INTERNATIONAL MONETARY FUND

BANGLADESH

STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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This debt sustainability analysis (DSA) fully updates the May 2017 joint IMF/WB DSA. Bangladesh's risks of external debt distress and overall debt distress continue to be assessed as low. The FY17 fiscal deficit remains well below the 5 percent of GDP budget target. Spending control and slower implementation of development projects more than compensated for revenue underperformance. The issuance of National Savings Certificates (NSCs) remains high. Over the medium term, debt ratios are projected to remain on a sustainable path, assuming continued spending restraint, with the deficit used to finance productive investment. Boosting budget revenue is key to creating fiscal space for diversification and growth. The authorities are delaying the implementation of the VAT reform further by two years. Any additional costs from spending pressures ahead of the parliamentary elections and from the Rohingya refugees remain key risks.[1]

[1] For the purposes of this DSA, the public sector comprises the central government and nonfinancial public enterprises. This analysis is based on the joint Fund-Bank debt sustainability framework for conducting debt sustainability analysis in low-income countries. Under IDA's Country Policy and Institutional Assessment (CPIA), Bangladesh is assessed to be a medium performer, with an average rating of 3.32 during 2014–16. This DSA uses the indicative thresholds for countries for this category.

A. Background

1. This DSA presents staffs' macroeconomic outlook and assumptions about the public sector's external and domestic borrowing paths. The DSA is based on estimates of the stock of public external, domestic, and private external debt as of end-FY17 and analyzes the likely trajectories of standard debt sustainability (solvency and liquidity) ratios through FY38.[2]

2. As of end-FY17, total public and publicly guaranteed (PPG) external debt is estimated to be US$35 billion (14.3 percent of GDP).[3] Multilateral creditors account for a large share of the total public and publicly guaranteed debt, with the World Bank and the Asian Development Bank being the largest creditors while China and Japan are the largest bilateral creditors.

3. Total public sector domestic debt as of end-FY17 amounted to 18.9 percent of GDP, or 180 percent of central government revenues, including grants. Domestic debt comprises mostly commercial banks' holdings of treasury instruments and non-banks' holdings of NSCs. It also includes net credit by Bangladesh Bank. The issuance of expensive NSCs increased sharply in FY17 and has remained high in FY18.

Table 1. External (PPG) and Domestic Debt
(end-FY17)

end- FY 2017	US$ billion	Percent of PPG debt
Total PPG Debt	35.0	100.0
Multilateral	23.3	66.6
of which		
World Bank (IDA)	13.1	37.4
Asian Development Bank	8.2	23.5
Bilateral	5.8	16.7
of which		
Japan	3.2	9.2
China	1.0	2.9
Short Term Debt	2.5	7.3
Guarantees (SOE)	3.3	9.5

end-FY 2017	Taka billion	Percent of Domestic Debt
Total Domestic Debt	3731.6	100.0
Bangladesh Bank	158.7	4.3
Deposit Money Banks	1407.0	37.7
T-bills	235.2	6.3
T-bonds	1117.6	29.9
Others	54.3	1.5
Nonbanks	2165.9	58.0
NSCs	1909.0	51.2

Source: Bangladesh Authorities

B. Underlying Assumptions

4. The main changes to the macroeconomic assumptions relative to the previous DSA are described below, primarily reflecting revisions to FY17 and the projections:

- **Real GDP growth.** Real GDP growth further strengthened to 7.3 percent in FY17 from 7.1 percent in FY16, driven by domestic demand. Growth is expected to moderate slightly to 7.0 percent in FY18, led by private consumption and investment. The Seventh Five-Year

[2] Fiscal year is defined from July to June.

[3] PPG external debt consists of medium to long term loans from multilateral and bilateral creditors, short term debt and borrowings of the state owned enterprises. Domestic debt does not include the outstanding liabilities of state-owned enterprises to the banking system.

Plan (FY16 – 20) aims at increasing real GDP growth to 7.4 percent on average during FY16-20. However, staff estimate growth to be around 7 percent, below the authorities' target. A growth accounting exercise explains that to be able to reach their growth target over the next three fiscal years, the authorities will need to boost investment by a large margin.

- **Inflation.** Headline inflation increased slightly to 5.9 percent in FY17 (y/y) towards the end of fiscal year due mainly to higher food prices. After picking-up in mid-2017 due to higher flood-related food prices, inflation is expected to decline to below 6 percent, close to the central bank's 5.5 percent average inflation target.

- **Fiscal deficit.** The FY17 fiscal deficit was 3.4 percent of GDP, well below the 5 percent of GDP budget target. Spending control and slower implementation of development projects more than compensated for revenue underperformance. The projected larger fiscal deficit in FY18 is mainly driven by increases in the annual development program spending, which would compensate for the slower implementation in FY17 and expedite infrastructure development. Over the medium term, it is assumed that spending growth will be aligned to projections of revenue growth which currently do not include the VAT implementation.

