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

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This debt sustainability analysis (DSA) fully updates the January 2016 joint IMF/IDA DSA. Bangladesh's risk of external debt distress and overall debt distress is continued to be assessed as low. Cautious fiscal policy has kept the public debt outlook benign – total public debt is on a sustainable path. Boosting Bangladesh's low budget revenue is key to creating fiscal space for spending on power and transport infrastructure, two of the main bottlenecks to growth. The DSA assumes that the most promising new source of revenue – new value added tax (VAT) – comes into effect in full this coming fiscal year (FY18). The authorities have insisted that this new deadline will be met and that any demands from the business community to alter or water down the VAT's planned structure will be contained. [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 2013–15. 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 the authorities' estimates of the stock of public external, domestic and private external debt as of end-FY16 and analyzes the likely trajectories of standard debt sustainability (solvency and liquidity) ratios through FY37.[2]

2. As of end-FY16, total public and publicly guaranteed (PPG) external debt amounted to US$26 billion (13 percent of GDP or 77 percent of exports of goods and services). The World Bank and the Asian Development Bank are—by far—the two largest creditors, with outstanding loans of US$12.1 and US$7.8 billion, respectively. The largest bilateral creditor is Japan, with outstanding loans of US$2.9 billion (text table).

End-June 2016	USD millions	Percent
Total PPG External Debt	**26,203.72**	**100.0**
Multilateral	**20,915.7**	**79.8**
Asian Development Bank	7,823.55	29.9
Eurasian Economic Commission	14.67	0.1
World Bank (IDA)	12,108.16	46.2
Islamic Development Bank	473.08	1.8
IFAD	389.96	1.5
Nordic Development Fund	36.64	0.1
OPEC Fund	69.63	0.3
Bilateral	**5,288.0**	**20.2**
Belgium	1.34	0.0
China	1,017.70	3.9
Denmark	78.13	0.3
France	24.94	0.1
India	290.39	1.1
Japan	2,953.58	11.3
Kuwait	123.40	0.5
Norway	0.56	0.0
Russia	321.57	1.2
Saudi Arabia	63.81	0.2
South Korea	370.17	1.4
Spain	2.92	0.0
Sweden	1.44	0.0
Switzerland	1.82	0.0
United Arab Emirates	22.57	0.1
United States	13.69	0.1

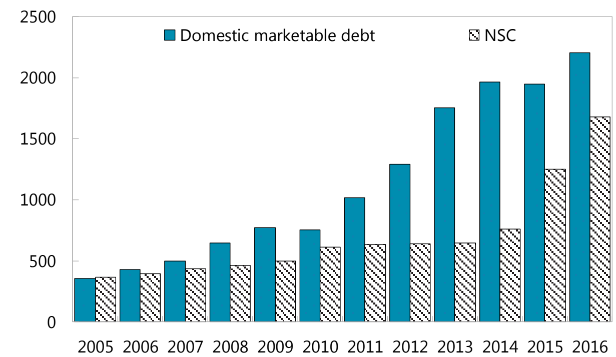
Source: Bangladesh Authorities

3. Total public sector domestic debt as of end-FY16 amounted to 21.3 percent of GDP or 192 percent of central government revenues, including grants. Domestic debt comprises mostly commercial banks' holdings of treasury instruments and non-banks' holdings of national savings certificates (see box). It also includes net credit by Bangladesh Bank and the outstanding liabilities of state-owned enterprises to the banking system.

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

Box. National Savings Certificates (NSCs)

Government Domestic Debt
(Billions Taka)



Sources: Bangladesh Bank

NSCs were introduced as a saving scheme for small savers when the banking system was less developed, and to provide a safety net for certain groups of population (pensioners, women etc.). NSCs have an administered interest rate usually higher than the market rates on bank deposits and government securities with similar maturity. There are about a dozen different instruments with maturities ranging between 3–5 years, available on demand. A single-lender ceiling is set to keep the scheme limited to small savers. The outstanding stock of NSCs is currently about forty percent of total domestic public debt, or ten percent of GDP. The issuance of NSCs has sharply accelerated in recent years and continues to grow mostly determined by public demand and not the budget borrowing plans of the government. The system suffers from various drawbacks such as impeding the much-needed capital market development. From a debt management point of view, given that the issuance is determined by household demand, the government is unable to develop and implement a robust borrowing and debt management strategy that would allow it to manage borrowing costs, maturities, and other aspects of its financing.

