

INTERNATIONAL DEVELOPMENT ASSOCIATION
INTERNATIONAL MONETARY FUND

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Joint Bank-Fund Debt Sustainability Analysis Update

Prepared by the staffs of the International Development Association
and the International Monetary Fund¹

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Following the improvement in the country's CPIA rating, Lao P.D.R.'s risk of debt distress is reclassified from high to moderate, as all external debt distress indicators stay below policy-dependent indicative thresholds during the forecasting period under baseline assumptions, although thresholds are breached in the presence of certain shocks.² In addition, debt service ratios remain comfortably within the policy-dependent indicative thresholds even under stress conditions, due to the high level of concessionality of official borrowing. The new risk classification will have important implications for Lao P.D.R.'s borrowing capacity. While the composition of concessional funds is expected to be skewed away from grants and towards loans, the overall envelope of external resources available to the country should increase.

¹ This DSA was prepared jointly by the World Bank (WB) and IMF, in consultation with the Asian Development Bank (AsDB). The debt data underlying this exercise were provided by the Lao P.D.R. authorities, the AsDB, and the WB, combined with IMF staff's estimates.

² The low-income country debt sustainability framework (LIC DSF) recognizes that better policies and institutions allow countries to manage higher levels of debt, and thus the threshold levels for debt indicators are policy-dependent. In the LIC-DSF, the quality of a country's policies and institutions is measured by the World Bank's Country Policy and Institutional Assessment (CPIA) index and classified into three categories: strong, medium, and weak. Lao P.D.R.'s policies and institutions, as measured by the CPIA, averaged 3.29 over the past 3 years. Since its average CPIA has been above the 3.25 mark for two years in a row, Lao P.D.R.'s policy performance has been reclassified from weak to medium according to the "Staff Guidance Note on the Application of the Joint Fund-Bank Debt Sustainability Framework for Low-income Countries (www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/10/15/000333037_20081015235232/Rendered/PDF/397480BR0Box3311022610SecM200810441.pdf) and (www.imf.org/external/np/pp/eng/2010/012210.pdf). Therefore, the relevant indicative thresholds for this category are: 40 percent for the PV of debt-to-GDP ratio, 150 percent for the PV of debt-to-exports ratio, 250 percent for the PV of debt-to-revenue ratio, 20 percent for the debt service-to-exports ratio, and 20 percent for the debt service-to-revenue ratio. These thresholds are applicable to public and publicly guaranteed external debt.

I. INTRODUCTION

1. The LIC DSA for Lao P.D.R. reclassifies the risk of debt distress from high to moderate.³ Recent improvements in Lao P.D.R.'s CPIA index led to a reclassification of its policy performance from weak to moderate.⁴ Consequently, Lao P.D.R.'s indicative debt distress thresholds were raised relative to 2011 levels. These higher thresholds combined with a similar

Thresholds for External Debt (In percent)		
Threshold		
Indicator	Before	Now
Present value of debt to GDP	30	40
Present value of debt to exports	100	150
Present value of debt to revenue	200	250
Debt service to exports	15	20
Debt service to revenue 1/	25	20

Source: Lao P.D.R. authorities; and IMF and World Bank staff estimates
1/ For debt service to revenue ratio, the applicable thresholds have been reduced.

debt dynamics relative to the previous DSA led to

the risk reclassification.

2. The high level of concessionality of official borrowing keeps debt service ratios at manageable levels. In addition, public and publicly-guaranteed (PPG) external debt stock indicators are expected to remain below policy-dependent indicative thresholds throughout the entire projection period under the baseline. However, shocks to the domestic and external environment or excessively loose macroeconomic policies may push the stock of external public debt beyond sustainable levels, with some debt distress indicators breaching their respective thresholds under certain stress tests.⁵ In this regard, debt dynamics are most sensitive to large real depreciations of the kip, as external debt is predominantly denominated in foreign currency.

II. BACKGROUND AND ASSUMPTIONS

3. Lao P.D.R.'s external PPG debt remains elevated, but its burden has eased considerably in the recent past. The nominal stock of PPG debt increased from US\$3.5 billion in 2010 to US\$3.7 billion in 2011. However, high real GDP growth and the Kip's appreciation vis-à-vis the U.S. dollar contributed to a decline in the debt-to-GDP ratio from 50.3 percent of GDP to

44.4 percent of GDP in 2011. The corresponding net present value (PV) of debt at end-2011 was 29.8 percent of GDP, down from 36.6 percent of GDP in 2010. Similarly, the PV of PPG debt relative to exports declined from 85.9 percent in 2010 to 78.1 percent in 2011.

4. Approximately 56 percent of PPG debt in Lao P.D.R. is held by multilateral creditors, mainly the Asian Development Bank (AsDB—33 percent) and the International Development

³ See the joint IMF-WB DSA for 2011: IDA/SecM2011-0565 and IMF Country Report No.12/165.

