BANGLADESH

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

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The results of the debt sustainability analysis (DSA) are similar to those of the previous DSA. Bangladesh's risk of debt distress on external debt remains low. The level of public and publicly guaranteed external debt as a share of GDP in FY11 is in line with that anticipated in the previous DSA, but has improved as a share of exports and revenues given their recent strong growth.[2] *Under the baseline scenario, Bangladesh's external debt burden indicators remain below the relevant policy-dependent indicative thresholds. They also do not breach the thresholds under the stress tests.*[3] *Debt burden indicators are less favorable when domestic debt is included.*

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

[2] See IMF Country Report No. 10/55.

[3] 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. Bangladesh's policies and institutions, as measured by the World Bank's Country Policy and Institutional Assessment (CPIA), place it as a "medium performer." 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.

INTRODUCTION

1. **This DSA incorporates a new baseline macroeconomic outlook, including revised assumptions on the public sector's external and domestic borrowing plans.** The outlook, summarized in Box 1, follows the broad trend of the government's Sixth Five-Year Plan (FY11–15) (SFYP)[4] and medium-term budget framework. Compared to the previous DSA, the baseline assumptions for economic growth in this DSA are moderately higher. At the same time, rising demand for oil and capital goods imports, in part associated with a ramping up of infrastructure investment, is accompanied by moderate current account deficits over the medium to long run, in part financed by larger external borrowing. As a result, the projected rate of external debt accumulation over the medium term is higher than in the previous DSA.

2. **Debt dynamics are positively affected by the higher growth assumptions, but negatively affected by the higher projected rate of debt accumulation.** On balance, the present value (PV) of external debt now declines by about 3 percentage points of GDP over the immediate six-year projection period (FY12–17), similar to the decline over the immediate six-year projection period in the previous DSA. Under the baseline scenario, this DSA has a less favorable external debt path than the historical scenario, the opposite of the previous DSA.[5]

3. **Bangladesh's current debt stock comprises the following:**

- **Public and publicly guaranteed external debt had a face value equivalent to 21.6 percent of GDP at end-FY11.** The debt is owed mostly to multilateral creditors, including the World Bank and the Asian Development Bank. Japan is the main bilateral creditor (see table below).

- **Domestic debt amounted to 21.3 percent of GDP at end-FY11, up from 20.3 percent in the previous year.** It mainly comprises treasury bills and bonds (42 percent), held mostly by domestic commercial banks, and National Savings Certificates (NSCs) (38 percent), held mainly by the nonbank private sector (see table below).[6]

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[4] FY11 refers to the period July 2010–June 2011.

[5] The large noninterest current account surplus recorded in FY10 (4 percent of GDP) and more moderate surplus in FY11 (1.1 percent of GDP) raise the 10-year average noninterest current account balance, which is used in the historical scenario to generate the relevant path for external debt. At the same time, compared to the baseline scenario in the previous DSA, the current account balance in this DSA weakens more over the near to medium term. This translates into a higher external borrowing requirement in the baseline scenario.

(continued)

[6] Net domestic government debt (i.e., including government deposits) was 18.1 percent of GDP at end-FY11. Deposits are mostly held by autonomous and semi-autonomous government bodies that are largely outside the control of the central government. Hence the public DSA focuses on gross public debt.

Bangladesh: Public and Publicly Guaranteed External Debt
(At end-June 2011)

	In Millions of U.S. Dollars	In Percent of Total External Debt
Multilateral debt	**19,609**	**85.5**
World Bank	11,129	48.6
Asian Development Bank	7,330	32.0
International Monetary Fund	590	2.6
International Fund for Agricultural Development	298	1.3
Islamic Development Bank	181	0.8
Other	80	0.3
Bilateral debt	**2,647**	**11.5**
Japan	2,039	8.9
Kuwait	166	0.7
Korea, Republic of	152	0.7
United States	116	0.5
Other	173	0.8
Short-term debt	**666**	**2.9**
Total	**22,922**	**100.0**
(Percent of GDP)	**21.6**	

Source: IMF staff estimates.

Bangladesh: Public Domestic Debt by Creditor
(At end-June 2011)

	In Billions of Taka	In Percent of Total Domestic Debt
Bangladesh Bank	**320**	**19.1**
Advances and overdrafts	284	16.9
Treasury instruments	30	1.8
Other obligations	6	0.4
Commercial banks	**663**	**39.5**
Treasury instruments	615	36.7
Other obligations	48	2.9
Other	**694**	**41.4**
National savings certificates	634	37.8
Treasury instruments	60	3.6
Total	**1,677**	**100.0**
(Percent of GDP)	**21.3**	

Source: IMF staff estimates.

EXTERNAL DEBT SUSTAINABILITY ANALYSIS

4. **All external debt indicators remain well below the policy-dependent debt burden thresholds under the baseline scenario, and no thresholds are breached under the standardized stress tests.** 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 1). During the projection period, the PV of the debt-to-GDP ratio decreases from 17½ percent in FY11 to about 8½ percent in FY32 (compared to an indicative threshold of 40 percent), while the PV of the debt-to-exports ratio decreases from 75 percent in FY11 to 26 percent in FY32 (compared to an indicative threshold of 150 percent).

