INTERNATIONAL MONETARY FUND

DEMOCRATIC REPUBLIC OF TIMOR-LESTE

STAFF REPORT FOR THE 2017 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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The Debt Sustainability Analysis (DSA) indicates that Timor-Leste's external debt remains at moderate risk. This reflects a projected increase in concessional borrowing to finance frontloaded infrastructure spending, in line with the authorities' strategy to moderate the drawdown of the assets of the Petroleum Fund (PF). Timor-Leste's net public asset position is currently strong at US$15.7 billion at end-2016 due to oil-related savings accumulated in PF assets and low level of public debt. However, staff's assessment under the baseline scenario suggests that existing expenditure plans are unsustainable as the PF will be depleted in the long term given large excess withdrawals. Staff's illustrative fiscal reform scenario demonstrates that revenue and expenditure reforms can ensure fiscal and debt sustainability. Safeguarding long-term fiscal and debt sustainability requires policy reforms to: maintain a more moderate level of public spending, reduce large front-loaded public investment in line with implementation capacity, raise investment efficiency, mobilize domestic revenues, and commit to a medium-term plan to reduce PF excess withdrawals to rebuild the PF assets.

[1] This DSA has been prepared by IMF staff with input from World Bank Group staff, using the debt sustainability framework for low-income countries approved by the Boards of both institutions.

BACKGROUND

1. **Timor-Leste's net public asset position is currently strong due to oil-related savings accumulated in Petroleum Fund (PF) assets and low level of public debt.** [2] The PF balance at end-2016 stood at US$15.8 billion (574 percent of GDP), covering 164 months of goods and services imports. The PF balance has seen two years of consecutive decline due to a combination of higher outflow from large PF withdrawals in excess of the Estimated Sustainable Income (ESI)[3] and lower inflow due to smaller oil and gas receipts. Nonetheless, against a low level of public external debt (see below), Timor-Leste's net public asset stood at US$15.7 billion at end-2016.

2. **Outstanding public external debt stood at US$77 million (2.8 percent of GDP) in 2016.** External loans signed since 2012 to end-2016 totaled US$321 million (11.6 percent of GDP) in eleven loans under seven loan packages. Owing to a prudent policy of utilizing external concessional financing, the loan profile consisted of concessional loans from the Asian Development Bank, Japan International Cooperation Agency, the World Bank Group, as well as a new loan from the China EXIM Bank. These loan packages are for rehabilitation and upgrading of national roads and for upgrading Dili's drainage infrastructure. As the public sector only borrows externally while the Timorese private sector has negligible medium- or long-term external liabilities, this DSA does not separately assess external and public sector external debt sustainability.

MACROECONOMIC ASSUMPTIONS

3. **This DSA is based on the macroeconomic projections underlying the 2016 and 2017 Article IV consultations.** The current DSA maintains the broad macroeconomic assumptions on GDP growth, inflation, oil receipts, government expenditure, and financing made during the 2016 Article IV DSA (see IMF Country Report No. 16/183). The baseline macroeconomic assumptions for both DSAs are summarized in Table 1. To illustrate the impact of different policy options on debt sustainability, two scenarios—baseline and reform—are considered in this DSA.

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[2] The quality of Timor-Leste's policies and institutions, as measured by the Country Policy and Institutional Assessment (CPIA) index, averaged 3.04 over the past three years. Hence the country is classified under "weak" policy performance (for CPIA average score at or below 3.25) and is assessed against lower thresholds compared to countries with medium or strong performance.

[3] The ESI is set at 3 percent of petroleum wealth, which consists of the PF balance and the projected net present value of future petroleum revenues.

Table 1. Macroeconomic Assumptions

	Current (2017 Article IV)				Previous (2016 Article IV)			
	2016	2017	2017-22	2023-37	2015	2016	2016-21	2022-35
Real GDP growth (%)	-7.9	-8.0	-3.7	5.2	-0.6	-8.8	-8.8	5.0
Real non-oil GDP growth (%)	5.5	3.0	5.0	5.2	4.3	5.0	5.7	5.5
Inflation (CPI annual average, %)	-1.3	1.0	3.2	4.0	0.6	1.5	3.6	4.0
Revenues (% GDP)	27.5	24.2	22.3	15.9	30.9	34.0	27.9	12.9
Current expenditure (% GDP)	36.3	33.4	35.1	23.1	39.1	49.3	44.2	24.0
Net acquisition of non-financial assets (% GDP)	22.1	10.9	20.2	5.4	11.7	17.4	19.1	5.0
Net lending/borrowing (% GDP)	-30.8	-20.1	-33.3	-12.9	-20.3	-32.7	-35.3	-16.0
Net incurrence of liabilities (% GDP)	1.1	0.4	5.0	2.1	0.9	5.1	7.3	0.7
Borrowing (in millions of USD, period average)	30.6	10.0	154.2	191.0	23.8	107.0	195.6	37.1
Exports of G&S (y/y growth)	5.7	-1.6	14.6	20.8	-2.6	15.2	14.4	12.0
Imports of G&S (y/y growth)	-11.1	-0.2	6.1	6.1	-3.4	9.5	5.7	6.9
Current account balance (% GDP)	-18.9	-3.4	-15.9	-4.1	16.5	2.0	-9.0	-15.8

Key macroeconomic assumptions are:

- **Real GDP growth** is expected to continue to fall in the medium term due to declining oil output with the existing oil field estimated to cease production by around 2022. Non-oil real GDP growth is expected to moderate in 2017 due to lower government expenditure and a slowdown of economic activity due to the delay in forming the government after parliamentary elections. Growth is projected to hover in the range of 5-6 percent over the medium term supported by public investment and increasing FDI inflows, stabilizing at around 5¼ percent per annum in the long term. Growth assumptions are broadly in line with the 2016 DSA.
- **Inflation** is expected to increase steadily over the medium and long term to about 4 percent on account of higher global food and fuel prices and spillovers from public investment activity.
- **The current account balance** is expected to remain in deficit over the medium term, reflecting lower oil and gas receipts and higher imports of goods and services generated by demand from infrastructure projects. Exports in the DSA include exports of goods and services as well as oil-related incomes. The projected current account deficit in the medium term is larger compared to the previous DSA, due to projected higher imports of goods and services and lower oil and gas receipts, but lower in the long term due largely to slower growth in imports of goods and services with the completion of frontloaded public investment.
- **The primary fiscal balance** is projected to remain in deficit of about 33 percent of GDP (2017-22 average) over the medium term, reflecting larger capital expenditure, but gradually narrowing to about 5 percent in the long term.
- **Public sector revenue** is defined as non-oil domestic revenues plus the ESI from the PF. The financing gap is covered by PF withdrawals in excess of ESI and external borrowing.
- **Debt servicing** projections used in this DSA are calculated based on information from creditors as the authorities do not have a system for estimating debt servicing payments.
- **The grant element of loans** is assumed to stabilize over the long term at about 32 percent after the higher borrowing needed to finance frontloaded infrastructure projects is over. This

DSA assumed that most debt contracted by the central government for the funding of infrastructure projects should be on a concessional basis.

