INTERNATIONAL MONETARY FUND

CAMBODIA

STAFF REPORT FOR THE 2011 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS[1]

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Cambodia has been upgraded to a "medium performer" based on the World Bank's Country Policy and Institutional Assessment (CPIA) and now faces a low risk of debt distress (from moderate last year). While external debt burden indicators do not breach the relevant indicative thresholds under the baseline scenario, the debt level is sensitive to shocks as indicated in standard bound tests.[2] Under an alternative scenario with a higher level of borrowing over the medium and long term, Cambodia may lose its low debt distress rating. In particular, the scope for absorbing additional risk, including from contingent liabilities related to the rapid growth of infrastructure projects outside the budget and the banking system, would be substantially smaller. All this underscores the need for a prudent borrowing strategy, underpinned by continued fiscal consolidation over the medium term, and improvements in debt and contingent liability management, which should be incorporated in the authorities' upcoming debt strategy document.

[1] This DSA has been prepared jointly by IMF and World Bank staffs and in consultation with the Asian Development Bank (AsDB), using the debt sustainability framework for low-income countries approved by the Boards of both institutions.

[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 are policy-dependent. Cambodia's policies and institutions, as measured by the World Bank's CPIA, place it as a "medium performer," reflecting the 2010 CPIA upgrade. The relevant indicative thresholds for this category are: 40 percent for the NPV of debt-to-GDP ratio, 150 percent for the NPV of debt-to-exports ratio, 250 percent for the NPV of debt-to-revenue ratio, 20 percent for the debt service-to-exports ratio, and 30 percent for the debt service-to-revenue ratio. These thresholds are applicable to public and publicly guaranteed external debt.

1. **Cambodia's DSA indicates that the risk of debt distress is low.** Under the baseline macroeconomic outlook (Box 1), including assumptions on growth and fiscal consolidation, external debt burden indicators do not breach the relevant indicative thresholds. These thresholds are higher than in the 2010 DSA, given Cambodia's recent upgrade as a medium performer based on the World Bank's CPIA measure of institutional capacity.

2. **Staffs have analyzed an additional country-specific alternative scenario of increased bilateral external borrowing.** Assuming a doubling of external borrowing from the baseline over 2011–21 on less concessional terms than those from multilateral donors, this scenario indicates that the scope for absorbing risks would be significantly reduced and Cambodia would lose its low debt distress rating.

3. **At the end of 2010, Cambodia's external public and publicly guaranteed (PPG) debt stock was 28 percent of GDP in nominal terms and 20 percent in net present value (NPV) terms.** Until 2008, strong economic growth and favorable external conditions contributed to a decline in debt ratios. However, in 2009, the external PPG debt ratios rose, partly reflecting an increase in the overall fiscal deficit against the backdrop of the global recession. For 2011, the debt stock in PV terms as a share of GDP, as a share of exports of goods and nonfactor services, and of government revenues is projected at 20 percent, 39 percent and 154 percent, respectively. The past DSA (2010) baseline macroeconomic scenario broadly matches the macroeconomic developments, with slightly higher-than-projected growth outcome in recent years, but no tangible impact on debt dynamics.

Cambodia: External Public Debt Indicators at end-2010

	Indicative Thresholds	End-2010
NPV of debt, as a percent of:		
GDP	40	20
Exports	150	40
Revenue	250	149
Debt service, as a percent of:		
Exports	20	1
Revenue	30	5

Sources: IMF and World Bank.

4. **Around half of Cambodia's external debt is held by multilateral creditors**, primarily the AsDB (27 percent) and the World Bank's IDA (18 percent). China is the largest emerging creditor, accounting for about 66 percent of total bilateral disbursements in 2010. Cambodia remains in arrears to the Russian Federation and the United States. Following a Paris Club agreement in 1995, Cambodia concluded agreements with France, Germany, Italy, and Japan. The status of negotiations of outstanding debt obligations with the Russian Federation and the United States has effectively remained unchanged since the last DSA. Currently, Cambodia is not servicing its debt with either of these creditors, and efforts to conclude

Cambodia: Stock of Public and Publicly Guaranteed External Debt at End-2010

	As a Share of External Total Debt	In percent of GDP
Total	100	28
Multilateral	49	14
Bilateral	51	14
Of which: Non-rescheduled debt with the U.S. and Russian Federation	24	7

Sources: Cambodian authorities; IMF and World Bank estimates.

agreements with each under the framework of the Paris Club are required. Since prospects for resolution are unclear, the current DSA assumes no restructuring in its baseline, with arrears continuing to build up throughout the projection period.

Box 1. Cambodia: Macroeconomic Assumptions Underlying the DSA (2011–31)

The Cambodian economy has performed well in 2011 with overall growth at slightly below 6 percent, on the back of robust garment exports, rising tourism income, and a recovering real estate sector. The recent severe flood is a temporary setback, but agricultural activity should revert back to trend by 2012, pushing GDP growth to 6½ percent.

Inflation is projected to average 5.6 percent in 2011, before gradually declining toward 3 percent in the medium term.

The **potential growth rate** of Cambodia in the medium and longer terms has been upgraded to 7–8 percent, on the assumption that Cambodia will continue implementing necessary reforms in a steadfast and evenhanded manner (for detailed analysis of the drivers of potential growth see Box 3 in the accompanying staff report). There has been some encouraging progress, such as a rising global market share in garment exports, large investments in hydropower projects that soon will substantially lower the cost of electricity in Cambodia which remains three times as high as in neighboring countries, and an emerging diversification of FDI beyond the garment manufacturing sector.

The **external current account deficit** (including official transfers) is projected to be above 9 percent of GDP during 2011–13, before trending toward 5 percent of GDP in the longer term. A higher current account deficit in the short term reflects high import contents of the build-operate-transfer (BOT) hydropower projects, which are incorporated in the macroeconomic framework from 2011 onward. These imports are fully financed by corresponding FDI flows. As the construction of these power plants is completed, FDI as a share of GDP should stabilize at around 6 percent, while imports of construction materials and petroleum for electricity production should also level off. Official transfers including loans and grants are programmed to continuously decline as a percentage of GDP in line with rising per capita income. With a positive outlook for export competiveness and FDI, and a narrowing current account deficit in the longer term, gross official reserves in months of next year's imports are expected to gradually rise from 4.3 months in 2011 toward 5 months in the long run.

Projected **fiscal consolidation** is an important anchor of macroeconomic stability in the medium term and beyond. The overall fiscal deficit in terms of GDP (excluding grants) is expected to narrow from about 6 percent in 2011 to less than 4 percent in 2016, before gradually falling to 2½ percent by 2031. Revenue would be the main driver of consolidation and is expected to rise to over 14 percent of GDP (excluding grants) by 2016 from about 12 percent of GDP in 2011 in line with targets adopted in the PFM reform program. Revenue (excluding grants) is assumed to increase to 16½ percent of GDP over the long term, implying that gaps in the productivity of Cambodia's tax system vis-à-vis regional peers would gradually be closed. Public expenditure would remain mostly at around 18 percent through the medium term, and kept below 19 percent up to 2031

EXTERNAL DEBT SUSTAINABILITY ANALYSIS

5. All external debt indicators remain below the policy-dependent debt burden thresholds under the baseline scenario, and no thresholds are breached under standardized stress test. The main results of the external DSA are as follows:

- **All debt indicators in the baseline scenario are expected to decline over the 20-year projection period** (Table 1a). During the projection period, the PV of the debt-to-GDP ratio decreases from 20 percent in 2011 to about 14 percent in 2031 (compared to an indicative threshold of 40 percent), while the PV of the debt-to-exports ratio decreases from 39 percent in 2011 to 27 percent in 2031 (compared to an indicative threshold of 150 percent). The PV of the-debt-to-revenue ratio declines from 154 percent in 2011 to 80 percent in 2031 (indicative threshold: 250 percent). The debt service-to-exports and debt service-to-revenue ratios stay well below the indicative thresholds throughout the entire projection period due to concessionality of previous debts.

- **The standard stress tests do not reveal any serious vulnerability** (Table 1b and Figure 1). A one-time 30 percent depreciation and the shock to exports push the NPV of debt-to-revenue ratio to 212 and 219 percent respectively, highlighting the need for improved revenue performance.

