INTERNATIONAL DEVELOPMENT ASSOCIATION

INTERNATIONAL MONETARY FUND

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Joint World Bank-IMF Debt Sustainability Analysis

August 2019

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Lao People's Democratic Republic: Joint Bank-Fund Debt Sustainability Analysis

Risk of external debt distress:	High
Overall risk of debt distress:	High
Granularity in the risk rating	Sustainable
Application of judgement:	No

Lao P.D.R.'s risks of external and overall debt distress continue to be assessed as high.[1] Under the revised low-income country debt sustainability framework (LIC DSF), its debt carrying capacity has deteriorated and most external and total public debt indicators breach their respective indicative thresholds and benchmarks under the baseline scenarios. [2] External debt indicators are most vulnerable to shocks to exports and depreciation of the currency. Public and external debt indicators are most sensitive to the contingent liabilities shock, while recent natural disasters underscore the need for strengthening buffers. The low level of reserves adds to these vulnerabilities. Factors, such as the large share of electricity export earnings under long-term intergovernmental power purchase agreements, and a strong and growing electricity exports market help mitigate risks, keeping the debt outlook sustainable. Market access is being maintained, around 65 percent of external debt is concessional, and the stock of expenditure arrears is declining. Rebuilding fiscal space, adopting clear guidelines for sovereign debt issuance and guarantees, assessing risks from contingent liabilities, and improving debt management are immediate priorities. Assessing and targeting infrastructure projects with high growth and social returns and financing these with concessional financing would benefit debt sustainability. Strengthening the business environment and governance, would improve the investment outlook, help diversify and make growth more inclusive. Increasing the export base, continuing to maximize the proportion of concessional loans and improving primary deficits would help to keep the debt burden contained.

[1] The 2017 DSA assessed that Lao P.D.R. faces a high risk of debt distress, based on an assessment of public and publicly guaranteed external debt.

[2] The CI is a composite indicator based on a weighted average of several factors such as the country's real GDP growth, remittances, international reserves, and world growth and the CPIA score. The calculation of the CI is based on 10-year averages of the variables, across 5 years of historical data and 5 years of projection, and the corresponding CPIA. Details on the methodology can be found in the new LIC-DSF guidance note: https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/02/14/pp122617guidance-note-on-lic-dsf.

PUBLIC DEBT COVERAGE AND COUNTRY CLASSIFICATION

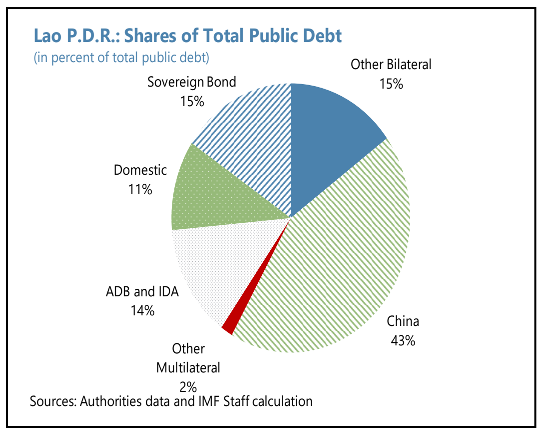
1. The coverage of public sector debt used in the DSA is central government debt, government-guarantees including to State Owned Enterprises (SOEs) and central bank borrowing. Some of the SOE debt is on lent by the central government and is therefore included in the coverage of public external debt. There is no outstanding debt to the IMF. Under the new Public Debt Management Law (2018) off-budget borrowing not approved by National Assembly is prohibited. To address the past concerns, all borrowing (by central and provincial governments, SOEs, Public-Private Partnerships (PPPs)) must be approved by the National Assembly and the Ministry of Finance negotiates all loans. Directives to implement this new law is being defined. Non-guaranteed SOE debt is covered in the PPP contingent liability shock (para 5).

Text Table 1. Coverage of Public Sector Debt

	Subsectors of the public sector	Check box
1	Central government	X
2	State and local government	
3	Other elements in the general government	
4	o/w: Social security fund	
5	o/w: Extra budgetary funds (EBFs)	
6	Guarantees (to other entities in the public and private sector, including to SOEs)	X
7	Central bank (borrowed on behalf of the government)	X
8	Non-guaranteed SOE debt	

BACKGROUND ON DEBT

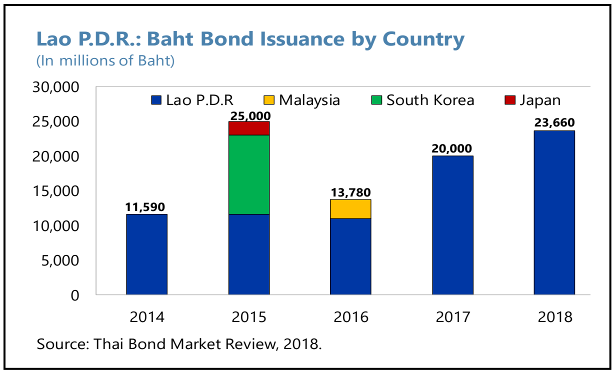
2. Lao P.D.R.'s total public debt is estimated to be 57.2 percent of GDP as of 2018.[3] Public debt in this DSA covers public domestic debt (5.8 percent of GDP) and public and publicly guaranteed (PPG) external debt (51.4 percent of GDP).[4] Domestic debt comprises T-bills and T-bonds, are mainly held by banking sector and the central bank. The resolution of domestic payment arrears related to public infrastructure projects is underway and has added around 3 percent of GDP to domestic debt in



[3] Lao P.D.R.'s fiscal year is defined as January to December. This first year of projection in this DSA is FY2018. Substantial progress is being made in improving macroeconomic statistics including data related to debt statistics. The stock of domestic debt was provided for the first time by authorities. It is lower than previous estimates as it does not include debt held by SOEs given that the SOE's domestic borrowing is not explicitly guaranteed by the central government. Private external debt is also lower than previously estimated. The latter are now linked to the actual private external flows in revised balance of payments (BOP). The upcoming new International Investment Position survey is expected to improve private debt estimates and further revisions are expected to BOP, which is transitioning to BPM6 reporting, supported by IMF TA.

[4] The external debt definition used in this DSA is based on residency.

2018.[5] Given higher costs of domestic borrowing, the share of domestic PPG debt remains relatively small. Much of the existing public and publicly guaranteed (PPG) debt stock is external, and close to 65 percent of the public external debt is on concessional and semi-concessional terms. The largest share of PPG external debt is held by bilateral creditors amongst which China's share, which is primarily concessional, is the largest (43 percent of total PPG debt). International Development Association (IDA) and the Asian Development Bank (ADB) are the two largest multilateral creditors (14 percent of total PPG external debt). Additionally, the authorities have been accessing the Thai capital market since 2013. The estimated outstanding bond amount at the end-2018 was US$ 1.6 billion.



3. The government has been clearing past domestic arrears related to infrastructure projects by issuing bonds (around 3 percent of GDP in 2018). The government is also in the process of evaluating completed projects with the view of identifying any outstanding payment obligations. These arrears are included as part of the domestic debt stock.

4. Total private external debt is estimated to be 41.5 percent of GDP as of 2018. Private external debt is estimated to be large given the large number of PPPs.

5. The magnitude of contingent liability shock (38.9 percent of GDP) account for potential liabilities from PPPs, realization of potential arrears, and the recapitalization needs from the banking system. Given the large capital stock, the DSA includes a PPP shock of 29.4 percent of GDP to capture any contingent liabilities arising from non-SOE debt.[6] In addition, while data limitations hinder a full assessment of potential NPLs and recapitalization needs, the uneven loan loss recognition and a slowdown of overall credit growth indicates low profitability and the need to recapitalize through time. A shock covering 0.5 percent and 5 percent of GDP has been added to the analysis to account for the discovery of potential domestic arrears and any likely recapitalization needs of the banking sector.[7] The stock of domestic debt, provided for the first time by the authorities, does not include debt held by SOEs given that the SOE's domestic borrowing is not explicitly guaranteed by the central government.

[5] The legacy debt of Bank of Lao P.D.R.'s direct lending to local government's off-budget infrastructure projects in the past is also included in domestic debt.

[6] The World Bank's Private Participation in Infrastructure Database is available here https://ppi.worldbank.org/. Amongst the LICs, Lao P.D.R. has the largest share of PPP capital stock as per the database.

[7] The minimum 5 percent of GDP shock for potential bank recapitalization per the LIC DSF methodology is on the higher side for Lao P.D.R. given that potential costs related to the two state banks which require recapitalization have been estimated to be lower.

Potential contingencies arising from domestic debt being implicitly guaranteed are covered by adding 4 percent to the contingent liability shock.