- **The risk of natural disasters and climate change** on the macroeconomy (especially, growth, external and fiscal balances) is estimated to be very small for Timor-Leste and is therefore not incorporated in the DSA. For instance, a recent empirical study by Lee et al. (forthcoming IMF Working Paper) estimated the negative impact of natural disasters on Timor-Leste's real GDP growth in the range of 0.04 percent to 0.12 percent.
- **No off-budget debt** is accumulated including by state-owned enterprises based on available information.

4. Under the baseline, projected capital expenditure is lower than planned reflecting past low implementation rates. A 70 percent implementation rate is assumed for the planned $4.3 billion multi-year (2018-21) capital spending envisaged under the 2017 Budget. The current total capital spending plan is about US$0.9 billion higher than that of the 2016 Budget reflected in the previous DSA.

- Domestic revenue to GDP ratio is expected to rise gradually in the absence of VAT implementation, from 6 percent in 2017 to 8 percent in the medium term and 16 percent in the long run. Increases in domestic revenue are assumed to be driven by increased compliance and a broadening tax base. At the same time, the ESI in nominal terms will decline due to a progressively lower PF balance under the baseline scenario (see below).
- Total withdrawals from the PF are capped at US$1.3 billion per annum beyond the medium term, broadly in line with the notional budget envelope proposed during the 2014 Yellow Road Workshop discussions of domestic stakeholders. This will help ensure fiscal sustainability. As the government is relying on PF excess withdrawals to meet financing needs for public investments, the PF balance is projected to fall to US$12 billion in 2022 (340 percent of GDP) and further depleted to US$640 million (3½ percent of GDP) by 2037.
- External borrowing in the medium term (2017–22) is projected to total US$0.9 billion, lower than the multi-year borrowing amount envisaged in the 2017 Budget, by assuming that about 70 percent of the planned borrowing amount will be disbursed taking into account past low implementation rate of external financing. This is also lower than the total borrowing projected under the previous DSA (US$1.1 billion), despite the higher financing needs from a larger capital spending envelope reflected in the 2017 Budget. Total external borrowing in the DSA horizon (2017–37) is projected to be US$ 3.8 billion. As a result, the outstanding external debt is projected to increase from 2.8 percent of GDP in 2016 to 28 percent in 2022.

5. The reform scenario illustrates the staff's proposed three-pronged strategy to safeguard fiscal sustainability. This scenario retains the main thrusts of the staff's recommendations in the 2016 Article IV consultation staff report and the corresponding adjustment scenario in the previous DSA which called for bold fiscal consolidation.

- ***More moderate levels of spending***. Capital spending should be scaled up more slowly averaging 14½ percent GDP in the medium term and be anchored at 10 percent of GDP in the long term, with the support of an expenditure rule. This more moderate and even-paced capital spending level would be better aligned with the country's implementation capacity while still meeting the objective of frontloading capital expenditure. Recurrent spending should be reduced to 22 percent of GDP in the medium term, from 36 percent of GDP in 2016, largely through lowering public transfers, and goods and services expenditure, while preserving pro-poor social spending.

- ***Domestic revenue mobilization***. To achieve the government's domestic revenue target of 15 percent of non-oil GDP, a value-added tax (VAT) would need to be implemented by 2020. The VAT is estimated to generate revenue of about 3¾ percent of GDP based on a VAT rate of 7.5 percent (tentative) in the medium term. VAT revenue should increase to at least 5 percent of GDP in the long term to meaningfully cover the financing needs.
- ***A commitment plan to stop PF excess withdrawal.*** Beyond capping PF withdrawals at US$1.3 billion over the medium term, PF withdrawals in excess of the ESI should cease from 2028 to rebuild the PF balance. The resulting financing gap from lower PF withdrawal could be met by external borrowing.
- As a result of the above measures, the more moderate levels of spending coupled with higher domestic revenue should help reverse the decline in PF assets with the PF balance increasing to about US$15.6 billion (468 percent of GDP) in 2022, and stabilizing at US$17.7 billion (93 percent of GDP) in 2037.
- Total external borrowing under the reform scenario is projected at US$0.9 billion in the medium term at similar level with the baseline scenario, and US$2.3 billion over the long term (2017-37) which is lower than that under the baseline scenario. Outstanding external debt is expected to rise to 36 percent of GDP in the medium term but should decline to 11½ percent of GDP in the long term.

Table 2. Macroeconomic Assumptions Under the Baseline and Reform Scenarios

			Baseline scenario		Reform scenario	
	2016 Est.	2017 Proj.	2017-22	2023-37	2017-22	2023-37
Real GDP growth (%)	-7.9	-8.0	-3.7	5.2	-4.2	6.0
Real non-oil GDP growth (%)	5.5	3.0	5.0	5.2	4.5	6.0
Inflation (CPI annual verage, %)	-1.3	1.0	3.2	4.0	2.5	4.0
Revenues (% GDP)	27.5	24.2	22.3	15.9	26.8	28.2
Current expenditure (% GDP)	36.3	33.4	35.1	23.1	26.9	18.9
Net acquisition of non-financial assets (% GDP)	22.1	10.9	20.2	5.4	13.9	9.8
Net lending/borrowing (% GDP)	-30.8	-20.1	-33.3	-12.9	-14.3	-1.1
Net incurrence of liabilities (% GDP)	1.1	0.4	5.0	2.1	4.9	1.0
Borrowing (in millions of USD, period average)	30.6	10.0	154.2	191.0	145.9	93.2
Exports of G&S (y/y growth)	5.7	-1.6	14.6	20.8	13.8	21.6
Imports of G&S (y/y growth)	-11.1	-0.2	6.1	6.1	5.4	7.8
Current account balance (% GDP)	-18.9	-3.4	-15.9	-4.1	-9.2	-3.9