- **The standard stress tests do not reveal any serious vulnerability** (Table 2 and Figure 1). The strong increase in remittances in Bangladesh in recent years, from about 8 percent of GDP in FY06 to 11 percent of GDP in FY11, has further raised Bangladesh's capacity to repay.[7] While remittances growth slowed significantly in FY11 relative to earlier years and remittances as a percent of GDP are projected to gradually fall over the long term, they will remain substantial and will continue to contribute toward reducing Bangladesh's vulnerability to shocks. Strong growth of exports and revenues in FY11 also contributed to lower the debt-to-exports and debt-to-revenue ratios, respectively.

[7] A recent review of some aspects of the LIC DSF recommended greater recognition of remittances in DSAs for countries where they are large, including in the determination of risk ratings (see http://www.imf.org/external/pp/longres.aspx?id=4358).

Box 1. Bangladesh: Macroeconomic Assumptions Underlying the DSA

Real GDP growth is projected to average 6¾ percent a year over the immediate projection period (FY12–17), broadly in line with the government's medium-term growth targets. This is above the ten-year average (5¾ percent), reflecting stepped-up investment and reforms. Over the longer run, growth is projected to average around 6½ percent a year. The near-term outlook factors in more robust growth in garments exports than envisaged in the previous DSA, which was prepared in late 2009 when there was substantial uncertainty about the pace of recovery from a severe global downturn. In addition, the baseline assumptions for growth presume a pickup in structural reforms, concentrated on strengthening fiscal management, deepening the financial sector, and improving the trade and investment climate. Finally, they take account of ongoing efforts to relieve energy shortages and infrastructure bottlenecks, most notably through higher public investment, as envisaged in the government's Annual Development Program (ADP), also with greater private sector participation in power and transportation sector development.

Inflation, as measured by the GDP deflator in domestic currency, decelerates from 10.0 percent in FY12 to 6.8 percent in FY17 and slightly more thereafter, reflecting an easing of upward pressures from import prices, moderate policy tightening, and a reduction in domestic supply constraints.

The growth of **exports** and **imports** of goods and services is moderately strong over the immediate projection period (around 13¼ and 12½ percent, on average, respectively, compared to about 10 percent for both in the previous DSA). Exports would continue to be driven by ready-made garments, as Bangladesh's low-cost advantage allows it to capture greater market share. As noted earlier, imports would be driven by stronger investment demand, including that associated with infrastructure development. Improvements in the trade and investment climate would also contribute to higher export and import growth.

The **current account** is projected to slip into a moderate deficit starting in FY12 and remain as such over the medium to long run. Main drivers during FY12–17 are strong envisaged growth in oil and capital goods imports, in part to address electricity shortages and infrastructure bottlenecks, and more moderate growth in remittances compared to recent years, because of lower net migration. Macroeconomic and structural reforms would also trigger larger foreign direct investment inflows, including in infrastructure, which would finance at least part of the higher imports.

Net aid inflows (disbursements of grants and loans, net of amortization payments) are projected to average 1.4 percent of GDP a year in the long term—around the current level. However, in FY12–15, official disbursements are projected to rise substantially, with net aid inflows averaging about 1.8 percent of GDP, owing to the construction of the Padma Bridge (with gross disbursements equivalent to around 2.5 percent of GDP) and stepped-up implementation of existing donor-supported projects.

The **grant element of new external borrowing** is assumed to average about 31 percent in FY12–17, despite some expected recourse to nonconcessional borrowing to fund infrastructure projects. Real domestic interest rates on government debt are currently suppressed and negative in real terms. With greater interest rate flexibility and financial markets development, real domestic interest rates are assumed to increase steadily over the medium term.

The **primary fiscal deficit** (including grants) is expected to average 2.3 percent of GDP during FY12–17, about 1 percent of GDP higher than the average of the past 10 years. The higher deficits factor in substantial expected improvement in revenue collection over the long run driven by the introduction of new VAT and income tax laws and implementation of the tax modernization plan, which will improve revenue collection processes. Offsetting these gains are steady increases in public investment which peak in FY20 before falling slightly as a percent of GDP to a long-run equilibrium consistent with continuing large investment needs. They also encapsulate rising subsidy costs associated with expected incurred losses by energy and fertilizer-related state-owned enterprises. In the electricity sector, the greater reliance on high-cost rental power plants to address the power deficit is expected to add to these losses over the near to medium term. The current baseline assumes gradual movement to full cost recovery for electricity by mid-decade.

On balance, the current outlook carries some downside risks, which, if realized, could result in a slightly lower growth trajectory, that is, a scenario more in line with the IMF's 2009 Article IV Consultation staff report and World Bank's July 2010 *Country Assistance Strategy*. These risks stem mainly from weak implementation capacity, persistent governance issues, and political opposition to reforms. In addition, the global economic recovery remains fragile, with Bangladesh's heavy dependence on garment exports to the U.S. and E.U. and on workers' remittances, mainly from the Middle East, exposing it to potential setbacks.

PUBLIC DEBT SUSTAINABILITY ANALYSIS[8]

5. **In the baseline scenario, the PV of public debt-to-GDP ratio remains steady initially, but then falls gradually over the long run to 38½ percent of GDP in FY32** (Table 3). The decline in the PV of external public debt-to-GDP ratio is partially offset by a rising domestic debt-to-GDP ratio. Reflecting reform plans to boost domestic revenue collection and a slight tapering off of public investment in the outer years, the PV of public debt-to-domestic revenue ratio declines steadily in the long run.