⁴ Lao P.D.R.'s CPIA index was raised from 3.28 in 2010 to 3.4 in 2011.

⁵ Stress tests include sharp exchange rate depreciation, more adverse terms of additional foreign financing, and reductions in GDP growth among others shocks.

Association (IDA—18 percent). Around 38 percent of the debt is held by bilateral creditors—mainly China, India, Japan, Korea, Russia, and Thailand. Noteworthy, the importance of bilateral creditors has increased vis-à-vis multilateral ones. Albeit small, the share of nonconcessional PPG debt has increased steadily in the last several years, standing at 6.3 percent in 2011. This increase was expected given heavy investments in hydropower and electricity generation projects, including the need by the public sector to finance equity stakes.

Lao P.D.R.: Stock of Public and Publicly Guaranteed External Debt at End-2011			
	As a Share of		
	In Billions of U.S. Dollar	Total External Debt	In percent of GDP
Total	3.7	100	44.4
Multilateral	2.1	55.8	24.7
Bilateral	1.4	37.9	16.9
Commercial 1/	0.2	6.3	2.8

Source: Lao P.D.R. authorities; and IMF and World Bank staff estimates
1/ Includes direct borrowing by state-owned enterprises on nonconcessional terms.

5. The increasing presence of bilateral creditors underscores the need to strengthen debt management capacity. This is particularly important to ensure that debt sustainability considerations are taken into account when new debt is contracted. A mitigating factor for Lao P.D.R.'s external debt burden lies in the prospective returns on the hydropower and mining projects that have been financed in part by external PPG debt. While many of these projects face construction and implementation

challenges, the long-term power purchase agreements that are signed for these projects and the resulting government revenues in the form of royalties, dividends, and profit tax payments arguably reduce the risk of debt distress.

6. Recorded domestic public debt rose to 8.9 percent of GDP in 2011, up from 8.5 percent of GDP in 2010, as the central bank disbursed more loans to finance local government's off-budget infrastructure projects. Lending from the Bank of Lao P.D.R. (BoL) to local governments represents about three-quarters of the recorded total domestic debt, with the remainder inclusive of government bonds related to the recapitalization of state-owned commercial banks (SOCBs). Total PPG domestic and external debt stood at 53.2 percent of GDP in 2011, down from 58.8 percent the year before. This improvement is also driven chiefly by the combination of GDP growth and exchange rate effects. The stock of BoL's loans to local governments is projected to peak in 2012 as the BoL's quasi-fiscal operations are terminated.

Lao P.D.R.: External Public Debt Indicators at End-2011		
	Indicative thresholds	End-2011
Present value of debt, as a percent of:		
GDP	40	29.8
Exports	150	78.1
Revenue	250	182.9
Debt service, as a percent of:		
Exports	20	3.2
Revenue	20	7.5

Source: Lao P.D.R. authorities; and IMF and World Bank staff estimates

III. ASSUMPTIONS UNDERLYING THE DEBT SUSTAINABILITY ANALYSIS

7. Box 1 summarizes the medium-term macroeconomic framework underlying the DSA. The baseline scenario—which is based on

current policies—projects annual average growth of 7.9 percent between 2012 and 2017, in line with the authorities' targets. Growth would be

supported by the strong performance of exports, especially from the resource sector, as well as by buoyant domestic activity, in particular agriculture, manufacturing, and services. Improvements to the

Lao P.D.R. Macroeconomic Assumptions: Comparison with 2011 (Average over the 20 year projection horizon)		
	2011 DSA	2012 DSA
GDP growth	6.7	6.8
GDP deflator in US dollar terms (in percent)	3.3	2.1
Non-interest current account deficit	11.4	11.8
Primary deficit	0.3	0.7

Source: Lao P.D.R. authorities, and IMF and World Bank staff estimates.

business climate and the continued transition towards a market-based economy will also contribute to steady and more broad-based growth in Lao P.D.R.

8. External financing is assumed to remain largely on concessional terms over the medium term. As Lao P.D.R. graduates from its low-income country status over the longer term, grant financing is expected to decline relative to loans from bilateral creditors as well as from commercial sources.

IV. DEBT SUSTAINABILITY

A. External Debt Sustainability Analysis

9. Contrary to the previous DSAs, the PV of debt-to-GDP ratio is not expected to cross the policy-dependent indicative thresholds at any point during the forecasting period under baseline conditions (Figure 1 and Table 1). This marked improvement is driven by the increase in the indicative threshold, as Lao P.D.R.'s policy performance was raised from weak to moderate due to its improved CPIA index of 3.4 in 2011. Similarly to last year's DSA, all three external debt stock indicators are projected to remain basically flat until about 2018, as large projected disbursements are expected to be counteracted by a combination of debt repayment and high GDP growth during the next several years. Also in line with the previous DSA, debt service ratios fall comfortably below policy-dependent thresholds during the entire forecasting period.