6. An additional country-specific alternative scenario considers the impact of increased borrowing (Tables 3a and 4a)**.** This scenario illustrates how increased borrowing (US$880 million during 2011–21, about double the amount envisaged under the baseline scenario) under consideration by the authorities can affect debt sustainability.[3] The terms for most of this additional borrowing are assumed to be comparable to bilateral loans from emerging donors: 60 percent of the loans are at 2 percent interest rate with grace period and maturity of 7 and 20 years.[4] With no information on the nature or the type of projects to be financed in the higher borrowing scenario and the fact the potential growth has already been upgraded since the last DSA to 7–8 percent, the alternative scenario does not assume any "growth dividends." Limited administrative capacity of the government to manage debt-financed capital investment and challenges in public financial management would further reduce the likelihood of any growth dividend. The main results under this borrowing scenario are as follows:

- There would be a significant accumulation of external debt, with the total debt stock rising to 38 percent of GDP (NPV of debt-to-GDP at 29 percent) over the medium term.
- In several bound tests, the indicative thresholds are breached for a prolonged period of time (Figures 3 and 4). The increased borrowing would therefore push the debt distress rating from low to moderate.
- Moreover, the return to sustainable debt levels would become more difficult if contingent liabilities, which tend to correlate with shocks under the bound tests, were triggered. Given the large exposure to BOT projects as noted in the accompanying staff report, if problems in only 1 out 10 BOT projects arose potentially leading to a total loss of investment costs, an additional 5 percent of GDP would be added to the debt stock. Similarly, based on international experience, a banking crisis for a country with a financial depth as in Cambodia during the DSA projection period could add about 10 percent of GDP to public debt.[5]
- Apart from impairing Cambodia's ability to absorb shocks, the scenario also underscores the need to raise tax revenue as planned. If the revenue-to-GDP ratio stagnates, higher fiscal deficits would push public debt close to the sustainability threshold.

[3] Based on a borrowing scenario in the authorities' preliminary debt strategy, which is yet to be finalized and, therefore, is not in the 2012 budget, adopted in December 2011.

[4] Another 20 percent at 1 percent interest rate with a grace period and maturity of 12 and 40 years; the remaining loans are assumed to be from multilateral agencies.

[5] Based on the pace of financial deepening (e.g., credit-to-GDP ratio) during the last decade, over the DSA projection period, Cambodia's credit-to-GDP is expected to reach or exceed that of the median emerging market (EM) economy (Rishi et al., 2010). Empirical studies show that the median direct fiscal cost of banking crises in EMs is 11.5 percent of GDP (Laeven and Valencia, 2010).

PUBLIC DEBT SUSTAINABILITY ANALYSIS

7. Given the predominance of external debt, public debt dynamics closely track that of the external debt. Cambodia does not have, and is not expected to have in the foreseeable future, a market for domestic government debt securities.

8. The nominal stock would increase modestly to 29 percent of GDP (21 percent of GDP in NPV terms) by end-2011 and then gradually decline after 2012, reflecting the fiscal consolidation envisaged under the baseline over the medium term (Table 2a). The PV of public debt-to-GDP ratio and the public debt service-to-revenue ratio would decline gradually over the long term to 14 percent and 64 percent respectively. The debt service-to-revenue ratio remains low in most scenarios for the entire projection period under the baseline.

9. Public debt dynamics are adversely affected by a permanent growth shock and accommodative fiscal stance. Under a permanent growth shock, the level of public debt (as a share of GDP) continues to rise to over 35 percent of GDP (in PV terms). If the primary balance remains unchanged at 2011 level, the PV of public debt-to-GDP continues to rise to 28 percent increase by 2025 and then declines gradually (Table 2b).

DEBT MANAGEMENT

10. The authorities are close to finalizing their formal debt strategy. Staffs welcomed the significant progress in designing a public debt strategy and the creation of a high-level (seven-member) government committee on public debt management, chaired by the Minister of Economy and Finance and co-chaired by the Governor of the National Bank of Cambodia. The debt strategy considers alternative borrowing plans and assesses associated risks. The debt unit at the MEF is also building its capacity, including through TA provided by the AsDB, for analyzing contingent liabilities from the BOT projects and the financial sector. The authorities also acknowledge the importance of a comprehensive approach to debt management, a transparent and objective management of investment projects, and the need to maintain concessionality of new borrowing. Once finalized, the debt strategy is expected to be published in early 2012.

VIEWS OF THE AUTHORITIES

11. The authorities were in broad agreement with the DSA. They underscored that government borrowing would be undertaken only for investment in a few critical sectors (e.g., infrastructure such power, roads, ports, irrigation) and that they would strengthen capacity to assess the budgetary, debt, and growth implications of investment projects. They also welcomed suggestions to strengthen monitoring BOT projects with a view to minimizing fiscal risks. Regarding the alternative scenario with higher borrowing, the authorities concurred that elevated borrowing would lead to Cambodia's losing the low distress rating.

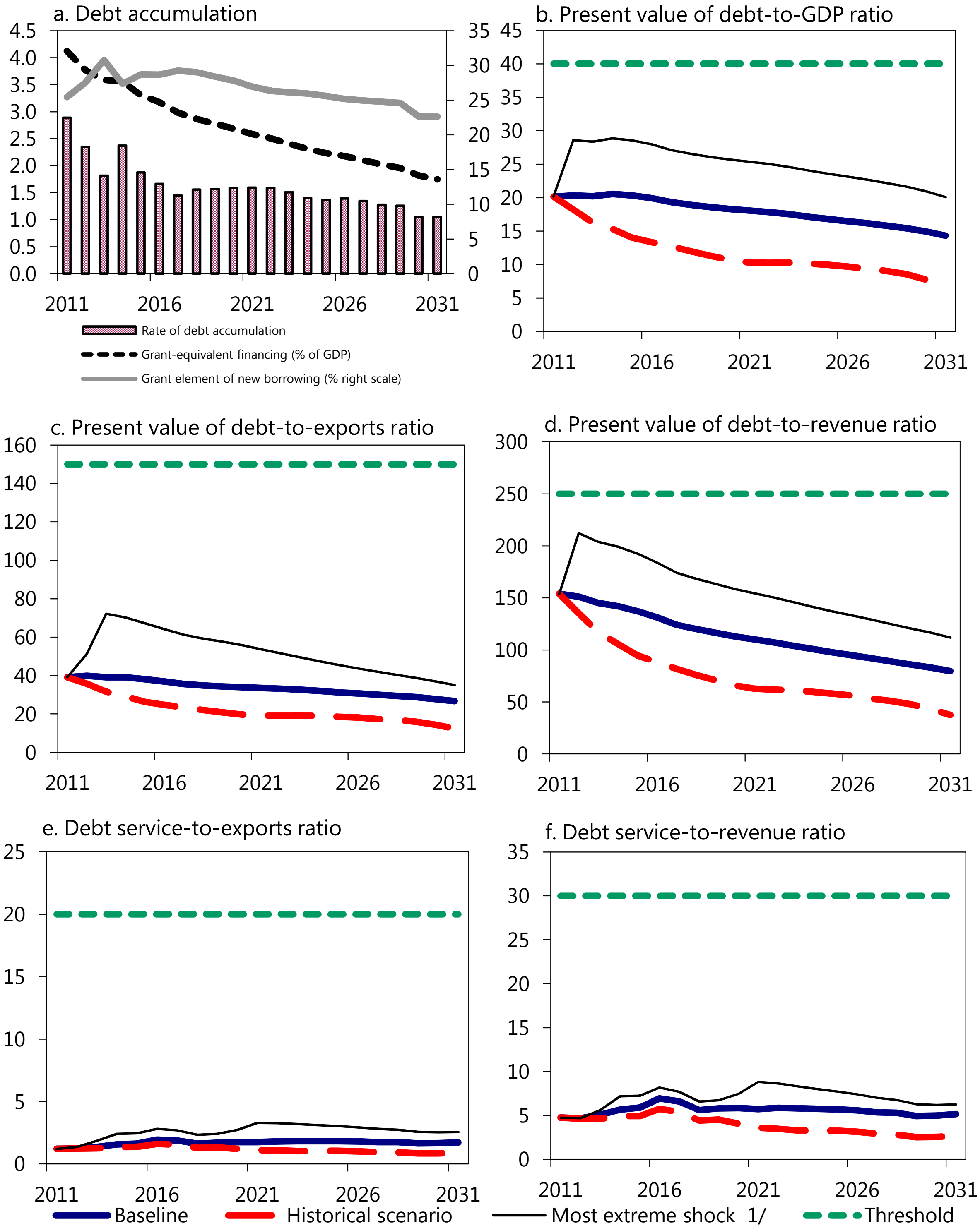
CONCLUSION

12. In the staffs' view, Cambodia is at low risk of debt distress based on external indicators under the baseline scenario and the higher thresholds as a medium performer. The baseline projections and the associated standard stress tests show limited risk related to external debt given that none of the indicators breaches the indicative debt burden thresholds. However, in view of Cambodia's low domestic revenue base, risks to total debt and debt service need to be managed through further strengthening revenue efforts over the medium term.

13. The increase in debt ratios under an alternative scenario with a higher borrowing path highlights the need for a prudent borrowing strategy and careful management of public debt. This exercise also underscores the importance of effective management of new debt accumulation and any contingent liabilities from the rapidly growing BOT projects and the financial sector. Increased borrowing will significantly reduce the government's ability to tackle any future crises within the sustainability thresholds.