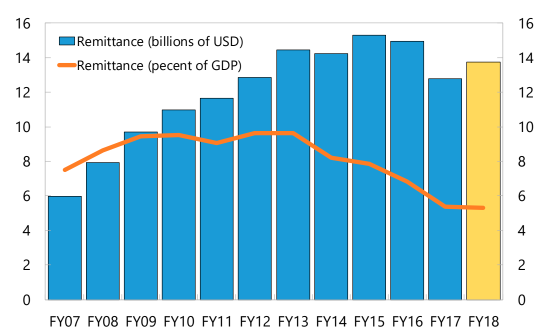
- **Current account.** In FY17, the CA turned into a small deficit (0.6 percent of GDP in FY17). Exports and imports of goods and services grew by an estimated 1.7 percent and 9.0 percent, respectively, while remittances dropped by 14.7 percent. The CA deficit is projected to widen in FY18, with strong import demand for capital machinery and industrial raw materials and a temporary need for food imports. Over the longer term, the CA is expected to remain in deficit in the expectation that investments will continue, as suggested by the strong import demand for capital goods.

Table 2. Macro Assumption Comparison FY16 – FY20

	FY16	FY17	FY18	FY19	FY20
Real GDP growth					
Current DSA	7.1	7.3	7.0	7.0	7.0
Previous DSA	7.1	6.8	7.0	7.0	7.0
Inflation (annual average)					
Current DSA	5.9	5.4	5.9	6.0	6.0
Previous DSA	5.9	6.8	6.0	5.5	5.5
Fiscal deficit (in percent of GDP)					
Current DSA	-3.5	-3.4	-4.3	-4.8	-4.4
Previous DSA	-3.5	-4.9	-4.7	-4.6	-4.4
Current account (in percent of GDP)					
Current DSA	1.9	-0.6	-1.8	-2.3	-2.4
Previous DSA	1.7	-0.4	-1.0	-1.6	-2.0
Remittance growth					
Current DSA	-1.6	-14.7	9.0	3.5	4.5
Previous DSA	-3.0	-17.0	3.5	3.5	4.5

- **Remittances.** After a significant decline in FY17, inflows are expected to pick up this year based on the increase in non-oil growth in the GCC and a recovery driven by relatively stronger global growth. Remittances are expected to grow modestly in FY18, reaching US$14 billion by June 2018. However, attaining historical levels of growth will be an uphill task.

Remittance Inflows into Bangladesh



Sources: Bangladesh authorities, IMF Staff

C. External DSA

5. All debt indicators under the baseline remain well within the respective policy-dependent solvency thresholds. Under the baseline scenario, the PV of PPG external debt to GDP ratio is projected to increase from 10.4 percent of GDP in FY17 to 13.1 percent in FY23. It is projected to remain stable reaching 9.2 percent of GDP by FY38. Other PPG indicators remain well within the respective policy-dependent solvency thresholds under the baseline scenario (Figure 1 and Tables 2–3). The stress tests with the biggest impact on debt indicators are those involving a large depreciation, borrowing on less favorable terms, and an export shock. The threshold for external debt service to revenue is breached under the extreme stress test scenario under the depreciation shock, however, this breach is small and temporary.

6. External risks include contracting large amounts of short term debt, a protracted slowdown in key export markets, a rapid build-up of non-concessional debt, or a combination thereof.

- **Short term debt.** The risk from contracting short term external debt is highlighted by the small and temporary breach of the threshold in the short term.

- **A protracted slowdown in key export markets**. The RMG sector continues to maintain a large and steady share in total exports at around 80 percent. The growth in the sector has been tepid while its production costs continue to increase. Growth in FY 2017 was only 0.2 percent – the lowest observed in the last fifteen years – while the average growth in the past five years has been half of what it used to be in the five years preceding. Therefore, any slowdown in demand in the sector is flagged as a risk given how narrow the export basket currently is.

- **Rapid build-up of non-concessional debt.** Per Hong Kong Trade Development Council, under the Belt and Road Initiative, the Chinese authorities have planned to finance several infrastructure projects, including investments from Chinese entrepreneurs in several sectors like telecom, agriculture, power, and energy. A line of credit with India totaling US$4.5 billion has been signed in October 2017. While the investments are much needed to boost infrastructure and address a shortage of power, higher non-concessionally externally-financed infrastructure spending could push up the debt path.

D. Public DSA

7. The authorities remain committed to the 5 percent of GDP deficit target for FY18. As in previous years, the budget targets ambitious increases for both expenditures and revenues – 26 percent and 32 percent, respectively. But the authorities are likely to adjust their spending in response to weaker revenues partly due to the delay in the VAT reform. NSC issuance continues at a rapid pace, exceeding the budgeted amount by a large margin and leading to a net reduction in domestic bank financing. By the end of 2017, the stock of NSCs reached more than double the amount compared to outstanding government borrowing from the banking sector. The budget faces risks, including from spending pressures ahead of the parliamentary elections and additional costs associated with the Rohingya refugees. International support will continue to be essential in addressing the influx of Rohingya refugees. Per the DSA, the PV of public debt to GDP ratio is projected to increase from 29.2 percent in FY17 to 35 percent in FY23 and then trends down over the long term, remaining well within the benchmark value under the baseline and for all standard stress tests (Figure 2 and Tables 4-5). The relatively high level of the total public debt service to revenue ratio underscores the need to boost revenues, including by implementing the delayed VAT reform.

8. Contingent liabilities from high non-performing loans (NPLs) in state owned commercial banks (SOCBs) could result in higher domestic debt. However, the potential impact appears to be manageable. While the NPLs approach 30 percent of total SOCBs loans, the total amount represents only about 2.0 percent of GDP. This amount provides a magnitude of the potential risk to the government's balance sheet. Actual NPLs could be higher than reported and could increase in the future, but bank's provisions against bad loans mitigate the fiscal risk. Moreover, the authorities are taking steps to address the NPLs in the SOCBs (see Staff Report). Liquidity concerns in the SOCBs are currently limited.