10. Exchange rate and shocks to the cost of new loans present the most important risks to external debt sustainability. Table 3 and Figure 1 illustrate how a one-off 30 percent depreciation of the kip vis-à-vis the U.S. dollar would lead to a sharp rise in the PV of the debt-to-GDP and the PV of debt-to-revenues, although

in the last case the new policy-dependent threshold is not breached. A rise in the cost of additional financing (by 200 basis points relative to the baseline) would increase the PV of debt-to-exports ratio by more than 30 percentage points in the long run relative to the baseline. However, even under this extreme scenario, there would be no breaches of the corresponding threshold, contrary to the results in the previous DSA when policy performance was still rated as weak. Hence, improved policy performance reduced the vulnerability of Lao P.D.R.'s external debt to potential shocks to the cost of public funds.

11. Debt dynamics continue to be markedly worse under an alternative scenario in which key variables are at their historical averages. Through 2015, debt dynamics are more favorable under this historical scenario – which takes into account the appreciation of the kip relative to the U.S. dollar experienced during

2002–2011.⁶ In later years, this effect is outweighed by the higher historical average of the current account deficit (14.7 percent of GDP per annum compared to 10.0 percent of GDP per annum in the baseline), and the lower historical

⁶ The kip appreciated 3 percent per year on average during this period.

Box 1: Baseline Scenario—Underlying Assumptions (2012–32)

The baseline macroeconomic framework assumes that the economy will be underpinned by further development of Lao P.D.R.'s potential in hydropower and mining, supported by continued reforms aimed at transitioning to a market economy and the strengthening of macroeconomic policies.

Real GDP growth is projected to average 7.9 percent between 2012–17. The near-term outlook is boosted by expanding production of mining and hydropower, with the (US\$3.7 billion) Hongsa Lignite mining and power station expected to start operations in 2015–16. In addition, the outlook for tourism and agriculture is favorable, buoyed by domestic demand and strong FDI inflows. Over the longer term, assumed structural reforms would create a better environment for private investment, broadening the sources of growth. Real GDP is expected to moderate to 6.5 percent on average during 2018–32, as production in the resource sector reaches maturity. Over time, the share of agriculture in GDP is expected to decline, as the transition to a market based economy is accompanied by the rising importance of the industry and services sectors. Graduation from low-income status could be achieved in the second half of the projection period.

Inflation is projected to average 5.1 percent in 2012, down from 7.6 percent in 2011, on the back of lower food and fuel price inflation. Over the medium term, inflation is expected to decline further, but it is projected to remain above 4 percent until 2017.

The balance of payments continues to be driven by developments in the resource sector, which has an important bearing both in the current account and the capital and financial account. Starting from a large deficit of 21.4 percent of GDP in 2011, the current account is projected to improve considerably in the long-term. While the nonresource current account deficit is projected to deteriorate until 2018, the resource current account is forecasted to move into surplus as early as 2016, building on the maturation of mining and hydropower projects. In this context, the assumed pick up in nonresource exports and services is driven by strengthened competitiveness and regional integration, supported by improvements in the investment climate, streamlining of business regulations, and the prevalence of trade commitments. The overall external position is expected to strengthen over time, exemplified by the gradual improvement in the international reserves position. Private capital inflows in the form of FDI are expected to remain high through the first half of the projection period as large new projects get under way before they gradually decline to a more sustainable level.

External financing is assumed to remain on largely concessional terms over the medium term. In the long-run, however, grant financing decreases with economic development.

- **Multilateral creditors:** Projected loan disbursements in the medium term are relatively low, since IDA and AsDB have a pipeline of operations financed on grant terms. Over the longer term, grant financing decreases with economic development and project loans are assumed to increase moderately.
- **Bilateral creditors:** For 2012–13, project loan disbursements also increase, as donors provide support to the government's development agenda. Over the medium and longer term, greater participation by new emerging market creditors results in an increased role for bilateral finance, including for lending purposes to state-owned enterprises.
- **Commercial creditors:** Over the medium term, commercial disbursements are relatively small, principally used to finance a portion of the government's equity stake participation in the new hydropower projects. The DSA assumes that disbursements of the government's borrowing to finance its equity stake in the Hongsa Lignite project will take place in 2014 and 2015.

Fiscal policy is projected to remain on a consolidation path, with the primary deficit declining from 2.4 percent of GDP in 2011 to 1.3 percent of GDP in 2018, before reaching 0.5 percent of GDP towards the end of the projection period. Reductions in the deficit are largely driven by expected declines in primary expenditures, since the ratio of revenues and grants to GDP are forecasted to decline from their 2012 peak starting in 2013.

Domestic debt decreases over the medium term driven by repayments of the lending to local governments from the BoL. In the long term, net external finance declines relative to GDP, and a larger share of budget deficits is financed domestically, pushing domestic debt to higher but sustainable levels.

average for FDI (4.6 percent of GDP per annum compared to 9.0 percent of GDP per annum in the baseline). These estimates indicate that the historical scenario assumes around 9 percentage points of GDP more in debt accumulation the

baseline, putting Lao P.D.R. on an unsustainable path in the long run. Therefore, a negative shock to FDI in Lao P.D.R. would force it to reduce substantially its current account deficit in order to avoid external debt distress.