6. **The alternative scenarios and bound tests indicate that the projected paths of debt indicators are sensitive to alternative assumptions and point to some risks** (Table 4 and Figure 2). A case in point is the low-case scenario, in which limited progress on fiscal and financial as well as trade and investment reforms causes real GDP growth and the primary fiscal balance to remain at their historical averages (Alternative Scenario 1). In this scenario, key debt and debt service ratios rise over the long term. Greater-than-envisaged dependence on high-cost power from rental power plants, slower-than-envisaged adjustments to electricity prices, and a larger-than-anticipated rise in world oil prices would add to prospective operating losses of energy-related state-owned enterprises (SOEs), which could exacerbate contingent liabilities of the government and necessitate budgetary absorption through larger fiscal imbalances.[9] Recapitalization needs of state-owned commercial banks (SOCBs), including those brought on by absorbing SOE losses, could put further pressure on contingent liabilities. One of the standardized shocks in the DSA framework assesses the impact of a one-time 30 percent real depreciation in FY13. As a result of this shock, the debt service-to-revenue ratio would reach 39 percent in FY14, compared with the baseline ratio of 31 percent.

DEBT MANAGEMENT

7. **In response to a request from the authorities, a joint World Bank/IMF mission visited Bangladesh in September 2010 to provide follow-up technical assistance to help build capacity to improve debt management.** The mission's main recommendations focused on operationalizing the debt management strategy, including the preferred choice of strategy and the need to develop annual borrowing plans. The authorities are making progress on devising a comprehensive debt management strategy that is built on estimates of the long-term public investment requirements and the associated financing needs. This strategy will also need to take into account the direct and contingent liabilities arising from infrastructure projects, including those being developed under the new public-private partnership framework, given the envisaged use of viability gap funding for some projects. Finally, work is also under way to establish a single, comprehensive, and wholly accurate database on domestic and external debt, which covers the wider public sector, as well as loan guarantees.[10] These reforms are being

[8] Public debt includes central government domestic debt and external public and publicly guaranteed debt.

[9] Legacy loans of these and several other large SOEs to the SOCBs currently amount to about 2 percent of GDP. The DSA explicitly accounts for short-term external nonconcessional borrowing by the Bangladesh Petroleum Corporation, which is guaranteed by the government. The total stock was US$0.7 billion at end-FY11 and is projected to rise.

[10] The authorities are also working to improve their database on private sector external debt, which was estimated at US$1.2 billion at end-FY11. Capital controls generally impede borrowing from abroad. Industrial projects in Bangladesh can access medium- and long-term external borrowing with prior approval by the government's Board of Investment. Until recently, the absence of a sovereign credit rating inflated the country risk premium, making such borrowing relatively expensive. In April 2010, S&P gave Bangladesh its first sovereign credit rating (BB-).

implemented in alignment with the objectives of the Strengthening Public Expenditure Management Project to develop capacities for debt policy and management.

VIEWS OF THE AUTHORITIES

8. **The authorities were in broad agreement with the DSA.** They underscored that the government would continue to assess the budgetary, debt, and growth implications of individual projects and ensure that the terms of new external borrowing are consistent with a debt management strategy currently being formulated. However, the authorities also indicated that should concessional resources fall short of financing development spending needs, the government might access non-concessional medium to long-term borrowing. They also recognized that progress on developing domestic bond markets would create a deeper and more stable source of financing for domestic debt.

CONCLUSION

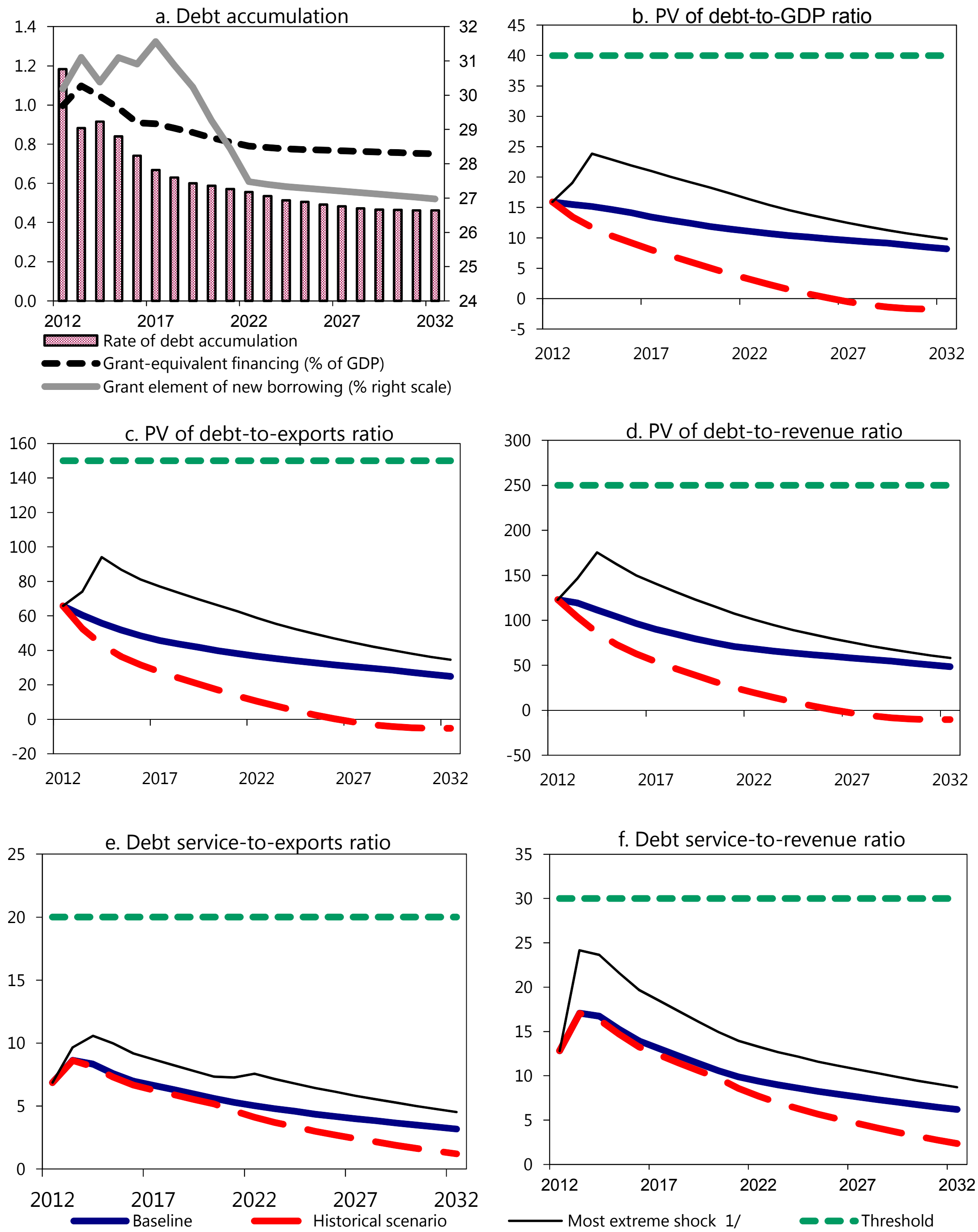
9. **In the staffs' view, Bangladesh is at low risk of debt distress based on external indicators, but the analysis reveals less favorable debt indicators on public debt.** The baseline projections and the associated standard stress tests show little risk related to external debt given that none of the indicators breach the indicative debt burden thresholds. However, in view of Bangladesh's continued low domestic revenue base, risk to total debt and debt service, including domestic debt, remains a concern.