B. Underlying Assumptions

4. The main changes to the macroeconomic assumptions relative to the previous DSA are described below, primarily reflecting the impact of revisions to FY16 and FY17 projections:

Table. Macro Assumption Comparison FY16 – FY20

	FY16	FY17	FY18	FY19	FY20
Real GDP growth					
Current DSA	7.1	6.8	7.0	7.0	7.0
Previous DSA	6.3	6.8	7.0	7.0	7.0
Inflation (annual average)					
Current DSA	5.9	6.8	6.0	5.5	5.5
Previous DSA	6.5	7.0	6.7	6.4	6.1
Fiscal deficit (in percent of GDP)					
Current DSA	-3.4	-4.7	-4.4	-4.2	-4.1
Previous DSA	-4.4	-4.3	-4.1	-4.1	-4.0
Current account (in percent of GDP)					
Current DSA	1.7	-0.4	-1.0	-1.6	-2.0
Previous DSA	-1.3	-1.4	-1.6	-1.8	-2.0
Remittance growth					
Current DSA	-3.0	-17.0	3.5	3.5	4.5
Previous DSA	3.0	6.0	6.0	6.0	6.0

- **Real GDP growth.** Official statistics reported output growth rising to 7.1 percent in FY16 from 6½ percent in the preceding fiscal year, supported by robust domestic demand, particularly government consumption, private investment, and external demand. Over the medium-term, growth of 7 percent per year is achievable, but only with an increase in public and private investment and reforms that underpin capital market development and improve investment efficiency. Without these, growth is likely to fall off considerably.

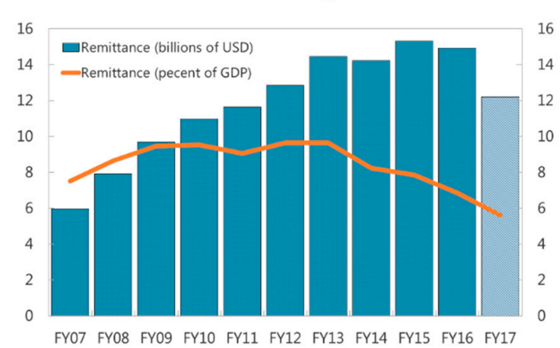
- **Inflation.** Headline CPI inflation (annual average) fell to 5½ percent by end-2016, below the 5.8 percent FY17 target, helped in part by favorable agricultural production and falling global commodity prices. Nonfood inflation has declined as well to 4½ percent in December 2016, compared to over 7 percent a year ago. Inflation is projected to increase somewhat in FY17 as global commodity prices pick up. However, with moderate money and credit growth, stable inflation expectations, and temperate private wage growth, inflation is projected to moderate in the medium term and remain close to Bangladesh Bank's target.

- **Fiscal deficit.** Preliminary data suggest that the FY16 fiscal deficit fell to around 3½ percent of GDP. In the first quarter of FY17 the budget recorded a small surplus, as for the same period a year earlier. The DSA assumes that the VAT – the most promising source of new revenue and a key structural reform under the recently completed ECF program— will be launched in July 2017.

- **Current account.** Exports held up as projected, but imports were revised down resulting in a $4½ billion improvement of the previously estimated trade deficit. This plus similar changes to the services and income accounts led to a significant upward revision to the FY16 current account surplus, from 0.5 percent of GDP to the current estimate of 1.7 percent. On the back of investment-led growth, the current account deficit is projected to widen to about 2 percent of GDP over the medium term, with international reserves remaining adequate.

- **Remittances.** The slowdown in remittances thus far in FY17 is projected to continue in the fiscal year. Remittances have been declining as a share of GDP over the past five years, and have begun falling in absolute terms. Inflows are forecast to drop further to just over $12 billion in 2017 and are assumed to pick up slightly over the medium term.

Remittance Inflows into Bangladesh



Sources: Bangladesh authorities, IMF Staff

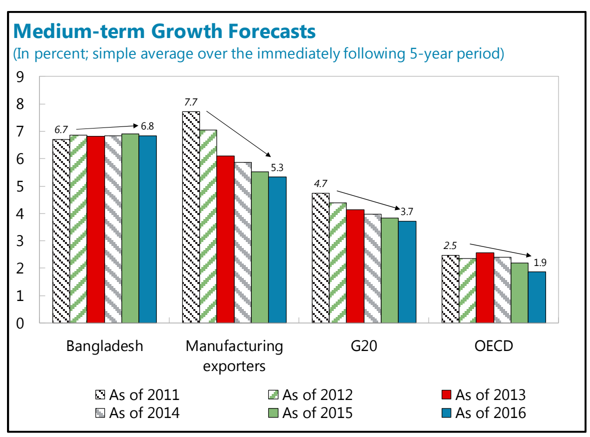
C. External DSA

5. All debt indicators remain well within the respective policy-dependent solvency thresholds under the baseline scenario. The DSA baseline scenario does not include remittances given that the three year backward looking average (7.6 percent of GDP over FY14-FY16) drops below 10 percent which is the required threshold for including it in a remittance based analysis. Thus, the remittance-adjusted thresholds for certain debt ratios are now higher.[3,4] The deterioration of the debt ratios from the exclusion of remittances does not increase the ratios by a large margin. Under the baseline scenario, the PV of PPG external debt to GDP ratio is projected to increase from 8.5 percent of GDP in FY17 to 10.2 percent in FY22, mostly reflecting externally-financed public investment. It is projected to rise slowly and reach close to 11 percent of GDP by FY37. Most PPG indicators also trend up initially, but 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 exports shock.

6. Risks to the external front include a protracted slowdown in key export markets - particularly the EU and a further weakening of remittances. A combination of these could adversely affect the external sector with a negative impact on the balance of payments which in turn could deteriorate of the debt ratios.