Table 3. Projected Medium-Term Fiscal Funding Gaps Under the Baseline and Reform Scenarios 1/

(In millions of US dollars)

	2017	2018	2019	2020	2021	2022	Total
Baseline scenario							
Funding gap	555	1,171	1,327	1,123	1,038	921	6,135
Excess Petroleum Fund withdrawal	544	953	1,104	900	885	821	5,209
Borrowing	10	217	223	222	153	100	925
Reform scenario							
Funding gap	554	626	519	325	286	190	2,500
Excess Petroleum Fund withdrawal	544	409	297	102	134	140	1,625
Borrowing	10	217	223	222	153	50	875
Memorandum item:							
2017 Budget Framework 2/							
Funding gap	699	1,577	1,799	1,475	1,296	-	6,845
Excess Petroleum Fund withdrawal	597	1,266	1,338	1,157	1,078	-	5,435
Borrowing	102	311	461	318	218	-	1,409

1/ Funding gap is defined as financing need not met by the Estimated Sustainable Income (ESI) and domestic revenue.
2/ Timor-Leste State Budget 2017 Book 1.

ASSESSMENT

A. Baseline Scenario

6. **Timor-Leste's risk of debt distress is moderate due to projected higher external borrowing.** Although the baseline scenario does not breach any thresholds, stress tests breach all thresholds (Figure 1). As in the previous DSA, the moderate risk of debt distress reflects the government's strategy to increase public external borrowing via concessional loans to meet the funding gap arising from the projected frontloading of public investment in infrastructure projects. Over the medium term, the present value of external debt is projected to reach 20 percent of GDP, 86 percent of exports, and 142 percent of revenues. Although the increasing use of concessional loans helps to reduce somewhat PF withdrawals, due to the lack of fiscal consolidation measures and domestic resource mobilization, the government will continue to rely on drawing down the PF in excess of the ESI to close the remaining funding gap, thereby further eroding PF wealth. Figure 2b provides complementary analysis to Figure 2a, showing the projected path of net debt taking into account the PF wealth.

B. Reform Scenario and Stress Tests

7. **The staff's reform scenario demonstrates that fiscal consolidation coupled with fiscal reforms can ensure long-term fiscal sustainability.** Under this scenario, debt ratios are projected to remain well below indicative thresholds.

8. Debt dynamics show vulnerability to shocks. These stress tests include shocks to real GDP growth, exports, non-debt creating flows, and a combination of these shocks. Stress tests with the most severe shock result in breaches for all indicators. Timor-Leste's high vulnerability to shocks is a reflection of its very small exports and revenue bases, and therefore exposed to high debt services payment risks if its positive assets position is not taken into account.

9. Debt recording and monitoring capacity need to be strengthened. The greater use of external borrowing should be accompanied by development of institutional framework and debt management policies and procedures as well as capacity building. In the near term, improvement should be made to have comprehensive debt servicing projections for existing debt. The World Bank's recent TA on debt management provided recommendations on the adoption of simple debt recording and management systems; strengthening the organization and capacity of the debt management unit; and for the government to prepare guidelines on the terms and conditions for external borrowing, and a medium-term debt management strategy including cost-risk analysis.

10. A strong debt management and asset-liability framework would complement a prudent fiscal policy focused on long-term sustainability. The increased use of concessional financing and increased avenues for the government's exposure to contingent liabilities—such as via increased use of public-private partnerships (PPPs)— are expected to increase the complexity of the consolidated government balance sheet. Also, major capital-intensive projects tend to have complex financing structures and the cost-benefit of public participation in these projects can be difficult to assess. In this context, PPPs need to be undertaken with realistic and transparent project assessments to reduce contingent liabilities. Off-balance sheet activities should be avoided. This is particularly relevant for state-owned companies such as the oil company, Timor GAP, which could undertake equity positions in joint venture projects or issue liabilities in overseas markets. Further fiscal autonomy of the Special Zone of Social Market Economy of Oecusse and Atauro (ZEESM) would raise risks of engaging in off-budget expenditures and to contract external debt. Lastly, the provisions to allow the PF to guarantee government debts (up to 10 percent of the PF's assets) is potentially risky and should be avoided.

