Benin: Joint Bank-Fund Debt Sustainability Analysis[1]

Although Benin's external debt ratios under the baseline scenario are projected to remain below the relevant indicative debt burden thresholds, the possibility of slower-than-projected growth, volatile export prices and output, and new non-concessional borrowing could lead to a breach of the policy-based indicative thresholds, placing the country at a moderate risk of debt distress. Thus, as new borrowing space opens up in the post-MDRI era, staff recommends that the future borrowing program be assessed with due caution, with special consideration given to the concessionality of new loans, cost-benefit analyses of investment projects, and the assessment of the absorptive capacity of the economy.

A. Introduction

Benin's risk of debt distress is moderate based on the path of external debt burden indicators under alternative scenarios and stress tests. The external debt burden indicators do not breach the relevant policy-dependent indicative thresholds[2] under the baseline scenario, but are substantially above the thresholds under standard alternative scenarios and some boundary tests. These findings are in line with Benin's previous DSA, which flagged the possibility of debt levels exceeding indicative thresholds under stress tests and alternative scenarios[3].

Benin's debt has declined gradually since 2001. The outstanding stock of debt decreased from about 59 percent of GDP at end-2001 to 42 percent in 2003, the year the country reached the completion point under the Enhanced HIPC Initiative.[4] By 2006, the nominal debt-to-GDP ratio is projected to decline further to 12.7 percent, reflecting total debt cancellation under the Multilateral Debt Relief Initiative (MDRI).[5]

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[1] This DSA was carried out jointly by the Fund and World Bank staffs.

[2] The low income country debt sustainability framework (LIC DSF) provides indicative levels (thresholds) of debt burdens beyond which a country's risk of debt distress reaches levels that are considered unacceptable. The LIC DSF recognizes that better policies and institutions allow countries to manage higher levels of debt, and thus the threshold levels are policy-dependent. Benin'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 indicated in Text table 1 below.

[3] The last DSA for Benin was conducted in August 2005. See IMF Country Report No. 05/288, Section IV.

[4] Benin reached the enhanced HIPC Initiative completion point in March 2003 (see "Benin – Enhanced initiative for Heavily Indebted Poor Countries – Completion Point Document;" Country Report 03/189).

[5] The MDRI cut-off dates for the IMF and the African Development Fund debt (AfDF) is end-2004 and that for International Development Association (IDA) credits is end-2003. Without MDRI, that ratio would have been 36.2 percent by end-2006.

The present debt sustainability analysis (DSA) is based on the full implementation of MDRI. In 2006–11, the projected share of loan disbursements from multilateral creditors is assumed to stay at its post-MDRI level as at end-2006 in part reflecting the impact of IDA and AfDF "moderate" lending policies to MDRI countries in the post-MDRI period. Beyond 2011, multilateral debt as a share of total debt is assumed to increase steadily.[6]

Although Benin's external debt burden indicators do not breach the indicative thresholds under the baseline scenario, vulnerabilities associated with slower growth, adverse exogenous shocks, or decreased availability of concessional financing point to a moderate risk of debt distress. This situation underscores the need to preserve macroeconomic stability and deepen structural reforms with a view to maintaining the economy on a path of sustained growth.

Going forward, a prudent borrowing strategy would help the country maintain its risk of debt distress within acceptable limits. Such a strategy, built on appropriate concessionality of new loans, cost-benefit analyses of investment projects, and assessment of the absorptive capacity constraints of the economy, would help prevent a rapid re-accumulation of new debt.

The rest of the analysis is organized as follows: Section B spells out the baseline scenario; Section C discusses alternative scenarios and stress tests; and Section D further highlights the positive impact of the MDRI on Benin's debt dynamics and provides staff recommendations.

[6] MDRI (but not HIPC) debt relief entails a (less than proportional) reduction in the allocation of resources from IDA and the AfDB to the recipient countries. At end 2005, multilateral debt after HIPC represented 95 percent of Benin's total debt; that share declined to 84 percent after the MDRI. The IDA debt ratio was 48 percent pre-MDRI and about 18 percent post-MDRI.