Text Table 2. Calibration of Shock Scenarios

1	The country's coverage of public debt	The central government, central bank, government-guaranteed debt	
		Used for the analysis	Reasons for deviations from the default settings
2	Other elements of the general government not captured in 1.	0.5	A 0.5 percent of GDP shock is included to account for the potential discovery of arrears.
3	SoE's debt (guaranteed and not guaranteed by the government) 1/	4	Domestic debt to SOEs indirectly guaranteed by the govt
4	PPP	29.4	Captures the contingent liability from the private sector share of PPPs
5	Financial market (the default value of 5 percent of GDP is the minimum value)	5	5 percent of GDP shock to capture potential restructing needs in the banking sector.
	Total (2+3+4+5) (in percent of GDP)	38.9	

1/ The default shock of 2% of GDP will be triggered for countries whose government-guaranteed debt is not fully captured under the country's public debt definition (1.). If it is already included in the government debt (1.) and risks associated with SoE's debt not guaranteed by the government is assessed to be negligible, a country team may reduce this to 0%.

6. Steady fiscal consolidation aimed at reducing fiscal deficit to about 2 percent of GDP and public debt below 50 percent of GDP by 2025. The authorities have incorporated SDGs in their 5-year development plan.[8] Key reforms along with greater investments in both physical and human capital are needed to achieve the SDGs. For this, the authorities should seek external borrowing on concessional terms while limiting financing on commercial terms. PPPs have been used more extensively over the past few years. As per data available from the World Bank, Lao P.D.R. was amongst the top three IDA eligible countries to get investment through private participation in infrastructure in 2017.[9] Investments are mostly directed towards the energy and transportation sectors. A current moratorium on new capital investment projects pipeline and planned reduction in the size of the civil service employment will also help fiscal consolidation.

BACKGROUND ON MACROECONOMIC FORECASTS

The Baseline Scenario

7. The assumptions in the baseline scenario are consistent with the macroeconomic framework presented in the staff report. The main assumptions in the baseline are:

- **Real GDP growth.** While economic growth has moderated in 2018 in part due to the protracted period of floods and natural disasters, it is expected to recover in 2019 but at a pace somewhat slower compared to the previous DSA.[10] Over the medium-term, growth is expected to pick up supported by improvement in infrastructure, an additional 2,200 MW of power generation with the completion of several power projects which

[8] Lao P.D.R.'s aspiration, as stated in 8th National Socio-Economic Development Plan (NSEDP), is to graduate from LDC status by 2020. The Triennial Least Developed Countries Review, held in March 2018 by the UN Committee for Development Policy determined that Lao P.D.R. will be considered for graduation at the time of the 2021 review.
[9] Investments in IDA Countries Private Participation in Infrastructure (PPI) 2013 – 2017
[10] Lao P.D.R. 2017 Article IV Consultation Staff Report DSA; IMF Country Report No. 18/84

is expected to lead to the export of electricity to new markets, and the completion of the Kunming-Singapore Railway Line. [11]

- **Inflation.** Despite the disruptions from protracted flooding and the tragic dam collapse in Attapeu, headline inflation remained moderate reflecting higher fuel prices and kip depreciation. Inflation is projected to rise temporarily given the pass-through of kip depreciation and higher oil prices.

- **Current account.** The current account deficit remained large in 2018 driven partly by disaster-related and mega-project imports and was largely financed by sustained FDI inflows and external debt, keeping international reserves at about one month of imports. The current account deficit is projected to remain around 11.4 percent of GDP over the short to medium term reflecting a relatively stronger demand for imports including oil.

- **External financing.** Financing from large creditors is currently in place, and the authorities continue to issue on the Thai capital market. Multilateral financing is expected to remain stable but slowly declining, while bilateral financing is projected to pick up. It is also expected that there will be continued access to the Thai market over the medium term. The medium-term outlook for FDI and external financing remains stable. FDI inflows remain around 7.8 percent of GDP. Several infrastructure projects are expected to wind down by 2021, however, some new investments are also expected.

- **Fiscal outlook.** Fiscal consolidation brought the fiscal deficit to 4.4 percent of GDP in 2018. It was mainly driven by a reduction in recurrent and capital spending, as revenues under performed and part of the spending was diverted towards natural disaster relief. The fiscal deficit is expected to decline further in 2019 supported by revenue administrative efforts and some optimization of recurrent spending given that the government has announced its plans for reductions in the civil service recruitment. Capital spending will decline due to a temporary suspension of new investment projects aiming to prioritize post-disaster reconstruction needs. Authorities, with support from the IMF, have developed a Medium-Term Revenue Strategy (MTRS: 2021–25) which provides a coordinated and sequenced approach to revenue mobilizations reforms. The government has also developed customs and tax administration strategic plans and has commenced the introduction of an automated tax revenue information system (TaxRis). Implementing these plans and supporting automation efforts with improved data gathering, risk-based administration practices, and training will help to improve revenue administration efficiency.

- **Realism of the baseline.** The PPG external debt-to-GDP ratio follows a similar path compared with the DSA from five years ago (2013) given the ongoing fiscal

[11] These include the Sayaboury Hydropower Project (1,285 MW), Nam Ngiep 1 (290 MW), Xe-Pian Xe-Namnoy (410 MW), and Don Sahong (260 MW).

consolidation efforts. Cross-country experience suggests that the baseline fiscal consolidation is feasible, and the projected growth path is in line with a fiscal multiplier of 0.2.[12]

Text Table 3. Key Macroeconomic Assumptions: 2018–24 (average)

	Baseline	Previous DSA
Real GDP growth (in percent)	6.6	6.9
Inflation (percent change, y/y)	3.0	3.0
Primary fiscal balance (in percent of GDP)	-2.4	-2.9
Overall fiscal balance (in percent of GDP)	-4.0	-4.6
Current account (in percent of GDP)	-11.4	-11.6
FDI (in percent of GDP)	6.8	11.8

Source: IMF staff calculations.

COUNTRY CLASSIFICATION AND SCENARIO STRESS TESTS

8. The new LIC DSF determines the debt sustainability thresholds by calculating a composite indicator (CI). For Lao P.D.R., the CI score based on both the 2019 April WEO and 2018 October WEO data corresponds to a weak rating. In the previous debt sustainability framework (DSF), debt-carrying capacity was determined by the World Bank's Country Policy and Institutional Assessment (CPIA) score. Under this methodology, Lao P.D.R. was classified as having a medium policy performance with a CPIA average of 3.29 for the period 2014–16. This CPIA indicator has deteriorated marginally owing to the weaker policy framework with an average of 3.22 for the period 2015–2017. Thus, the debt carrying capacity classification is weaker compared to the previous DSA - the present value (PV) of PPG external debt-to-GDP threshold has decreased from 40 to 30 percent, the PV of PPG external debt-to-exports has decreased from 150 to 140 percent, debt service-to-exports has decreased from 20 to 10 percent and debt service-to-revenue ratio has decreased from 20 to 14 percent. The indicative threshold for the PV of total public debt-to-GDP has decreased to 35 percent. A summary of the thresholds used in the exercise are included in the table below.[13]

[12] Public/Private investment rate charts are not available in the current DSA from data limitations.

[13] See footnote 2 which discusses the CI.

Text Table 4. Applicable Thresholds

Debt Carrying Capacity	Weak

Final	Classification based on current vintage	Classification based on the previous vintage	Classification based on the two previous vintages
Weak	Weak	Weak	Weak
	2.35	2.38	2.39

APPLICABLE	
EXTERNAL debt burden thresholds	
PV of debt in % of	
Exports	140
GDP	30
Debt service in % of	
Exports	10
Revenue	14

APPLICABLE	
TOTAL public debt benchmark	
PV of total public debt in percent of GDP	35