AUTHORITIES' VIEWS

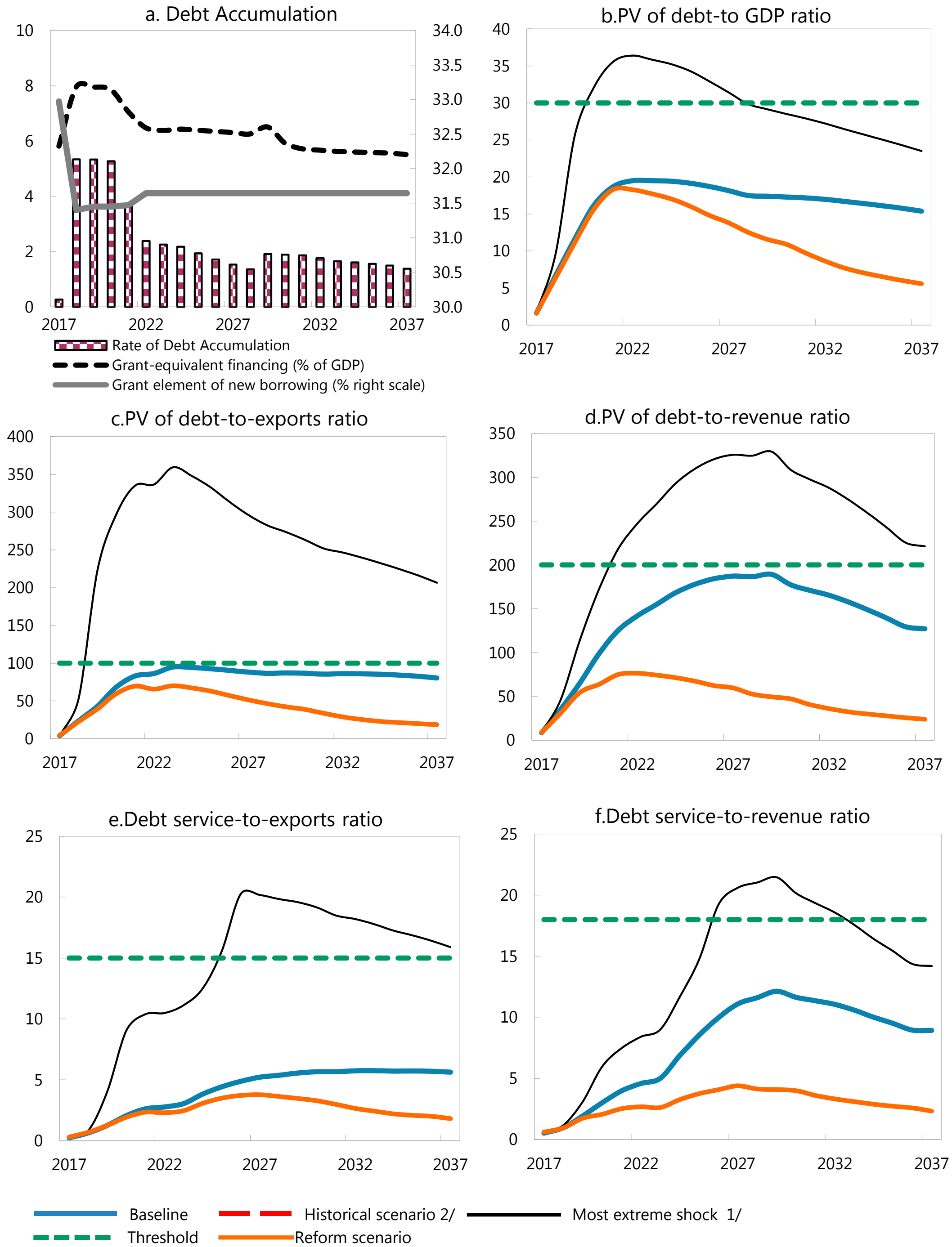
11. The authorities consider the risk of debt distress to be contained, despite higher borrowing. While the authorities are in broad agreement with staff on the need to implement bold fiscal consolidation measures to preserve fiscal sustainability, they noted the importance of accounting for the country's specific circumstances, especially the existence of a significant buffer from the PF.

CONCLUSION

12. Timor-Leste continues to be at moderate risk of debt distress driven by projected higher external borrowing. The greater use of concessional financing reflects the government's frontloaded infrastructure spending and strategy to preserve the wealth of the PF. Meeting the financing gap through external loans as guided by the DSA is warranted, especially if the borrowing cost is lower than the opportunity cost of tapping into the PF (as measured by the PF's expected investment return). Non-concessional debt should be avoided. Discipline of debt sustainability monitoring by creditors may also come with the transfer of knowledge by these multilateral or bilateral institutions.

13. Fiscal reforms are needed to safeguard long-term fiscal and debt sustainability. These reforms include adopting a more moderate pace of capital spending in line with implementation capacity, rationalizing recurrent spending, mobilizing domestic revenues, and committing to a medium-term plan to preserve the PF assets wealth as an ongoing revenue source and as a fiscal buffer to mitigate shocks. Prioritization of government expenditure to facilitate high-return infrastructure investments is crucial to ensuring medium- to long-term fiscal and debt sustainability.

Figure 1. Timor-Leste: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2017-2037