B. Baseline Scenario: 2006–26[7]

The macroeconomic projections for 2006–26, built around Benin's existing short-run structural capacity constraints, assume the implementation of growth-enhancing structural policies in the medium and long term (See Box 1)[8]. Assuming the government's sustained implementation of reforms to diversify the economy and increase its resilience to adverse shocks, average real GDP growth is projected at 5.3 percent and 5.5 percent in 2006-11, and 2012-26, respectively, from a historical average of 4.2 percent during 2000-05. The period 2000-05 is the historical basis for the projections.

Growth is projected to be initially driven primarily by the cotton and service sectors. Seed cotton output is projected to reach full capacity of 600,000 tons for cotton-ginning plants by 2026, as the GDP share of other sector rises. Consumer price inflation is expected to be in line with the relevant West African Economic and Monetary Union convergence criterion, remaining at about 2.5 percent through 2026, below the historical average of 3.4 percent.

The baseline scenario underscores the importance of enhancing fiscal discipline. On average, the overall fiscal deficit, excluding grants, is projected to be below 5 percent of GDP in 2006–26, with revenue rising to a projected 20 percent of GDP and total expenditure expected to reach the equivalent of 25 percent of GDP, on average, in the period. Total expenditure is projected to increase gradually in the initial period, from 21 percent in 2005 to 26 percent in 2011, reflecting an expected higher investment budget, particularly for infrastructure projects, to sustain future growth. The financing gap is assumed to average 3 percent per annum, increasing gradually, from less than 2 percent of GDP in 2006 to about 4 percent of GDP in 2011. Beyond 2011, the financing gap is expected to decline steadily, falling below 1 percent in 2026.

The baseline scenario also stresses the importance of fostering a business environment that attracts foreign direct investment. GDP and export growth beyond the cotton sector will depend on continued capital accumulation that requires substantial increases in FDI from a historical average of 1.5 percent of GDP to 3.9 percent of GDP. Financing new investments with loans, particularly non-concessional borrowing, can lead to a quick deterioration of Benin's debt ratios.

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[7] The DSA exercise focuses on external debt as the stock of domestic debt is projected to remain below 2.5 percent of GDP on average in 2006-26.

[8] The updated DSA includes minor changes in macroeconomic assumptions and in new borrowing conditions from the 2005 DSA (IMF Country Report No. 05/288). In particular, the previous DSA assumed interest rate, grace period, and maturity of 1.9 percent, 7.7 years, and 28 years, respectively (See Box 1). In addition, based on historical structure, we assumed that 53 percent of the financing gap will be covered by external creditors.