B. Public Sector Debt Sustainability

12. In line with the previous DSA's projections, the PV of total PPG debt in percent of GDP and in percent of revenue are both projected to decline markedly over the long run under baseline assumptions (Figure 2 and Table 2). Domestic debt is expected to decline from 8.9 percent of GDP in 2011 to about 5.4 percent of GDP by 2017. In addition, the PV of debt-to-revenue ratio is also projected to decline during the forecasting period.

13. Public debt ratios are particularly sensitive to a kip depreciation over the medium term (Figure 2 and Table 4). Similarly to the results in the last DSA, a 30 percent real depreciation of the kip would immediately raise the PV of public debt-to-GDP and the PV of public debt-to-revenue, before both indicators start a declining trend once again. While the debt service-to-revenue ratio is relatively stable under the baseline scenario, it would increase permanently by a substantial margin if the kip were to depreciate sharply. It should be noted that this scenario is likely to overstate risks given that a significant share of GDP, including most of the resource GDP, is earned in foreign currency.

14. Public debt indicators are susceptible to the effects of contingent liabilities. The settlement of arrears and debts to contractors, related to public investment projects implemented by local governments and the recapitalization of SOCBs could lead to a rise in recorded domestic public debt. As an illustration,

the fifth bound test, which considers the effect of a 10 percent of GDP increase in other debt-creating flows, provides hints on the possible effect of a resolution of relevant contingent public liabilities.

15. Alternative scenarios show less positive debt dynamics over the longer term.

For example, in a historical scenario where real GDP growth and the primary balance are fixed at their historical averages, the PV of public debt-to-GDP ratio rises above 42 percent by 2032. If, however, the primary balance were fixed at the level projected for 2012, the PV of debt-to-GDP would be roughly unchanged in the medium term, but it would be higher relative to baseline conditions by the end of the projection period. Together, these results highlight the importance of efforts towards improving fiscal balances over time, even relative to the positive fiscal performance expected for this year.

16. The baseline scenario also assumes that the BoL will slow down its quasi-fiscal operations. Naturally, public debt dynamics could deteriorate significantly should this assumption not materialize.

V. THE AUTHORITIES' VIEWS

17. Authorities broadly agreed with the overall assessment and indicated they are supportive of the reclassification of debt distress. They expect to capitalize on the better risk classification to expand access to official resources and improve their ability to finance capital needs. In addition, the authorities agreed with staff that a better risk classification may improve access to nonconcessional loans in the future. This is important since Lao P.D.R. is expected to rely more on commercial funds as it graduates from its low-income country status over the medium term.

18. Two main sources of disagreement are the nonrecognition of US\$600 million of disbursements from China over the medium term as well as the expected exchange rate depreciation built into the framework. The authorities did not acknowledge staff's previous estimates of large disbursements of new funds from China between 2012 and 2017.⁷ In addition, they questioned staff's projections for the evolution of the kip-U.S. dollar exchange rate—driven by inflation differentials—which has an important bearing on external debt indicators.

VI. CONCLUSION

19. Due to recent improvements in policy performance, Lao P.D.R.'s risk of debt distress has been reclassified from high to moderate. The improved 2011 CPIA index moved Lao P.D.R. to the group of countries with medium rather than weak policy performance, raising its policy-dependent debt distress thresholds. Consequently, the new marks are not breached by any of the debt distress indicators under baseline conditions. Since debt dynamics are relatively similar to what was projected in the previous DSA, it is clear that the risk reclassification is driven by improvements in domestic policies and institutions.

20. These gains notwithstanding, results are still sensitive to assumptions regarding investment and performance of the resource sector. Despite long-term contracts with fixed prices for energy exports to neighboring countries, Lao P.D.R.'s economy remains exposed to fluctuations in copper and gold prices in the medium term, as well as to economic developments in its main trading partners (China, Thailand and Vietnam).⁸ Lower growth in

Lao P.D.R. and a weaker balance of payments would worsen debt dynamics. Thus, a tightening of macroeconomic policies can support external sustainability. Cautious assessment and monitoring of large-scale projects and private external debt will be required to mitigate the risks posed to external and public debt sustainability, especially if some of these projects are financed

⁷ The staff maintained the \$600 million of estimated disbursements as this was information collected by previous missions. These disbursements do not, however, result in a material change in the overall assessment of debt distress.