- **Remittances continue to decline even though the number of Bangladeshi workers abroad have increased steadily in recent years.** Total remittances thus far in the fiscal year (Jul 16 – Mar 17) have dropped by over fifteen percent compared to the same period last year. GCC countries account for the largest number of migrant workers from Bangladesh and for the largest inflows of remittances into Bangladesh. Substantial deficit-reduction efforts, low oil prices and deepening conflicts that continue to weigh in on economic activity in the GCC and is expected to further affect employment and in turn remittances from these countries. Other factors including measurement gaps related to a shift away towards informal channels for transferring funds have been quoted as possible reasons.

- **Global growth is more subdued now than in the past.** The United States, Germany and the U.K. represent Bangladesh's three main export destinations. Thus, protracted risk of slowdown in the European Union could hurt exports. Additionally, per media reports, British garment importers have started putting price pressures on exports following the announcement of the Brexit. The Trans-Pacific Partnership, of which Bangladesh is not a member, is no



Medium-term Growth Forecasts
(In percent; simple average over the immediately following 5-year period)

[3] Based on staff judgement, remittances were included in the baseline in the previous DSA. Remittances are included in the LIC DSA analysis when both criterion - larger than 10 percent of GDP and 20 percent of exports of goods and services measured on a backward-looking, three-year average basis - are met.

[4] Compared to the previous DSA, the threshold for the PV of debt to GDP is now 10 percent higher than with remittances, while the thresholds for PV of debt to exports and debt service to exports are 20 percent higher.

longer flagged as risk – however, there still remains a large uncertainty around the impact on global trade from the U.S trade policies.

D. Public DSA

7. Bangladesh's moderate public debt and rapid growth gives scope for some cautious deficit spending as laid out in this year's budget target of 5 percent of GDP. The budget has been and will continued to be financed mainly domestically with external financing relatively stable at around 1 percent of GDP. Currently, prudent fiscal policy has kept the public debt outlook benign. Per the DSA, the PV of public debt to GDP ratio is projected to increase from 31 per cent in FY17 to 33.8 per cent in FY22 and then stabilizing around that level over the long term as the impact of higher public investment on debt is mostly offset by an expected increase in tax revenue from the new VAT.[5] The ratio remains well within the benchmark value under the baseline and for all standard stress tests (Figure 2 and Tables 4-5). Debt indicators based on revenues trend downwards over the medium to long term also on the improvement in tax revenue from the upcoming VAT.

E. Conclusion

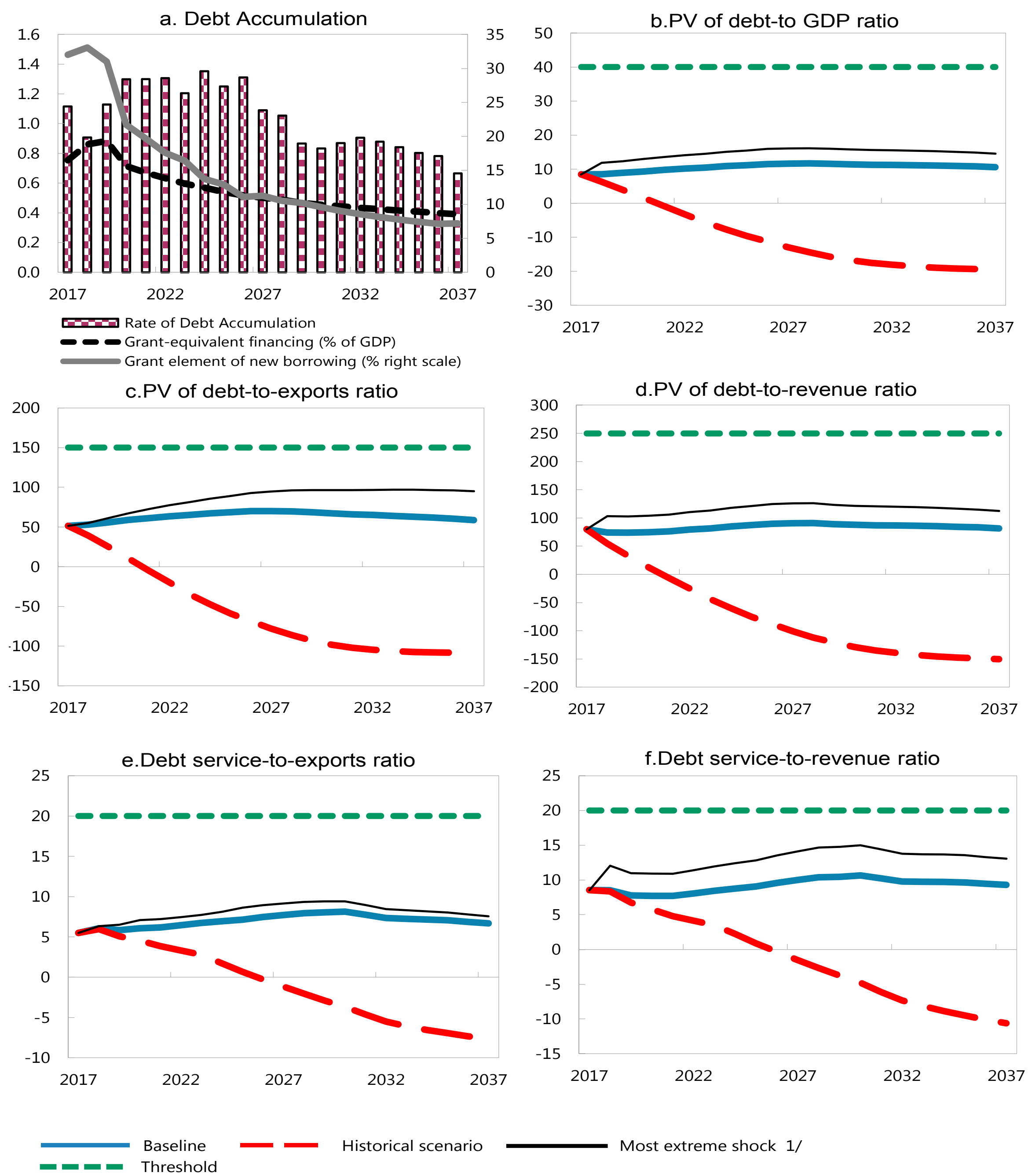
8. The debt sustainability assessment remains unchanged and the risk of external debt distress and overall debt distress remains low. Boosting Bangladesh's low budget revenue is key to preserving fiscal sustainability and sustaining growth. The favorable debt outlook is sensitive to the assumption of continued robust growth and revenue gains from the upcoming VAT launch. The failure to improve revenues would reduce the scope for boosting public investment, with adverse implications on growth and debt dynamics.