Box 1. Benin: Baseline Scenario - Macroeconomic Assumptions for 2006–26

- **Real GDP** is projected to rise by 5.3 percent annually in 2006 –11 and by 5.5 percent annually in 2012–26, from an historical average growth of 4.2 percent in 2000-05, reflecting the implementation of growth-supporting policies and private sector involvement.
    - In 2006-11, real GDP growth is is expected to be based on growth in the cotton and service sectors. Beyond 2011, economic diversification is projected to gradually take hold, as a result of which non-cotton activity would account for an increasing share of growth performance. In particular, the service sector, which currently accounts for about 40 percent of GDP, is expected to expand rapidly as structural reforms take hold.
    - After a projected average increase of 13 percent during 2006–11, the growth of cotton production is projected to decelerate steadily to an annual average of 0.6 percent in 2012–2026. Cotton production is expected to reach full capacity (i.e. 600, 000 tons) by 2026; however, improvements in cotton production efficiency would enhance productivity in the latter years.
- **Inflation** as measured by the consumer price index is projected to average 2.5 percent annually in 2006–26.
- **Fiscal.** The fiscal deficit, excluding grants, is projected to be below 5 percent of GDP. The projected public financing gap is within 2–4 percent of GDP. The grant share is assumed to be maintained at the historical level of about 47 percent.
- **External sector.** Over the medium term, the terms of trade are assumed to improve on average by 4.2 percent annually, and the current account deficit is projected to remain below 5 percent of GDP on average.
    - The volume of exports of goods and nonfactor services is expected to grow by about 9 percent a year, in line with projected cotton and noncotton production.
    - The volume of imports is projected to rise 10.3 percent annually in 2006–2026, reflecting the projected average change in yearly gross domestic expenditure. Therefore, its average (nominal) shares to GDP and domestic expenditure are expected to increase gradually from respectively 26 percent and 23 percent in 2000-05 to 30 percent and 25 by 2026.
    - A large fraction of import growth is expected to be in capital goods; a meaningful share of such imports is projected to be financed by FDI, which is forecast to average 3.9 percent of GDP in the projection period compared with the 2000-05 historical high of 3.2 percent in 2000 and low of 0.9 percent in 2003.
- **Public debt and outcomes.** New public external borrowing averages about 2 percent of GDP a year. New loans have a projected average maturity of 26 years, a grace period of 8 years, and an average interest rate of 2 percent. Average discount rate of 5 percent is built into the net present value calculations, yielding an average grant element on new loans of about 32 percent.

Benin's external debt burden indicators do not breach the relevant policy-dependent indicative thresholds at any time under the baseline scenario (see Text Table 1)**.** The

NPV of debt to GDP ratio is expected to stabilize at approximately 15 percent of GDP, compared to a threshold of 40 percent. The NPV of debt to exports ratio is projected to reach 99 percent in 2016, a level that poses low risks of debt distress provided Benin's policy performance remains solid. Finally, the debt service ratio is expected to remain well below the 20 percent threshold throughout the projection period under the baseline.

Text Table 1. Benin: External Debt Indicators, 2006 - 2026
(in percent, post-MDRI unless otherwise indicated)

	Indicative thresholds	Baseline Scenario		
		2006	2007-11 1/	2012-2026 1/
NPV of debt-to-GDP	40	11	12	15
Debt service to revenue	35	4	4	4
NPV of debt-to-revenue	250	64	66	77
Debt service-to-exports	20	5	5	4
NPV of debt-to-exports	150	86	80	81
Memorandum items:				
Debt-to-GDP (post-HIPC)		36	33	28
Debt-to-GDP (post-MDRI)		13	15	20

Source: Benin authorities; and IMF Staf estimates.
1/ Simple average.

C. Alternative Scenarios and Stress Tests

Alternative scenarios and bound tests reveal moderate risk of debt distress. For instance, the net present value of the debt-to-exports ratio could breach the policy-dependent indicative threshold after 2011 under the historical scenario and, to a lesser degree, under the scenario of increased non-concessional borrowing. The NPV of debt to GDP ratio would also breach the indicative threshold in the historical scenario.

Alternative scenarios show that Benin's debt profile is vulnerable to non-concessional borrowing as well as growth rates and current account deficits at historical levels. The alternative scenarios assume the following risks (i) a historical performance in economic growth, FDI and the current account, reflecting lags in implementing reforms[9]; (ii) new borrowing on non-concessional terms; and (iii) a weaker cotton production owing to poor rainfall. The NPV of debt-to-exports ratio and debt service ratio breach the indicative thresholds in the case of the first two shocks, and all relevant debt ratios deteriorate under the historical and lower cotton output scenarios, reflecting cotton's significant share in total exports (Text table 2).