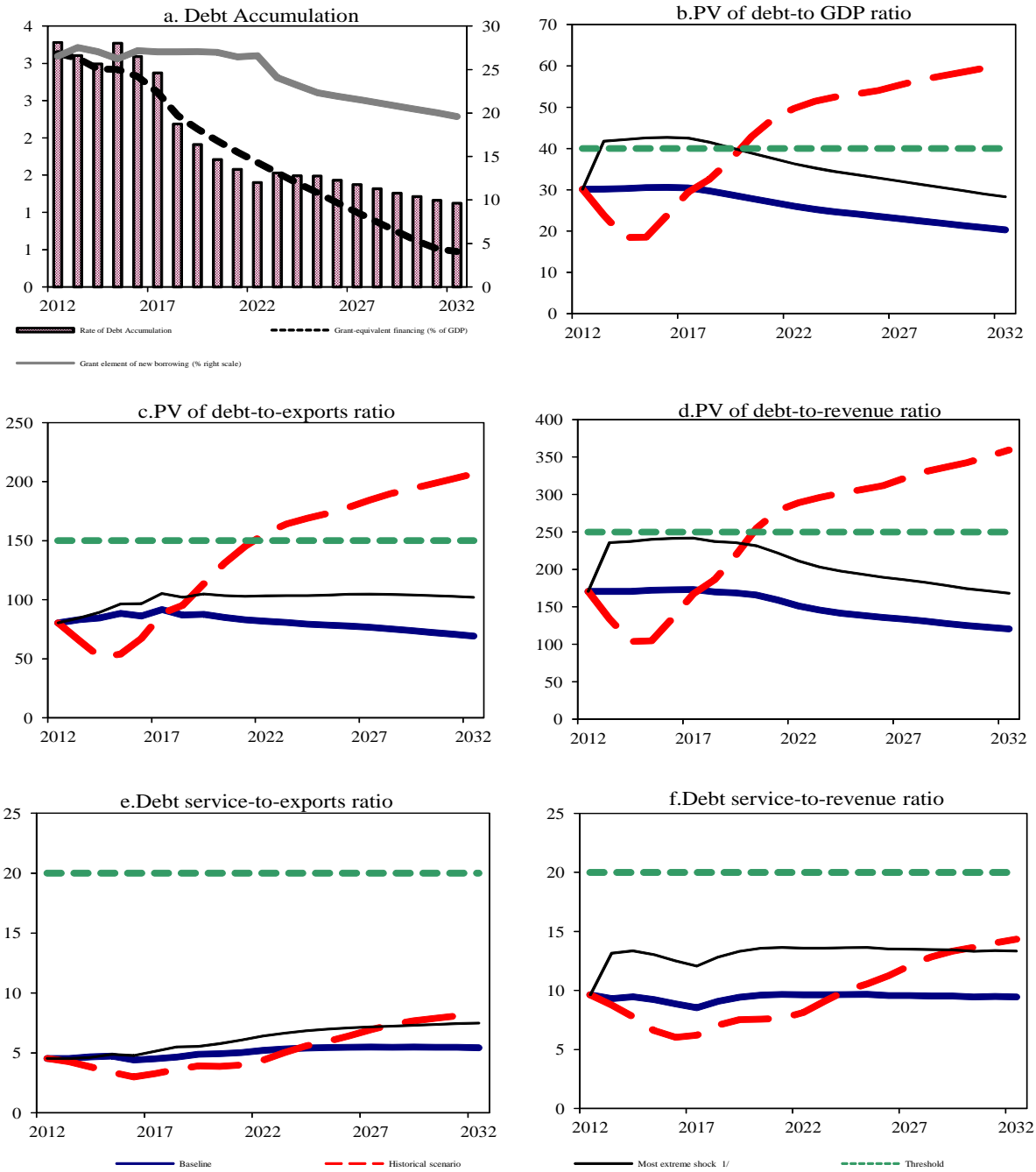
⁸ In a customized scenario where commodity prices decline by 20 percent in 2013 and 2014, debt stock indicators approach or even reach their policy-dependent thresholds, illustrating the vulnerability of Lao P.D.R. to commodity price shocks. However, this customized scenario poses less of a threat to debt dynamics than the historical scenario.

from commercial sources, such as bonds backed by future revenues.

21. External borrowing should mostly be obtained on concessional terms and fiscal and quasi-fiscal liabilities should be carefully managed, to further create buffers against vulnerabilities. Improving debt management

capacity and developing a medium-term borrowing strategy for the government could also lead to more efficient utilization of borrowed funds and more favorable debt dynamics even under stress scenarios. If these conditions were to materialize, Lao P.D.R.'s risk of debt distress could improve even further.