E. Staffs' Illustrative Scenario

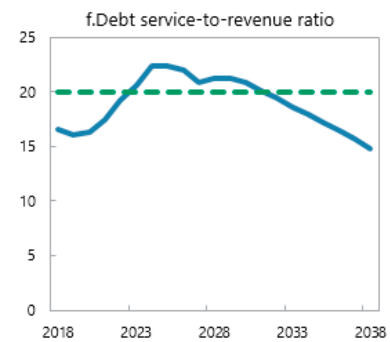
9. To highlight risks from the expenditure arising from the Rohingya crises, staff includes the impact of the costs and its effects on debt sustainability as an illustrative scenario. The Rohingya are a stateless Muslim minority in Myanmar, a majority of whom are women, children, and the elderly. As of March 2018, close to 900,000 refugees reside in Bangladesh. In the medium and long term, the economic, social, and environmental impacts of the crisis could be large if repatriation does not proceed as swiftly as planned.

a. In October 2017, the international community pledged US$360 million under the Rohingya Refugee Crisis Response Plan to meet expenses until February 2018. Several donors have announced in-kind assistance worth more than US$50 million. A second Joint Response Plan was launched in March 2018 to cover the needs of both refugees and host communities from March until December 2018, with a funding request of US$951 million. The UNHCR launched a supplementary appeal of US$238 million for 2018 to enhance protection and step up emergency preparedness.

b. The impact on the budget will depend on relief efforts and the extent to which donor support continues. Currently, the authorities are coping with costs as they emerge, but are confident that with external support and some re-allocations, additional spending pressures can be met without exceeding the budget deficit target.

c. However, donor support could wane, which would then increase the burden on the authorities. To illustrate the impact of these costs, it is assumed that the authorities will meet these costs from domestic and external resources. Over the next six years, it is presumed that approximately Tk. 440 billion (US$5.4 billion) will be raised domestically borrowed with a higher interest rate and a little over US$ US$1 billion will be borrowed externally on non-concessional terms given donor fatigue. Additionally, it is also expected that import growth will increase from 8 percent (baseline) to 9 percent to meet increased demands.

10. Under the illustrative scenario, the debt sustainability outlook is affected by the worsening of the PV of public debt-to-GDP ratio and the external debt service ratios. On the external side, the most important result is the deterioration and breach of the external debt service-to-revenue over the medium term. The other external indicators also deteriorate but remain below their respective thresholds. On the public debt, the PV of public debt-to-GDP ratio deteriorates by almost 1.5 percentage points of GDP on average over the projection period. This scenario strengthens the argument to create the fiscal space by implementing the VAT and the need for continued donor support from the international community to address the refugee crisis. In the case of needs that arise from the refugee crisis, it is also important to continue to rely on concessional financing to the extent possible to maintain sustainability.



F. Conclusion

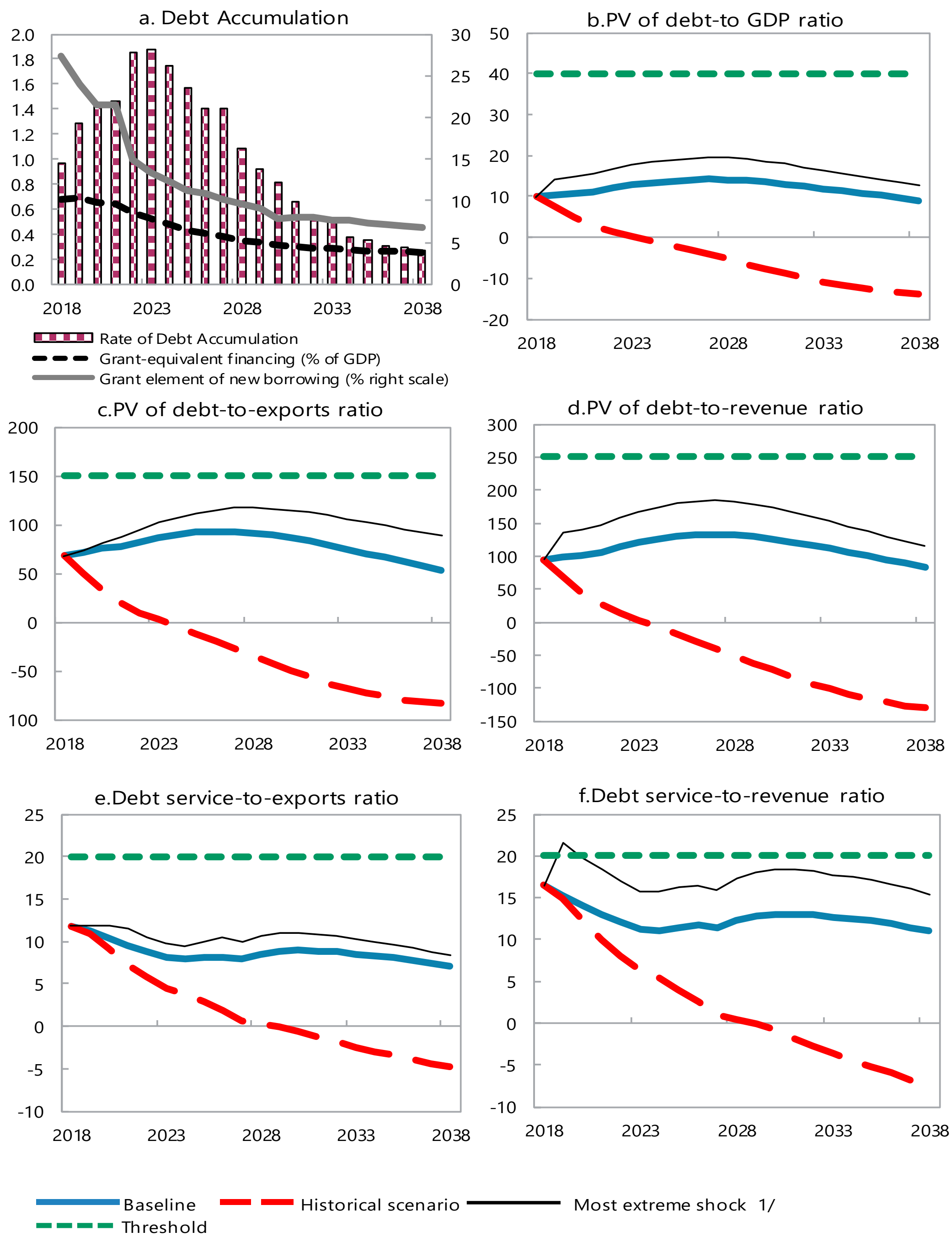
11. The risk of external debt distress and overall debt distress remains low. While the threshold for the external debt service to revenue is breached temporarily under the most extreme stress test scenario, staff judge the risk of external debt distress to be low given the small and temporary nature of the breach. The need for donor support to mitigate the impact of the refugee crisis, especially over the next few years, is highlighted. As in the case of project financing, it is important that the authorities rely on concessional financing to address the needs stemming from the refugee crises.