Text Table 2. Benin: Sensitivity Analysis - Selected Key Indicators of PPG External Debt, 2006-26
(In percent)

	2006	2007	2008	2009-2011	2012-26
NPV of debt-to-GDP ratio					
Baseline	10.6	10.9	11.4	12.2	14.7
Historical scenario	10.6	13.2	15.7	23.2	42.0
Lower cotton production 1/	10.6	13.1	13.7	14.7	17.7
New borrowing on less favorable terms 2/	10.6	11.5	12.9	15.5	24.8
NPV of debt-to-exports ratio					
Baseline	86.3	78.6	80.1	81.0	81.4
Historical scenario	86.3	95.0	110.7	154.0	228.1
Lower cotton production 1/	86.3	132.8	130.7	128.5	122.6
New borrowing on less favorable terms 2/	86.3	82.9	91.0	102.9	133.8
Debt service ratio					
Baseline	5.5	4.9	4.8	4.4	4.4
Historical scenario	5.5	4.9	5.3	6.0	14.0
Lower cotton production 1/	5.5	8.3	7.9	7.0	6.7
New borrowing on less favorable terms 2/	5.5	4.9	8.2	14.1	18.5

Source: Benin authorities and IMF staff estimates.
1/ 15 percent below the baseline production.
2/ Assumed commercial loan: (i) Interest rate: average 2007-12 LIBOR+1=6.4 %, (ii) Maturity: 6 years, (iii) grace period : 1 year, (iv) discount factor: 10 %

The substantial deterioration of debt ratios under the historical scenario stresses the importance of FDI-financed investments to promote export growth beyond 2011. Replacing FDI inflows with loans as a means of financing investment in imported capital goods would substantially increase the risk of debt distress, particularly if loans are contracted on non-concessional terms. An acceleration of export growth is also necessary to relieve the pressure from underlying current account financing needs.

[9] The historical scenario assumes continuation of the historical 2000–05 growth performance of 4.2 percent, on average, in 2006–26, as opposed to the 5.5 percent average real GDP growth assumed in the baseline scenario. Moreover, the historical scenario assumes a higher current account deficit (6.9 percent vs. 4.4 percent of GDP, on average) and lower FDI inflows (1.5 percent vs. 3.9 percent of GDP, on average).

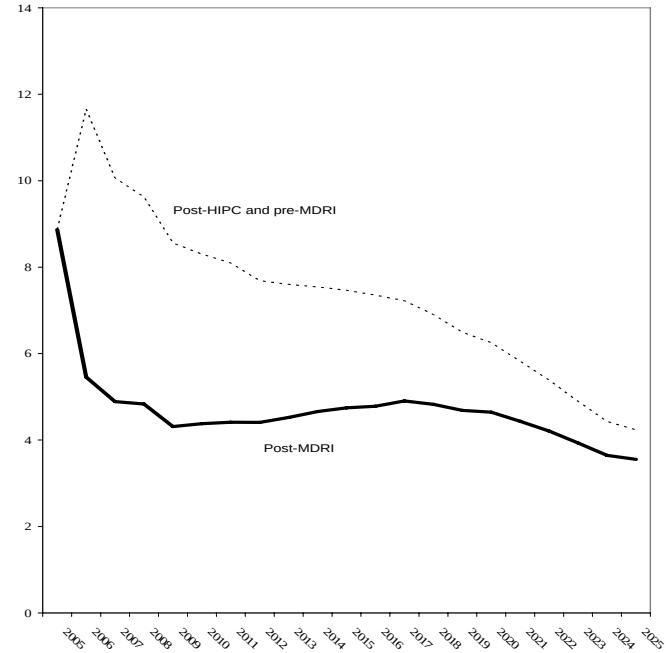
Benin's debt indicators are also vulnerable to exogenous shocks, particularly shocks to export growth. As summarized in Table 2, the NPV of debt-to-exports ratio would rise quickly and exceed the policy-dependent threshold under a temporary shock to export growth. Moreover, a combination of shocks to GDP growth and non-debt creating financing flows (such as FDI) would also lead to an elevation of the risk of debt distress.