9. The authorities agreed that Bangladesh continues to maintain a low risk of external debt distress along with a low risk of overall debt distress. Moderate fiscal deficits, concessional external borrowing and prudent debt management policies have helped keep the outlook robust. The authorities acknowledged the problems arising from the rapid expansion of NSCs and that implementing the strategies in the MTDS (MTDS 2014) can get complex. They explained that they are working on proposals to improve monitoring to get a better understanding of who is benefiting from NSCs.

[5] The DSA in the 2015 Article IV discusses the consequences of failing to introduce the VAT. Please refer to Bangladesh: 2015 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Bangladesh, Country Report No. 16/27.

Figure 1. Bangladesh: Indicators of Public and Publicly Guaranteed External Debt, 2017–2037 1/

(In percent, unless otherwise mentioned)

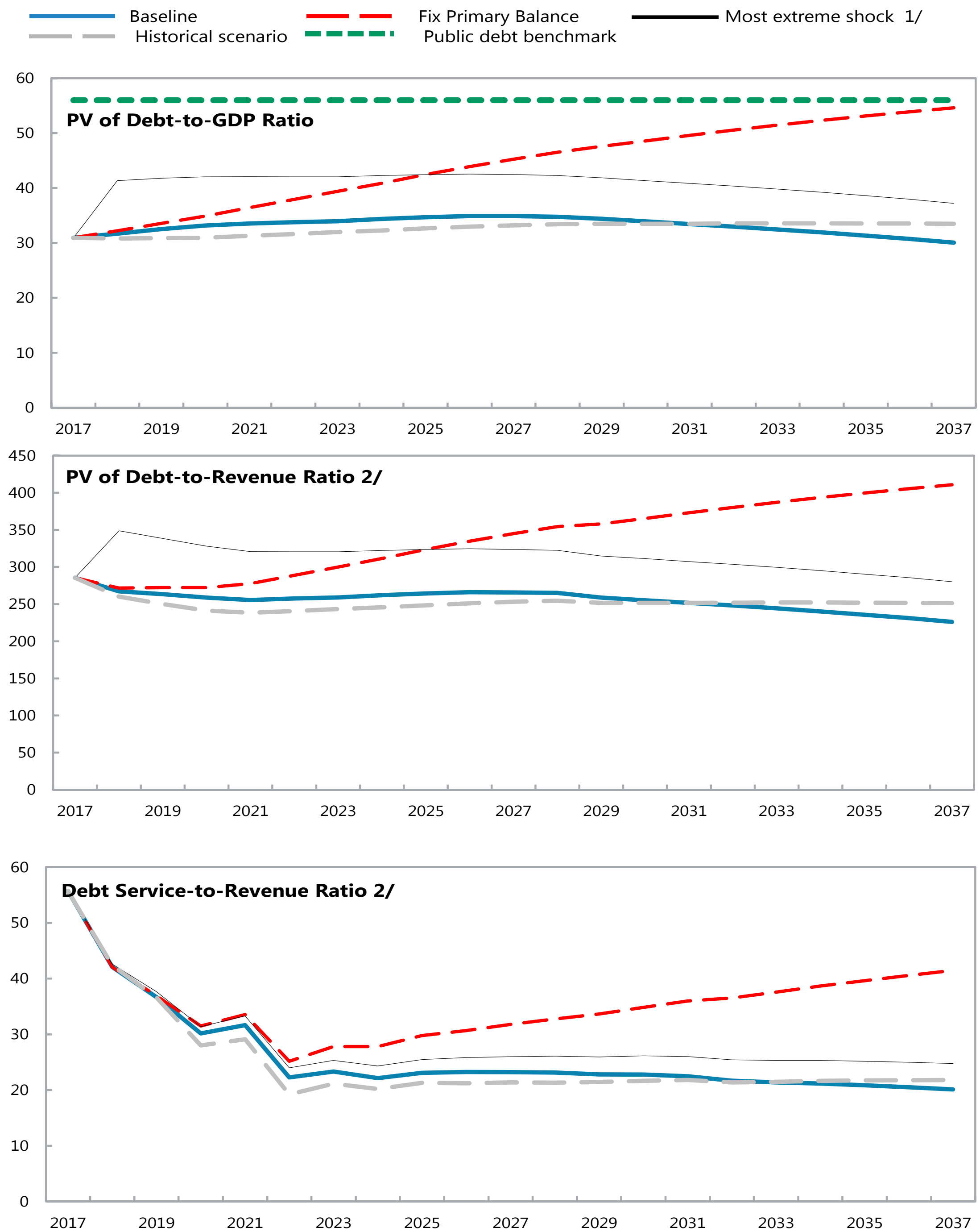


Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2027. 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, 2017–2037 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 2027.

2/ Revenues are defined inclusive of grants.

Table 2. Bangladesh: External Debt Sustainability Framework, Baseline Scenario, 2014–2037 1/

(In percent of GDP, unless otherwise indicated)