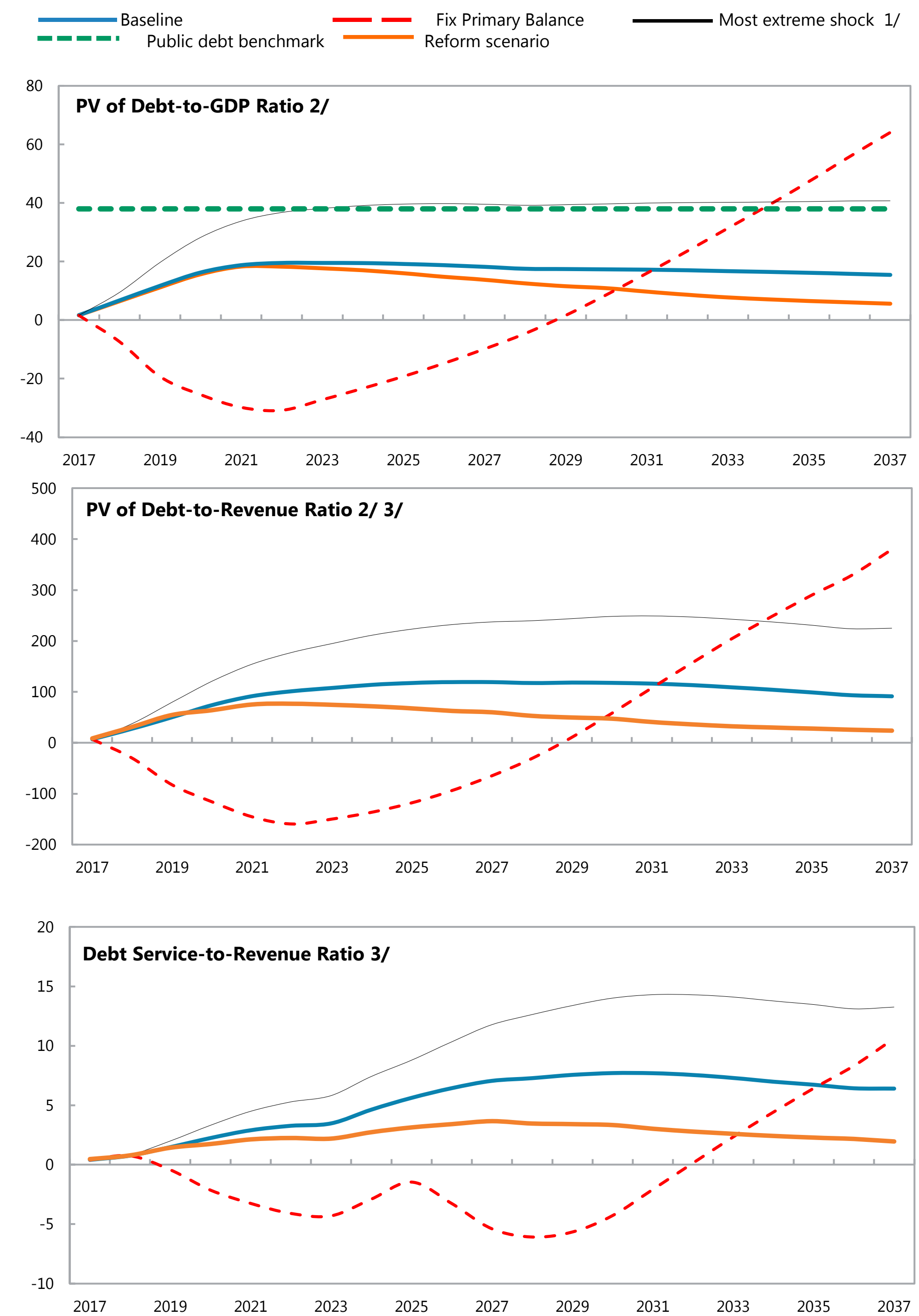


Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2027. In figure b. it corresponds to a Combination shock; in c. to a Exports shock; in d. to a GDP deflator shock; in e. to a Exports shock and in figure f. to a Combination shock

2/ Under the historical scenario, debt-to-GDP ratio is negative after 2018, due to large current account surpluses. Net debt creating dynamics are assumed to depend on the historical average of non-interest current account balances. However, these do not reflect declining oil production in future.

Figure 2a. Timor-Leste: Indicators of Public Debt (Gross) Under Alternative Scenarios, 2017-2037



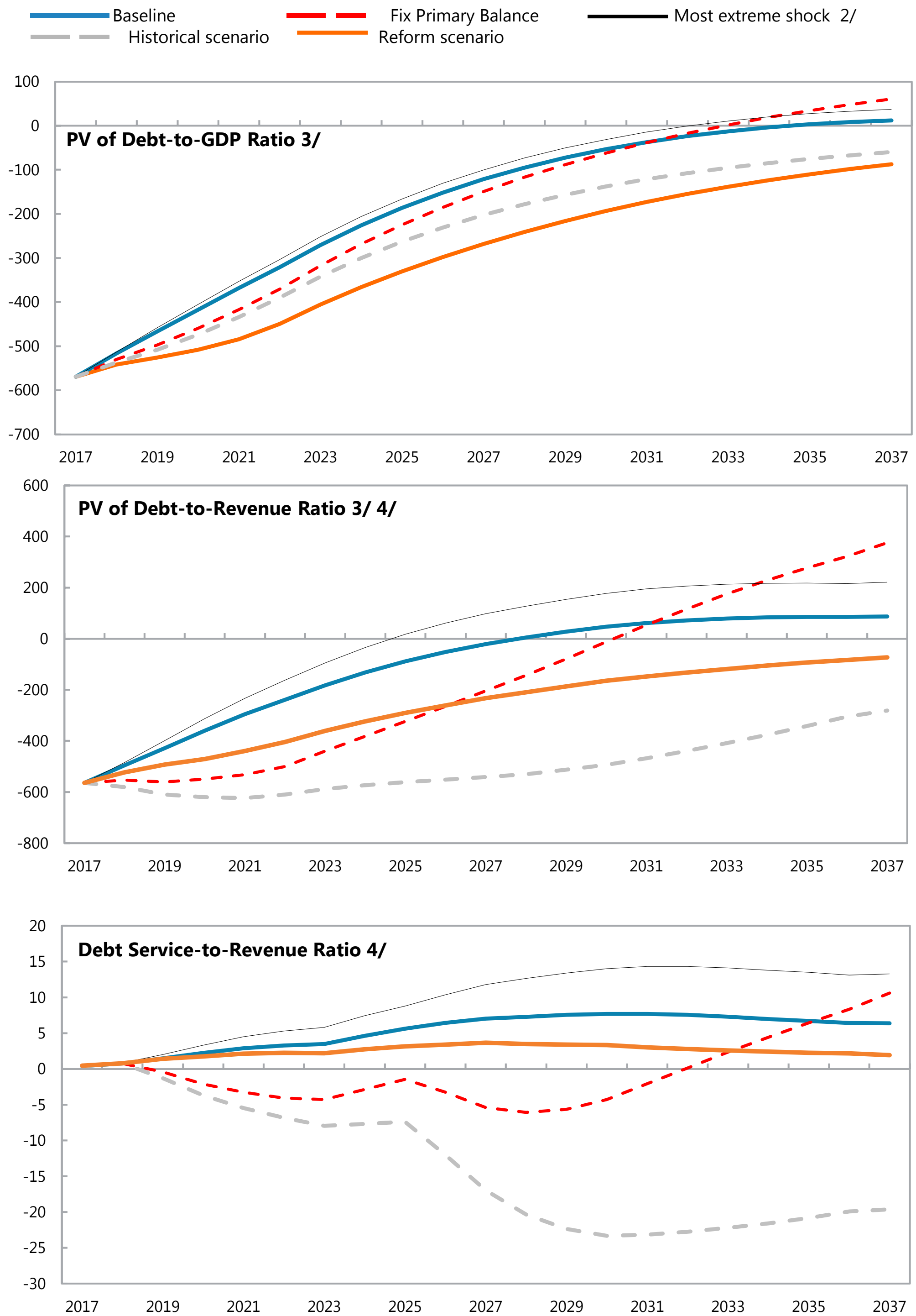
Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2027.

2/ Negative debt burden indicators arise because the strong current account surpluses historically led to the accumulation of net assets.

3/ Revenues are defined as exclusive of grants.

Figure 2b. Timor-Leste: Indicators of Public Debt (Net) Under Alternative Scenarios, 2017-2037 1/



Sources: Country authorities; and staff estimates and projections.

1/ Net debt is calculated by subtracting the PF assets from gross debt.

2/ The most extreme stress test is the test that yields the highest ratio on or before 2027.

3/ Negative debt burden indicators arise because the strong current account surpluses historically led to the accumulation of net assets.

4/ Revenues are defined as exclusive of grants.