10. **The substantial increase in debt ratios when domestic debt is included calls for a prudent fiscal policy.** While the PV of the public debt-to-revenue ratio would decline over the 20-year horizon under the baseline assumptions, the ratio would remain high over the medium term and rise over the long term in some of the alternative scenarios and bound tests. Public debt and debt service ratios also remain high over the long term when some of the key variables are fixed at historical levels. This underscores the importance of undertaking structural fiscal reforms aimed at expanding domestic resources, containing subsidy costs, and raising public investment, ultimately with an aim of boosting growth.

11. **Efforts to mobilize domestic revenues, to manage expenditures prudently while protecting priority outlays, and to contain contingent liabilities are key to improving debt indicators.** Higher pass-through of changes in world energy prices would help reduce SOE losses and associated subsidy costs, protecting the fiscal space needed to raise social and development spending and put Bangladesh on a higher growth trajectory, as targeted in its SFYP. This exercise also underscores the importance of effective management of the existing debt and new debt accumulation, including relying primarily on concessional external debt over the medium term to finance infrastructure needs.

12. **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 a comprehensive debt management strategy and public debt data base, covering both domestic and external debt and integrating it with centralized reporting of all external aid flows.

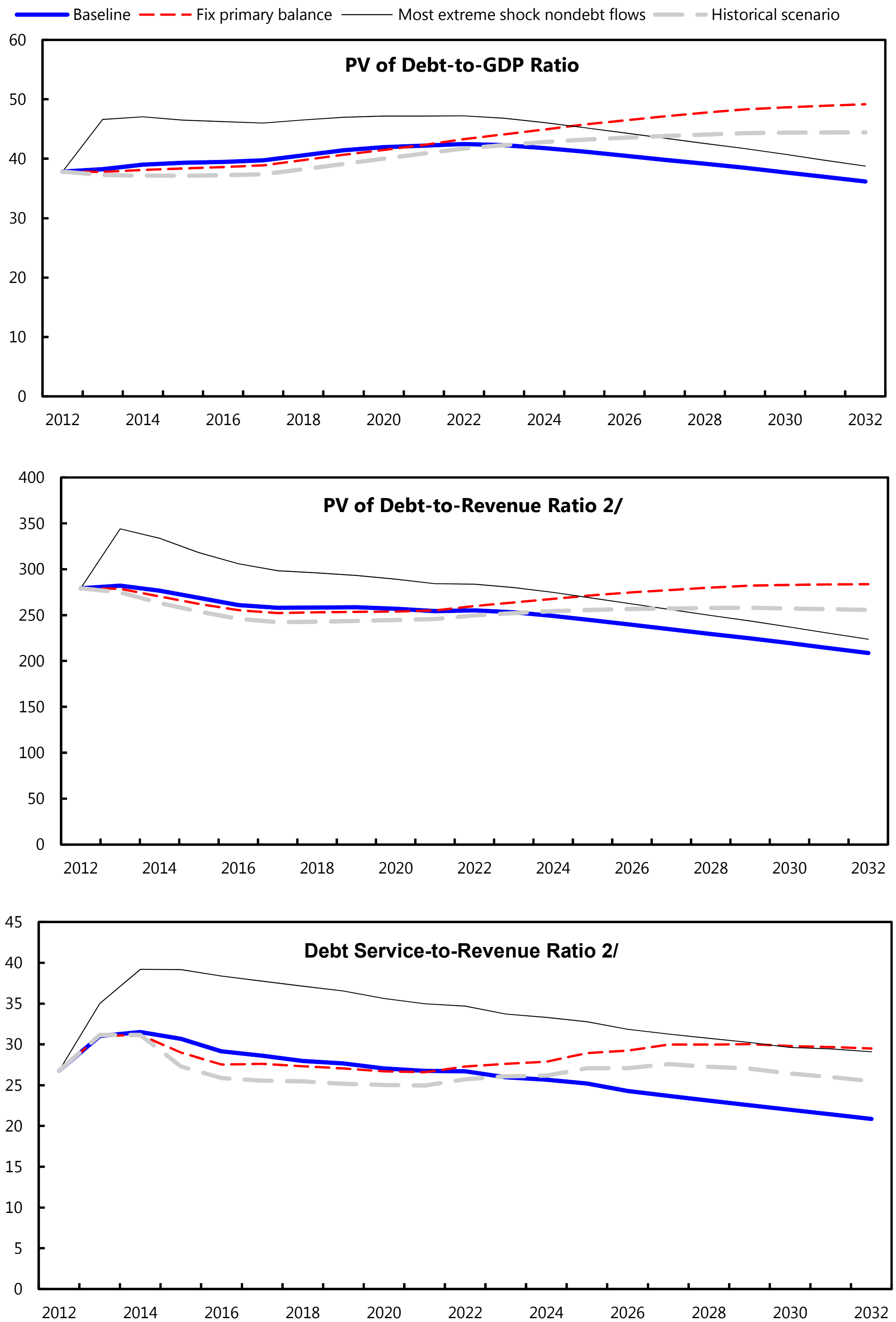
Figure 1. Bangladesh: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2012–32 1/