D. Multilateral Debt Relief Initiative

MDRI-related debt relief has significantly reduced debt-service ratios. The 2006 debt service–to-export ratio fell from 12 percent after HIPC relief and before MDRI assistance, to 5 percent after MDRI delivery. Excluding both HIPC and MDRI relief, that ratio would have been about 18 percent. Continued reduction to Benin's risk of debt distress post-MDRI will depend on two major policy determinants: (i) new borrowing behavior; and (ii) authorities' effectiveness both in using resources freed up by HIPC and MDRI to meet development challenges as well as in attracting additional aid and investments through a strong policy and institutional environment.

The projected post-MDRI debt service ratio is more than halved in the medium term. Beyond 2011 the ratio is projected to increase steadily as the country contracts new debt, but the ratio remains below the indicative threshold (Figure 1).

Figure 1. Benin: Projected Debt Service-to-exports after HIPC and MDRI, 2005-26
(Percent)



Source: CAA database and IMF Staff estimates.

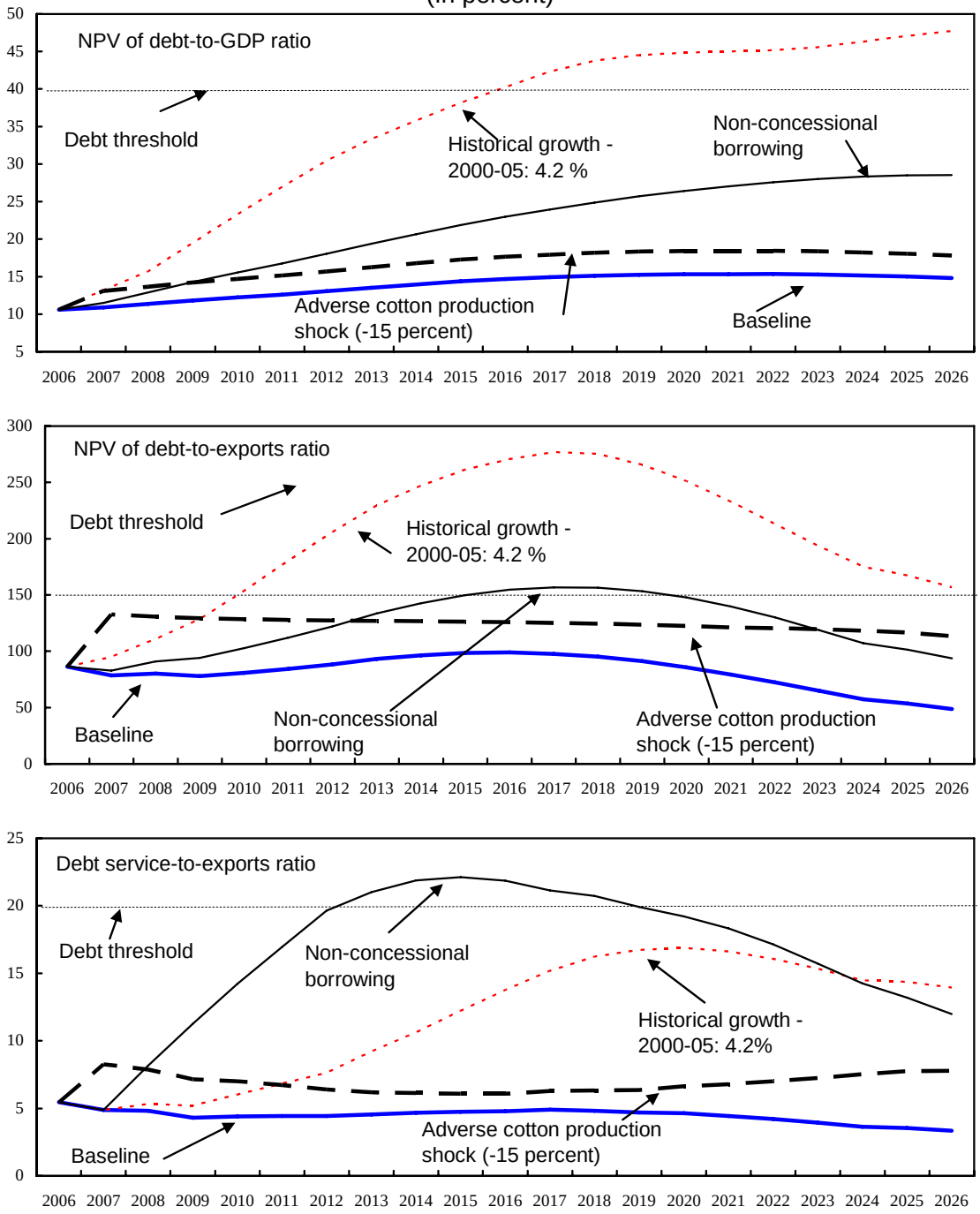
Upon receiving debt relief under the MDRI, Benin had seen its borrowing capacity open up and realized average debt service savings of about US$64 million,[10] or 1.3 percent of GDP, a year. In allocating MDRI- and HIPC-related debt-service savings, the government aims to scale up pro-growth and pro-poor expenditure to accelerate progress toward the Millennium Development Goals.[11]

