.6	7.1	8.9	9.8	10.2		10.5	9.9	
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	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	5.8	34.6	13.0			9.0	5.6	7.1	8.9	9.8	10.2		10.5	9.9	
Residual, including asset changes 2/	7.0	-63.4	-22.5			-10.0	-16.5	-16.5	-18.6	-22.0	-21.0		-20.4	-19.7	
Other Sustainability Indicators															
PV of public sector debt	...	...	45.0			38.7	35.5	32.9	30.7	29.2	29.3		30.2	38.1	
o/w foreign-currency denominated	...	...	36.7			31.4	29.1	27.4	25.9	25.2	25.4		26.8	35.6	
o/w external	...	...	36.7			31.4	29.1	27.4	25.9	25.2	25.4		26.8	35.6	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	-0.1	38.5	5.9			0.9	14.8	13.3	14.2	17.5	16.1		14.5	13.1	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	47.7			46.1	49.4	46.0	43.1	43.3	43.6		44.7	52.0	
PV of public sector debt-to-revenue ratio (in percent)	...	...	80.1			65.0	59.6	55.3	51.5	51.8	52.0		53.6	67.7	
o/w external 4/	...	...	65.3			52.6	48.8	45.9	43.5	44.8	45.1		47.6	63.2	
Debt service-to-revenue and grants ratio (in percent) 5/	-1.5	13.3	9.4			7.9	8.4	7.5	7.3	6.7	3.9		1.9	2.3	
Debt service-to-revenue ratio (in percent) 5/	-2.2	19.0	15.7			11.2	10.2	9.0	8.7	8.0	4.7		2.3	3.0	
Primary deficit that stabilizes the debt-to-GDP ratio	-3.9	32.5	8.8			0.8	10.0	8.5	9.1	12.1	11.3		11.0	11.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	-1.7	-2.9	1.1	1.2	4.5	1.2	1.3	1.2	1.2	1.2	1.0	1.2	1.2	1.5	1.3
Average nominal interest rate on forex debt (in percent)	3.7	2.1	3.2	2.6	0.8	3.2	3.2	2.8	2.4	2.0	1.6	2.6	0.9	0.8	0.9
Average real interest rate on domestic debt (in percent)	4.6	-0.8	3.5	1.5	2.4	1.7	1.1	0.7	0.2	-0.5	-1.6	0.2	...	...	...
Real exchange rate depreciation (in percent, + indicates depreciation)	-25.7	-9.2	-2.0	-5.5	15.7	-0.1	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-2.1	3.2	-1.0	1.9	2.2	1.3	1.5	1.5	1.5	1.5	1.7	1.5	1.7	1.7	1.7
Growth of real primary spending (deflated by GDP deflator, in percent)	0.2	0.1	-0.1	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grant element of new external borrowing (in percent)	...	...	...	...	...	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3	...

Sources: Country authorities; and staff estimates and projections.
1/ Public sector includes central government (excludes public enterprises)and public enterprise loan guarantees by the government. Gross debt is used.
2/ Residuals reflect the CIF drawdown and official grants received
3/ Revenues excluding grants.
4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.
5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 3.Tuvalu: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012-2032
(In percent)

	Projections							
	2012	2013	2014	2015	2016	2017	**2022**	2032
PV of debt-to GDP ratio								
Baseline	31	29	27	26	25	25	**27**	36
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	31	32	37	43	49	56	**86**	118
A2. New public sector loans on less favorable terms in 2012-2032 2	31	30	30	30	32	34	**43**	65
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	31	30	30	28	28	28	**29**	39
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	31	29	28	26	26	26	**27**	36
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	31	29	27	25	25	25	**26**	35
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	31	26	23	21	20	21	**22**	32
B5. Combination of B1-B4 using one-half standard deviation shocks	31	22	15	13	12	12	**13**	26
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	31	41	39	37	36	36	**38**	51
PV of debt-to-exports ratio								
Baseline	270	250	235	223	217	219	**231**	306
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	270	279	318	369	424	485	**738**	1016
A2. New public sector loans on less favorable terms in 2012-2032 2	270	259	257	259	271	288	**371**	556
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	270	247	233	221	216	218	**230**	306
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	270	257	253	240	236	238	**251**	330
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	270	247	233	221	216	218	**230**	306
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	270	224	194	181	175	177	**188**	278
B5. Combination of B1-B4 using one-half standard deviation shocks	270	189	122	108	102	103	**111**	212
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	270	247	233	221	216	218	**230**	306
PV of debt-to-revenue ratio								
Baseline	53	49	46	44	45	45	**48**	63
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	53	54	62	72	88	100	**152**	210
A2. New public sector loans on less favorable terms in 2012-2032 2	53	51	50	51	56	60	**77**	115
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	53	51	50	47	49	49	**52**	69
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	53	49	46	44	46	46	**49**	64
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	53	48	45	43	44	44	**47**	62
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	53	44	38	35	36	36	**39**	57
B5. Combination of B1-B4 using one-half standard deviation shocks	53	38	25	22	22	22	**24**	45
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	53	69	65	62	64	65	**68**	90