Sources: Bangladesh authorities; and staff estimates and projections.

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

Figure 2. Bangladesh: Indicators of Public Debt Under Alternative Scenarios, 2012–32 1/



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

Table 1. Bangladesh: External Debt Sustainability Framework, Baseline Scenario, 2009–32 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 2/	Standard Deviation	Projections									
	2009	2010	2011			2012	2013	2014	2015	2016	2017	2012–17 Average	2022	2032	2018–32 Average
External debt (nominal) 1/	**25.7**	**22.3**	**22.7**			**21.9**	**21.2**	**20.7**	**19.9**	**19.1**	**18.1**		**14.7**	**10.9**	
Of which: Public and publicly guaranteed (PPG)	24.2	21.1	21.6			20.8	20.2	19.7	19.0	18.2	17.3		14.1	10.4	
Change in external debt	-2.6	-3.4	0.4			-0.8	-0.7	-0.5	-0.7	-0.9	-1.0		-0.6	-0.4	
Identified net debt-creating flows	-7.0	-7.4	-3.7			-1.4	-1.3	-1.4	-1.8	-2.1	-2.2		-1.7	-1.9	
Noninterest current account deficit	**-3.1**	**-4.0**	**-1.1**	**-1.4**	**1.3**	**0.4**	**0.6**	**0.5**	**0.2**	**0.0**	**0.0**		**0.6**	**-0.2**	0.4
Deficit in balance of goods and services	7.1	6.4	8.8			10.5	10.6	10.5	10.1	9.7	9.6		9.4	7.0	
Exports	19.5	18.6	23.1			24.2	25.7	27.2	28.4	29.1	29.4		30.2	32.9	
Imports	26.6	25.0	31.9			34.7	36.2	37.7	38.5	38.8	39.0		39.6	39.9	
Net current transfers (negative = inflow)	-11.4	-11.6	-10.9	-8.9	2.2	-11.0	-10.9	-10.9	-10.8	-10.7	-10.6		-9.8	-8.3	-9.3
Of which: Official	-0.1	-0.1	-0.1			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1	-0.1	
Other current account flows (negative = net inflow)	1.3	1.2	1.0			0.9	0.9	0.9	0.9	0.9	0.9		1.0	1.0	
Net FDI (negative = inflow)	**-1.1**	**-0.9**	**-0.7**	**-0.9**	**0.2**	**-0.8**	**-0.9**	**-0.9**	**-1.0**	**-1.1**	**-1.2**		**-1.6**	**-1.3**	-1.5
Endogenous debt dynamics 3/	**-2.9**	**-2.6**	**-1.9**			**-1.0**	**-1.0**	**-1.0**	**-1.0**	**-1.0**	**-1.0**		**-0.7**	**-0.4**	
Contribution from nominal interest rate	0.2	0.2	0.2			0.3	0.3	0.3	0.3	0.3	0.3		0.3	0.2	
Contribution from real GDP growth	-1.4	-1.4	-1.3			-1.3	-1.3	-1.3	-1.3	-1.3	-1.3		-1.0	-0.6	
Contribution from price and exchange rate changes	-1.7	-1.4	-0.7			...	...	...	...	...	...		...	...	
Residual (3–4) 4/	**4.4**	**4.1**	**4.1**			**0.6**	**0.6**	**0.9**	**1.1**	**1.3**	**1.2**		**1.2**	**1.5**	
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 5/	...	...	17.4			17.0	16.5	16.1	15.6	15.0	14.3		11.7	8.6	
In percent of exports	...	...	75.1			70.2	64.3	59.2	54.9	51.5	48.5		38.7	26.2	
PV of PPG external debt	**...**	**...**	**16.3**			**15.9**	**15.5**	**15.2**	**14.7**	**14.1**	**13.4**		**11.1**	**8.2**	
In percent of exports	**...**	**...**	**70.3**			**65.8**	**60.4**	**55.7**	**51.7**	**48.5**	**45.8**		**36.6**	**24.9**	
In percent of government revenues	**...**	**...**	**140.4**			**123.0**	**119.4**	**111.6**	**104.0**	**96.6**	**90.1**		**68.3**	**48.5**	
Debt service-to-exports ratio (in percent) 6/	**4.5**	**5.5**	**4.0**			**7.1**	**8.9**	**8.6**	**7.8**	**7.3**	**6.9**		**5.4**	**3.5**	