	Act 2014	Act 2015	Est 2016	Historical 6/ Average	Standard 6/ Deviation	Projections 2017	2018	2019	2020	2021	2022	2017-2022 Average	2027	2037	2023-2037 Average
External debt (nominal) 1/	**16.0**	**15.8**	**14.3**			**13.5**	**12.7**	**12.6**	**12.6**	**12.8**	**13.0**		**15.9**	**21.3**	
of which: public and publicly guaranteed (PPG)	15.0	13.4	13.4			13.5	13.5	13.8	14.1	14.4	14.6		15.2	12.8	
Change in external debt	-1.0	-0.2	-1.5			-0.8	-0.8	-0.1	0.0	0.2	0.2		0.6	0.3	
Identified net debt-creating flows	-3.9	-4.2	-4.3			-1.4	-0.8	-0.2	0.3	0.5	0.6		1.2	0.9	
Non-interest current account deficit	**-1.1**	**-1.9**	**-2.0**	**-1.2**	**1.3**	**0.4**	**1.0**	**1.5**	**1.9**	**2.1**	**2.2**		**2.3**	**2.2**	2.3
Deficit in balance of goods and services	6.3	5.2	4.2			4.8	5.1	5.4	5.6	5.6	5.6		5.7	5.9	
Exports	19.0	17.3	17.0			16.5	16.2	16.0	15.9	15.9	16.0		16.6	18.0	
Imports	25.3	22.5	21.1			21.3	21.3	21.4	21.5	21.6	21.6		22.3	23.9	
Net current transfers (negative = inflow)	-8.6	-8.1	-7.0	-9.1	1.0	-5.4	-5.1	-4.8	-4.6	-4.4	-4.2		-3.7	-2.9	-3.4
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)	1.3	1.1	0.9			0.9	0.9	0.9	0.9	0.8	0.8		0.3	-0.8	
Net FDI (negative = inflow)	**-0.9**	**-0.9**	**-0.9**	**-0.9**	**0.1**	**-0.9**	**-0.9**	**-0.9**	**-0.9**	**-0.9**	**-0.9**		**-0.9**	**-1.5**	-1.1
Endogenous debt dynamics 2/	**-2.0**	**-1.4**	**-1.4**			**-0.9**	**-0.8**	**-0.8**	**-0.7**	**-0.7**	**-0.7**		**-0.3**	**0.2**	
Contribution from nominal interest rate	0.3	0.4	0.3			0.0	0.0	0.1	0.1	0.1	0.2		0.6	1.5	
Contribution from real GDP growth	-0.9	-0.9	-1.0			-0.9	-0.9	-0.8	-0.8	-0.8	-0.8		-0.9	-1.3	
Contribution from price and exchange rate changes	-1.3	-0.9	-0.7			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**3.0**	**4.0**	**2.8**			**0.6**	**0.0**	**0.1**	**-0.3**	**-0.3**	**-0.4**		**-0.6**	**-0.7**	
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/	...	...	9.0			8.4	7.7	7.7	7.8	8.1	8.5		12.3	19.1	
In percent of exports	...	...	53.4			51.2	48.0	48.1	49.3	51.1	53.3		74.2	105.8	
PV of PPG external debt	**...**	**...**	**8.1**			**8.5**	**8.6**	**8.9**	**9.3**	**9.8**	**10.2**		**11.6**	**10.6**	
In percent of exports	**...**	**...**	**47.9**			**51.4**	**53.0**	**55.8**	**58.9**	**61.3**	**63.6**		**69.9**	**58.6**	
In percent of government revenues	**...**	**...**	**78.9**			**79.8**	**74.1**	**74.0**	**74.7**	**76.2**	**79.3**		**90.6**	**81.4**	
Debt service-to-exports ratio (in percent)	**5.3**	**7.6**	**6.7**			**7.0**	**7.1**	**6.5**	**6.6**	**6.5**	**6.7**		**13.3**	**29.2**	
PPG debt service-to-exports ratio (in percent)	**3.7**	**3.9**	**3.4**			**5.5**	**6.1**	**5.9**	**6.1**	**6.2**	**6.5**		**7.7**	**6.7**	