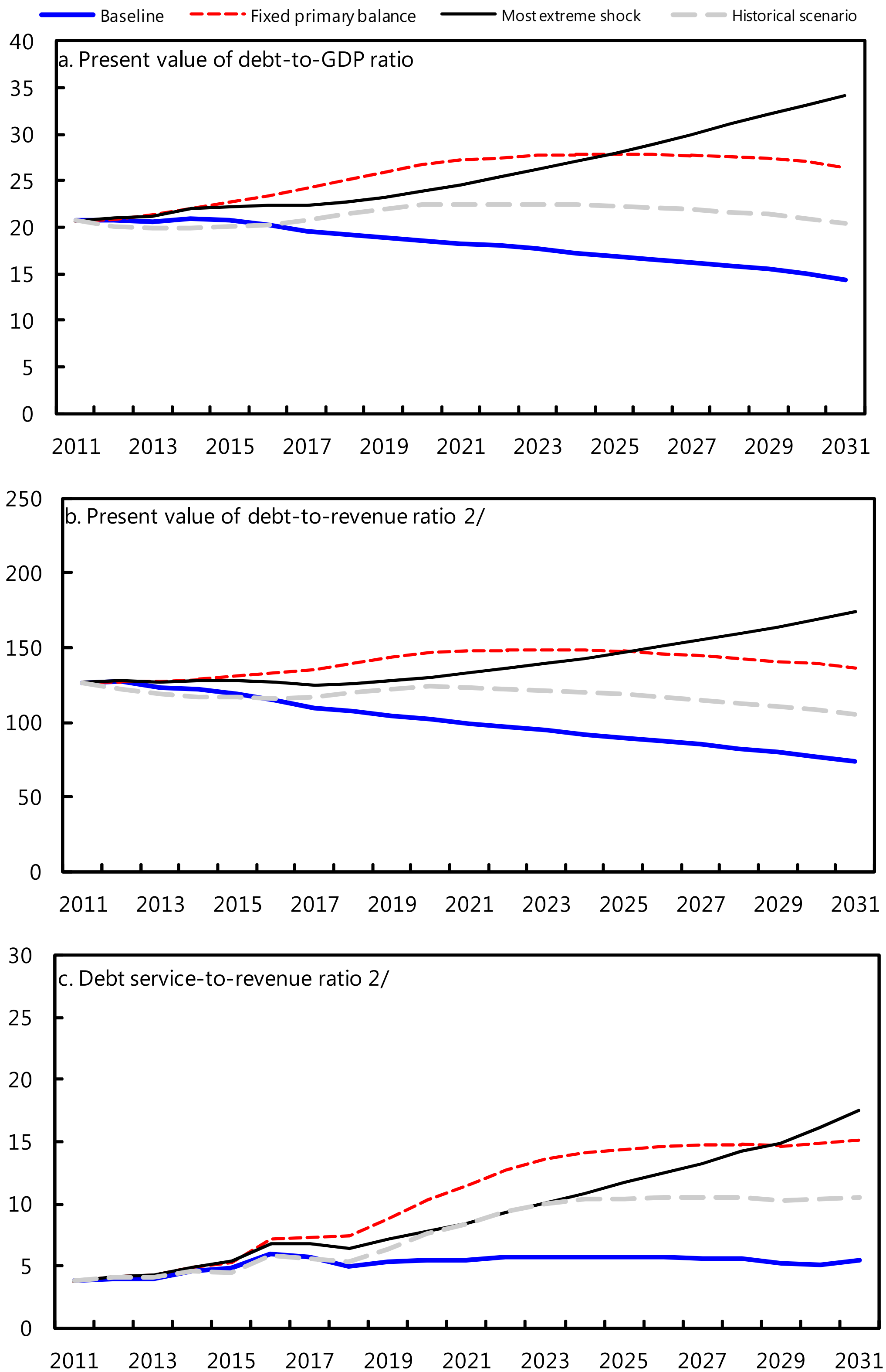
14. The staffs encourage the authorities to build on recent steps and move forward as quickly as possible to strengthen debt management capacity. In this regard, it will be important to continue the work under way to develop and implement a comprehensive debt management strategy and to closely monitor the contingent liabilities from the BOT projects and the financial sector.

Figure 1. Cambodia: Indicators of External Debt Under Alternative Scenarios, 2011–31 1/



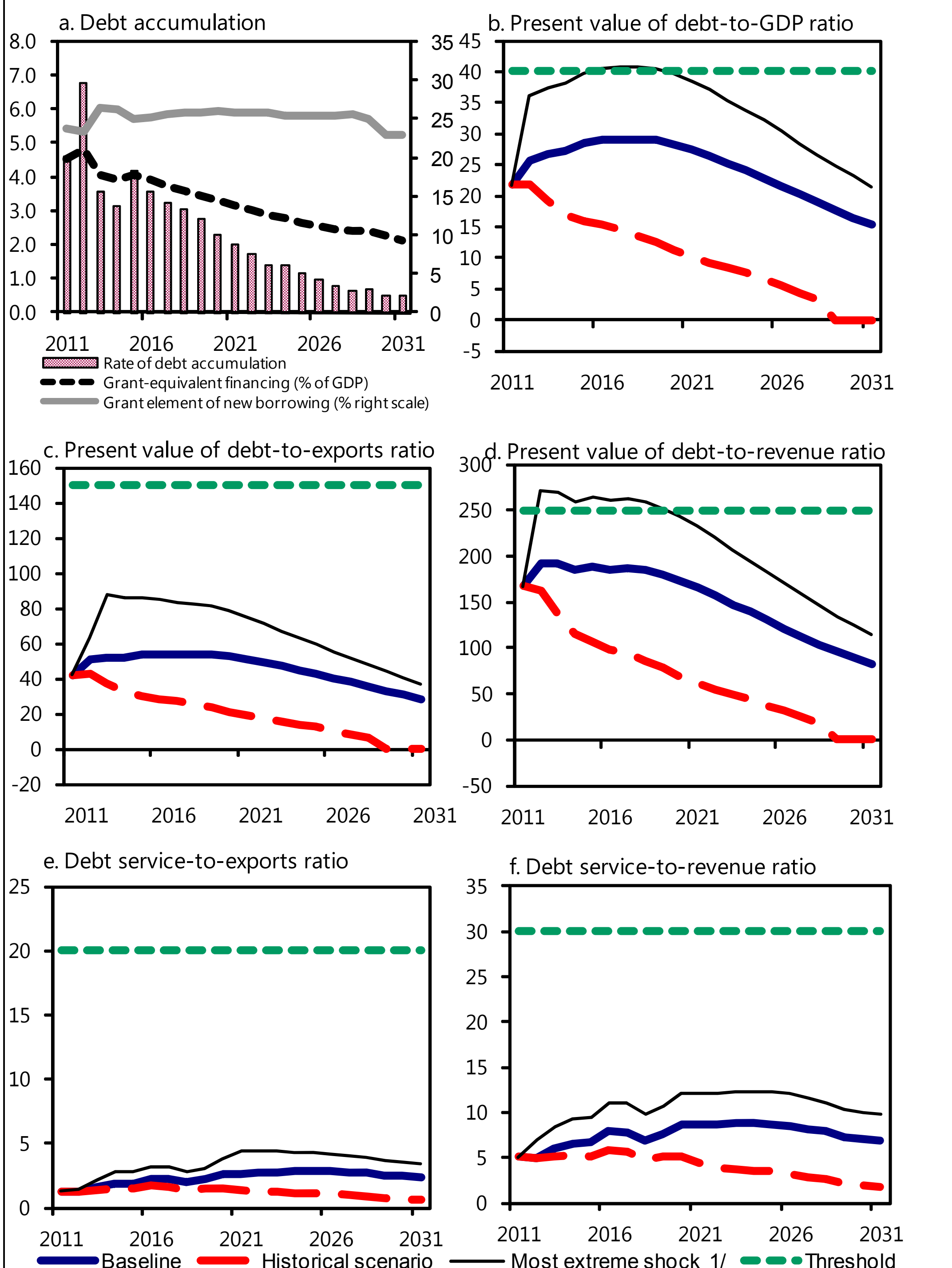
Sources: Cambodian authorities; and staff estimates and projections.
1/ The most extreme stress test is the bound test that yields the highest ratio in 2021. In figure b. it corresponds to a one-time depreciation shock; in c. to an export shock; in d. to a one-time depreciation shock; in e. and f. to an exports shock.