G. Authorities Views

12. The authorities agree with the low risk of debt distress and consider the level of debt as manageable. The composition of the current stock of public and publicly guaranteed external debt is largely concessional. However, they recognized the need for prudent debt management as terms from creditors are expected to harden reflecting the country's graduation from lower income status. They clarified that the current large disbursements reflect debt for large infrastructure. They emphasized that fiscal policy continues to be guided by the 2009 Public Money and Budget Management Act, which stipulates that public debt as a percent of GDP should be gradually declining. The authorities noted that the Rohingya refugee crisis is not expected to have a major impact on government deficits and public debt. An internal debt sustainability analysis has also been planned.

Figure 1. Bangladesh: Indicators of Public and Publicly Guaranteed External Debt, 2018–2038 1/

(In percent, unless otherwise mentioned)

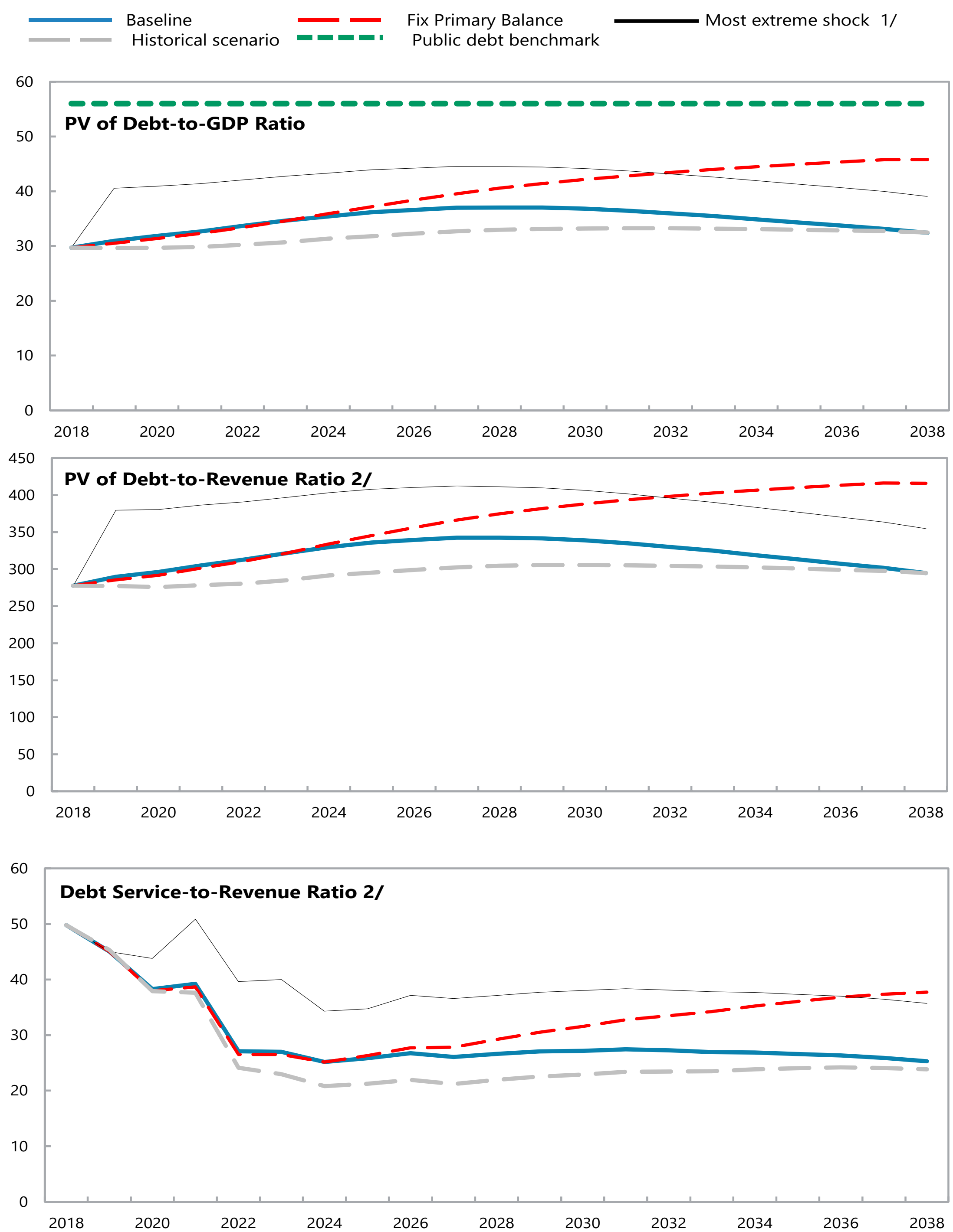


Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2028. 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 Exports shock and in figure f. to a One-time depreciation shock

Figure 2. Bangladesh: Indicators of Public Debt, 2018–2038 1/

(In percent)



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2028.

2/ Revenues are defined inclusive of grants.

Table 1. Bangladesh: External Debt Sustainability Framework, Baseline Scenario, 2015–2038 1/

(In percent of GDP, unless otherwise indicated)