PPG debt service-to-revenue ratio (in percent)	**6.8**	**7.1**	**5.6**			**8.5**	**8.5**	**7.8**	**7.7**	**7.7**	**8.1**		**10.0**	**9.3**	
Total gross financing need (Billions of U.S. dollars)	-0.1	-1.8	-0.4			1.9	1.6	1.0	1.3	1.2	1.7		12.6	68.9	
Non-interest current account deficit that stabilizes debt ratio	-0.1	-1.7	-0.5			1.2	1.7	1.6	1.9	1.9	2.0		1.8	2.0	
Key macroeconomic assumptions															
Real GDP growth (in percent)	6.1	6.6	7.1	6.2	0.6	6.8	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)	8.7	5.9	4.4	5.2	3.2	1.9	2.4	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0
Effective interest rate (percent) 5/	1.7	3.0	2.1	1.5	0.7	0.3	0.2	0.4	0.8	1.1	1.4	0.7	4.5	7.6	5.5
Growth of exports of G&S (US dollar terms, in percent)	11.9	2.7	9.4	12.4	8.9	5.6	7.6	8.0	8.6	9.5	9.5	8.1	9.5	9.5	9.5
Growth of imports of G&S (US dollar terms, in percent)	10.7	0.3	4.8	12.2	15.7	9.6	9.6	9.9	9.9	9.4	9.4	9.6	9.4	9.4	9.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	32.0	33.1	31.0	21.7	19.7	17.6	25.9	11.3	7.2	10.1
Government revenues (excluding grants, in percent of GDP)	10.4	9.6	10.3			10.6	11.5	12.0	12.5	12.8	12.8		12.8	13.0	12.9
Aid flows (in Billions of US dollars) 7/	3.2	3.0	3.1			3.7	4.6	5.2	5.5	5.7	6.1		8.7	18.8	
of which: Grants	0.8	0.6	0.2			0.5	0.8	0.9	0.9	1.0	1.1		1.7	3.8	
of which: Concessional loans	2.4	2.5	2.9			3.2	3.8	4.3	4.6	4.7	5.0		7.0	15.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			0.8	0.9	0.9	0.7	0.7	0.6		0.5	0.4	0.5
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			40.1	43.5	40.8	32.6	30.9	29.0		23.8	23.5	23.5
Memorandum items:															
Nominal GDP (Billions of US dollars)	172.9	195.0	218.1			237.2	260.1	284.2	310.4	338.8	369.8		562.0	1285.9	
Nominal dollar GDP growth	15.2	12.8	11.8			8.8	9.6	9.3	9.2	9.1	9.1	9.2	8.6	8.6	8.7
PV of PPG external debt (in Billions of US dollars)			17.3			19.7	21.9	24.8	28.5	32.5	37.0		64.2	134.0	
(PVt-PVt-1)/GDPt-1 (in percent)						1.1	0.9	1.1	1.3	1.3	1.3	1.2	1.1	0.7	1.0
Gross workers' remittances (Billions of US dollars)	14.2	15.2	14.7			12.2	12.6	13.1	13.7	14.3	15.0		19.8	35.5	
PV of PPG external debt (in percent of GDP + remittances)	...	...	7.6			8.0	8.2	8.5	8.9	9.4	9.8		11.2	10.3	
PV of PPG external debt (in percent of exports + remittances)	...	...	34.3			39.2	40.7	43.3	46.1	48.5	50.7		57.7	50.9	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.4			4.2	4.7	4.5	4.8	4.9	5.2		6.4	5.8	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as $[r - g - \rho(1+g)]/(1+g+\rho+g\rho)$ 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 3. Bangladesh: Sensitivity Analysis for Key Indicators for Public and Publicly Guaranteed External Debt, 2017–2037

(In percent)