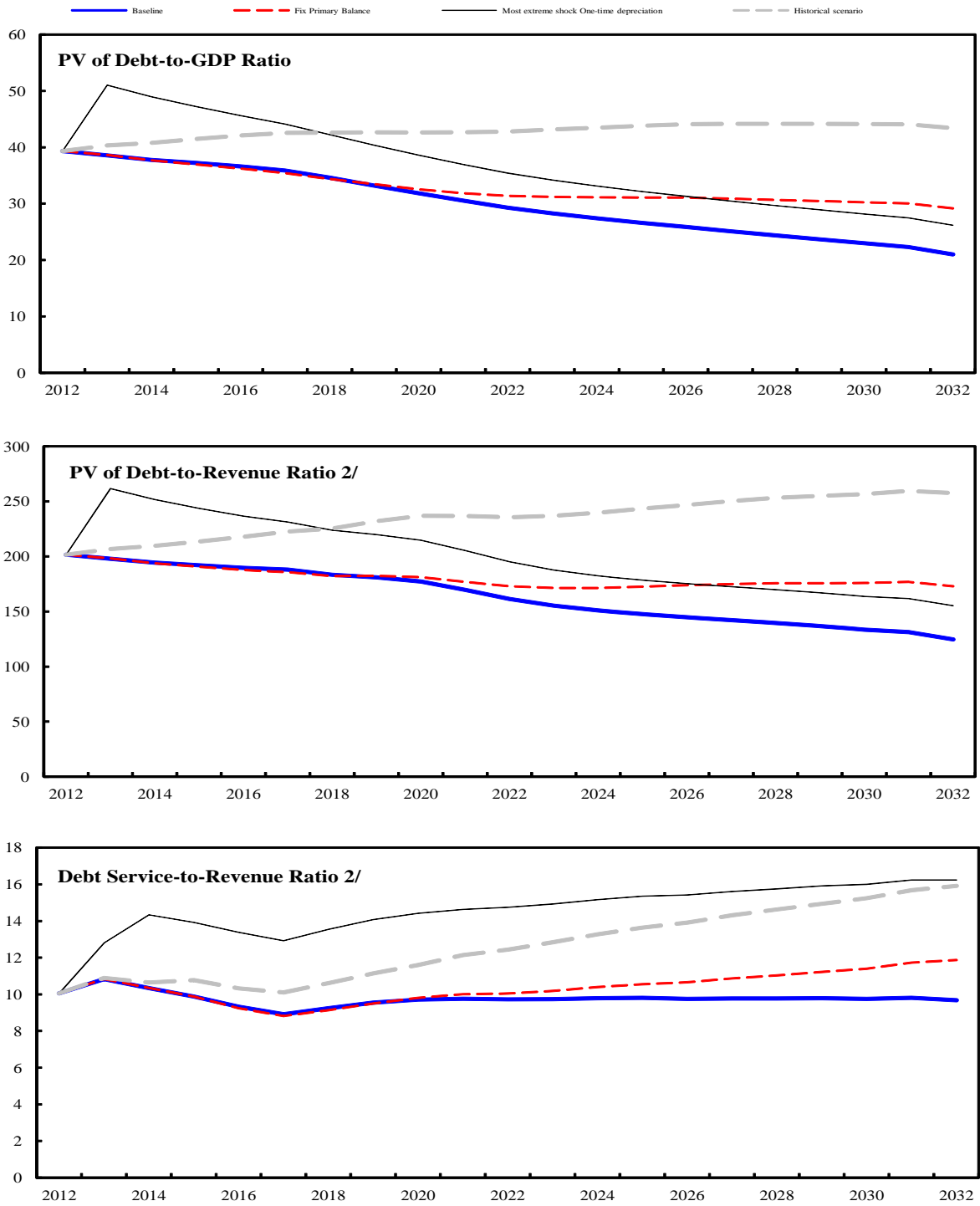
Figure 1. Lao PDR: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2012-2032 1/



Sources: Country authorities; and staff estimates and projections.

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

Figure 2.Lao PDR: Indicators of Public Debt Under Alternative Scenarios, 2012-2032 1/



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

Table 2. Lao PDR: Public Sector Debt Sustainability Framework, Baseline Scenario, 2009–2032

(In percent of GDP, unless otherwise indicated)