	Act	Act	Est	Historical Average 6/	Standard Deviation 6/	Projections									
	2015	2016	2017			2018	2019	2020	2021	2022	2023	2018-2023 Average	2028	2038	2024-2038 Average
External debt (nominal) 1/	**19.1**	**18.5**	**18.5**			**17.5**	**17.2**	**17.2**	**17.6**	**18.2**	**18.8**		**19.7**	**20.8**	
of which: public and publicly guaranteed (PPG)	15.1	14.5	14.3			14.2	14.5	15.0	15.5	16.2	16.9		17.5	10.9	
Change in external debt	1.5	-0.6	0.0			-0.9	-0.4	0.0	0.4	0.6	0.6		0.1	-0.1	
Identified net debt-creating flows	-4.7	-4.8	-2.2			-0.1	0.4	0.5	0.4	0.1	-0.1		0.1	0.4	
Non-interest current account deficit	**-2.2**	**-2.3**	**0.0**	**-1.2**	**1.4**	**1.2**	**1.7**	**1.8**	**1.6**	**1.4**	**1.1**		**1.6**	**1.5**	1.5
Deficit in balance of goods and services	5.2	4.1	5.1			6.3	6.4	6.2	5.9	5.5	5.2		4.9	4.7	
Exports	17.3	16.7	15.1			14.6	14.3	14.3	14.4	14.5	14.7		15.3	16.8	
Imports	22.5	20.8	20.2			20.9	20.7	20.5	20.3	20.1	19.9		20.2	21.5	
Net current transfers (negative = inflow)	-8.1	-6.9	-5.3	-8.8	1.6	-5.3	-5.0	-4.8	-4.6	-4.4	-4.2		-3.7	-2.9	-3.5
of which: official	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other current account flows (negative = net inflow)	0.7	0.5	0.2			0.2	0.3	0.3	0.3	0.2	0.2		0.4	-0.3	
Net FDI (negative = inflow)	**-0.9**	**-0.6**	**-0.7**	**-0.8**	**0.2**	**-0.7**	**-0.8**	**-0.7**	**-0.8**	**-0.8**	**-0.8**		**-1.1**	**-1.2**	-1.1
Endogenous debt dynamics 2/	**-1.6**	**-1.9**	**-1.5**			**-0.6**	**-0.5**	**-0.5**	**-0.5**	**-0.5**	**-0.5**		**-0.4**	**0.2**	
Contribution from nominal interest rate	0.4	0.4	0.6			0.6	0.6	0.6	0.6	0.7	0.7		0.8	1.4	
Contribution from real GDP growth	-1.0	-1.2	-1.2			-1.2	-1.1	-1.1	-1.1	-1.1	-1.2		-1.2	-1.3	
Contribution from price and exchange rate changes	-1.0	-1.1	-0.9			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**6.2**	**4.1**	**2.2**			**-0.8**	**-0.8**	**-0.5**	**0.0**	**0.5**	**0.7**		**0.1**	**-0.6**	
of which: exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	14.1			13.3	12.9	12.9	13.3	14.0	14.6		16.2	18.9	
In percent of exports	...	...	93.5			90.7	90.4	90.6	92.4	96.0	99.4		105.6	112.4	
PV of PPG external debt	**...**	**...**	**9.9**			**9.9**	**10.3**	**10.8**	**11.2**	**12.0**	**12.7**		**14.0**	**9.0**	
In percent of exports	**...**	**...**	**65.5**			**67.9**	**71.9**	**75.4**	**77.9**	**82.4**	**86.6**		**91.4**	**53.4**	
In percent of government revenues	**...**	**...**	**97.1**			**94.6**	**97.8**	**101.5**	**106.0**	**113.3**	**120.2**		**131.8**	**83.1**	
Debt service-to-exports ratio (in percent)	**7.6**	**8.6**	**10.3**			**16.7**	**15.5**	**14.1**	**13.0**	**11.9**	**11.0**		**11.3**	**28.6**	
PPG debt service-to-exports ratio (in percent)	**3.9**	**4.5**	**4.4**			**11.8**	**11.2**	**10.4**	**9.5**	**8.7**	**8.0**		**8.5**	**7.0**	
PPG debt service-to-revenue ratio (in percent)	**7.1**	**7.6**	**6.5**			**16.5**	**15.2**	**14.0**	**13.0**	**12.0**	**11.2**		**12.2**	**11.0**	
Total gross financing need (Billions of U.S. dollars)	-0.3	3.4	9.2			17.9	17.8	16.7	15.3	14.8	14.0		21.2	84.8	
Non-interest current account deficit that stabilizes debt ratio	-3.7	-1.7	0.0			2.1	2.1	1.8	1.2	0.7	0.5		1.4	1.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.6	7.1	7.3	6.3	0.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.5	6.5
GDP deflator in US dollar terms (change in percent)	5.9	5.9	5.1	5.5	3.2	2.0	2.3	2.2	2.0	2.0	2.0	2.1	2.0	2.0	2.0
Effective interest rate (percent) 5/	2.7	2.2	3.6	1.7	0.9	3.5	3.6	3.7	3.9	4.1	4.3	3.9	4.4	7.4	5.6
Growth of exports of G&S (US dollar terms, in percent)	2.7	9.4	1.8	11.1	9.5	6.0	7.0	9.0	10.0	10.3	10.3	8.8	9.5	9.8	9.7
Growth of imports of G&S (US dollar terms, in percent)	0.3	5.0	9.2	11.6	15.7	13.3	8.3	8.3	8.0	8.0	8.0	9.0	9.4	9.2	9.2
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	27.3	24.0	21.4	21.5	15.0	13.4	20.4	9.6	6.8	8.7
Government revenues (excluding grants, in percent of GDP)	9.6	10.0	10.2			10.5	10.5	10.6	10.6	10.6	10.6		10.6	10.8	10.7
Aid flows (in Billions of US dollars) 7/	2.8	3.3	3.3			4.5	5.7	6.4	6.8	8.3	8.7		9.2	15.3	
of which: Grants	0.3	0.2	0.1			0.5	0.5	0.5	0.5	0.8	0.8		1.2	2.8	