Figure 2. Cambodia: Indicators of Public Debt Under Alternative Scenarios, 2011–31 1/



Sources: Cambodian authorities; and staff estimates and projections.
1/ The most extreme stress test is the bound test that yields the highest ratio in the outer years. In figures a., b., and c., they correspond to permanent shock to growth
2/ Revenues are defined inclusive of grants.

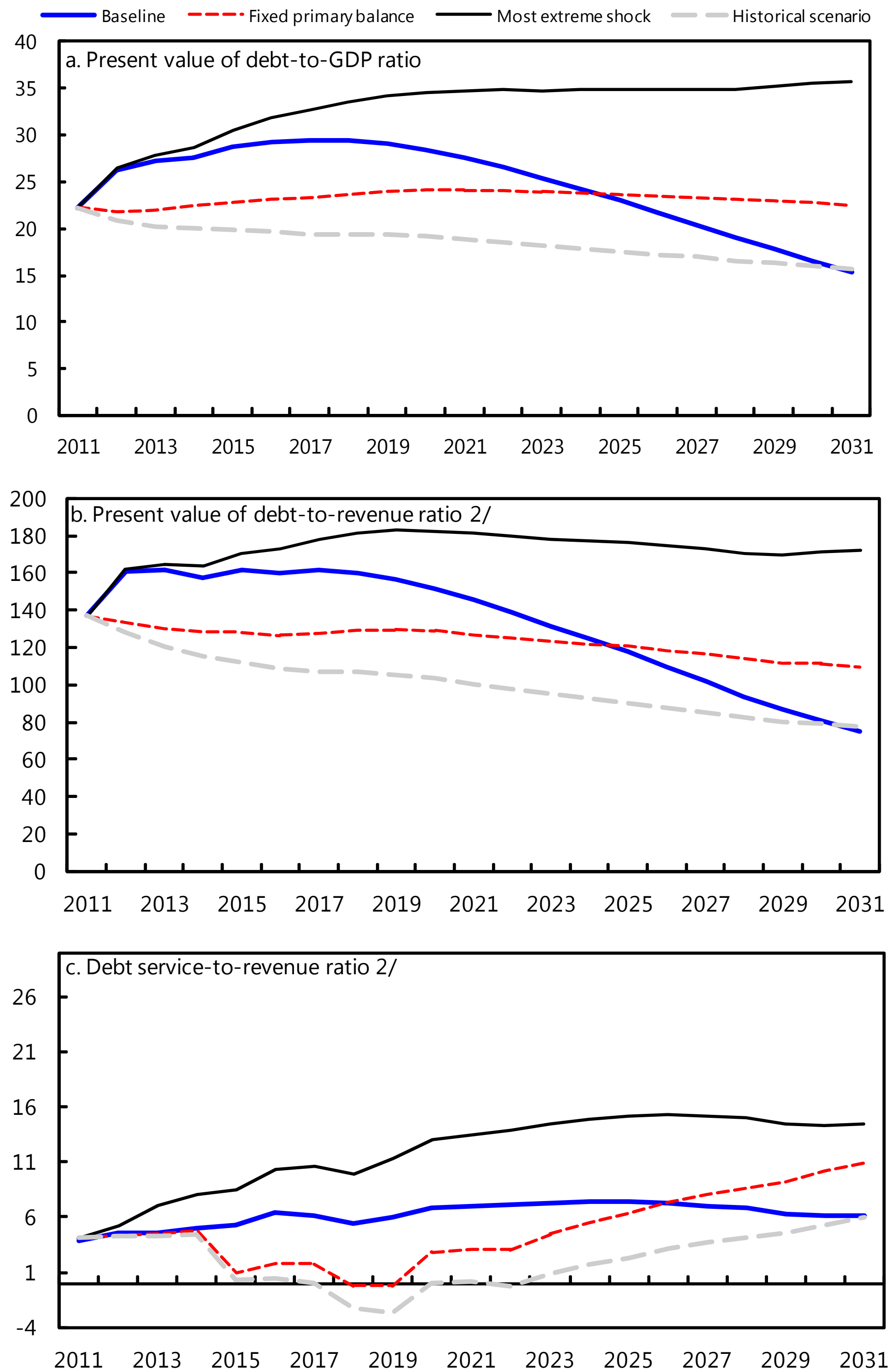
Figure 3. Alternative Scenario of Increasing Borrowing Limits, Indicators of External Debt, 2011–31 1/



Sources: Cambodian authorities; and staff estimates and projections.

1/ The most extreme stress test is the bound test that yields the highest ratio in 2021. In figure b. it corresponds to a one-time depreciation shock; in c. to an export shock; in d. to a one-time depreciation shock; in e. to an exports shock; and in figure f. to a one-time depreciation shock.

Figure 4. Alternative Scenario of Increasing Borrowing Limits, Indicators of Public Debt, 2011–31 1/



Sources: Cambodian authorities; and staff estimates and projections.
1/ The most extreme stress test is the bound test that yields the highest ratio in 2021. In figures a. and b., they correspond to permanent shock to growth, and for c. it corresponds to a one time depreciation in 2011.
2/ Revenues are defined inclusive of grants.