Table 1a. Timor-Leste: External Debt Sustainability Framework, Baseline Scenario, 2014-2037 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 5/	Standard Deviation 5/	Projections									
	2014	2015	2016			2017	2018	2019	2020	2021	2022	2017-2022 Average	2027	2037	2023-2037 Average
External debt (nominal) 1/	**0.5**	**1.5**	**2.8**			**3.1**	**10.6**	**17.8**	**24.3**	**27.6**	**28.3**		**25.3**	**21.4**	
of which: public and publicly guaranteed (PPG)	0.5	1.5	2.8			3.1	10.6	17.8	24.3	27.6	28.3		25.3	21.4	
Change in external debt	0.4	0.9	1.3			0.4	7.4	7.2	6.5	3.3	0.7		-0.9	-0.6	
Identified net debt-creating flows	-27.9	-8.5	19.4			2.3	13.4	15.7	15.1	14.0	14.3		3.1	0.8	
Non-interest current account deficit	**-27.0**	**-7.7**	**18.9**	**-31.5**	**21.2**	**3.4**	**18.1**	**19.1**	**18.5**	**17.4**	**17.2**		**4.5**	**1.4**	3.8
Deficit in balance of goods and services	-23.4	-2.9	18.1			3.6	22.4	24.0	23.8	23.0	23.1		8.0	0.2	
Exports	55.2	45.0	23.9			38.4	28.2	27.1	23.8	22.6	22.6		20.6	19.1	
Imports	31.8	42.1	42.1			41.9	50.6	51.1	47.6	45.6	45.7		28.6	19.4	
Net current transfers (negative = inflow)	-3.9	-5.3	0.0	-7.3	4.6	-0.3	-4.4	-4.8	-5.1	-5.3	-5.4		-4.0	-2.2	-3.5
of which: official	-6.7	-7.2	-6.2			-5.7	-5.6	-5.6	-5.3	-5.0	-4.6		-2.7	0.0	
Other current account flows (negative = net inflow)	0.2	0.5	0.8			0.2	0.1	0.0	-0.2	-0.4	-0.4		0.5	3.3	
Net FDI (negative = inflow)	**-0.9**	**-1.0**	**0.3**	**-0.7**	**0.6**	**-1.4**	**-4.8**	**-4.1**	**-4.4**	**-4.5**	**-4.2**		**-0.8**	**0.0**	-0.7
Endogenous debt dynamics 2/	**0.0**	**0.2**	**0.2**			**0.2**	**0.1**	**0.7**	**1.0**	**1.1**	**1.2**		**-0.7**	**-0.6**	
Denominator: 1+g+r+gr	0.7	0.8	0.9			1.0	1.0	1.0	1.0	1.1	1.1		1.1	1.1	
Contribution from nominal interest rate	0.0	0.0	0.0			0.0	0.1	0.3	0.4	0.5	0.6		0.5	0.5	
Contribution from real GDP growth	0.0	-0.1	0.1			0.2	0.0	0.5	0.6	0.6	0.7		-1.2	-1.0	
Contribution from price and exchange rate changes	0.0	0.3	0.1			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**28.3**	**9.4**	**-18.1**			**-2.0**	**-6.0**	**-8.5**	**-8.7**	**-10.6**	**-13.6**		**-4.0**	**-1.4**	
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	...	...	1.4			1.6	6.7	11.7	16.2	18.7	19.5		18.2	15.4	
In percent of exports	...	...	5.7			4.2	23.7	43.0	68.2	83.0	86.3		88.2	80.4	
PV of PPG external debt	**...**	**...**	**1.4**			**1.6**	**6.7**	**11.7**	**16.2**	**18.7**	**19.5**		**18.2**	**15.4**	
In percent of exports	**...**	**...**	**5.7**			**4.2**	**23.7**	**43.0**	**68.2**	**83.0**	**86.3**		**88.2**	**80.4**	
In percent of government revenues	**...**	**...**	**6.3**			**8.7**	**35.5**	**65.5**	**99.0**	**125.4**	**142.1**		**187.2**	**127.2**	
Debt service-to-exports ratio (in percent)	**0.0**	**0.0**	**0.0**			**0.3**	**0.7**	**1.3**	**2.1**	**2.6**	**2.8**		**5.2**	**5.6**	
PPG debt service-to-exports ratio (in percent)	**0.0**	**0.0**	**0.0**			**0.3**	**0.7**	**1.3**	**2.1**	**2.6**	**2.8**		**5.2**	**5.6**	
PPG debt service-to-revenue ratio (in percent)	**0.0**	**0.0**	**0.0**			**0.5**	**1.0**	**1.9**	**3.0**	**4.0**	**4.6**		**11.1**	**8.9**	
Total gross financing need (Billions of U.S. dollars)	-1.1	-0.3	0.5			0.1	0.4	0.5	0.5	0.4	0.5		0.3	0.4	
Non-interest current account deficit that stabilizes debt ratio	-27.5	-8.6	17.6			3.1	10.7	11.9	12.1	14.0	16.5		5.4	1.9	
Key macroeconomic assumptions															
Real GDP growth (in percent)	-26.0	20.9	-7.9	0.4	13.5	-8.0	-0.7	-4.7	-3.7	-2.6	-2.6	-3.7	5.2	5.2	5.2
GDP deflator in US dollar terms (change in percent)	-3.2	-36.5	-3.3	3.3	22.6	8.8	4.9	8.0	8.4	8.7	11.1	8.3	6.0	6.0	6.0
Effective interest rate (percent) 4/	0.0	0.0	0.0	0.0	0.0	0.2	3.1	2.5	2.4	2.3	2.2	2.1	2.2	2.3	2.3
Growth of exports of G&S (US dollar terms, in percent)	-34.3	-37.4	-52.7	10.5	52.4	60.4	-23.6	-0.9	-8.5	0.6	8.4	6.1	10.9	11.7	10.3
Growth of imports of G&S (US dollar terms, in percent)	13.0	1.6	-11.1	15.2	38.8	-0.2	25.5	4.0	-2.7	1.4	8.4	6.1	7.3	7.3	5.6
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	33.0	31.4	31.4	31.4	31.5	31.6	31.7	31.6	31.6	31.6
Government revenues (excluding grants, in percent of GDP)	13.1	18.9	21.4			18.5	18.8	17.8	16.4	14.9	13.7		9.7	12.1	10.7
Aid flows (in Billions of US dollars) 6/	0.3	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.2		0.4	1.0	
of which: Grants	0.3	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.2		0.3	0.9	
of which: Concessional loans	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	
Grant-equivalent financing (in percent of GDP) 7/	...	...	...			5.8	8.0	8.0	7.9	7.1	6.5		6.3	5.5	6.0
Grant-equivalent financing (in percent of external financing) 7/	...	...	...			95.0	60.3	60.4	61.1	68.4	76.6		79.7	77.6	76.8
Memorandum items:															
Nominal GDP (Billions of US dollars)	4.0	3.1	2.8			2.8	2.9	3.0	3.1	3.3	3.5		6.1	18.1	
Nominal dollar GDP growth	-28.4	-23.2	-11.0			0.1	4.1	2.9	4.4	5.9	8.2	4.3	11.5	11.5	11.5
PV of PPG external debt (in Billions of US dollars)			0.0			0.0	0.2	0.3	0.5	0.6	0.7		1.1	2.8	
(PVt-PVt-1)/GDPt-1 (in percent)						0.3	5.3	5.3	5.3	3.6	2.4	3.7	1.5	1.4	1.7
Gross workers' remittances (Billions of US dollars)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of PPG external debt (in percent of GDP + remittances)	...	...	1.4			1.6	6.7	11.7	16.2	18.7	19.5		18.2	15.4	
PV of PPG external debt (in percent of exports + remittances)	...	...	5.7			4.2	23.7	43.0	68.2	82.9	86.2		88.1	80.4	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	0.0			0.3	0.7	1.3	2.1	2.6	2.8		5.2	5.6	