of which: Concessional loans	2.5	3.0	3.2			3.9	5.2	5.9	6.2	7.6	7.9		8.0	12.5	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			0.7	0.7	0.6	0.6	0.6	0.5		0.4	0.3	0.3
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			34.6	29.8	26.7	26.3	21.1	19.7		18.9	21.5	19.7
Memorandum items:															
Nominal GDP (Billions of US dollars)	195.1	221.4	249.7			272.6	298.5	326.5	356.4	388.9	424.5		645.1	1476.2	
Nominal dollar GDP growth	12.9	13.5	12.8			9.2	9.5	9.4	9.1	9.1	9.1	9.2	8.6	8.6	8.7
PV of PPG external debt (in Billions of US dollars)			24.2			26.6	30.1	34.4	39.2	45.8	53.1		88.9	132.8	
(PVt-PVt-1)/GDPt-1 (in percent)						1.0	1.3	1.4	1.5	1.8	1.9	1.5	1.1	0.3	0.8
Gross workers' remittances (Billions of US dollars)	15.2	14.9	12.7			13.9	14.4	15.0	15.7	16.5	17.3		23.0	41.3	
PV of PPG external debt (in percent of GDP + remittances)	...	...	9.4			9.5	9.8	10.3	10.7	11.5	12.2		13.5	8.7	
PV of PPG external debt (in percent of exports + remittances)	...	...	48.9			50.4	53.8	57.0	59.6	63.8	67.8		74.1	45.8	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	3.3			8.8	8.4	7.8	7.3	6.8	6.3		6.9	6.0	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

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

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

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

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

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

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

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

Table 2. Bangladesh: Sensitivity Analysis for Key Indicators for Public and Publicly Guaranteed External Debt, 2018–2038

(In percent)

	Projections							
	2018	2019	2020	2021	2022	2023	**2028**	2038
PV of debt-to GDP ratio								
Baseline	10	10	11	11	12	13	**14**	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2018-2038 1/	10	7	5	3	1	0	**-5**	-14
A2. New public sector loans on less favorable terms in 2018-2038 2	10	11	12	12	14	15	**18**	15
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	10	10	11	11	12	13	**14**	9
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	10	11	13	13	14	14	**15**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	10	10	11	11	12	12	**14**	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	10	8	7	7	8	9	**11**	8
B5. Combination of B1-B4 using one-half standard deviation shocks	10	7	5	6	7	8	**10**	8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	10	14	15	16	17	18	**19**	13
PV of debt-to-exports ratio								
Baseline	68	72	75	78	82	87	**91**	53
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2018-2038 1/	68	51	34	19	9	2	**-35**	-83
A2. New public sector loans on less favorable terms in 2018-2038 2	68	74	81	87	95	102	**118**	88
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	68	70	74	76	81	85	**89**	53
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	68	79	101	103	107	110	**110**	62
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	68	70	74	76	81	85	**89**	53
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	68	57	46	50	55	61	**74**	49
B5. Combination of B1-B4 using one-half standard deviation shocks	68	52	38	42	49	55	**71**	49
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	68	70	74	76	81	85	**89**	53
PV of debt-to-revenue ratio								
Baseline	95	98	102	106	113	120	**132**	83
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2018-2038 1/	95	69	45	26	13	3	**-50**	-129
A2. New public sector loans on less favorable terms in 2018-2038 2	95	101	109	118	130	142	**170**	137
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	95	97	102	107	114	121	**132**	84
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	95	102	120	124	130	136	**141**	85
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	95	96	99	104	111	118	**129**	82
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	95	77	61	67	76	84	**106**	76
B5. Combination of B1-B4 using one-half standard deviation shocks	95	69	49	55	64	73	**98**	74
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	95	136	141	147	157	167	**182**	116