Table 3.Tuvalu: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012-2032 (continued)
(In percent)

	Projections							
	2012	2013	2014	2015	2016	2017	**2022**	2032
Debt service-to-revenue ratio								
Baseline	50	45	40	39	34	23	**11**	14
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	50	41	34	31	25	18	**12**	25
A2. New public sector loans on less favorable terms in 2012-2032 2	50	45	41	40	36	26	**18**	29
A3. Alternative Scenario :[Costumize, enter title]	50	42	35	32	26	17	**5**	-1
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	50	45	40	39	34	23	**11**	14
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	50	47	43	42	36	24	**12**	15
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	50	45	40	39	34	23	**11**	14
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	50	45	40	39	33	22	**11**	12
B5. Combination of B1-B4 using one-half standard deviation shocks	50	43	36	34	29	19	**9**	8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	50	45	40	39	34	23	**11**	14
Debt service-to-revenue ratio								
Baseline	10	9	8	8	7	5	**2**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	10	8	7	6	5	4	**2**	5
A2. New public sector loans on less favorable terms in 2012-2032 2	10	9	8	8	7	5	**4**	6
A3. Alternative Scenario :[Costumize, enter title]	10	8	7	6	5	3	**1**	0
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	10	9	9	8	8	5	**3**	3
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	10	9	8	8	7	5	**2**	3
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	10	9	8	8	7	5	**2**	3
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	10	9	8	8	7	5	**2**	3
B5. Combination of B1-B4 using one-half standard deviation shocks	10	9	7	7	6	4	**2**	2
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	10	13	11	11	10	7	**3**	4
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	50	50	50	50	50	50	**50**	50

Sources: Country authorities; and staff estimates and projections.