Table 1a. Cambodia: External Debt Sustainability Framework, Baseline Scenario, 2008–31 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical	Standard	Projections									
	2008	2009	2010	Average 1/	Deviation 1/	2011	2012	2013	2014	2015	2016	2011–16 Average	2021	2031	2017–31 Average
External debt (nominal) 2/	**27.0**	**28.5**	**27.6**			**28.1**	**28.1**	**27.9**	**28.2**	**27.8**	**27.2**		**24.3**	**18.4**	
Of which: Public and publicly guaranteed (PPG)	27.0	28.5	27.6			28.1	28.1	27.9	28.2	27.8	27.2		24.3	18.4	
Change in external debt	-2.4	1.5	-0.9			0.5	0.0	-0.2	0.3	-0.4	-0.6		-0.4	-0.9	
Identified net debt-creating flows	-8.0	-1.7	-4.8			-2.3	-0.9	-1.4	-1.8	-2.0	-2.9		-2.7	-1.9	
Noninterest current account deficit	**4.3**	**3.2**	**3.8**	**2.3**	**1.4**	**9.2**	**9.8**	**9.0**	**6.5**	**6.1**	**5.4**		**5.1**	**5.5**	5.0
Deficit in balance of goods and services	9.2	8.4	8.3			11.2	10.1	9.4	7.0	6.8	6.5		7.1	6.7	
Exports	48.5	43.4	49.3			51.5	51.0	51.6	52.5	53.3	54.1		53.9	53.8	
Imports	57.7	51.8	57.6			62.7	61.1	61.0	59.6	60.1	60.6		61.0	60.5	
Net current transfers (negative = inflow)	-9.3	-9.5	-8.9	-10.0	0.8	-5.9	-4.3	-4.3	-4.4	-4.4	-4.5		-4.1	-3.6	-4.0
Of which: Official	-6.6	-6.7	-6.8			-3.8	-2.0	-1.8	-1.7	-1.5	-1.4		-0.8	-0.3	
Other current account flows (negative = net inflow)	4.4	4.3	4.4			4.0	4.0	3.9	3.8	3.7	3.4		2.2	2.4	
Net FDI (negative = inflow)	**-7.7**	**-5.0**	**-6.8**	**-4.4**	**3.6**	**-10.4**	**-9.3**	**-9.0**	**-6.9**	**-6.6**	**-6.8**		**-6.5**	**-6.3**	-6.4
Endogenous debt dynamics 3/	**-4.7**	**0.1**	**-1.8**			**-1.2**	**-1.4**	**-1.3**	**-1.4**	**-1.5**	**-1.5**		**-1.4**	**-1.1**	
Contribution from nominal interest rate	0.2	0.3	0.3			0.3	0.3	0.3	0.3	0.4	0.4		0.3	0.3	
Contribution from real GDP growth	-1.6	0.0	-1.6			-1.4	-1.7	-1.6	-1.7	-1.9	-1.9		-1.7	-1.4	
Contribution from price and exchange rate changes	-3.2	-0.1	-0.6			...	...	...	...	...	...		...	...	
Residual (3–4) 4/	**5.6**	**3.2**	**3.9**			**2.8**	**0.9**	**1.1**	**2.1**	**1.6**	**2.3**		**2.3**	**1.0**	
Of which: Exceptional financing	0.0	-0.2	-0.2			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Present value (PV) of external debt 5/	...	...	19.5			20.2	20.4	20.2	20.6	20.3	19.9		18.1	14.3	
PV of external debt (in percent of exports) 5/	...	...	39.5			39.2	39.9	39.2	39.2	38.1	36.9		33.5	26.7	
PV of PPG external debt	**...**	**...**	**19.5**			**20.2**	**20.4**	**20.2**	**20.6**	**20.3**	**19.9**		**18.1**	**14.3**	
In percent of exports	**...**	**...**	**39.5**			**39.2**	**39.9**	**39.2**	**39.2**	**38.1**	**36.9**		**33.5**	**26.7**	
In percent of government revenues	**...**	**...**	**149.0**			**154.0**	**151.1**	**145.2**	**142.0**	**137.2**	**131.2**		**110.0**	**79.7**	
Debt service-to-exports ratio (in percent)	**1.2**	**1.5**	**1.4**			**1.2**	**1.2**	**1.4**	**1.6**	**1.6**	**2.0**		**1.7**	**1.7**	
PPG debt service-to-exports ratio (in percent)	**1.2**	**1.5**	**1.4**			**1.2**	**1.2**	**1.4**	**1.6**	**1.6**	**2.0**		**1.7**	**1.7**	
PPG debt service-to-revenue ratio (in percent)	**4.3**	**5.3**	**5.3**			**4.8**	**4.7**	**5.1**	**5.7**	**5.9**	**7.0**		**5.7**	**5.2**	
Total gross financing need (in billions of U.S. dollars)	-0.3	-0.1	-0.3			-0.1	0.2	0.1	0.1	0.1	-0.1		-0.1	0.1	
Noninterest current account deficit that stabilizes debt ratio	6.7	1.7	4.7			8.7	9.8	9.2	6.2	6.5	6.0		5.6	6.3	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.7	0.1	6.0	8.1	3.6	5.8	6.5	6.4	6.8	7.4	7.4	6.7	7.6	7.8	7.7
GDP deflator in U.S. dollar terms (change in percent)	12.3	0.5	2.0	3.7	3.8	7.6	4.0	3.1	2.9	2.7	2.8	3.9	2.4	2.5	2.5
Effective interest rate (percent) 6/	0.8	1.1	1.1	1.1	0.1	1.1	1.1	1.2	1.3	1.4	1.5	1.3	1.5	1.6	1.5
Growth of exports of G&S (U.S. dollar terms, in percent)	7.3	-10.0	22.8	12.4	12.6	18.9	9.6	11.2	11.8	12.1	11.9	12.6	10.0	10.6	10.3
Growth of imports of G&S (U.S. dollar terms, in percent)	12.1	-9.8	20.3	11.6	10.7	23.8	8.0	9.7	7.3	11.3	11.2	11.9	9.7	10.8	10.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	25.5	27.5	30.8	27.3	28.7	28.7	28.1	27.0	22.6	26.0
Government revenues (excluding grants, in percent of GDP)	13.0	12.0	13.1			13.1	13.5	13.9	14.5	14.8	15.2		16.4	18.0	17.0
Aid flows (in billions of U.S. dollars) 7/	0.6	0.7	0.6			0.5	0.6	0.6	0.6	0.7	0.7		0.9	1.4	
Of which: Grants	0.3	0.4	0.6			0.4	0.4	0.4	0.5	0.5	0.5		0.7	1.3	
Of which: Concessional loans	0.2	0.2	0.0			0.1	0.1	0.2	0.2	0.2	0.2		0.2	0.2	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			4.1	3.8	3.6	3.6	3.3	3.2		2.6	1.7	2.3
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			62.0	63.9	67.5	60.3	63.6	62.7		59.4	58.8	59.1
Memorandum items:															
Nominal GDP (in billions of U.S. dollars)	10.4	10.4	11.3			12.8	14.2	15.6	17.1	18.9	20.9		34.1	91.5	
Nominal dollar GDP growth	19.8	0.6	8.1			13.9	10.8	9.7	9.9	10.4	10.4	10.8	10.2	10.4	10.4
PV of PPG external debt (in billions of U.S. dollars)			2.3			2.6	2.9	3.1	3.5	3.8	4.2		6.2	13.1	
(PVt-PVt-1)/GDPt-1 (in percent)						2.9	2.3	1.8	2.4	1.9	1.7	2.2	1.6	1.1	1.4
Gross remittances (in billions of U.S. dollars)	0.3	0.3	0.2			0.3	0.3	0.4	0.5	0.5	0.6		1.1	0.9	
PV of PPG external debt (in percent of GDP + remittances)	...	...	19.1			19.8	19.9	19.7	20.0	19.8	19.3		17.5	14.2	
PV of PPG external debt (in percent of exports + remittances)	...	...	37.8			37.6	38.2	37.4	37.3	36.2	34.9		31.6	26.2	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	1.3			1.2	1.2	1.3	1.5	1.6	1.8		1.6	1.7	

Sources: Cambodian 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/ Includes both public and private sector external debt. The years in the table refer to calendar years.

3/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

4/ 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.

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

6/ Current-year interest payments divided by previous period debt stock.

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

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 1b. Cambodia: Sensitivity Analysis for Key Indicators of External Debt, 2011–31

(In percent)

		Projections						
	2011	2012	2013	2014	2015	2016	**2021**	2031
Present value of debt-to-GDP ratio								
Baseline	20	20	20	21	20	20	**18**	14
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	20	18	16	15	14	13	**10**	7
A2. New public sector loans on less favorable terms in 2011–31 2/	20	21	22	23	23	23	**23**	21
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	20	21	21	21	21	21	**19**	15
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	20	24	30	30	29	28	**24**	15
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	20	21	22	22	22	21	**19**	15
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	20	23	25	25	25	24	**21**	15
B5. Combination of B1–B4 using one-half standard deviation shocks	20	23	28	28	27	26	**22**	16
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	20	29	28	29	29	28	**25**	20
Present value of debt-to-exports ratio								
Baseline	39	40	39	39	38	37	**34**	27
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	39	36	32	29	26	25	**19**	13
A2. New public sector loans on less favorable terms in 2011–31 2/	39	41	42	43	43	43	**43**	38
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	39	40	39	39	38	37	**33**	27
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	39	51	72	70	67	64	**54**	35
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	39	40	39	39	38	37	**33**	27
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	39	45	49	48	47	45	**39**	28
B5. Combination of B1–B4 using one-half standard deviation shocks	39	46	56	55	53	51	**43**	30
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	39	40	39	39	38	37	**33**	27
Present value of debt-to-revenue ratio								
Baseline	154	151	145	142	137	131	**110**	80
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	154	135	117	106	95	88	**63**	37
A2. New public sector loans on less favorable terms in 2011–31 2/	154	157	155	156	155	152	**140**	114
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	154	154	151	147	142	136	**114**	83
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	154	176	219	208	198	187	**144**	86
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	154	157	156	153	147	141	**118**	86
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	154	171	182	175	168	159	**127**	82
B5. Combination of B1–B4 using one-half standard deviation shocks	154	174	200	192	183	173	**137**	87
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	154	212	204	199	193	184	**154**	112

Table 1b. Cambodia: Sensitivity Analysis for Key Indicators of External Debt, 2011–31 (concluded)

(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	**2021**	2031
Debt service-to-exports ratio								
Baseline	1	1	1	2	2	2	**2**	2
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	1	1	1	1	1	2	**1**	1
A2. New public sector loans on less favorable terms in 2011–31 2/	1	1	1	2	2	2	**2**	3
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	1	1	1	2	2	2	**2**	2
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	1	1	2	2	2	3	**3**	3
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	1	1	1	2	2	2	**2**	2
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	1	1	1	2	2	2	**2**	2
B5. Combination of B1–B4 using one-half standard deviation shocks	1	1	2	2	2	2	**3**	2
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	1	1	1	2	2	2	**2**	2
Debt service-to-revenue ratio								
Baseline	5	5	5	6	6	7	**6**	5
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	5	5	5	5	5	6	**4**	3
A2. New public sector loans on less favorable terms in 2011–31 2/	5	5	5	6	7	8	**8**	8
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	5	5	5	6	6	7	**6**	5
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	5	5	6	7	7	8	**9**	6
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	5	5	5	6	6	7	**6**	6
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	5	5	6	6	7	8	**7**	6
B5. Combination of B1–B4 using one-half standard deviation shocks	5	5	6	7	7	8	**8**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	5	7	7	8	8	10	**8**	7
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	25	25	25	25	25	25	**25**	25

Sources: Cambodian authorities; and staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), noninterest current account in percent of GDP, and nondebt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline, while grace and maturity periods are the same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.