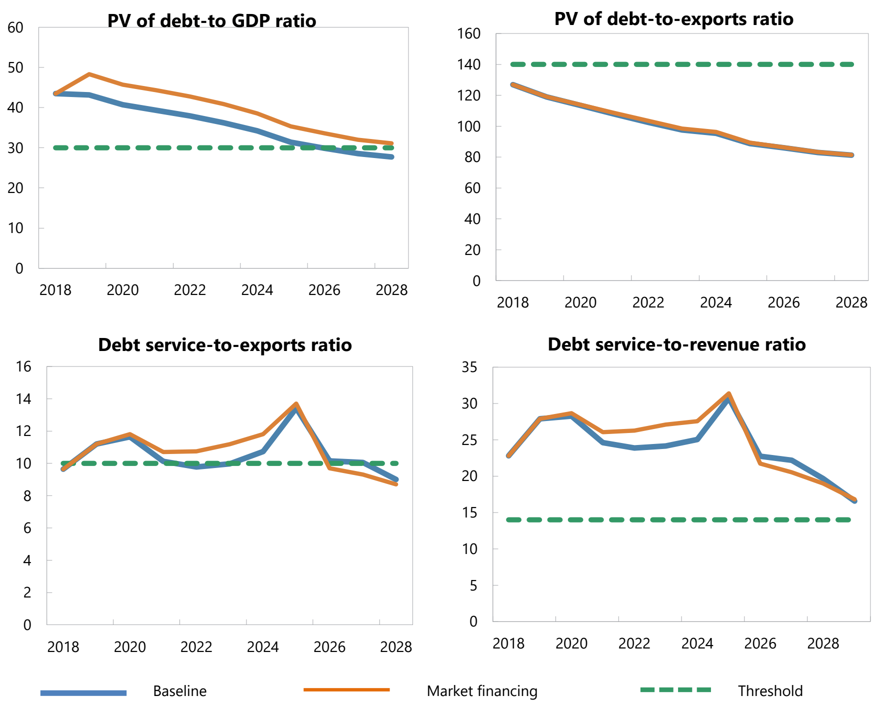
9. Standardized stress tests indicate that the external debt path is vulnerable to a shock to exports, depreciation of the currency and large contingent liabilities. In an uncertain global environment, a sharper than expected slowdown in China – Lao P.D.R.'s largest trading partner and FDI investor– may reduce exports and decelerate FDI flows (see Staff Report: Box 1). Additionally, any future lower demand for electricity may reduce exports. Thus, the shock to exports, which affects both the export-based ratios, underscores the importance of diversifying from a resource-based economy and expand its current export base. The one-time 30 percent depreciation shock deteriorates the external and public debt service indicators and highlights the susceptibility to a sudden depreciation of the kip/U.S. dollar exchange rate from the tightening of global financial conditions. Given the considerable share of foreign currency denominated debt, a large sudden exchange rate depreciation could significantly deteriorate this ratio over the projection period. Market reactions, especially in the Thai capital market given their access to it, are especially important for rollovers and any future issuance. The combined contingent liability shock from PPPs and recapitalization needs keeps all four external debt ratios above their respective benchmark throughout the projection period (Figure 2, Table 4).

10. Lao P.D.R. has been accessing the Thai capital market to raise funds to finance infrastructure projects. The Thai capital market has been tapped regularly since the first issuance in 2013. The results of the market-financing module of the DSF indicates that Lao P.D.R. has a low liquidity risk based on the gross financing need being below the 14 percent benchmark. There is no Emerging Market Bond Index (EMBI) or equivalent spread available for Lao P.D.R.

Lao P.D.R.: Market-Financing Risk Indicators

	GFN 1/	EMBI 2/
Benchmarks	14	570
Values	9	n.a.
Breach of benchmark	No	n.a.
Potential heightened liquidity needs	Low	

1/ Maximum gross financing needs (GFN) over 3-year baseline projection horizon.
2/ EMBI spreads correspond to the latest available data.



Sources: Country authorities; and staff estimates and projections.

11. Natural disasters have generated direct losses of 2 percent of GDP and reconstruction needs close to 3 percent of GDP (Box 1 and Appendix III). Lao P.D.R. has become more prone to natural disasters and needs to build the fiscal space to mitigate weather related shocks and its economic and social consequences. In the aftermath of a natural disaster, typically debt ratios tend to deteriorate from an increase in total expenditure, decline in revenues or from the slowdown in GDP. A tailored test shows that debt ratios deteriorate significantly compared with the baseline highlighting the need to enhance preparedness and response ability to natural disasters by building fiscal and external buffers

(Table 3–4).[14] The vulnerability to this shock also underscores the need for stronger growth in the medium term. The authorities need to build up policy buffers, particularly domestic revenues and foreign reserves, and continue their efforts with structural reforms to improve growth potential and resilience by pursuing economic diversification.

Box 1. Impact of the 2018 Natural Disaster in Lao P.D.R.

In 2018, the country experienced widespread floods, which have significantly impacted the population and the economy. Two tropical cyclones and a dam collapse in Attapeu Province resulted in extensive flooding between July and September 2018, impacting all parts of the country. A comprehensive Post-Disaster Needs Assessment (PDNA) has estimated damage and losses to be around 2 percent of the GDP and total recovery needs around 3 percent of the GDP (US$520 million). Short-term recovery and reconstruction needs, estimated to be 0.8 percent of the GDP (US$ 154 million), largely include support to restore livelihoods and the recovery of affected sectors. In part due to the floods, real GDP growth slowed in 2018 (6.3 percent compared with 6.8 percent in 2017), as both agricultural and industrial production declined and while there were no additional expenditures, the fiscal deficit estimate was revised up to 4.4 percent (in 2018) from tax exemptions to the affected businesses. The fiscal deficit in 2019 has also been revised up to 4.3 percent from the ongoing reconstruction efforts. The government allocated emergency assistance of LAK 100 billion (US$11.7 million) in 2018 towards public works, transportation, agriculture, forestry and infrastructure by reallocating capital expenditures and a further LAK 500 billion (US$57 million) in 2019 to repair public priority infrastructure. In addition, developing partners have allocated approximately US$81.1 million which leaves a gap of approximately US$370.2 million which is expected to be met by re-prioritizing capital spending over 2020-23 period. To mitigate future risks of natural disasters, the government of Lao P.D.R. has decided to join the regional catastrophe risk insurance pool and secured premium financing of US$5 million through WB's support.

EXTERNAL AND PUBLIC DEBT SUSTAINABILITY

12. All but one external PPG debt indicators breach their policy relevant thresholds in the baseline scenario (Figure 1). The PV of external debt-to GDP ratio remains above its threshold in the near term and then trends downwards going below the threshold over the projection period. The debt service-to-exports ratio hovers around the threshold while the debt service-to-revenue ratio is expected

[14] The tailored test includes US$ 520 million (3 percent of GDP) as the reconstruction needs estimated by the PDNA.

to remain above its thresholds during the projection period given the large debt service payments falling due and low level of revenues.

13. The PV of total public debt-to-GDP ratio stays above the public debt benchmark (Figure 2). The primary deficit is expected to fall in subsequent years mainly on the back of fiscal consolidation, supported by revenue administrative efforts and some optimization of recurrent spending and a slowdown in capital spending after the disaster reconstruction period has been completed. The PV of public debt-to-GDP ratio remains well above the indicative benchmark over the projection period but is projected to be on a downward trend. Under the baseline, the PV of public debt falls from 50.2 percent of GDP in 2018 to 45.6 percent of GDP by 2028.

ASSESSMENT OF RISK RATING

14. The DSA under the new LIC DSF framework suggests that the risk of external debt distress is high as is the overall risk of debt distress. The overall debt outlook remains challenging—under the baseline, and most of the total public debt and debt service indicators related to PPG external debt are expected to remain above or close to their respective benchmarks and thresholds over the projection period— and several vulnerabilities exist. These include a shock to exports, depreciation of the currency, large exposure to PPPs, recapitalization needs of the banking sector and the aftermath from potential natural disasters. With the debt service-to-exports and debt service-to-revenue ratios well above their thresholds, the authorities should remain mindful of liquidity risks.

15. However, factors such as the large export-oriented electricity sector, help mitigate risks keeping the debt outlook sustainable. Over 90 percent of the electricity exports are under intergovernmental power purchase agreements (PPA) that cover 25–30 years of export earnings.[15] The total share of electricity sector in total stock of PPP investments is around 75 percent. The government's equity shares in export-oriented PPPs ranges primarily between 15–25 percent.[16] Intergovernmental PPAs, large export receipts, and a growing exports market with new PPAs mitigate risks related to power sector loans (Box 2). Lao P.D.R. has a strong track record of implementing energy export related mega-projects and maintains close economic ties with a diversified investor base from neighboring countries. These neighboring countries, and primarily Thailand, are not only a source of financing but also main consumers of energy exports. Moreover, a large share of debt remains mostly concessional, there are no external payment arrears, the stock of domestic arrears is declining, and Lao P.D.R.'s market access to the Thai capital market is being maintained with favorable terms. In addition, the authorities are in the process of taking measures such as reviewing current tax exemptions in the power sector and implementing the Medium-Term Revenue Strategies (MTRS) which are expected to significantly strengthen revenues going forward. Finally, there could be some upside potential if the authorities' ambitious projected fiscal adjustment plans materialize as opposed to the assumed relatively conservative

[15] As an example, the two large hydropower projects - Nam Theun 2 and Hong Sa Lignite, have produced over a billion dollars in export earnings in 2017-18 under the PPAs with Thailand. Seven other power plants, including three new ones that are expected to start operations in 2019, have similar PPAs with Thailand. In addition, there are two PPAs with Vietnam.

[16] In two of these projects the government's equity shares is around 60 percent.

baseline. All these measures underpin the argument that while the risk of debt distress is high, the outlook remains sustainable.