PPG debt service-to-exports ratio (in percent) 6/	**4.2**	**5.2**	**3.8**			**6.9**	**8.6**	**8.3**	**7.6**	**7.0**	**6.6**		**5.0**	**3.2**	
PPG debt service-to-revenue ratio (in percent) 6/	**7.9**	**8.8**	**7.5**			**12.8**	**17.1**	**16.7**	**15.3**	**13.9**	**13.1**		**9.4**	**6.2**	
Total gross financing need (in billions of U.S. dollars)	-2.6	-3.8	-0.8			2.3	4.1	4.4	4.1	3.7	3.7		4.0	0.3	
Noninterest current account deficit that stabilizes debt ratio	-0.4	-0.6	-1.5			1.2	1.3	1.1	1.0	0.8	1.0		1.1	0.2	
Key macroeconomic assumptions															
Real GDP growth (in percent)	5.7	6.1	6.7	6.0	0.7	6.3	6.4	6.6	7.0	7.1	7.2	6.8	6.8	6.0	6.5
GDP deflator in U.S. dollar terms (change in percent)	6.2	5.9	3.3	2.9	4.1	2.2	2.3	1.4	1.9	1.9	1.6	1.9	1.6	1.6	1.6
Effective interest rate (percent) 7/	0.9	1.1	0.9	1.0	0.1	1.6	1.6	1.6	1.7	1.7	1.8	1.7	1.9	2.0	2.0
Growth of exports of G&S (U.S. dollar terms, in percent)	8.6	7.4	36.7	14.0	10.9	13.7	15.4	14.7	13.7	12.0	9.9	13.2	9.3	8.7	9.0
Growth of imports of G&S (U.S. dollar terms, in percent)	3.7	5.7	40.6	14.1	13.5	18.1	13.6	12.4	11.3	10.1	9.4	12.5	8.7	7.7	8.4
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	30.2	31.1	30.4	31.1	30.9	31.6	30.9	27.5	27.0	27.9
Government revenues (excluding grants, in percent of GDP)	10.5	10.9	11.6			12.9	13.0	13.6	14.1	14.6	14.9		16.2	16.9	16.3
Aid flows (in billions of U.S. dollars) 8/	0.6	0.8	1.0			1.1	1.4	1.5	1.6	1.7	1.9		2.2	4.5	
Of which: Grants	0.3	0.6	0.7			0.7	0.8	0.7	0.8	0.8	0.9		1.3	2.7	
Of which: Concessional loans	0.3	0.2	0.2			0.4	0.6	0.7	0.8	0.8	1.0		0.9	1.8	
Grant-equivalent financing (in percent of GDP) 9/	...	...	...			1.0	1.1	1.0	1.0	0.9	0.9		0.8	0.8	0.8
Grant-equivalent financing (in percent of external financing) 9/	...	...	...			51.8	48.8	46.4	48.5	50.1	50.7		48.1	48.6	48.6
Memorandum items:															
Nominal GDP (in billions of U.S. dollars)	89.4	100.4	110.6			120.2	130.8	141.4	154.1	168.2	183.2		281.4	597.4	
Nominal dollar GDP growth	12.3	12.3	10.2			8.6	8.8	8.1	9.0	9.1	8.9	8.8	8.5	7.7	8.2
PV of PPG external debt (in billions of U.S. dollars)	...	...	17.3			18.6	19.6	20.8	22.0	23.1	24.3		30.7	50.2	
(PVt-PVt-1)/GDPt-1 (in percent)	...	...	...			1.2	0.9	0.9	0.8	0.7	0.7	0.9	0.6	0.5	0.5
Gross workers' remittances (in billions of U.S. dollars)	9.7	11.0	11.7			12.8	13.8	14.9	16.1	17.4	18.8		26.9	48.2	
PV of PPG external debt (in percent of GDP + remittances)	...	...	14.7			14.4	14.0	13.7	13.3	12.8	12.2		10.1	7.6	
PV of PPG external debt (in percent of exports + remittances)	...	...	48.3			45.7	42.8	40.1	37.8	35.8	33.9		27.8	20.0	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.6			4.8	6.1	6.0	5.5	5.2	4.9		3.8	2.6	

Sources: Bangladesh authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

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

3/ 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.

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/ The increase in debt service in FY12 is, in part, due to projected interest for AsDB loans that is not paid during the loan's grace period.