Table 2a. Cambodia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2008–31

(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
					Standard							2011–16			2017–31
	2008	2009	2010	Average 1/	Deviation 1/	2011	2012	2013	2014	2015	2016	Average	2021	2031	Average
Public sector debt 2/	27.8	29.2	28.2			28.7	28.6	28.3	28.6	28.1	27.5		24.5	18.5	
Of which: Foreign-currency denominated	27.0	28.5	27.6			28.1	28.1	27.9	28.2	27.8	27.2		24.3	18.4	
Change in public sector debt	-2.8	1.4	-1.0			0.5	-0.1	-0.3	0.3	-0.5	-0.6		-0.4	-0.9	
Identified debt-creating flows	-4.8	4.1	-0.6			0.0	-0.1	-0.6	-0.2	-1.0	-1.2		-0.9	-0.2	
Primary deficit	-0.5	4.0	2.3	1.9	1.7	2.4	2.4	1.6	2.0	1.3	1.1	1.8	1.1	1.4	1.0
Revenue and grants	16.4	16.3	18.0			16.4	16.4	16.8	17.2	17.4	17.6		18.4	19.4	
Of which: Grants	3.3	4.2	4.9			3.3	3.0	2.8	2.7	2.5	2.4		1.9	1.4	
Primary (noninterest) expenditure	15.9	20.2	20.3			18.8	18.9	18.4	19.1	18.7	18.7		19.4	20.8	
Automatic debt dynamics	-4.3	0.1	-2.9			-2.4	-2.5	-2.2	-2.2	-2.3	-2.3		-2.0	-1.5	
Contribution from interest rate/growth differential	-2.4	0.3	-1.7			-1.6	-1.9	-1.8	-1.9	-2.1	-2.1		-1.9	-1.5	
Of which: Contribution from average real interest rate	-0.5	0.3	0.0			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1	-0.1	
Of which: Contribution from real GDP growth	-1.9	0.0	-1.6			-1.6	-1.8	-1.7	-1.8	-2.0	-1.9		-1.8	-1.4	
Contribution from real exchange rate depreciation	-2.0	-0.2	-1.3			...	...	...	...	...	...		...	...	
Other identified debt-creating flows	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g., bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	2.0	-2.7	-0.3			0.4	0.0	0.3	0.5	0.5	0.5		0.4	-0.7	
Other sustainability indicators	...	...	20.1			20.7	20.9	20.7	21.0	20.7	20.3		18.3	14.4	
Of which: Foreign-currency denominated	...	...	19.5			20.2	20.4	20.2	20.6	20.3	19.9		18.1	14.3	
Of which: External	...	...	19.5			20.2	20.4	20.2	20.6	20.3	19.9		18.1	14.3	
Of which: External	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	1.0	5.1	3.5			3.6	3.5	2.7	3.1	2.5	2.5		2.3	2.5	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	111.6			126.7	126.9	123.5	122.3	119.3	115.2		99.5	74.3	
PV of public sector debt-to-revenue ratio (in percent)	...	...	153.7			158.3	154.8	148.6	144.9	139.8	133.5		111.2	80.1	
Of which: External 4/	...	...	149.0			154.0	151.1	145.2	142.0	137.2	131.2		110.0	79.7	
Debt service-to-revenue and grants ratio (in percent) 5/	4.1	3.3	3.9			3.8	3.9	3.9	4.5	4.8	6.0		5.5	5.5	
Debt service-to-revenue ratio (in percent) 5/	5.1	4.5	5.3			4.8	4.8	4.7	5.4	5.6	7.0		6.1	5.9	
Primary deficit that stabilizes the debt-to-GDP ratio	2.3	2.6	3.2			2.0	2.5	1.9	1.7	1.8	1.7		1.5	2.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.7	0.1	6.0	8.1	3.6	5.8	6.5	6.4	6.8	7.4	7.4	6.7	7.6	7.8	7.7
Average nominal interest rate on forex debt (in percent)	0.8	1.1	1.1	1.1	0.1	1.1	1.1	1.2	1.3	1.4	1.5	1.3	1.5	1.6	1.5
Average real interest rate on domestic debt (in percent)	-10.5	-2.1	-2.8	-4.6	2.8	-3.7	-3.5	-3.0	-2.8	-2.7	-2.8	-3.1	-2.4	-2.5	-2.5
Real exchange rate depreciation (in percent, + indicates depreciatio	-7.2	-0.6	-4.7	-2.5	2.8	-3.1	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	12.3	2.6	3.1	4.5	3.3	4.1	3.8	3.3	3.2	3.1	3.1	3.4	2.7	2.8	2.8
Growth of real primary spending (deflated by GDP deflator, in perce	16.7	27.3	6.2	5.1	9.5	-1.9	6.9	3.7	11.3	4.9	7.6	5.4	10.9	8.4	
Grant element of new external borrowing (in percent)	...	...	...	...	...	25.5	27.5	30.8	27.3	28.7	28.7	28.1	27.0	22.6	...

Sources: Cambodian 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/ The public sector debt represents general government gross debt.
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 2b. Cambodia: Sensitivity Analysis for Key Indicators of Public Debt, 2011–31

(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
Present value of debt-to-GDP ratio								
Baseline	21	21	21	21	21	20	18	14
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	21	20	20	20	20	20	22	20
A2. Primary balance is unchanged from 2011	21	21	21	22	23	23	27	26
A3. Permanently lower GDP growth 1/	21	21	21	22	22	22	25	34
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	21	22	22	23	23	23	23	21
B2. Primary balance is at historical average minus one standard deviations in 2012–13	21	22	23	24	23	23	20	15
B3. Combination of B1–B2 using one half standard deviation shocks	21	21	22	22	22	22	19	15
B4. One-time 30 percent real depreciation in 2012	21	29	28	27	26	25	21	16
B5. 10 percent of GDP increase in other debt-creating flows in 2012	21	30	29	29	28	27	23	16
Present value of debt-to-revenue ratio 2/								
Baseline	127	127	124	122	119	115	100	74
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	127	123	119	117	117	116	123	106
A2. Primary balance is unchanged from 2011	127	127	128	129	131	133	148	136
A3. Permanently lower GDP growth 1/	127	128	127	128	128	127	133	174
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	127	130	132	133	132	130	124	109
B2. Primary balance is at historical average minus one standard deviations in 2012–13	127	133	140	138	133	128	108	78
B3. Combination of B1–B2 using one half standard deviation shocks	127	129	131	130	127	122	105	79
B4. One-time 30 percent real depreciation in 2012	127	174	165	158	151	143	116	82
B5. 10 percent of GDP increase in other debt-creating flows in 2012	127	182	175	169	162	154	125	85
Debt service-to-revenue ratio 2/								
Baseline	4	4	4	5	5	6	5	5
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	4	4	4	5	4	6	8	11
A2. Primary balance is unchanged from 2011	4	4	4	5	5	7	11	15
A3. Permanently lower GDP growth 1/	4	4	4	5	5	7	8	18
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	4	4	4	5	6	7	8	10
B2. Primary balance is at historical average minus one standard deviations in 2012–13	4	4	4	5	6	9	7	5
B3. Combination of B1–B2 using one half standard deviation shocks	4	4	4	5	6	8	6	5
B4. One-time 30 percent real depreciation in 2012	4	5	6	7	7	9	9	10
B5. 10 percent of GDP increase in other debt-creating flows in 2012	4	4	5	6	14	15	10	7

Sources: Cambodian 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.