16. Increasing the export base, assessing risks from PPPs, and improving policy buffers would help keep the debt burden contained. Effective implementation of new Public Debt Management Law and a 5-year public debt management strategy supported with strong institutional capacity building efforts could strengthen the debt carrying capacity going forward. That said, authorities must remain cautious about borrowing that leads to a rapid debt buildup, target infrastructure projects with high social and growth impact, and finance them on concessional terms to the extent possible and assess fiscal risks of PPPs related contingent liabilities on a regular basis. It will also be important to continue to develop the legal and institutional frameworks for PPPs. In this regard, a Public Investment Management Assessment (PIMA) should be considered to set priorities for public investment reform. The low level of foreign reserves may make foreign exchange availability challenging given the lumpy external debt repayments. This could put pressure on the kip and, in turn, raise financing challenges. The authorities should remain vigilant of the potential vulnerabilities in the banking system by monitoring the balance sheet of the banks as they conform to the new regulations. Over the long term, the need to strengthen economic resilience and increasing fiscal and external buffers is emphasized to strengthen debt sustainability. Strengthening the business environment and governance would raise the investment outlook and potential growth. In addition, these measures will also help improve the CPIA rating of the country which in turn will help improve overall debt sustainability.

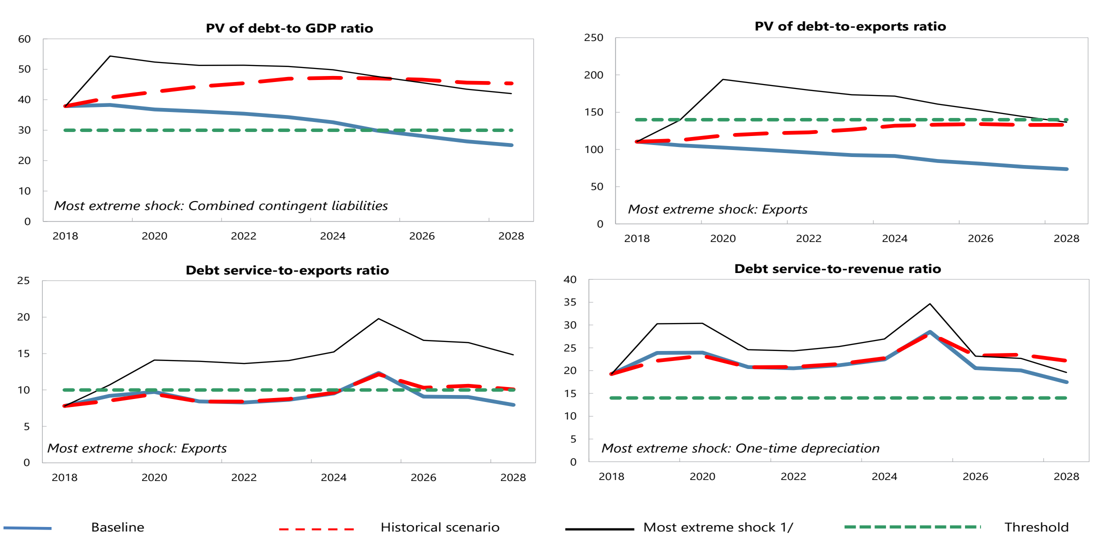
Authorities' Views

17. The authorities highlighted that they have put in place various measures to reduce risks associated with debt sustainability to improve the debt outlook. The authorities acknowledged that their debt burden is high. Policies such as suspending new investment projects combined with the new Procurement Law and intentions to borrow new debt on concessional terms will reduce the debt burden. The authorities are also taking stock of all existing projects with the view of prioritizing them. The new Public Debt Management Law now consolidates the Ministry of Finance's oversight powers over debt through budgeting and project approval processes. Previously, this process of contracting debt was fragmented amongst line ministries and sub-national governments. The authorities have started to review the power sector related debt and have instituted a moratorium on new hydropower projects. They clarified that revenues generated from these projects are expected to be stable and cover related debt service. In addition, they indicated that the process of diversifying the electricity export market is underway and new power purchase agreements with Vietnam, Cambodia and Myanmar are being negotiated. They also emphasized that several power projects are currently under tax exemptions and upon the expiration of the concession period, revenues and dividends are expected to be much stronger. They reiterated that the debt is on a sustainable path and will be manageable given all the measures they have been undertaking. They noted that the calibration of risks included in the contingent liability scenario are on the higher side.

Box 2. Customized Scenario – Power Sector Related Debt

Lao P.D.R. has a strong track record of implementing energy exports from mega- power projects supported by power purchase agreements (PPAs) and it maintains close economic ties with a diversified investor base, including from many neighboring countries. These neighboring countries, and primarily Thailand, are not only a source of financing but are also consumers of energy exports. The government's participation in large-size power exporting Independent Power Producers (IPPs) is via equity financing through SOEs which hold equity shares ranging between 15 and 60 percent in these projects. The main off-taker of power exports from these IPPs is the Electricity Generation Authority of Thailand (EGAT). Long-term PPAs with EGAT, a financially creditworthy electric utility company, have allowed IPP developers to access long-term affordable financing from a highly diversified creditor base including multilateral, bilateral, and a range of commercial creditors. Currently, over 70 percent of total power generation capacity is exported to the guaranteed Thai market. Lao P.D.R. is working to expand its power export market and is starting to export to Cambodia, Myanmar, and Vietnam. SOEs service the on-lent portion of the debt out of export revenues through direct transfers to the government budget, before dividends and profit taxes are paid out. Completed mega IPP projects with long term PPAs, a guaranteed and growing power export market, strong project cashflows, the power sector SOEs directly servicing, on average, more than 20 percent of the total external debt indicate the 'self-sustaining' nature of export related power sector debt. Thus, under the customized scenario, the on-lent portion of the PPG debt to two power sector SOEs with export exposures to EGAT guaranteed by PPAs have been excluded from the public debt, which is equivalent to 10 percent of total public debt. Forthcoming disbursements are also adjusted down by 10 percent to account for the assumption that these on-lending activities covered by PPAs is likely to continue between the central government and power sector SOEs in the future. The debt ratios improve significantly over the projection period, once this portion of power sector related debt is excluded. And while the debt-service to revenue ratio continues to breach its threshold for most of the projection period, measures such as reviewing current tax exemptions for power projects, winding down of tax-exemption periods and implementing the MTRS are expected to significantly strengthen revenues, improving the outlook of this ratio. To note, this is a conservative assumption given that the total on-lending to the power sector from the central budget is 35 percent of total external public debt.

Figure 1. Lao PDR: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2018-2028



Box 2. Customized Scenario – Power Sector Related Debt (Concluded)

Figure 2. Lao P.D.R.: Indicators of Public Debt Under Alternative Scenarios, 2018–28

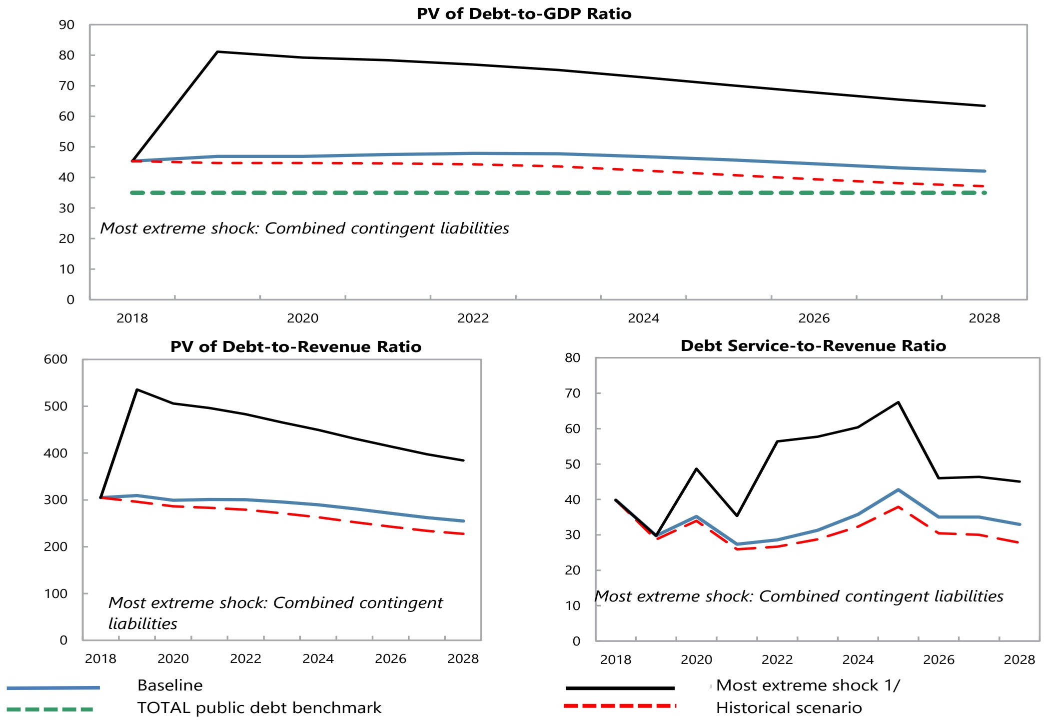


Figure 2. Lao P.D.R.: Indicators of Public Debt Under Alternative Scenarios, 2018–28