	Actual			Average	Standard Deviation ^{1/}	Projections									
	2009	2010	2011			2012	2013	2014	2015	2016	2017	2012–17 Average		2022	2032	2018–32 Average
Public sector debt 2/	63.1	58.8	53.2			53.4	52.1	50.9	50.0	49.0	47.8		38.4	26.7	
o/w foreign-currency denominated	56.0	50.3	44.3			44.1	43.7	43.4	43.3	43.0	42.4		35.1	26.0	
Change in public sector debt	4.9	-4.2	-5.6			0.2	-1.2	-1.2	-0.9	-1.0	-1.2		-1.8	-1.5	
Identified debt-creating flows	4.9	-8.0	-6.2			-2.7	-3.0	-2.3	-2.3	-2.3	-2.2		-2.4	-1.3	
Primary deficit	6.1	3.7	2.4	3.3	1.2	1.4	1.3	1.6	1.6	1.5	1.5	1.5	0.3	0.4	0.4
Revenue and grants	17.9	18.1	18.4			19.5	19.5	19.4	19.4	19.3	19.1		18.2	16.9	
of which: grants	2.3	2.3	2.1			1.9	1.8	1.7	1.7	1.6	1.5		1.0	0.0	
Primary (noninterest) expenditure	24.1	21.8	20.8			20.9	20.8	21.1	21.0	20.8	20.5		18.4	17.2	
Automatic debt dynamics	-1.0	-11.7	-8.6			-4.1	-4.2	-3.9	-3.9	-3.8	-3.7		-2.7	-1.6	
Contribution from interest rate/growth differential	-3.8	-5.0	-5.3			-4.1	-3.9	-3.7	-3.7	-3.7	-3.6		-2.5	-1.5	
of which: contribution from average real interest rate	0.3	-0.3	-0.9			0.0	0.1	0.1	0.0	0.0	0.0		0.0	0.1	
of which: contribution from real GDP growth	-4.1	-4.7	-4.4			-4.1	-4.0	-3.7	-3.7	-3.7	-3.5		-2.5	-1.6	
Contribution from real exchange rate depreciation	2.8	-6.7	-3.3			0.0	-0.3	-0.2	-0.2	-0.1	-0.1		...	...
Other identified debt-creating flows	-0.3	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.3	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	-0.1	3.8	0.6			2.9	1.7	1.1	1.4	1.3	1.1		0.7	-0.3	
Other Sustainability Indicators															
PV of public sector debt	...	...	38.7			39.3	38.6	37.8	37.2	36.6	35.9		29.3	21.0	
o/w foreign-currency denominated	...	...	29.8			30.1	30.2	30.3	30.5	30.6	30.5		26.0	20.3	
o/w external	...	...	29.8			30.1	30.2	30.3	30.5	30.6	30.5		26.0	20.3	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...
Gross financing need 3/	9.2	6.6	4.8			4.5	4.8	5.7	5.4	5.1	4.8		3.1	2.6	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	210.5			201.6	197.9	194.3	192.0	189.8	188.1		161.4	124.7	
PV of public sector debt-to-revenue ratio (in percent)	...	...	237.4			222.8	217.8	212.8	210.1	206.9	204.1		170.4	124.8	
o/w external 4/	...	...	182.9			170.7	170.6	170.7	172.3	173.0	173.4		151.4	120.6	
Debt service-to-revenue and grants ratio (in percent) 5/	10.2	10.3	7.2			10.1	10.8	10.3	9.9	9.3	8.9		9.7	9.7	
Debt service-to-revenue ratio (in percent) 5/	11.7	11.8	8.1			11.1	11.9	11.3	10.8	10.2	9.7		10.3	9.7	
Primary deficit that stabilizes the debt-to-GDP ratio	1.3	7.9	8.1			1.2	2.5	2.8	2.5	2.5	2.6		2.0	1.9	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	7.5	8.1	8.0	7.5	0.7	8.3	8.0	7.7	7.8	7.9	7.8	7.9	6.7	5.9	6.5
Average nominal interest rate on forex debt (in percent)	0.9	1.4	0.7	0.9	0.3	1.5	1.5	1.7	1.7	1.7	1.7	1.6	1.7	2.1	1.8
Average real interest rate on domestic debt (in percent)	8.5	-7.0	-6.8	2.1	10.0	-1.2	-0.6	-0.5	-0.6	-0.5	-0.7	-0.7	-0.9	-1.3	-0.8
Real exchange rate depreciation (in percent, + indicates depreciation)	5.6	-12.9	-7.2	-6.7	7.7	-0.1	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-4.3	10.0	8.9	8.2	5.4	4.7	6.5	5.0	4.9	4.4	4.4	5.0	4.4	4.4	4.4
Growth of real primary spending (deflated by GDP deflator, in percent)	0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	26.5	27.5	27.1	26.2	27.2	27.0	26.9	26.6	19.6	...

Sources: Country authorities; and staff estimates and projections.

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

2/ [Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.]

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

4/ Revenues excluding grants.