	Projections							
	2017	2018	2019	2020	2021	2022	**2027**	2037
PV of debt-to GDP ratio								
Baseline	8	9	9	9	10	10	**12**	11
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	8	6	4	2	-1	-3	**-13**	-20
A2. New public sector loans on less favorable terms in 2017-2037 2	8	9	10	11	12	12	**16**	17
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	8	9	9	9	10	10	**12**	11
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	8	9	10	11	11	12	**12**	11
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	8	8	9	9	10	10	**11**	10
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	8	6	3	4	5	5	**8**	10
B5. Combination of B1-B4 using one-half standard deviation shocks	8	5	2	3	3	4	**7**	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	8	12	12	13	14	14	**16**	15
PV of debt-to-exports ratio								
Baseline	51	53	56	59	61	64	**70**	59
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	51	39	25	10	-5	-20	**-78**	-108
A2. New public sector loans on less favorable terms in 2017-2037 2	51	55	61	67	73	78	**95**	95
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	51	52	55	58	60	62	**69**	57
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	51	58	71	74	76	78	**81**	63
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	51	52	55	58	60	62	**69**	57
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	51	36	20	25	29	32	**49**	53
B5. Combination of B1-B4 using one-half standard deviation shocks	51	32	12	17	21	25	**45**	52
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	51	52	55	58	60	62	**69**	57
PV of debt-to-revenue ratio								
Baseline	80	74	74	75	76	79	**91**	81
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	80	55	33	13	-6	-25	**-101**	-150
A2. New public sector loans on less favorable terms in 2017-2037 2	80	77	81	86	90	97	**123**	132
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	80	74	74	75	77	80	**91**	81
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	80	78	87	87	87	90	**97**	81
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	80	73	73	74	75	78	**89**	80
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	80	50	27	31	35	40	**64**	74
B5. Combination of B1-B4 using one-half standard deviation shocks	80	44	16	22	26	31	**58**	72
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	80	103	103	104	106	110	**126**	112

Table 3. Bangladesh: Sensitivity Analysis for Key Indicators for Public and Publicly Guaranteed External Debt, 2017–2037 (Concluded)

(In percent)

				Debt service-to-exports ratio				
Baseline	5	6	6	6	6	6	**8**	7
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	5	6	5	5	4	3	**-1**	-8
A2. New public sector loans on less favorable terms in 2017-2037 2	5	6	5	6	6	6	**8**	10
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	5	6	6	6	6	6	**8**	7
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	5	6	7	7	7	7	**9**	8
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	5	6	6	6	6	6	**8**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	5	6	5	5	5	5	**5**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	5	6	5	4	4	5	**5**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	5	6	6	6	6	6	**8**	7
				Debt service-to-revenue ratio				
Baseline	9	9	8	8	8	8	**10**	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2017-2037 1/	9	8	7	6	5	4	**-2**	-11
A2. New public sector loans on less favorable terms in 2017-2037 2	9	9	7	7	7	8	**11**	14
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2018-2019	9	9	8	8	8	8	**10**	9
B2. Export value growth at historical average minus one standard deviation in 2018-2019 3/	9	9	8	8	8	9	**11**	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2018-2019	9	9	8	8	8	8	**10**	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2018-2019 4/	9	9	7	6	6	6	**7**	8
B5. Combination of B1-B4 using one-half standard deviation shocks	9	9	7	5	6	6	**6**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2018 5/	9	12	11	11	11	11	**14**	13
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	6	6	6	6	6	6	**6**	6

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, 2013–2036

(In percent of GDP, unless otherwise indicated)