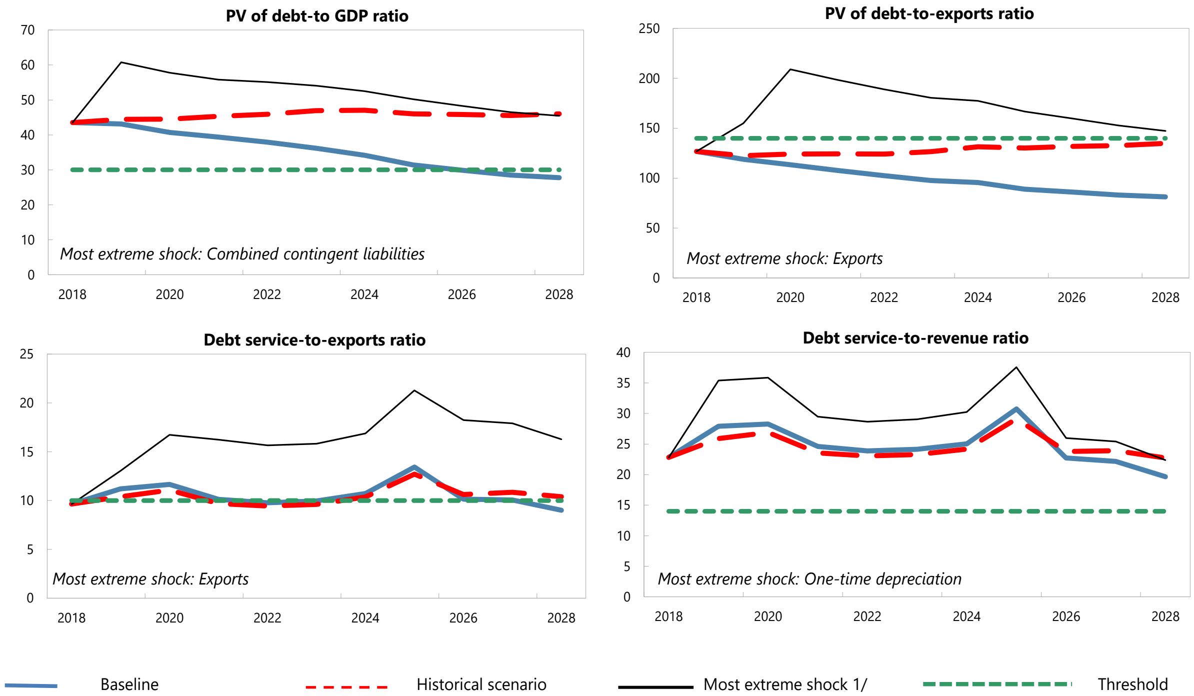
Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	53%	53%
Domestic medium and long-term	46%	46%
Domestic short-term	1%	1%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	2.7%	2.7%
Avg. maturity (incl. grace period)	22	22
Avg. grace period	5	5
Domestic MLT debt		
Avg. real interest rate on new borrowing	1.8%	1.8%
Avg. maturity (incl. grace period)	6	6
Avg. grace period	2	2
Domestic short-term debt		
Avg. real interest rate	-0.1%	-0.1%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2028. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Figure 1. Lao P.D.R.: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2018–2028 1/ 2/



Customization of Default Settings		
	Size	Interactions
Tailored Stress		
Combined CL	Yes	
Natural disaster	Yes	No
Commodity price	n.a.	n.a.
Market financing	No	No

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing assumptions on additional financing needs resulting from the stress tests*		
	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	2.7%	5.0%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	22	20
Avg. grace period	5	5

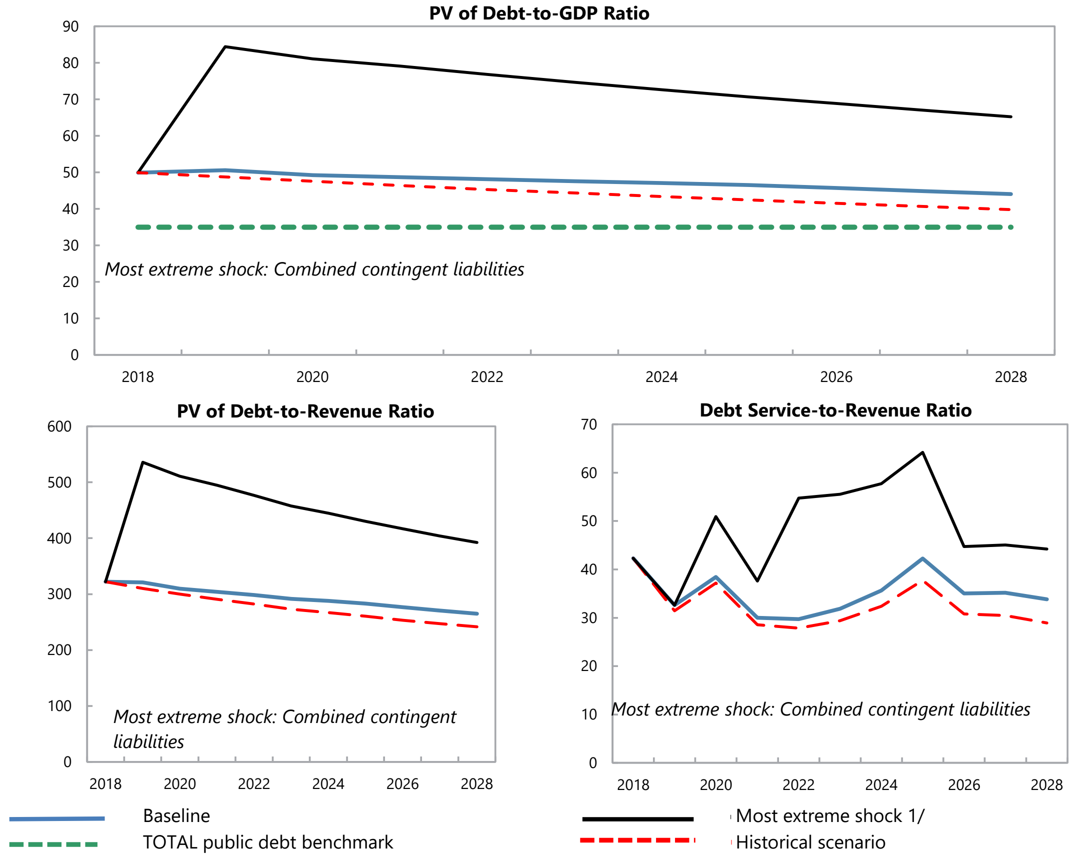
* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2028. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Figure 2. Lao P.D.R.: Indicators of Public Debt Under Alternative Scenarios, 2018-28 1/



Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	58%	58%
Domestic medium and long-term	41%	41%
Domestic short-term	1%	1%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	2.7%	2.7%
Avg. maturity (incl. grace period)	22	22
Avg. grace period	5	5
Domestic MLT debt		
Avg. real interest rate on new borrowing	1.8%	1.8%
Avg. maturity (incl. grace period)	6	6
Avg. grace period	2	2
Domestic short-term debt		
Avg. real interest rate	-0.1%	-0.1%

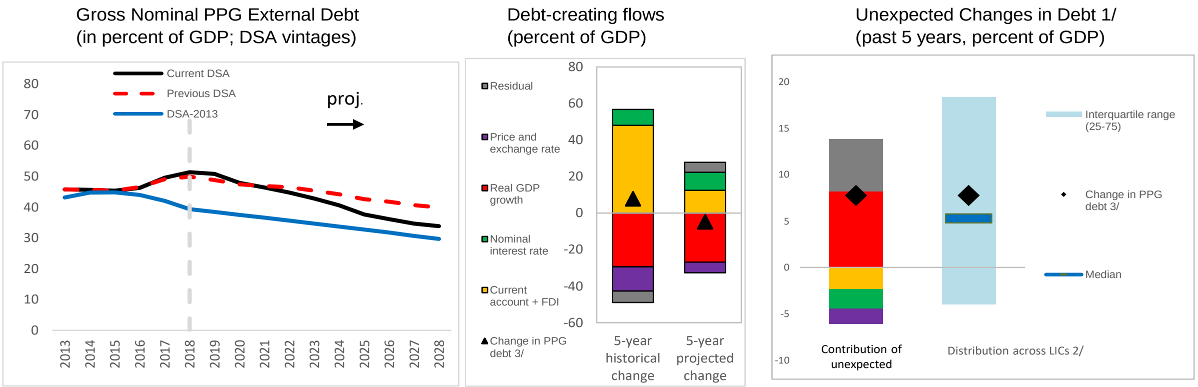
* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