Sources: Country authorities; and staff estimates and projections.

1/ Includes only public 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/ Current-year interest payments divided by previous period debt stock.

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

6/ Defined as grants, concessional loans, and debt relief.

7/ 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. Timor-Leste: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2017-2037

(In percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
PV of debt-to GDP ratio								
Baseline	2	7	12	16	19	20	**18**	15
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	2	-25	-53	-81	-110	-141	**-256**	-384
A2. New public sector loans on less favorable terms in 2017-2037 2/	2	8	15	22	25	26	**26**	24
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	2	8	15	20	23	24	**23**	19
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	2	11	27	31	34	34	**27**	18
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	2	9	20	28	33	34	**32**	27
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	2	11	20	25	27	28	**23**	17
B5. Combination of B1-B4 using one-half standard deviation shocks	2	10	26	32	36	36	**31**	23
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	2	9	16	23	26	27	**25**	22
PV of debt-to-exports ratio								
Baseline	4	24	43	68	83	86	**88**	80
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	4	-89	-196	-342	-488	-622	**-1242**	-2003
A2. New public sector loans on less favorable terms in 2017-2037 2/	4	30	56	91	111	116	**125**	125
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	4	24	43	68	83	86	**88**	80
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	4	53	223	297	335	337	**296**	207
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	4	24	43	68	83	86	**88**	80
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	4	40	75	105	121	123	**113**	87
B5. Combination of B1-B4 using one-half standard deviation shocks	4	26	70	100	116	119	**113**	91
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	4	24	43	68	83	86	**88**	80
PV of debt-to-revenue ratio								
Baseline	9	35	65	99	125	142	**187**	127
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	9	-133	-299	-495	-738	-1025	**-2638**	-3169
A2. New public sector loans on less favorable terms in 2017-2037 2/	9	45	86	131	168	192	**265**	198
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	9	40	82	124	157	178	**234**	159
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	9	61	151	192	226	247	**280**	146
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	9	46	114	172	218	247	**326**	221
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	9	59	115	152	183	202	**240**	138
B5. Combination of B1-B4 using one-half standard deviation shocks	9	51	144	196	238	265	**324**	194
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	9	50	92	139	176	199	**262**	178

Table 1b. Timor-Leste: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2017-203 (concluded)

(In percent)

Debt service-to-exports ratio								
Baseline	0	1	1	2	3	3	**5**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	0	1	-2	-6	-10	-14	**-53**	-136
A2. New public sector loans on less favorable terms in 2017-2037 2/	0	1	1	3	4	5	**9**	9
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	0	1	1	2	3	3	**5**	6
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	0	1	4	9	10	10	**20**	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	0	1	1	2	3	3	**5**	6
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	0	1	2	3	4	4	**7**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	0	1	2	3	4	4	**7**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	0	1	1	2	3	3	**5**	6
Debt service-to-revenue ratio								
Baseline	1	1	2	3	4	5	**11**	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	1	1	-4	-9	-16	-23	**-113**	-215
A2. New public sector loans on less favorable terms in 2017-2037 2/	1	1	2	4	6	8	**18**	15
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	1	1	2	4	5	6	**14**	11
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	1	1	3	6	7	8	**19**	11
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	1	1	3	5	7	8	**19**	16
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	1	1	3	5	6	6	**16**	10
B5. Combination of B1-B4 using one-half standard deviation shocks	1	1	3	6	7	8	**21**	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	1	1	3	4	6	6	**16**	13
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	30	30	30	30	30	30	**30**	30

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. Timor-Leste: Public Sector Debt Sustainability Framework, Baseline Scenario, 2014-2037