Table 3. Bangladesh: Sensitivity Analysis for Key Indicators for Public and Publicly Guaranteed External Debt, 2018–2038 (Concluded)

(In percent)

				Debt service-to-exports ratio				
Baseline	12	11	10	10	9	8	**8**	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2018-2038 1/	12	11	9	7	6	5	**0**	-5
A2. New public sector loans on less favorable terms in 2018-2038 2	12	11	10	10	9	8	**10**	10
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	12	11	10	10	9	8	**8**	7
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	12	12	12	11	11	10	**11**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	12	11	10	10	9	8	**8**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	12	11	10	8	8	7	**7**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	12	11	10	8	8	7	**6**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	12	11	10	10	9	8	**8**	7
				Debt service-to-revenue ratio				
Baseline	16	15	14	13	12	11	**12**	11
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2018-2038 1/	16	15	12	10	8	6	**0**	-7
A2. New public sector loans on less favorable terms in 2018-2038 2	16	15	14	13	12	12	**15**	16
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2019-2020	16	15	14	13	12	11	**13**	11
B2. Export value growth at historical average minus one standard deviation in 2019-2020 3/	16	15	14	14	13	12	**14**	12
B3. US dollar GDP deflator at historical average minus one standard deviation in 2019-2020	16	15	14	13	12	11	**12**	11
B4. Net non-debt creating flows at historical average minus one standard deviation in 2019-2020 4/	16	15	13	11	10	10	**10**	10
B5. Combination of B1-B4 using one-half standard deviation shocks	16	15	13	11	10	9	**9**	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2019 5/	16	22	20	18	17	16	**17**	15
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	7	7	7	7	7	7	**7**	7

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 a 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. Bangladesh: Public Sector Debt Sustainability Framework, Baseline Scenario, 2015–2038

(In percent of GDP, unless otherwise indicated)