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

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

9/ 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 of Public and Publicly Guaranteed External Debt, 2012–32

(In percent)

	Projections							
	2012	2013	2014	2015	2016	2017	**2022**	2032
PV of debt-to GDP ratio								
Baseline	16	16	15	15	14	13	**11**	8
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	16	13	12	10	9	8	**3**	-2
A2. New public sector loans on less favorable terms in 2011–31 2/	16	15	16	15	15	15	**14**	13
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	16	15	15	15	14	13	**11**	8
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	16	17	21	20	19	18	**14**	9
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	16	16	16	15	15	14	**11**	9
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	16	18	21	20	19	19	**15**	9
B5. Combination of B1–B4 using one-half standard deviation shocks	16	19	24	23	22	21	**16**	10
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	16	21	21	20	19	19	**15**	12
PV of debt-to-exports ratio								
Baseline	66	60	56	52	48	46	**37**	25
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	66	53	43	36	32	28	**11**	-5
A2. New public sector loans on less favorable terms in 2011–31 2/	66	60	57	55	52	51	**45**	39
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	66	58	54	50	47	45	**36**	25
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	66	74	94	87	81	77	**59**	35
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	66	58	54	50	47	45	**36**	25
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	66	71	78	72	67	64	**48**	28
B5. Combination of B1–B4 using one-half standard deviation shocks	66	77	95	87	82	77	**58**	32
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	66	58	54	50	47	45	**36**	25
PV of debt-to-revenue ratio								
Baseline	123	119	112	104	97	90	**68**	49
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	123	104	87	73	63	54	**20**	-10
A2. New public sector loans on less favorable terms in 2011–31 2/	123	119	115	110	104	101	**85**	76
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	123	117	111	103	96	90	**68**	50
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	123	131	152	140	130	122	**88**	54
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	123	119	115	107	99	94	**71**	52
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	123	141	156	144	133	125	**90**	54
B5. Combination of B1–B4 using one-half standard deviation shocks	123	146	176	162	150	141	**101**	58
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	123	163	153	143	132	125	**94**	69

Table 2. Bangladesh: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012–32 (concluded)

(In percent)

	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
Debt service-to-exports ratio								
Baseline	7	9	8	8	7	7	**5**	3
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	7	9	8	7	7	6	**4**	1
A2. New public sector loans on less favorable terms in 2011–31 2/	7	9	8	8	7	7	**5**	4
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	7	9	8	8	7	7	**5**	3
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	7	10	11	10	9	9	**8**	5
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	7	9	8	8	7	7	**5**	3
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	7	9	9	8	7	7	**6**	4
B5. Combination of B1–B4 using one-half standard deviation shocks	7	9	10	9	8	8	**7**	4
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	7	9	8	8	7	7	**5**	3
Debt service-to-revenue ratio								
Baseline	13	17	17	15	14	13	**9**	6
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	13	17	16	15	13	12	**8**	2
A2. New public sector loans on less favorable terms in 2011–31 2/	13	17	17	16	14	13	**10**	8
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	13	17	17	16	14	13	**10**	6
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	13	17	17	16	15	14	**11**	7
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	13	18	18	16	15	14	**10**	7
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	13	17	17	16	15	14	**12**	7
B5. Combination of B1–B4 using one-half standard deviation shocks	13	17	18	17	16	15	**13**	8
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	13	24	24	22	20	19	**13**	9
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	26	26	26	26	26	26	**26**	26

Sources: Bangladesh 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 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 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 3. Bangladesh: Public Sector Debt Sustainability Framework, Baseline Scenario, 2009–32