(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
	2014	2015	2016	Average 5/	Standard Deviation 5/	2017	2018	2019	2020	2021	2022	2017-22 Average	2027	2037	2023-37 Average
Public sector debt 1/	0.5	1.5	2.8			3.1	10.6	17.8	24.3	27.6	28.3		25.3	21.4	
of which: foreign-currency denominated	0.5	1.5	2.8			3.1	10.6	17.8	24.3	27.6	28.3		25.3	21.4	
Change in public sector debt	0.4	0.9	1.3			0.4	7.4	7.2	6.5	3.3	0.7		-0.9	-0.6	
Identified debt-creating flows	20.0	24.3	37.1			25.7	46.1	50.1	41.2	35.9	29.5		19.3	7.6	
Primary deficit	20.0	24.2	36.9	15.6	9.1	25.7	46.2	50.1	41.5	36.8	31.0	38.5	21.5	9.4	17.6
Revenue and grants	19.8	26.1	27.5			24.2	24.4	23.4	22.0	20.5	19.3		15.3	16.9	
of which: grants	6.7	7.2	6.1			5.7	5.6	5.6	5.6	5.6	5.6		5.6	4.8	
Primary (noninterest) expenditure	39.8	50.2	64.5			49.9	70.6	73.5	63.4	57.3	50.3		36.8	26.3	
Automatic debt dynamics	0.0	0.2	0.2			0.0	0.0	0.0	-0.3	-0.8	-1.5		-2.2	-1.8	
Contribution from interest rate/growth differential	0.0	-0.1	0.1			0.2	0.1	0.6	0.8	0.7	0.8		-1.2	-1.0	
of which: contribution from average real interest rate	0.0	0.0	0.0			0.0	0.0	0.0	0.1	0.1	0.0		0.1	0.1	
of which: contribution from real GDP growth	0.0	-0.1	0.1			0.2	0.0	0.5	0.7	0.6	0.7		-1.3	-1.1	
Contribution from real exchange rate depreciation	0.0	0.3	0.1			-0.2	-0.1	-0.6	-1.1	-1.6	-2.3		...	...	
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	
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)	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	-19.6	-23.4	-35.8			-25.4	-38.7	-42.9	-34.7	-32.6	-28.8		-20.2	-8.1	
Other Sustainability Indicators															
PV of public sector debt	...	...	1.4			1.6	6.7	11.7	16.2	18.7	19.5		18.2	15.4	
of which: foreign-currency denominated	...	...	1.4			1.6	6.7	11.7	16.2	18.7	19.5		18.2	15.4	
of which: external	...	...	1.4			1.6	6.7	11.7	16.2	18.7	19.5		18.2	15.4	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	20.0	24.2	36.9			25.8	46.3	50.5	42.0	37.4	31.7		22.6	10.5	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	4.9			6.7	27.4	49.9	73.9	91.4	101.1		119.0	91.2	
PV of public sector debt-to-revenue ratio (in percent)	...	...	6.3			8.7	35.5	65.5	99.0	125.4	142.1		187.2	127.2	
of which: external 3/	...	...	6.3			8.7	35.5	65.5	99.0	125.4	142.1		187.2	127.2	
Debt service-to-revenue and grants ratio (in percent) 4/	0.0	0.0	0.0			0.4	0.8	1.5	2.2	2.9	3.3		7.1	6.4	
Debt service-to-revenue ratio (in percent) 4/	0.0	0.0	0.0			0.5	1.0	1.9	3.0	4.0	4.6		11.1	8.9	
Primary deficit that stabilizes the debt-to-GDP ratio	19.5	23.2	35.6			25.4	38.7	42.9	35.0	33.5	30.3		22.4	10.0	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	-26.0	20.9	-7.9	0.4	13.5	-8.0	-0.7	-4.7	-3.7	-2.6	-2.6	-3.7	5.2	5.2	5.2
Average nominal interest rate on forex debt (in percent)	0.0	0.0	0.0	0.0	0.0	0.2	3.1	2.5	2.4	2.3	2.2	2.1	2.2	2.3	2.3
Average real interest rate on domestic debt (in percent)	...	...	...	0.0	0.0	...	...	...	...	...	...	0.0	...	...	0.0
Real exchange rate depreciation (in percent, + indicates depreciation)	5.1	59.2	4.8	3.2	25.4	-6.4	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-3.2	-36.5	-3.3	3.3	22.6	8.8	4.9	8.0	8.4	8.7	11.1	8.3	6.0	6.0	6.0
Growth of real primary spending (deflated by GDP deflator, in percent)	23.7	52.7	18.1	9.6	17.5	-28.8	40.3	-0.7	-16.9	-12.1	-14.4	-5.4	1.1	2.4	0.8
Grant element of new external borrowing (in percent)	...	...	...	...	...	33.0	31.4	31.4	31.4	31.5	31.6	31.7	31.6	31.6	...

Sources: Country authorities; and staff estimates and projections.

1/ Covers gross debt of central government.

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

3/ Revenues excluding grants.

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

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

Table 2b. Timor-Leste: Sensitivity Analysis for Key Indicators of Public Debt, 2017-2037

		Projections						
	2017	2018	2019	2020	2021	2022	2027	2037
PV of Debt-to-GDP Ratio								
Baseline	2	7	12	16	19	20	18	15
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	2	-14	-30	-40	-47	-50	-63	-56
A2. Primary balance is unchanged from 2017	2	-7	-19	-25	-30	-31	-10	64
A3. Permanently lower GDP growth 1/	2	7	14	20	25	28	38	73
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	2	9	20	28	34	37	40	41
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	2	-8	-21	-16	-13	-11	-3	6
B3. Combination of B1-B2 using one half standard deviation shocks	2	-13	-31	-25	-21	-18	-5	11
B4. One-time 30 percent real depreciation in 2018	2	6	10	14	16	17	17	14
B5. 10 percent of GDP increase in other debt-creating flows in 2018	2	14	19	23	26	26	23	17
PV of Debt-to-Revenue Ratio 2/								
Baseline	7	27	50	74	91	101	119	91
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	7	-58	-132	-186	-237	-270	-402	-277
A2. Primary balance is unchanged from 2017	7	-30	-83	-116	-146	-160	-65	380
A3. Permanently lower GDP growth 1/	7	30	57	89	117	138	221	353
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	7	38	80	121	154	178	238	225
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	7	-33	-88	-73	-63	-56	-19	38
B3. Combination of B1-B2 using one half standard deviation shocks	7	-51	-130	-112	-99	-89	-29	62
B4. One-time 30 percent real depreciation in 2018	7	26	45	65	80	90	109	84
B5. 10 percent of GDP increase in other debt-creating flows in 2018	7	56	80	105	125	135	148	103
Debt Service-to-Revenue Ratio 2/								
Baseline	0	1	1	2	3	3	7	6
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	0	1	-1	-4	-5	-7	-17	-20
A2. Primary balance is unchanged from 2017	0	1	0	-2	-3	-4	-5	11
A3. Permanently lower GDP growth 1/	0	1	2	3	4	4	11	18
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	0	1	2	3	4	5	12	13
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	0	1	-1	-2	-2	-1	-4	2
B3. Combination of B1-B2 using one half standard deviation shocks	0	1	-1	-4	-3	-3	-6	2
B4. One-time 30 percent real depreciation in 2018	0	1	2	3	4	5	10	10
B5. 10 percent of GDP increase in other debt-creating flows in 2018	0	1	2	3	4	4	9	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 exclusive of grants.