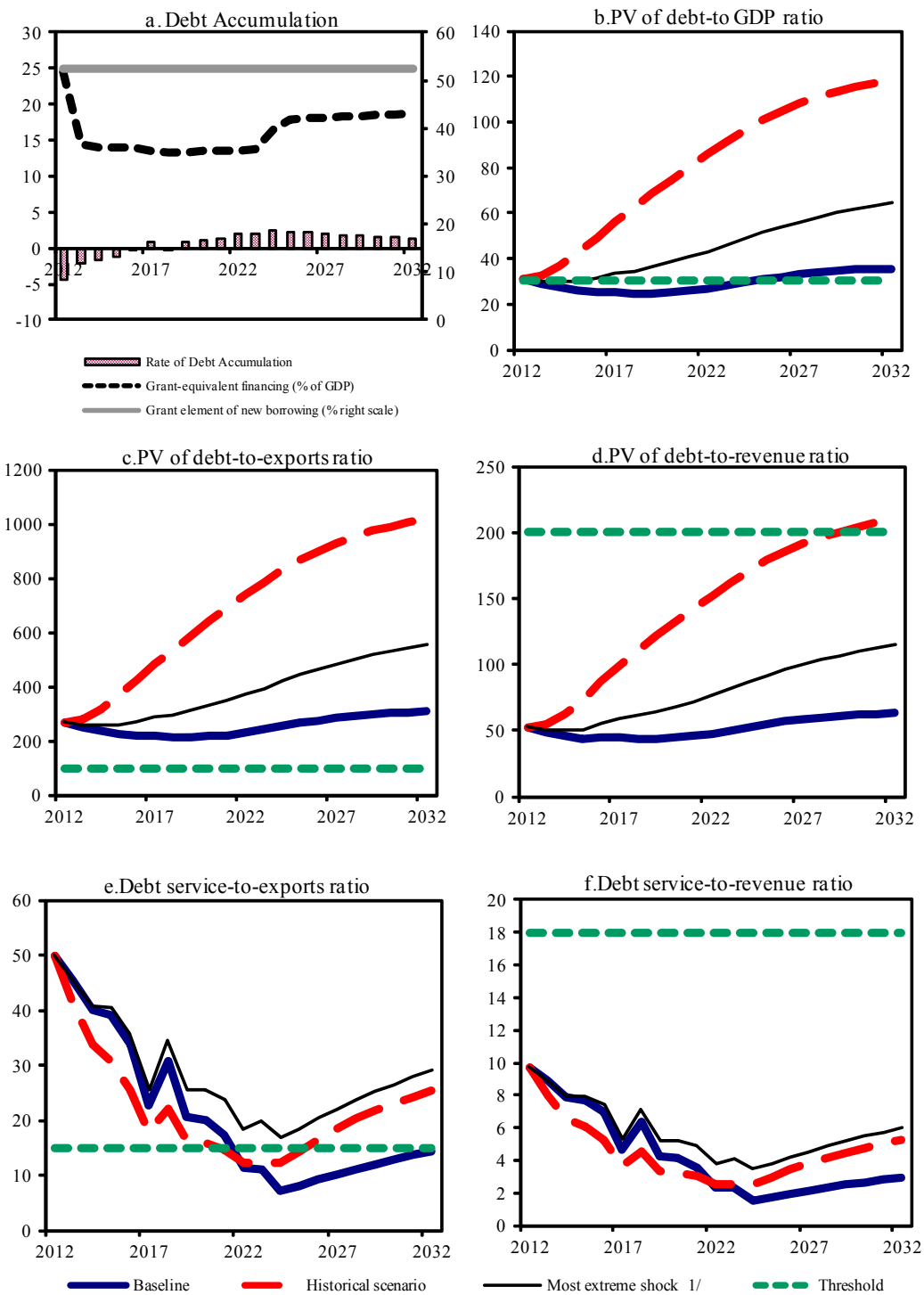
1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline., while grace and maturity periods 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 4.Tuvalu: Sensitivity Analysis for Key Indicators of Public Debt 2012-2032

	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
PV of Debt-to-GDP Ratio								
Baseline	39	36	33	31	29	29	30	38
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	39	35	31	28	23	20	4	-15
A2. Primary balance is unchanged from 2012	39	28	18	8	-3	-13	-62	-140
A3. Permanently lower GDP growth 1/	39	36	34	33	33	35	50	113
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	39	39	41	41	42	45	61	96
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	39	40	42	40	38	38	40	46
B3. Combination of B1-B2 using one half standard deviation shocks	39	38	38	37	37	38	46	68
B4. One-time 30 percent real depreciation in 2013	39	49	45	41	38	36	31	35
B5. 10 percent of GDP increase in other debt-creating flows in 2013	39	38	32	26	20	16	0	-11
PV of Debt-to-Revenue Ratio 2/								
Baseline	46	49	46	43	43	44	45	52
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	46	48	44	39	35	30	6	-20
A2. Primary balance is unchanged from 2012	46	39	26	12	-4	-19	-92	-192
A3. Permanently lower GDP growth 1/	46	50	48	47	49	52	73	147
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	46	53	56	57	62	67	89	128
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	46	55	58	56	57	57	59	63
B3. Combination of B1-B2 using one half standard deviation shocks	46	52	52	52	54	57	68	91
B4. One-time 30 percent real depreciation in 2013	46	68	62	57	56	54	47	48
B5. 10 percent of GDP increase in other debt-creating flows in 2013	46	53	45	36	30	25	1	-15
Debt Service-to-Revenue Ratio 2/								
Baseline	8	8	8	7	7	4	2	2
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	8	8	8	7	7	4	1	0
A2. Primary balance is unchanged from 2012	8	8	7	7	6	3	0	-6
A3. Permanently lower GDP growth 1/	8	8	8	8	7	4	2	5
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	8	9	8	8	7	5	3	5
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	8	8	8	8	7	4	2	3
B3. Combination of B1-B2 using one half standard deviation shocks	8	9	8	8	7	4	2	4
B4. One-time 30 percent real depreciation in 2013	8	10	10	10	9	6	3	4
B5. 10 percent of GDP increase in other debt-creating flows in 2013	8	8	8	8	7	5	3	7