Table 3a. Alternative Scenario of Increasing Borrowing Limits, External Sustainability Framework, 2008–31 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 1/	Standard Deviation 1/	Projections									
	2008	2009	2010			2011	2012	2013	2014	2015	2016	2011–16 Average	2021	2031	2017–31 Average
External debt (nominal) 2/	**27.0**	**28.5**	**27.6**			**30.0**	**34.8**	**35.9**	**36.2**	**37.6**	**38.1**		**35.2**	**19.3**	
Of which: Public and publicly guaranteed (PPG)	27.0	28.5	27.6			30.0	34.8	35.9	36.2	37.6	38.1		35.2	19.3	
Change in external debt	-2.4	1.5	-0.9			2.4	4.8	1.1	0.4	1.3	0.5		-1.2	-1.6	
Identified net debt-creating flows	-8.0	-1.7	-4.8			0.1	1.5	0.6	-0.1	-0.5	-1.7		-2.1	-1.1	
Noninterest current account deficit	**4.3**	**3.2**	**3.8**	**2.4**	**1.4**	**11.6**	**12.2**	**11.2**	**8.5**	**8.0**	**7.1**		**6.3**	**6.3**	6.1
Deficit in balance of goods and services	9.2	8.4	8.3			13.6	12.5	11.6	9.1	8.7	8.3		8.4	7.4	
Exports	48.5	43.4	49.3			51.5	51.0	51.6	52.5	53.3	54.1		53.9	53.8	
Imports	57.7	51.8	57.6			65.1	63.4	63.3	61.7	62.1	62.4		62.3	61.2	
Net current transfers (negative = inflow)	-9.3	-9.5	-8.9	-10.0	0.8	-5.9	-4.3	-4.3	-4.4	-4.4	-4.5		-4.1	-3.6	-4.0
Of which: Official	-6.6	-6.7	-6.8			-3.8	-2.0	-1.8	-1.7	-1.5	-1.4		-0.8	-0.3	
Other current account flows (negative = net inflow)	4.4	4.3	4.4			4.0	4.1	3.9	3.8	3.7	3.3		2.0	2.5	
Net FDI (negative = inflow)	**-7.7**	**-5.0**	**-6.8**	**-4.4**	**3.6**	**-10.4**	**-9.3**	**-9.0**	**-6.9**	**-6.6**	**-6.8**		**-6.5**	**-6.3**	-6.4
Endogenous debt dynamics 3/	**-4.7**	**0.1**	**-1.8**			**-1.1**	**-1.5**	**-1.6**	**-1.7**	**-1.9**	**-2.0**		**-2.0**	**-1.2**	
Contribution from nominal interest rate	0.2	0.3	0.3			0.3	0.3	0.4	0.5	0.5	0.5		0.6	0.3	
Contribution from real GDP growth	-1.6	0.0	-1.6			-1.4	-1.8	-2.0	-2.2	-2.4	-2.5		-2.5	-1.5	
Contribution from price and exchange rate changes	-3.2	-0.1	-0.6			...	...	...	...	...	...		...	...	
Residual (3–4) 4/	**5.6**	**3.2**	**3.9**			**2.3**	**3.3**	**0.5**	**0.5**	**1.8**	**2.2**		**0.9**	**-0.5**	
Of which: Exceptional financing	0.0	-0.2	-0.2			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Present value (PV) of external debt 5/	...	...	19.6			21.7	25.7	26.7	27.2	28.4	28.9		27.5	15.2	
PV of external debt (in percent of exports) 5/	...	...	39.7			42.2	50.5	51.8	51.7	53.2	53.5		50.9	28.3	
PV of PPG external debt	**...**	**...**	**19.6**			**21.7**	**25.7**	**26.7**	**27.2**	**28.4**	**28.9**		**27.5**	**15.2**	
In percent of exports	**...**	**...**	**39.7**			**42.2**	**50.5**	**51.8**	**51.7**	**53.2**	**53.5**		**50.9**	**28.3**	
In percent of government revenues	**...**	**...**	**149.7**			**167.4**	**192.6**	**191.9**	**185.2**	**188.7**	**185.9**		**165.4**	**81.8**	
Debt service-to-exports ratio (in percent)	**1.2**	**1.5**	**1.4**			**1.3**	**1.3**	**1.6**	**1.8**	**1.9**	**2.3**		**2.7**	**2.4**	
PPG debt service-to-exports ratio (in percent)	**1.2**	**1.5**	**1.4**			**1.3**	**1.3**	**1.6**	**1.8**	**1.9**	**2.3**		**2.7**	**2.4**	
PPG debt service-to-revenue ratio (in percent)	**4.3**	**5.3**	**5.3**			**5.1**	**5.0**	**6.0**	**6.6**	**6.8**	**7.9**		**8.6**	**7.0**	
Total gross financing need (in billions of U.S. dollars)	-0.3	-0.1	-0.3			0.2	0.5	0.5	0.4	0.5	0.3		0.4	1.2	
Noninterest current account deficit that stabilizes debt ratio	6.7	1.7	4.7			9.2	7.4	10.1	8.2	6.7	6.6		7.5	7.9	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.7	0.1	6.0	8.1	3.6	5.8	6.5	6.4	6.8	7.4	7.4	6.7	7.6	7.8	7.7
GDP deflator in U.S. dollar terms (change in percent)	12.3	0.5	2.0	3.7	3.8	7.6	4.0	3.1	2.9	2.7	2.8	3.9	2.4	2.5	2.5
Effective interest rate (percent) 6/	0.8	1.1	1.1	1.1	0.1	1.2	1.1	1.4	1.5	1.6	1.6	1.4	1.7	1.7	1.7
Growth of exports of G&S (U.S. dollar terms, in percent)	7.3	-10.0	22.8	12.4	12.6	18.9	9.6	11.2	11.8	12.1	11.9	12.6	10.0	10.6	10.3
Growth of imports of G&S (U.S. dollar terms, in percent)	12.1	-9.8	20.3	11.6	10.8	28.6	8.0	9.5	7.1	11.1	11.0	12.5	9.5	10.7	10.2
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	23.8	23.3	26.5	26.1	24.9	25.3	25.0	25.7	23.0	25.2
Government revenues (excluding grants, in percent of GDP)	13.0	12.0	13.1			13.0	13.4	13.9	14.7	15.0	15.6		16.6	18.6	17.3
Aid flows (in billions of U.S. dollars) 7/	0.6	0.7	0.6			0.5	0.6	0.6	0.7	0.7	0.8		1.1	1.8	
Of which: Grants	0.3	0.4	0.6			0.4	0.4	0.5	0.5	0.5	0.6		0.8	1.7	
Of which: Concessional loans	0.2	0.2	0.0			0.1	0.1	0.2	0.2	0.2	0.2		0.2	0.2	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			4.5	4.8	4.1	3.9	4.1	3.9		3.2	2.1	2.8
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			53.0	44.1	55.9	56.9	51.2	52.7		58.7	67.4	60.7
Memorandum items:															
Nominal GDP (in billions of U.S. dollars)	10.4	10.4	11.3			12.8	14.2	15.6	17.1	18.9	20.9		34.1	91.5	
Nominal dollar GDP growth	19.8	0.6	8.1			13.9	10.8	9.7	9.9	10.4	10.4	10.8	10.2	10.4	10.4
PV of PPG external debt (in billions of U.S. dollars)			2.3			2.8	3.7	4.2	4.6	5.4	6.0		9.4	13.9	
(PVt-PVt-1)/GDPt-1 (in percent)						4.6	6.8	3.5	3.1	4.2	3.6	4.3	2.0	0.5	1.5
Gross remittances (in billions of U.S. dollars)	0.3	0.3	0.2			0.3	0.3	0.4	0.5	0.5	0.6		1.1	0.9	
PV of PPG external debt (in percent of GDP + remittances)	...	...	19.2			21.3	25.2	26.1	26.4	27.6	28.1		26.6	15.1	
PV of PPG external debt (in percent of exports + remittances)	...	...	38.0			40.5	48.3	49.4	49.2	50.5	50.6		48.0	27.8	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	1.3			1.2	1.2	1.5	1.8	1.8	2.2		2.5	2.4	

Sources: Cambodian 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/ Includes both public and private sector external debt. The years in the table refer to calendar years.

3/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

4/ 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.

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

6/ Current-year interest payments divided by previous period debt stock.

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

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 3b. Alternative Scenario with Increasing Borrowing Limits: Sensitivity Analysis for Key Indicators of External Debt, 2011–31
(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	**2021**	2031
Present value of debt-to-GDP ratio								
Baseline	22	26	27	27	28	29	**27**	15
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	22	22	19	17	16	15	**10**	0
A2. New public sector loans on less favorable terms in 2011–31 2/	22	28	29	31	33	34	**35**	23
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	22	26	28	28	29	30	**28**	16
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	22	29	37	37	37	37	**33**	16
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	22	27	29	29	31	31	**30**	16
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	22	29	32	32	33	33	**30**	16
B5. Combination of B1–B4 using one-half standard deviation shocks	22	29	35	35	36	36	**32**	17
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	22	36	37	38	40	41	**39**	21
Present value of debt-to-exports ratio								
Baseline	42	51	52	52	53	54	**51**	28
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	42	43	37	32	30	28	**19**	0
A2. New public sector loans on less favorable terms in 2011–31 2/	42	54	57	58	62	63	**65**	43
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	42	51	52	52	53	53	**51**	28
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	42	63	88	86	86	85	**75**	37
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	42	51	52	52	53	53	**51**	28
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	42	56	62	61	62	61	**56**	29
B5. Combination of B1–B4 using one-half standard deviation shocks	42	57	70	69	69	69	**62**	32
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	42	51	52	52	53	53	**51**	28
Present value of debt-to-revenue ratio								
Baseline	167	193	192	185	189	186	**165**	82
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	167	163	138	116	106	98	**61**	0
A2. New public sector loans on less favorable terms in 2011–31 2/	167	206	212	209	219	220	**212**	123
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	167	196	199	192	196	193	**172**	85
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	167	218	266	251	249	241	**199**	88
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	167	201	206	199	203	200	**178**	88
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	167	213	229	218	219	213	**182**	85
B5. Combination of B1–B4 using one-half standard deviation shocks	167	217	249	236	236	229	**194**	89
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	167	271	269	260	265	261	**232**	115