[10] Including new borrowing and controlling for both estimated amounts and the distribution of compensatory financing from IDA and AfDF relative to debt-service payments.

[11] Chapter II of the Selected Issues paper elaborates on this issue.

In the period ahead, staff recommends that the authorities maintain prudent borrowing strategy that includes: i) maximizing the use of concessional financing and grants; and ii) integrating rigorous cost-benefit analysis of new projects, particularly those that are financed with new debt, including considerations of the absorptive capacity of the economy. The authorities ought to ensure that resources freed up by HIPC and MDRI, as well as new grants from development partners, are not used to support new non-concessional borrowing but rather pro-poor and pro-growth spending. Moreover, given the moderate risk identified in this DSA, debt-financed projects must be thoroughly scrutinized to ensure that their expected returns justify not only the financing costs but also the additional risks to Benin's debt profile. Effective implementation of such a borrowing strategy would benefit from close collaboration with and technical assistance from Benin's development partners, especially the World Bank.

Figure 2. Benin: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2006-2026
(In percent)



Source: Staff projections and simulations.

Non-concessional borrowing: (i) Interest rate: average 2007-12 LIBOR+1=6.4 %, (ii) Maturity: 6 years, (iii) grace period : 1 year, (iv) discount factor: 10 %

Table 1. Benin: External Debt Sustainability Framework, Baseline Scenario, 2004-2026 1/ 2/
(In percent of GDP, unless otherwise indicated)