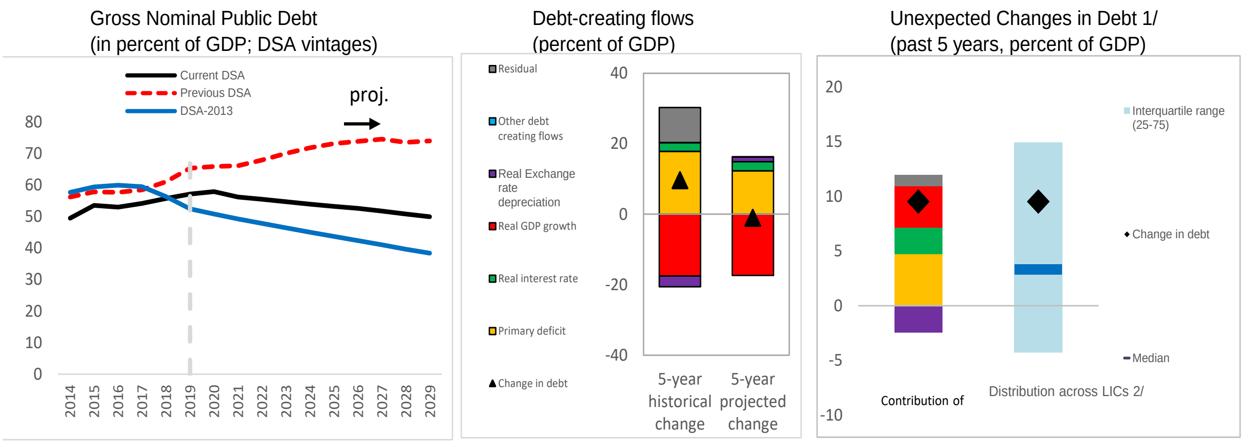
1/ The most extreme stress test is the test that yields the highest ratio in or before 2028. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Figure 3. Lao P.D.R.: Drivers of Debt Dynamics—Baseline Scenario

External Debt



Public Debt



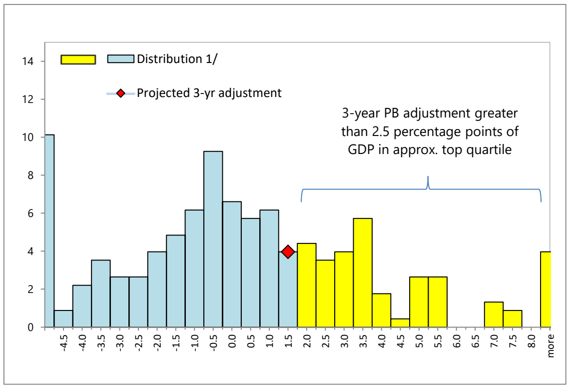
1/ Difference between anticipated and actual contributions on debt ratios.

2/ Distribution across LICs for which LIC DSAs were produced.

3/ Given the relatively low private external debt for average low-income countries, a ppt change in PPG external debt should be largely explained by the drivers of the external debt dynamics equation.

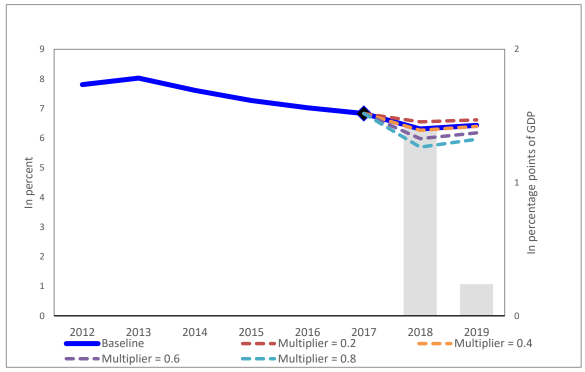
Figure 4. Lao P.D.R.: Realism Tools

3-Year Adjustment in Primary Balance
(Percentage points of GDP)



1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

Fiscal Adjustment and Possible Growth Paths 1/



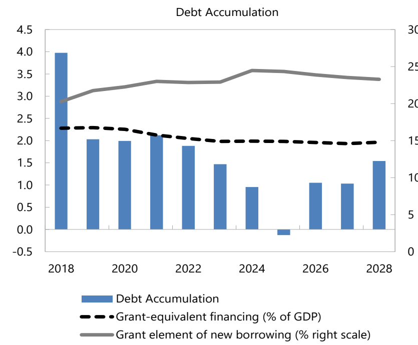
1/ Bars refer to annual projected fiscal adjustment (right-hand side scale) and lines show possible real GDP growth paths under different fiscal multipliers (left-hand side scale).

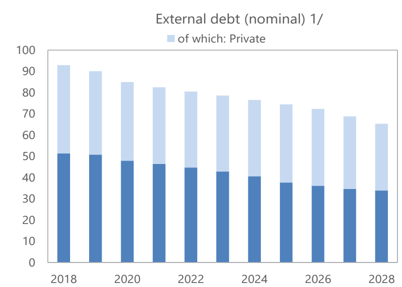
Table 1. Lao P.D.R.: External Debt Sustainability Framework, Baseline Scenario, 2017–38

(In percent of GDP, unless otherwise indicated)

	Actual	Projections								Average 8/	
	2017	2018	2019	2020	2021	2022	2023	2028	2038	Historical	Projections
External debt (nominal) 1/	**92.6**	**92.9**	**90.0**	**84.9**	**82.5**	**80.5**	**78.6**	**65.3**	**45.9**	**88.2**	**78.8**
of which: public and publicly guaranteed (PPG)	**49.6**	**51.4**	**50.8**	**47.9**	**46.4**	**44.7**	**42.8**	**33.9**	**37.8**	**45.9**	**42.4**
Change in external debt	3.7	0.3	-2.9	-5.1	-2.4	-2.0	-1.9	-3.5	-2.0		
Identified net debt-creating flows	**-5.3**	**-1.4**	**-1.2**	**-0.4**	**-0.8**	**-0.7**	**-0.2**	**-0.4**	**-1.5**	**-2.4**	**-0.4**
Non-interest current account deficit	**8.5**	**9.8**	**9.6**	**10.1**	**9.4**	**9.2**	**8.0**	**7.6**	**4.4**	**16.5**	**8.9**
Deficit in balance of goods and services	9.9	10.2	10.0	9.7	9.2	8.6	7.9	7.3	4.8	**17.8**	**8.7**
Exports	35.1	34.3	36.3	35.9	36.5	37.0	37.1	34.1	29.6		
Imports	45.1	44.5	46.3	45.6	45.7	45.6	45.0	41.4	34.4		
Net current transfers (negative = inflow)	-1.9	-1.3	-1.3	-1.2	-1.1	-1.0	-1.5	-0.9	-0.8	**-2.2**	**-1.1**
of which: official	-1.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.6	-0.3	-0.4		
Other current account flows (negative = net inflow)	0.5	1.0	0.9	1.5	1.3	1.6	1.7	1.2	0.4	**0.8**	**1.3**
Net FDI (negative = inflow)	**-9.9**	**-7.8**	**-7.6**	**-7.1**	**-6.7**	**-6.4**	**-6.1**	**-5.3**	**-4.4**	**-10.0**	**-6.3**
Endogenous debt dynamics 2/	**-3.9**	**-3.3**	**-3.2**	**-3.4**	**-3.5**	**-3.5**	**-2.1**	**-2.7**	**-1.5**		
Contribution from nominal interest rate	2.2	2.2	2.4	1.9	1.7	1.6	2.9	1.4	0.9		
Contribution from real GDP growth	-5.7	-5.5	-5.7	-5.3	-5.3	-5.1	-5.0	-4.1	-2.4		
Contribution from price and exchange rate changes	-0.3	...	...	...	...	...	...	...	...		
Residual 3/	**9.0**	**1.6**	**-1.7**	**-4.7**	**-1.6**	**-1.3**	**-1.7**	**-3.0**	**-0.5**	**2.5**	**-2.1**
of which: exceptional financing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Sustainability indicators											
PV of PPG external debt-to-GDP ratio	**42.2**	**43.5**	**43.1**	**40.7**	**39.3**	**37.9**	**36.2**	**27.7**	**31.1**		
PV of PPG external debt-to-exports ratio	**120.2**	**126.8**	**118.9**	**113.4**	**107.8**	**102.5**	**97.6**	**81.3**	**104.9**		
PPG debt service-to-exports ratio	**7.4**	**9.6**	**11.2**	**11.6**	**10.1**	**9.8**	**10.0**	**9.0**	**8.2**		
PPG debt service-to-revenue ratio	**17.9**	**22.8**	**27.9**	**28.3**	**24.6**	**23.9**	**24.1**	**19.7**	**13.8**		
Gross external financing need (Million of U.S. dollars)	1018.1	1812.7	2115.1	2515.5	2561.4	2736.3	3549.2	4009.0	2120.6		
Key macroeconomic assumptions											
Real GDP growth (in percent)	6.8	6.3	6.4	6.5	6.7	6.8	6.8	6.5	5.4	**7.6**	**6.6**
GDP deflator in US dollar terms (change in percent)	0.4	-0.1	-0.8	4.1	2.0	1.9	1.8	1.8	1.8	**5.7**	**1.6**
Effective interest rate (percent) 4/	2.6	2.5	2.8	2.4	2.2	2.1	3.9	2.2	2.0	**2.0**	**2.7**
Growth of exports of G&S (US dollar terms, in percent)	14.3	3.7	11.6	9.7	10.6	10.2	9.1	7.6	5.8	**14.8**	**8.0**
Growth of imports of G&S (US dollar terms, in percent)	11.0	4.8	9.9	9.4	8.9	8.6	7.2	6.6	4.4	**14.9**	**7.5**
Grant element of new public sector borrowing (in percent)	...	20.3	21.8	22.3	23.0	22.9	22.9	23.3	23.3	**...**	**23.0**
Government revenues (excluding grants, in percent of GDP)	14.5	14.5	14.6	14.8	15.0	15.1	15.3	15.6	17.6	**14.9**	**15.2**
Aid flows (in Million of US dollars) 5/	266.4	348.6	399.6	403.5	427.9	439.6	437.3	500.7	785.4		
Grant-equivalent financing (in percent of GDP) 6/	...	2.3	2.3	2.3	2.1	2.0	2.0	2.0	1.6	**...**	**2.1**
Grant-equivalent financing (in percent of external financing) 6/	...	31.0	36.9	35.9	36.1	36.7	37.5	38.2	37.9	**...**	**37.2**
Nominal GDP (Million of US dollars)	17,069	18,120	19,127	21,211	23,084	25,107	27,299	41,062	86,835		
Nominal dollar GDP growth	7.2	6.2	5.6	10.9	8.8	8.8	8.7	8.4	7.3	**13.8**	**8.3**
Memorandum items:											
PV of external debt 7/	85.3	85.0	82.4	77.7	75.5	73.7	72.0	59.2	39.2		
In percent of exports	242.9	247.9	227.1	216.5	206.8	199.3	194.2	173.5	132.2		
Total external debt service-to-exports ratio	21.1	23.4	24.9	24.7	23.1	21.8	29.8	21.9	8.2		
PV of PPG external debt (in Million of US dollars)	7205.5	7884.2	8252.3	8633.3	9082.9	9517.1	9885.8	11391.9	26974.0		
(PVt-PVt-1)/GDPt-1 (in percent)		4.0	2.0	2.0	2.1	1.9	1.5	1.5	1.8		
Non-interest current account deficit that stabilizes debt ratio	4.8	9.6	12.5	15.2	11.8	11.3	9.9	11.1	6.4		