Table 3b. Alternative Scenario with Increasing Borrowing Limits: Sensitivity Analysis for Key Indicators of External Debt, 2011–31 (concluded)
(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	**2021**	2031
Debt service-to-exports ratio								
Baseline	1	1	2	2	2	2	**3**	2
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	1	1	1	1	1	2	**1**	1
A2. New public sector loans on less favorable terms in 2011–31 2/	1	1	2	2	2	3	**4**	3
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	1	1	2	2	2	2	**3**	2
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	1	1	2	3	3	3	**4**	3
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	1	1	2	2	2	2	**3**	2
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	1	1	2	2	2	2	**3**	3
B5. Combination of B1–B4 using one-half standard deviation shocks	1	1	2	2	2	3	**4**	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	1	1	2	2	2	2	**3**	2
Debt service-to-revenue ratio								
Baseline	5	5	6	7	7	8	**9**	7
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	5	5	5	5	5	6	**4**	2
A2. New public sector loans on less favorable terms in 2011–31 2/	5	5	6	8	8	10	**12**	10
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	5	5	6	7	7	8	**9**	7
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	5	5	7	8	8	9	**12**	8
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	5	5	6	7	7	9	**9**	8
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	5	5	6	7	7	9	**10**	8
B5. Combination of B1–B4 using one-half standard deviation shocks	5	5	7	8	8	9	**11**	8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	5	7	8	9	10	11	**12**	10
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	24	24	24	24	24	24	**24**	24

Sources: Cambodian authorities; and staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), noninterest current account in percent of GDP, and nondebt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline, while grace and maturity periods are the same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 4a. Alternative Scenario of Increasing Borrowing Limits: Public Sector Debt Sustainability Framework, 2008–31
(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
					Standard							2011–16			2017–31
	2008	2009	2010	Average 1/	)eviation 1/	2011	2012	2013	2014	2015	2016	Average	2021	2031	Average
Public sector debt 2/	27.8	29.2	28.2			30.5	35.3	36.3	36.7	37.9	38.4		35.4	19.4	
Of which: Foreign-currency denominated	27.0	28.5	27.6			30.0	34.8	35.9	36.2	37.6	38.1		35.2	19.3	
Change in public sector debt	-2.8	1.4	-1.0			2.3	4.8	1.0	0.3	1.3	0.5		-1.2	-1.6	
Identified debt-creating flows	-4.8	4.1	-0.6			0.2	4.9	1.0	-0.1	1.0	0.2		-0.7	-0.6	
Primary deficit	-0.5	4.0	2.3	1.9	1.7	2.6	7.5	3.6	2.7	3.9	3.3	3.9	2.1	1.1	1.7
Revenue and grants	16.4	16.3	18.0			16.2	16.3	16.8	17.5	17.8	18.3		19.0	20.5	
Of which: Grants	3.3	4.2	4.9			3.3	3.0	2.9	2.9	2.8	2.7		2.4	1.8	
Primary (noninterest) expenditure	15.9	20.2	20.3			18.8	23.8	20.4	20.2	21.7	21.6		21.1	21.5	
Automatic debt dynamics	-4.3	0.1	-2.9			-2.4	-2.6	-2.6	-2.8	-2.9	-3.0		-2.8	-1.7	
Contribution from interest rate/growth differential	-2.4	0.3	-1.7			-1.6	-2.0	-2.2	-2.4	-2.6	-2.8		-2.7	-1.6	
Of which: Contribution from average real interest rate	-0.5	0.3	0.0			0.0	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1	-0.1	
Of which: Contribution from real GDP growth	-1.9	0.0	-1.6			-1.6	-1.9	-2.1	-2.3	-2.5	-2.6		-2.6	-1.5	
Contribution from real exchange rate depreciation	-2.0	-0.2	-1.3			...	...	...	...	...	...		...	...	
Other identified debt-creating flows	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g., bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	2.0	-2.7	-0.3			2.1	-0.1	0.1	0.4	0.3	0.2		-0.5	-1.0	
Other sustainability indicators	...	...	20.2			22.3	26.2	27.2	27.6	28.8	29.3		27.7	15.3	
Of which: Foreign-currency denominated	...	...	19.6			21.7	25.7	26.7	27.2	28.4	28.9		27.5	15.2	
Of which: External	...	...	19.6			21.7	25.7	26.7	27.2	28.4	28.9		27.5	15.2	
Of which: External	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	1.0	5.1	3.5			3.7	8.7	4.8	4.0	5.2	4.8		3.6	2.4	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	112.1			137.2	160.8	161.4	157.4	161.3	160.2		145.6	74.9	
PV of public sector debt-to-revenue ratio (in percent)	...	...	154.4			171.7	196.4	195.2	188.1	191.2	188.1		166.7	82.2	
Of which: External 4/	...	...	149.7			167.4	192.6	191.9	185.2	188.7	185.9		165.4	81.8	
Debt service-to-revenue and grants ratio (in percent) 5/	4.1	3.3	3.9			3.8	4.6	4.6	5.0	5.3	6.4		7.0	6.1	
Debt service-to-revenue ratio (in percent) 5/	5.1	4.5	5.3			4.8	5.6	5.6	6.0	6.3	7.5		8.0	6.7	
Primary deficit that stabilizes the debt-to-GDP ratio	2.3	2.6	3.2			0.2	2.8	2.6	2.4	2.6	2.8		3.3	2.7	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.7	0.1	6.0	8.1	3.6	5.8	6.5	6.4	6.8	7.4	7.4	6.7	7.6	7.8	7.7
Average nominal interest rate on forex debt (in percent)	0.8	1.1	1.1	1.1	0.1	1.2	1.1	1.4	1.5	1.6	1.6	1.4	1.7	1.7	1.7
Average real interest rate on domestic debt (in percent)	-10.5	-2.1	-2.8	-4.6	2.8	-3.7	-3.5	-3.0	-2.8	-2.7	-2.8	-3.1	-2.4	-2.5	-2.5
Real exchange rate depreciation (in percent, + indicates depreciatio	-7.2	-0.6	-4.7	-2.5	2.8	-3.1	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	12.3	2.6	3.1	4.5	3.3	4.1	3.8	3.3	3.2	3.1	3.1	3.4	2.7	2.8	2.8
Growth of real primary spending (deflated by GDP deflator, in perce	16.7	27.3	6.2	5.1	9.5	-1.9	35.1	-8.8	5.8	15.3	6.5	8.7	8.8	8.3	
Grant element of new external borrowing (in percent)	...	...	...	...	...	23.8	23.3	26.5	26.1	24.9	25.3	25.0	25.7	23.0	...

Sources: Cambodian 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/ The public sector debt represents general government gross debt.
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 4b. Alternative Scenario of Increasing Borrwing Limits: Sensitivity Analysis for Key Indicators of Public Debt, 2011–31

(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
Present value of debt-to-GDP ratio								
Baseline	22	26	27	28	29	29	28	15
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	22	21	20	20	20	20	19	16
A2. Primary balance is unchanged from 2011	22	22	22	22	23	23	24	22
A3. Permanently lower GDP growth 1/	22	27	28	29	31	32	35	36
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	22	27	29	30	32	32	33	22
B2. Primary balance is at historical average minus one standard deviations in 2012–13	22	23	24	24	26	27	26	15
B3. Combination of B1–B2 using one half standard deviation shocks	22	22	22	23	25	26	25	15
B4. One-time 30 percent real depreciation in 2012	22	34	34	34	34	34	31	18
B5. 10 percent of GDP increase in other debt-creating flows in 2012	22	35	36	36	36	36	32	17
Present value of debt-to-revenue ratio 2/								
Baseline	137	161	161	157	161	160	146	75
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	137	128	121	115	112	108	100	77
A2. Primary balance is unchanged from 2011	137	133	130	128	128	127	127	110
A3. Permanently lower GDP growth 1/	137	162	165	163	171	173	181	172
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	137	165	171	169	176	177	171	109
B2. Primary balance is at historical average minus one standard deviations in 2012–13	137	139	141	139	145	145	136	71
B3. Combination of B1–B2 using one half standard deviation shocks	137	135	133	132	138	140	134	73
B4. One-time 30 percent real depreciation in 2012	137	209	203	193	192	187	162	86
B5. 10 percent of GDP increase in other debt-creating flows in 2012	137	216	212	204	203	198	170	85
Debt service-to-revenue ratio 2/								
Baseline	4	5	5	5	5	6	7	6
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	4	4	4	4	0	1	0	6
A2. Primary balance is unchanged from 2011	4	4	4	5	1	2	3	11
A3. Permanently lower GDP growth 1/	4	4	5	6	6	8	11	20
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	4	4	5	6	6	8	11	12
B2. Primary balance is at historical average minus one standard deviations in 2012–13	4	4	5	5	2	4	6	6
B3. Combination of B1–B2 using one half standard deviation shocks	4	4	4	5	1	2	6	6
B4. One-time 30 percent real depreciation in 2012	4	5	7	8	8	10	13	14
B5. 10 percent of GDP increase in other debt-creating flows in 2012	4	4	6	7	15	15	13	9

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

INTERNATIONAL MONETARY FUND

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