	Act	Act	Est			Projections									
	2015	2016	2017	Average 5/	Standard Deviation 5/	2018	2019	2020	2021	2022	2023	2018-23 Average	2028	2038	2024-38 Average
Public sector debt 1/	33.7	33.3	33.2			34.0	35.2	36.1	37.0	37.9	38.8		40.5	34.3	
of which: foreign-currency denominated	15.1	14.5	14.3			14.2	14.5	15.0	15.5	16.2	16.9		17.5	10.9	
Change in public sector debt	-1.6	-0.4	-0.2			0.8	1.2	0.9	0.9	1.0	0.9		-0.2	-0.9	
Identified debt-creating flows	0.0	-0.7	-0.3			1.1	1.4	1.1	1.0	1.1	0.9		0.0	-0.5	
Primary deficit	1.8	1.4	1.6	1.4	0.4	2.5	2.9	2.5	2.4	2.4	2.2	2.5	1.4	1.0	1.3
Revenue and grants	9.8	10.1	10.2			10.7	10.7	10.8	10.7	10.8	10.8		10.8	11.0	
of which: grants	0.2	0.1	0.1			0.2	0.2	0.2	0.1	0.2	0.2		0.2	0.2	
Primary (noninterest) expenditure	11.6	11.5	11.9			13.2	13.6	13.3	13.1	13.1	13.0		12.2	12.0	
Automatic debt dynamics	-1.8	-2.1	-2.0			-1.7	-1.9	-1.9	-1.9	-1.9	-1.9		-1.8	-1.7	
Contribution from interest rate/growth differential	-1.3	-1.5	-1.8			-1.7	-1.9	-1.8	-1.8	-1.8	-1.8		-1.7	-1.5	
of which: contribution from average real interest rate	0.9	0.8	0.5			0.4	0.3	0.5	0.5	0.6	0.7		0.7	0.7	
of which: contribution from real GDP growth	-2.2	-2.2	-2.3			-2.2	-2.2	-2.3	-2.4	-2.4	-2.5		-2.5	-2.1	
Contribution from real exchange rate depreciation	-0.6	-0.6	-0.2			0.0	0.0	-0.1	-0.1	-0.1	-0.1		...	...	
Other identified debt-creating flows	0.0	0.1	0.1			0.3	0.4	0.5	0.5	0.6	0.6		0.4	0.2	
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	0.1	0.1			0.3	0.4	0.5	0.5	0.6	0.6		0.4	0.2	
Residual, including asset changes	-1.6	0.3	0.1			-0.2	-0.2	-0.2	-0.2	-0.1	-0.1		-0.2	-0.4	
Other Sustainability Indicators															
PV of public sector debt	...	...	28.8			29.7	31.0	31.8	32.7	33.7	34.6		37.0	32.4	
of which: foreign-currency denominated	...	...	9.9			9.9	10.3	10.8	11.2	12.0	12.7		14.0	9.0	
of which: external	...	...	9.9			9.9	10.3	10.8	11.2	12.0	12.7		14.0	9.0	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	7.8	6.5	9.2			9.8	8.5	7.2	7.1	5.7	5.4		4.4	3.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	281.4			277.6	289.7	296.1	305.1	313.1	321.5		342.3	294.5	
PV of public sector debt-to-revenue ratio (in percent)	...	...	282.9			282.8	294.6	300.6	309.4	318.8	327.4		348.4	299.6	
of which: external 3/	...	...	97.1			94.6	97.8	101.5	106.0	113.3	120.2		131.8	83.1	
Debt service-to-revenue and grants ratio (in percent) 4/	26.8	25.5	55.4			49.8	45.0	38.3	39.2	27.1	27.0		26.6	25.3	
Debt service-to-revenue ratio (in percent) 4/	27.3	25.7	55.7			50.7	45.8	38.9	39.8	27.6	27.5		27.1	25.7	
Primary deficit that stabilizes the debt-to-GDP ratio	3.4	1.7	1.8			1.7	1.7	1.6	1.5	1.4	1.3		1.5	1.9	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.6	7.1	7.3	6.3	0.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.5	6.5
Average nominal interest rate on forex debt (in percent)	1.5	1.4	1.4	1.1	0.2	2.2	2.6	2.9	3.1	3.3	3.6	2.9	3.5	4.0	3.8
Average real interest rate on domestic debt (in percent)	4.7	4.2	2.8	3.9	1.1	2.3	1.4	1.5	1.7	1.9	1.8	1.8	2.0	2.0	1.9
Real exchange rate depreciation (in percent, + indicates depreciation)	-4.0	-4.5	-1.8	-3.4	3.8	0.0	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	5.9	6.7	6.3	7.0	0.9	6.0	6.2	6.1	6.0	5.7	5.5	5.9	5.5	5.5	5.6
Growth of real primary spending (deflated by GDP deflator, in percent)	4.2	5.4	11.0	2.1	3.7	19.1	10.5	4.2	5.6	7.4	5.6	8.7	4.5	6.8	6.0
Grant element of new external borrowing (in percent)	...	...	...	...	...	27.3	24.0	21.4	21.5	15.0	13.4	20.4	9.6	6.8	...

Sources: Country authorities; and staff estimates and projections.

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

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

3/ Revenues excluding grants.

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

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

Table 5. Bangladesh: Sensitivity Analysis for Key Indicators of Public Debt, 2018–2038
(In percent)

		Projections						
	2018	2019	2020	2021	2022	2023	2028	2038
PV of Debt-to-GDP Ratio								
Baseline	30	31	32	33	34	35	37	32
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	30	30	30	30	30	31	33	32
A2. Primary balance is unchanged from 2018	30	30	31	32	33	35	41	46
A3. Permanently lower GDP growth 1/	30	31	32	33	34	35	38	36
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2019-2020	30	31	33	34	35	37	40	37
B2. Primary balance is at historical average minus one standard deviations in 2019-2020	30	30	30	31	32	33	36	32
B3. Combination of B1-B2 using one half standard deviation shocks	30	30	30	31	33	34	38	35
B4. One-time 30 percent real depreciation in 2019	30	35	36	36	37	38	41	39
B5. 10 percent of GDP increase in other debt-creating flows in 2019	30	41	41	41	42	43	44	39
PV of Debt-to-Revenue Ratio 2/								
Baseline	278	290	296	305	313	322	342	295
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	278	277	276	278	281	285	305	295
A2. Primary balance is unchanged from 2018	278	285	292	302	310	321	375	416
A3. Permanently lower GDP growth 1/	278	290	297	307	315	325	352	323
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2019-2020	278	295	307	319	329	340	371	336
B2. Primary balance is at historical average minus one standard deviations in 2019-2020	278	279	280	289	298	307	330	286
B3. Combination of B1-B2 using one half standard deviation shocks	278	280	281	293	304	315	347	315
B4. One-time 30 percent real depreciation in 2019	278	329	331	338	345	353	382	350
B5. 10 percent of GDP increase in other debt-creating flows in 2019	278	380	381	386	391	397	411	355
Debt Service-to-Revenue Ratio 2/								
Baseline	50	45	38	39	27	27	27	25
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	50	45	38	38	24	23	22	24
A2. Primary balance is unchanged from 2018	50	45	38	39	27	27	29	38
A3. Permanently lower GDP growth 1/	50	45	38	39	27	27	27	28
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2019-2020	50	46	39	41	28	29	29	30
B2. Primary balance is at historical average minus one standard deviations in 2019-2020	50	45	38	38	25	25	25	24
B3. Combination of B1-B2 using one half standard deviation shocks	50	45	38	38	25	25	27	27
B4. One-time 30 percent real depreciation in 2019	50	48	45	46	34	34	36	38
B5. 10 percent of GDP increase in other debt-creating flows in 2019	50	45	44	51	40	40	37	36

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.