(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
	2009	2010	2011	Average	Standard Deviation	2012	2013	2014	2015	2016	2017	2012–17 Average	2022	2032	2018–32 Average
Public sector debt 1/	45.4	41.4	42.9			42.7	43.0	43.6	43.7	43.6	43.6		45.5	38.4	
Of which: Foreign-currency denominated	24.2	21.1	21.6			20.8	20.2	19.7	19.0	18.2	17.3		14.1	10.4	
Change in public sector debt	-1.6	-4.1	1.5			-0.2	0.2	0.6	0.1	-0.1	0.0		0.2	-0.8	
Identified debt-creating flows	-1.4	-2.0	0.1			-0.6	0.2	0.5	0.0	-0.2	0.0		0.1	-0.9	
Primary deficit	1.2	0.9	1.7	1.3	0.5	2.1	2.7	2.7	2.2	2.1	2.2	2.3	1.3	0.1	0.7
Revenue and grants	10.8	11.5	12.2			13.5	13.6	14.1	14.6	15.1	15.4		16.7	17.3	
Of which: Grants	0.3	0.6	0.7			0.6	0.6	0.5	0.5	0.5	0.5		0.5	0.5	
Primary (noninterest) expenditure	12.0	12.4	14.0			15.7	16.2	16.8	16.8	17.2	17.6		18.0	17.4	
Automatic debt dynamics	-2.6	-2.9	-1.7			-2.7	-2.4	-2.1	-2.2	-2.2	-2.2		-1.2	-0.9	
Contribution from interest rate/growth differential	-1.7	-1.8	-2.1			-2.4	-2.1	-1.7	-2.2	-2.2	-2.0		-1.2	-0.8	
Of which: Contribution from average real interest rate	0.8	0.8	0.5			0.1	0.4	0.9	0.7	0.7	0.9		1.7	1.4	
Of which: Contribution from real GDP growth	-2.6	-2.6	-2.6			-2.5	-2.6	-2.7	-2.9	-2.9	-2.9		-2.9	-2.2	
Contribution from real exchange rate depreciation	-0.9	-1.1	0.4			-0.3	-0.3	-0.4	0.0	0.0	-0.2		...	...	
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	-0.2	-2.1	1.5			0.5	0.0	0.1	0.1	0.1	0.0		0.0	0.0	
Other sustainability indicators															
PV of public sector debt	...	...	37.6			37.8	38.2	39.0	39.3	39.5	39.7		42.5	36.2	
Of which: Foreign-currency denominated	...	...	16.3			15.9	15.5	15.2	14.7	14.1	13.4		11.1	8.2	
Of which: External	...	...	16.3			15.9	15.5	15.2	14.7	14.1	13.4		11.1	8.2	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	4.6	3.9	4.5			6.3	8.0	8.3	7.9	7.7	7.7		6.5	4.0	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	306.9			279.3	282.0	276.8	268.9	261.0	257.9		255.2	208.7	
PV of public sector debt-to-revenue ratio (in percent)	...	...	324.3			292.1	294.6	287.3	278.6	270.0	266.5		262.6	214.3	
Of which: External 3/	...	...	140.4			123.0	119.4	111.6	104.0	96.6	90.1		68.3	48.5	
Debt service-to-revenue and grants ratio (in percent) 4/	28.6	25.2	21.5			26.8	31.0	31.5	30.7	29.2	28.6		26.7	20.9	
Debt service-to-revenue ratio (in percent) 4/	29.6	26.6	22.8			28.0	32.4	32.7	31.8	30.2	29.6		27.5	21.4	
Primary deficit that stabilizes the debt-to-GDP ratio	2.8	5.0	0.2			2.3	2.4	2.1	2.1	2.2	2.1		1.1	0.9	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	5.7	6.1	6.7	6.0	0.7	6.3	6.4	6.6	7.0	7.1	7.2	6.8	6.8	6.0	6.5
Average nominal interest rate on forex debt (in percent)	0.8	1.1	0.9	1.0	0.1	1.6	1.5	1.6	1.6	1.7	1.7	1.6	1.7	5.1	2.1
Average real interest rate on domestic debt (in percent)	5.7	3.6	3.3	3.9	1.2	0.7	1.1	2.6	3.2	3.2	4.0	2.5	5.8	4.0	5.4
Real exchange rate depreciation (in percent, + indicates depreciation)	-3.5	-4.8	2.2	-0.6	4.5	-1.5	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	6.5	6.5	6.3	5.7	1.6	10.0	9.3	8.1	7.8	7.6	6.8	8.3	4.5	4.5	4.5
Growth of real primary spending (deflated by GDP deflator, in percent)	-0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	30.2	31.1	30.4	31.1	30.9	31.6	30.9	27.5	27.0	...

Sources: Bangladesh authorities; and staff estimates and projections.

1/ Central government gross debt. The years in the table refer to fiscal years. Therefore, 2010 refers to July 2009–June 2010.

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. The increase in debt service in FY12 is, in part, due to projected interest for AsDB loans that is not paid during the loan's grace period.

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

6/ The increase in debt service in FY12 is, in part, due to projected interest for AsDB loans which is not paid during the loan's grace period.

Table 4. Bangladesh: Sensitivity Analysis for Key Indicators of Public Debt 2012–32

	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
PV of Debt-to-GDP Ratio								
Baseline	38	38	39	39	39	40	42	36
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	38	37	37	37	37	37	42	44
A2. Primary balance is unchanged from 2012	38	38	38	38	39	39	43	49
A3. Permanently lower GDP growth 1/	38	38	39	40	40	40	44	40
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	38	39	40	41	41	42	46	41
B2. Primary balance is at historical average minus one standard deviations in 2012–13	38	38	38	38	38	39	42	36
B3. Combination of B1–B2 using one half standard deviation shocks	38	38	38	38	39	39	43	39
B4. One-time 30 percent real depreciation in 2013	38	45	45	45	45	45	46	40
B5. 10 percent of GDP increase in other debt-creating flows in 2013	38	47	47	47	46	46	47	39
PV of Debt-to-Revenue Ratio 2/								
Baseline	279	282	277	269	261	258	255	209
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	279	275	263	254	246	242	250	256
A2. Primary balance is unchanged from 2012	279	279	270	262	255	252	260	284
A3. Permanently lower GDP growth 1/	279	282	278	270	263	261	263	231
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	279	286	286	279	272	270	273	235
B2. Primary balance is at historical average minus one standard deviations in 2012–13	279	277	266	260	253	250	249	205
B3. Combination of B1–B2 using one half standard deviation shocks	279	277	268	262	257	256	260	223
B4. One-time 30 percent real depreciation in 2013	279	333	322	309	297	290	278	229
B5. 10 percent of GDP increase in other debt-creating flows in 2013	279	344	334	318	306	298	284	224
Debt Service-to-Revenue Ratio 2/								
Baseline	27	31	31	31	29	29	27	21
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	27	31	31	27	26	26	26	25
A2. Primary balance is unchanged from 2012	27	31	31	29	28	28	27	29
A3. Permanently lower GDP growth 1/	27	31	31	31	29	29	28	23
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	27	31	32	32	31	30	29	24
B2. Primary balance is at historical average minus one standard deviations in 2012–13	27	31	31	28	27	27	26	20
B3. Combination of B1–B2 using one half standard deviation shocks	27	31	31	28	27	28	28	22
B4. One-time 30 percent real depreciation in 2013	27	35	39	39	38	38	35	29
B5. 10 percent of GDP increase in other debt-creating flows in 2013	27	31	35	55	32	37	28	24

Sources: Bangladesh 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.