	Act	Act	Est			Projections									
	2014	2015	2016	Average 5/	Standard Deviation 5/	2017	2018	2019	2020	2021	2022	2017-22 Average	2027	2037	2023-37 Average
Public sector debt 1/	35.3	34.5	34.7			36.0	36.6	37.4	37.9	38.1	38.2		38.4	32.3	
of which: foreign-currency denominated	15.0	13.4	13.4			13.5	13.5	13.8	14.1	14.4	14.6		15.2	12.8	
Change in public sector debt	-0.5	-0.7	0.2			1.3	0.6	0.8	0.5	0.2	0.1		-0.2	-0.8	
Identified debt-creating flows	-0.8	-0.1	-0.3			1.1	0.7	0.8	0.5	0.3	0.2		0.1	-0.5	
Primary deficit	1.0	1.8	1.5	1.3	0.5	2.9	2.4	2.3	2.2	1.6	1.5	2.2	1.1	0.6	1.0
Revenue and grants	10.9	9.9	10.4			10.8	11.9	12.3	12.8	13.1	13.1		13.1	13.3	
of which: grants	0.5	0.3	0.1			0.2	0.3	0.3	0.3	0.3	0.3		0.3	0.3	
Primary (noninterest) expenditure	11.9	11.7	11.9			13.8	14.2	14.7	15.0	14.8	14.6		14.3	13.9	
Automatic debt dynamics	-1.8	-1.8	-1.8			-2.0	-1.9	-1.9	-2.1	-1.8	-1.9		-1.6	-1.2	
Contribution from interest rate/growth differential	-1.2	-1.3	-1.7			-1.9	-1.9	-1.8	-2.0	-1.8	-1.8		-1.5	-1.2	
of which: contribution from average real interest rate	0.9	0.9	0.6			0.3	0.5	0.6	0.5	0.7	0.7		0.8	0.8	
of which: contribution from real GDP growth	-2.0	-2.2	-2.3			-2.2	-2.4	-2.4	-2.4	-2.5	-2.5		-2.4	-2.0	
Contribution from real exchange rate depreciation	-0.6	-0.6	-0.1			-0.1	0.0	0.0	-0.1	-0.1	-0.1		...	...	
Other identified debt-creating flows	0.0	0.0	0.1			0.1	0.3	0.3	0.4	0.5	0.5		0.6	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	0.0	0.1			0.1	0.3	0.3	0.4	0.5	0.5		0.6	0.2	
Residual, including asset changes	0.3	-0.7	0.4			0.2	-0.1	0.0	0.0	-0.1	-0.1		-0.3	-0.3	
Other Sustainability Indicators															
PV of public sector debt	...	...	29.4			30.9	31.7	32.5	33.2	33.5	33.8		34.9	30.1	
of which: foreign-currency denominated	...	...	8.1			8.5	8.6	8.9	9.3	9.8	10.2		11.6	10.6	
of which: external	...	...	8.1			8.5	8.6	8.9	9.3	9.8	10.2		11.6	10.6	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	4.5	4.9	4.4			9.3	7.7	7.1	6.3	6.0	4.7		4.3	3.3	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	283.0			285.5	267.3	263.5	258.7	255.6	257.4		265.9	226.1	
PV of public sector debt-to-revenue ratio (in percent)	...	...	285.9			291.6	274.4	270.2	265.0	261.6	263.5		272.0	231.2	
of which: external 3/	...	...	78.9			79.8	74.1	74.0	74.7	76.2	79.3		90.6	81.4	
Debt service-to-revenue and grants ratio (in percent) 4/	24.6	26.4	23.0			55.8	42.1	36.6	30.2	31.6	22.3		23.2	20.1	
Debt service-to-revenue ratio (in percent) 4/	25.7	27.2	23.3			56.9	43.2	37.6	30.9	32.4	22.8		23.8	20.6	
Primary deficit that stabilizes the debt-to-GDP ratio	1.5	2.5	1.3			1.6	1.7	1.5	1.7	1.4	1.4		1.3	1.4	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	6.1	6.6	7.1	6.2	0.6	6.8	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)	0.9	1.5	0.8	1.0	0.2	1.1	1.4	1.8	2.2	2.4	2.7	1.9	3.3	4.7	3.5
Average real interest rate on domestic debt (in percent)	5.1	4.7	3.1	3.8	1.1	1.8	2.8	2.5	1.7	2.6	2.3	2.3	2.7	2.4	2.6
Real exchange rate depreciation (in percent, + indicates depreciation)	-3.9	-4.0	-0.8	-3.4	3.8	-0.9	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	5.7	5.9	6.6	7.0	0.8	7.0	6.2	5.7	6.2	5.7	5.6	6.0	5.4	5.2	5.3
Growth of real primary spending (deflated by GDP deflator, in percent)	0.2	4.5	8.7	1.4	2.9	23.9	10.7	10.2	9.4	5.4	6.1	11.0	5.0	5.6	6.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	32.0	33.1	31.0	21.7	19.7	17.6	25.9	11.3	7.2	...

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, 2017–2037
(In percent)

		Projections						
	2017	2018	2019	2020	2021	2022	2027	2037
PV of Debt-to-GDP Ratio								
Baseline	31	32	33	33	34	34	35	30
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	31	31	31	31	31	32	33	33
A2. Primary balance is unchanged from 2017	31	32	34	35	36	38	45	55
A3. Permanently lower GDP growth 1/	31	32	33	33	34	34	36	34
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	31	32	34	35	35	36	38	35
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	31	31	31	32	32	33	34	29
B3. Combination of B1-B2 using one half standard deviation shocks	31	31	32	32	33	34	36	33
B4. One-time 30 percent real depreciation in 2018	31	35	36	36	36	36	38	36
B5. 10 percent of GDP increase in other debt-creating flows in 2018	31	41	42	42	42	42	42	37
PV of Debt-to-Revenue Ratio 2/								
Baseline	286	267	263	259	256	257	266	226
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	286	260	250	241	238	241	253	251
A2. Primary balance is unchanged from 2017	286	272	272	272	278	289	345	411
A3. Permanently lower GDP growth 1/	286	268	264	260	258	261	275	252
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	286	272	274	271	270	274	292	267
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	286	262	254	250	248	250	259	221
B3. Combination of B1-B2 using one half standard deviation shocks	286	263	255	253	253	257	275	250
B4. One-time 30 percent real depreciation in 2018	286	296	289	281	277	278	291	268
B5. 10 percent of GDP increase in other debt-creating flows in 2018	286	349	339	328	321	321	324	280
Debt Service-to-Revenue Ratio 2/								
Baseline	56	42	37	30	32	22	23	20
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	56	42	37	28	29	19	21	22
A2. Primary balance is unchanged from 2017	56	42	37	32	34	25	32	41
A3. Permanently lower GDP growth 1/	56	42	37	30	32	23	24	23
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2018-2019	56	43	38	31	33	24	26	25
B2. Primary balance is at historical average minus one standard deviations in 2018-2019	56	42	36	29	30	21	22	19
B3. Combination of B1-B2 using one half standard deviation shocks	56	42	37	29	30	22	24	23
B4. One-time 30 percent real depreciation in 2018	56	44	40	34	36	27	31	31
B5. 10 percent of GDP increase in other debt-creating flows in 2018	56	42	42	51	41	32	33	30

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.