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

Table 3.Lao PDR: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012–2032									
(In percent)									
	Projections							2022	2032
	2012	2013	2014	2015	2016	2017			
PV of debt-to GDP ratio									
Baseline	30	30	30	31	31	30	26	20	
A. Alternative Scenarios									
A1. Key variables at their historical averages in 2012-2032 1/	30	24	18	19	24	29	50	61	
A2. New public sector loans on less favorable terms in 2012-2032 2	30	31	32	33	34	35	33	30	
B. Bound Tests									
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	30	30	30	31	31	31	26	20	
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	30	31	34	34	34	33	28	21	
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	30	30	30	30	30	30	25	20	
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	30	34	38	37	37	37	30	21	
B5. Combination of B1-B4 using one-half standard deviation shocks	30	31	29	30	30	29	25	19	
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	30	42	42	43	43	43	36	28	
PV of debt-to-exports ratio									
Baseline	80	83	85	88	86	92	82	69	
A. Alternative Scenarios									
A1. Key variables at their historical averages in 2012-2032 1/	80	66	51	54	67	88	156	207	
A2. New public sector loans on less favorable terms in 2012-2032 2	80	84	89	96	97	105	103	102	
B. Bound Tests									
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	80	81	83	87	85	90	81	68	
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	80	89	103	108	104	110	96	78	
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	80	81	83	87	85	90	81	68	
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	80	93	105	108	104	110	94	72	
B5. Combination of B1-B4 using one-half standard deviation shocks	80	83	82	85	83	88	78	65	
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	80	81	83	87	85	90	81	68	
PV of debt-to-revenue ratio									
Baseline	171	171	171	172	173	173	151	121	
A. Alternative Scenarios									
A1. Key variables at their historical averages in 2012-2032 1/	171	135	104	105	135	167	289	359	
A2. New public sector loans on less favorable terms in 2012-2032 2	171	173	180	188	194	199	191	178	
B. Bound Tests									
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	171	169	172	174	174	175	153	122	
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	171	174	189	190	190	189	162	122	
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	171	167	166	168	169	169	148	118	
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	171	192	212	211	210	208	174	126	
B5. Combination of B1-B4 using one-half standard deviation shocks	171	173	166	167	168	167	145	113	
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	171	236	237	240	241	242	211	168	

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

(In percent)

	Debt service-to-exports ratio							
Baseline	5	5	5	5	4	5	5	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	5	4	4	3	3	3	4	8
A2. New public sector loans on less favorable terms in 2012-2032 2	5	5	5	5	5	5	6	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	5	5	5	5	4	5	5	5
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	5	5	5	5	5	5	6	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	5	5	5	5	4	5	5	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	5	5	5	5	5	5	6	6
B5. Combination of B1-B4 using one-half standard deviation shocks	5	4	4	5	4	4	5	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	5	5	5	5	4	5	5	5
	Debt service-to-revenue ratio							
Baseline	10	9	9	9	9	9	10	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	10	9	8	7	6	6	8	14
A2. New public sector loans on less favorable terms in 2012-2032 2	10	9	9	10	10	10	12	13
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	10	9	10	9	9	9	10	10
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	10	9	10	10	9	9	11	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	10	9	9	9	9	8	10	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	10	9	10	10	10	9	12	10
B5. Combination of B1-B4 using one-half standard deviation shocks	10	9	9	9	8	8	9	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	10	13	13	13	13	12	14	13
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	23	23	23	23	23	23	23	23

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 an offsetting adjustment in import levels).

4/ Includes official and private transfers and FDI.

5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.

6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 4. Lao PDR: Sensitivity Analysis for Key Indicators of Public Debt 2012–2032

	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
PV of Debt-to-GDP Ratio								
Baseline	39	39	38	37	37	36	29	21
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	39	40	41	41	42	43	43	43
A2. Primary balance is unchanged from 2012	39	39	38	37	36	35	31	29
A3. Permanently lower GDP growth 1/	39	39	38	38	37	36	31	25
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	39	39	39	39	38	38	32	25
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	39	41	42	42	41	40	32	23
B3. Combination of B1-B2 using one half standard deviation shocks	39	41	42	41	41	40	33	25
B4. One-time 30 percent real depreciation in 2013	39	51	49	47	46	44	35	26
B5. 10 percent of GDP increase in other debt-creating flows in 2013	39	46	45	44	43	42	34	23
PV of Debt-to-Revenue Ratio 2/								
Baseline	202	198	194	192	190	188	161	125
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	202	207	210	214	218	223	236	258
A2. Primary balance is unchanged from 2012	202	198	194	191	188	186	173	173
A3. Permanently lower GDP growth 1/	202	198	195	193	192	191	169	147
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	202	201	201	200	199	198	177	149
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	202	211	218	214	211	208	177	134
B3. Combination of B1-B2 using one half standard deviation shocks	202	210	216	213	211	209	183	148
B4. One-time 30 percent real depreciation in 2013	202	262	252	244	237	231	195	155
B5. 10 percent of GDP increase in other debt-creating flows in 2013	202	237	232	227	223	219	186	139
Debt Service-to-Revenue Ratio 2/								
Baseline	10	11	10	10	9	9	10	10
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	10	11	11	11	10	10	12	16
A2. Primary balance is unchanged from 2012	10	11	10	10	9	9	10	12
A3. Permanently lower GDP growth 1/	10	11	10	10	9	9	10	11
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	10	11	11	10	10	9	10	11
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	10	11	11	11	11	9	11	10
B3. Combination of B1-B2 using one half standard deviation shocks	10	11	11	11	10	10	11	11
B4. One-time 30 percent real depreciation in 2013	10	13	14	14	13	13	15	16
B5. 10 percent of GDP increase in other debt-creating flows in 2013	10	11	11	13	10	10	12	11
Sources: Country authorities; and staff estimates and projections.								
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.								
2/ Revenues are defined inclusive of grants.								