Definition of external/domestic debt	Residency-based
Is there a material difference between the two criteria?	No





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) + Ɛα (1+r)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, ρ = growth rate of GDP deflator in U.S. dollar terms, Ɛ=nominal appreciation of the local currency, and α= share of local currency-denominated external debt in total external debt.

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

6/ 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).

7/ Assumes that PV of private sector debt is equivalent to its face value.

8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

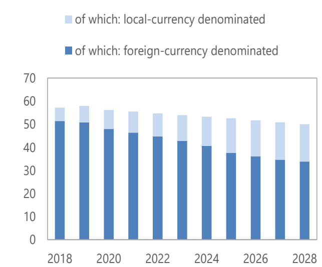
Table 2. Lao P.D.R.: Public Sector Debt Sustainability Framework, Baseline Scenario, 2017–38

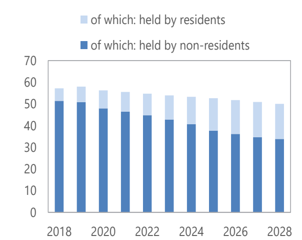
(In percent of GDP, unless otherwise indicated)

	Actual	Projections								Average 6/	
	2017	2018	2019	2020	2021	2022	2023	2028	2038	Historical	Projections
Public sector debt 1/	55.8	57.2	58.0	56.2	55.5	54.7	53.9	50.0	42.8	50.8	54.0
of which: external debt	49.6	51.4	50.8	47.9	46.4	44.7	42.8	33.9	37.8	45.9	42.4
Change in public sector debt	1.6	1.4	0.8	-1.7	-0.7	-0.8	-0.8	-0.8	-0.6		
Identified debt-creating flows	1.8	1.3	0.8	-1.7	-0.7	-0.8	-0.8	-0.9	-0.6	-2.5	-0.5
Primary deficit	4.1	2.7	2.4	2.5	2.4	2.3	2.2	1.8	1.2	2.5	2.2
Revenue and grants	16.1	15.5	15.8	15.9	16.0	16.1	16.3	16.6	18.4	18.8	16.2
of which: grants	1.6	1.0	1.2	1.1	1.0	1.0	1.0	1.0	0.8		
Primary (noninterest) expenditure	20.2	18.2	18.2	18.4	18.4	18.4	18.5	18.4	19.6	21.2	18.4
Automatic debt dynamics	-2.3	-1.3	-1.7	-4.3	-3.1	-3.1	-3.0	-2.6	-1.9		
Contribution from interest rate/growth differential	-2.8	-2.7	-2.6	-3.3	-3.2	-3.1	-3.1	-2.7	-2.0		
of which: contribution from average real interest rate	0.7	0.6	0.9	0.2	0.4	0.4	0.4	0.4	0.3		
of which: contribution from real GDP growth	-3.5	-3.3	-3.5	-3.5	-3.5	-3.5	-3.5	-3.1	-2.2		
Contribution from real exchange rate depreciation	0.5	...	...	...	...	...	...	...	...		
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		
Recognition of contingent liabilities (e.g., bank recapitalization)	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		
Other debt creating or reducing flow (please specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual	-0.3	1.4	0.9	-1.0	0.0	0.0	0.1	0.1	0.1	2.5	0.2
Sustainability indicators											
PV of public debt-to-GDP ratio 2/	48.7	49.9	50.6	49.2	48.7	48.1	47.6	44.0	36.2		
PV of public debt-to-revenue and grants ratio	303.0	322.3	321.0	309.8	304.2	298.5	291.6	265.1	197.0		
Debt service-to-revenue and grants ratio 3/	32.3	42.3	32.6	38.4	30.0	29.7	31.9	33.8	18.5		
Gross financing need 4/	9.3	9.2	7.6	8.6	7.2	7.1	7.4	7.4	4.7		
Key macroeconomic and fiscal assumptions											
Real GDP growth (in percent)	6.8	6.3	6.4	6.5	6.7	6.8	6.8	6.5	5.4	7.6	6.6
Average nominal interest rate on external debt (in percent)	2.4	2.6	3.2	2.5	2.5	2.6	2.6	2.5	2.6	1.7	2.6
Average real interest rate on domestic debt (in percent)	3.3	5.2	4.6	0.4	1.8	1.9	1.8	1.5	1.6	2.3	2.2
Real exchange rate depreciation (in percent, + indicates depreciation)	1.1	...	...	...	...	...	...	...	...	-3.4	...
Inflation rate (GDP deflator, in percent)	1.9	1.9	1.2	5.3	3.1	3.0	3.0	3.0	3.0	4.1	2.9
Growth of real primary spending (deflated by GDP deflator, in percent)	8.5	-4.2	6.6	7.7	6.7	6.8	7.3	6.5	7.3	12.1	5.7
Primary deficit that stabilizes the debt-to-GDP ratio 5/	2.5	1.3	1.7	4.3	3.1	3.1	3.0	2.6	1.9	3.4	2.7
PV of contingent liabilities (not included in public sector debt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Definition of external/domestic debt	**Residency-based**
Is there a material difference between the two criteria?	**No**

Public sector debt 1/





Sources: Country authorities; and staff estimates and projections.

1/ Coverage of debt: The central government, central bank, government-guaranteed debt . Definition of external debt is Residency-based.

2/ The underlying PV of external debt-to-GDP ratio under the public DSA differs from the external DSA with the size of differences depending on exchange rates projections.

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

4/ 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 and other debt creating/reducing flows.

5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio ((-): a primary surplus), which would stabilizes the debt ratio only in the year in question.