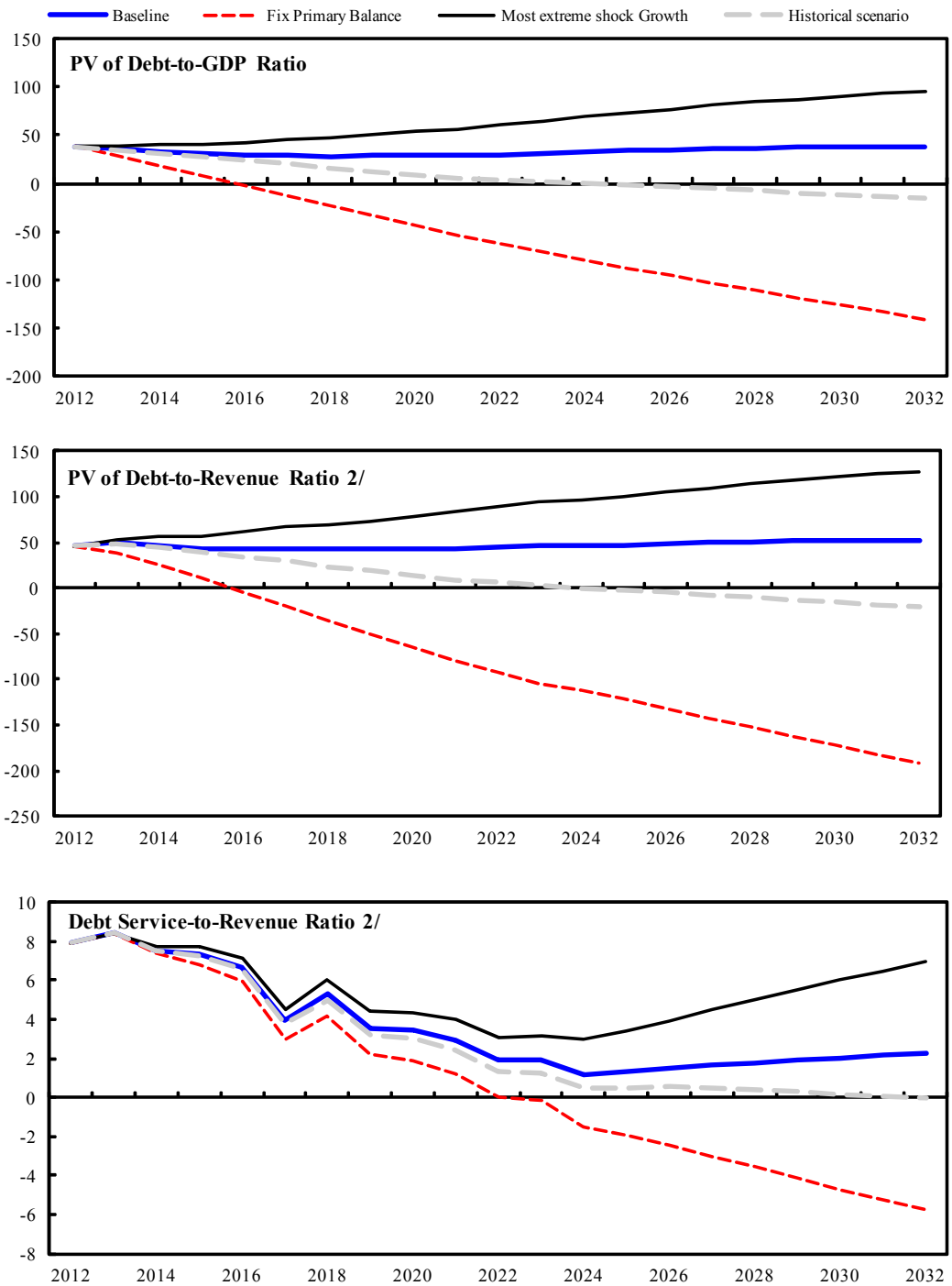
Sources: Country authorities; and staff estimates and projections.
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.
2/ Revenues are defined inclusive of grants.

Figure 1. Tuvalu: Indicators of Public and Publicly Guaranteed External Debt under Baseline and Alternative Scenarios, 2012-2032 1/



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2022. In figure b. it corresponds to a Terms shock; in c. to a Terms shock; in d. to a Terms shock; in e. to a Terms shock and in figure f. to a One-time depreciation shock.

Figure 2.Tuvalu: Indicators of Public Debt under Baseline and Alternative Scenarios, 2012-2032 1/



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2022.
2/ Revenues are defined inclusive of grants.