6/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

Table 3. Lao P.D.R.: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2018–28 (In percent)

	Projections 1/										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
PV of debt-to GDP ratio											
Baseline	**44**	**43**	**41**	**39**	**38**	**36**	**34**	**31**	30	29	28
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	**44**	**44**	**45**	**45**	**46**	**47**	**47**	**46**	**46**	**46**	**46**
B. Bound Tests											
B1. Real GDP growth	**44**	**43**	**41**	**40**	**38**	**37**	**35**	**32**	**30**	29	28
B2. Primary balance	**44**	**44**	**43**	**41**	**40**	**38**	**36**	**33**	**32**	**30**	29
B3. Exports	**44**	**49**	**57**	**55**	**53**	**50**	**48**	**44**	**42**	**40**	**38**
B4. Other flows 3/	**44**	**48**	**49**	**48**	**46**	**44**	**42**	**38**	**36**	**34**	**33**
B5. Depreciation	**44**	**55**	**46**	**44**	**43**	**41**	**38**	**35**	**34**	**32**	**32**
B6. Combination of B1-B5	**44**	**50**	**48**	**47**	**45**	**43**	**41**	**37**	**35**	**34**	**33**
C. Tailored Tests											
C1. Combined contingent liabilities	**44**	**61**	**58**	**56**	**55**	**54**	**53**	**50**	**48**	**47**	**45**
C2. Natural disaster	**44**	**45**	**43**	**41**	**40**	**39**	**37**	**34**	**33**	**31**	**31**
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	**44**	**48**	**46**	**44**	**43**	**41**	**39**	**35**	**34**	**32**	**31**
Threshold	30	30	30	30	30	30	30	30	30	30	30
PV of debt-to-exports ratio											
Baseline	127	119	113	108	103	98	95	89	86	83	81
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	127	123	124	124	124	127	131	130	132	133	135
B. Bound Tests											
B1. Real GDP growth	127	119	113	108	103	98	95	89	86	83	81
B2. Primary balance	127	121	119	113	107	102	100	94	91	88	86
B3. Exports	127	**155**	**209**	**199**	**189**	**180**	**178**	**167**	**160**	**153**	**147**
B4. Other flows 3/	127	131	137	130	124	118	116	109	104	100	97
B5. Depreciation	127	119	101	96	91	87	85	78	76	74	73
B6. Combination of B1-B5	127	**143**	128	**141**	134	128	126	117	113	108	105
C. Tailored Tests											
C1. Combined contingent liabilities	127	**168**	**161**	**153**	**149**	**146**	**147**	**142**	139	135	133
C2. Natural disaster	127	127	121	116	111	106	104	98	95	92	91
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	127	119	114	109	103	98	96	89	86	83	81
Threshold	140	140	140	140	140	140	140	140	140	140	140
Debt service-to-exports ratio											
Baseline	10	11	12	10	10	10	11	13	10	10	9
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	10	10	11	10	9	10	10	13	11	11	10
B. Bound Tests											
B1. Real GDP growth	10	11	12	10	10	10	11	13	10	10	9
B2. Primary balance	10	11	12	10	10	10	11	14	11	10	9
B3. Exports	10	13	17	16	16	16	17	21	18	18	16
B4. Other flows 3/	10	11	12	11	11	11	12	15	12	12	11
B5. Depreciation	10	11	12	10	9	9	10	13	9	9	8
B6. Combination of B1-B5	10	12	14	13	12	12	13	17	13	13	12
C. Tailored Tests											
C1. Combined contingent liabilities	10	11	13	12	11	11	12	15	12	12	11
C2. Natural disaster	10	12	12	11	10	10	11	14	11	11	9
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	10	11	12	11	11	11	12	14	10	9	9
Threshold	10	10	10	10	10	10	10	10	10	10	10
Debt service-to-revenue ratio											
Baseline	**23**	**28**	**28**	**25**	**24**	**24**	**25**	**31**	**23**	**22**	**20**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	**23**	**26**	**27**	**24**	**23**	**23**	**24**	**29**	**24**	**24**	**23**
B. Bound Tests											
B1. Real GDP growth	**23**	**28**	**29**	**25**	**24**	**24**	**25**	**31**	**23**	**22**	**20**
B2. Primary balance	**23**	**28**	**29**	**25**	**24**	**25**	**26**	**31**	**24**	**23**	**20**
B3. Exports	**23**	**28**	**31**	**30**	**29**	**29**	**30**	**37**	**31**	**30**	**27**
B4. Other flows 3/	**23**	**28**	**30**	**27**	**26**	**27**	**27**	**34**	**27**	**26**	**23**
B5. Depreciation	**23**	**35**	**36**	**29**	**29**	**29**	**30**	**38**	**26**	**25**	**22**
B6. Combination of B1-B5	**23**	**29**	**31**	**28**	**27**	**27**	**28**	**35**	**27**	**26**	**23**
C. Tailored Tests											
C1. Combined contingent liabilities	**23**	**28**	**32**	**28**	**27**	**28**	**29**	**34**	**26**	**26**	**23**
C2. Natural disaster	**23**	**28**	**29**	**25**	**24**	**24**	**25**	**31**	**23**	**23**	**20**
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	**23**	**28**	**29**	**26**	**26**	**27**	**28**	**31**	**22**	**21**	**19**
Threshold	14	14	14	14	14	14	14	14	14	14	14

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the threshold.
2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
3/ Includes official and private transfers and FDI.

Table 4. Lao P.D.R.: Sensitivity Analysis for Key Indicators of Public Debt 2018–28 (In percent)

	Projections 1/										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	PV of Debt-to-GDP Ratio										
Baseline	**50**	**51**	**49**	**49**	**48**	**48**	**47**	**47**	**46**	**45**	**44**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	**50**	**49**	**48**	**46**	**45**	**44**	**43**	**42**	**42**	**41**	**40**
B. Bound Tests											
B1. Real GDP growth	**50**	**51**	**50**	**50**	**49**	**49**	**49**	**48**	**47**	**47**	**46**
B2. Primary balance	**50**	**52**	**52**	**52**	**51**	**50**	**49**	**49**	**48**	**47**	**46**
B3. Exports	**50**	**56**	**64**	**63**	**62**	**61**	**60**	**58**	**57**	**55**	**53**
B4. Other flows 3/	**50**	**55**	**58**	**57**	**56**	**55**	**55**	**54**	**52**	**51**	**49**
B5. Depreciation	**50**	**62**	**58**	**56**	**53**	**51**	**49**	**47**	**45**	**43**	**41**
B6. Combination of B1-B5	**50**	**49**	**49**	**48**	**47**	**46**	**45**	**44**	**43**	**42**	**41**
C. Tailored Tests											
C1. Combined contingent liabilities	**50**	**84**	**81**	**79**	**77**	**75**	**73**	**71**	**69**	**67**	**65**
C2. Natural disaster	**50**	**54**	**53**	**52**	**52**	**51**	**51**	**50**	**49**	**49**	**48**
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	**50**	**51**	**49**	**49**	**48**	**48**	**47**	**47**	**46**	**45**	**44**
TOTAL public debt benchmark	35	35	35	35	35	35	35	35	35	35	35
	PV of Debt-to-Revenue Ratio										
Baseline	322	321	310	304	298	292	288	283	277	271	265
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	322	310	300	291	282	273	267	260	254	247	242
B. Bound Tests											
B1. Real GDP growth	322	323	315	311	306	300	297	293	287	282	277
B2. Primary balance	322	329	328	322	315	307	303	297	290	283	277
B3. Exports	322	354	401	391	382	371	365	356	343	331	320
B4. Other flows 3/	322	349	364	356	348	339	334	326	316	306	298
B5. Depreciation	322	395	368	349	332	315	302	288	274	261	249
B6. Combination of B1-B5	322	313	307	299	292	283	277	270	262	254	246
C. Tailored Tests											
C1. Combined contingent liabilities	322	536	511	495	477	458	445	430	417	404	392
C2. Natural disaster	322	343	332	326	320	313	310	305	299	293	288
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	322	321	311	306	301	294	290	284	277	271	265
	Debt Service-to-Revenue Ratio										
Baseline	42	33	38	30	30	32	36	42	35	35	34
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	42	31	37	29	28	29	32	38	31	30	29
B. Bound Tests											
B1. Real GDP growth	42	33	39	30	30	33	36	43	36	36	35
B2. Primary balance	42	33	39	31	31	34	38	44	37	37	35
B3. Exports	42	33	40	34	34	36	39	47	42	42	40
B4. Other flows 3/	42	33	40	32	32	34	38	45	39	39	37
B5. Depreciation	42	35	45	36	36	38	42	50	41	41	39
B6. Combination of B1-B5	42	31	38	30	30	32	36	42	35	34	33
C. Tailored Tests											
C1. Combined contingent liabilities	42	33	51	38	55	56	58	64	45	45	44
C2. Natural disaster	42	33	40	31	32	34	38	45	37	37	36
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	42	33	39	31	32	35	38	43	34	34	33

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the benchmark.
2/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.
3/ Includes official and private transfers and FDI.