	Act.	Est. 2/	Historical Average 3/	Standard Deviation 3/	Projections									
	2004	2005			2006	2007	2008	2009	2010	2011	2006-11 Average	2016	2026	2012-26 Average
External debt (nominal) 1/	**34.9**	**36.9**			**12.7**	**13.4**	**14.2**	**14.9**	**15.5**	**16.1**	**14.5**	**19.0**	**21.3**	
o/w public and publicly guaranteed (PPG)	34.9	36.9			12.7	13.4	14.2	14.9	15.5	16.1	14.5	19.0	21.3	
Change in external debt	-2.8	2.0			1.1	0.6	0.8	0.7	0.6	0.6	0.7	0.5	0.3	
Identified net debt-creating flows	1.4	1.5			2.9	1.7	1.6	-0.4	-0.8	-0.9	0.7	-0.5	-0.8	
Non-interest current account deficit	**6.9**	**6.0**	**6.5**	**1.1**	**6.8**	**6.5**	**6.2**	**4.4**	**3.8**	**3.5**	**5.2**	**3.7**	**3.5**	4.1
Deficit in balance of goods and services	12.2	10.0			10.7	10.5	10.0	8.5	7.7	7.3	9.1	7.0	8.5	
Exports	14.3	13.1			12.3	13.9	14.2	15.2	15.1	15.0	14.3	14.9	30.5	
Imports	26.6	23.1			23.0	24.3	24.1	23.6	22.9	22.2	23.4	21.9	39.0	
Net current transfers (negative = inflow)	-6.0	-4.7	-5.5	0.7	-4.7	-4.7	-4.5	-4.7	-4.6	-4.5	-4.6	-4.0	-3.2	-3.8
Other current account flows (negative = net inflow)	0.6	0.7			0.8	0.8	0.7	0.6	0.7	0.7	0.7	0.7	-1.8	
Net FDI (negative = inflow)	-1.2	-2.0	-1.5	0.8	-3.6	-4.4	-4.1	-4.4	-4.1	-3.9	-4.1	-3.7	-3.6	-3.8
Endogenous debt dynamics 4/	-4.2	-2.5			-0.3	-0.4	-0.4	-0.5	-0.5	-0.5	-0.4	-0.6	-0.7	
Contribution from nominal interest rate	0.3	0.3			0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	
Contribution from real GDP growth	-1.0	-0.9			-0.5	-0.6	-0.7	-0.7	-0.8	-0.8	-0.7	-0.9	-1.1	
Contribution from price and exchange rate changes	-3.5	-1.8			…	…	…	…	…	…		…	…	
Residual (3-4) 5/	-4.3	0.5			-1.8	-1.1	-0.8	1.1	1.4	1.4	0.0	1.0	1.1	0.7
o/w exceptional financing	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NPV of external debt 6/	18.9	9.4			10.6	10.9	11.4	11.8	12.2	12.6	11.6	14.7	14.8	
In percent of exports	132.1	72.0			86.3	78.6	80.1	78.0	80.8	84.2	81.3	98.9	48.7	
NPV of PPG external debt	**18.9**	**9.4**			**10.6**	**10.9**	**11.4**	**11.8**	**12.2**	**12.6**	11.6	**14.7**	**14.8**	
In percent of exports	132.1	72.0			86.3	78.6	80.1	78.0	80.8	84.2	81.3	98.9	48.7	
Debt service-to-exports ratio (in percent)	6.5	8.9			5.5	4.9	4.8	4.3	4.4	4.4	4.7	4.8	3.3	
PPG debt service-to-exports ratio (in percent)	6.5	8.9			5.5	4.9	4.8	4.3	4.4	4.4	4.7	4.8	3.3	
Total gross financing need (billions of U.S. dollars)	0.3	0.2			0.2	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.2	
Non-interest current account deficit that stabilizes debt ratio	9.7	4.0			5.7	5.9	5.4	3.7	3.2	2.9	4.5	3.3	3.2	
Key macroeconomic assumptions														
Real GDP growth (in percent)	3.1	2.9	4.2	1.2	4.5	5.1	5.5	5.5	5.5	5.5	5.3	5.5	5.5	5.5
GDP deflator in US dollar terms (change in percent) 7/	10.3	5.6	4.6	9.6	3.0	4.7	2.9	2.8	2.9	3.2	3.3	2.4	2.4	2.4
Effective interest rate (percent) 8/	1.0	1.1	1.1	0.3	2.1	1.9	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1
Growth of exports of G&S (US dollar terms, in percent)	19.2	-1.0	5.1	12.8	1.0	24.6	11.0	16.0	8.5	7.6	11.4	10.0	15.8	13.3
Growth of imports of G&S (US dollar terms, in percent)	13.9	-5.5	5.6	11.5	7.0	16.6	7.7	6.2	5.1	5.8	8.1	8.8	16.7	12.1
Grant element of new public sector borrowing (in percent)	...	...	...	...	36.0	36.8	36.5	35.9	35.4	34.9	35.9	33.1	26.8	31.0
Memorandum item:														
Nominal GDP (billions of US dollars)	4.1	4.4			4.7	5.2	5.7	6.1	6.7	7.3		10.7	22.9	

Source: Staff simulations.

1/ Includes both public and private sector external debt.
2/ 2005: Post-MDRI stock. 2006: first year of projection based on post-MDRI (full implementation) debt stock end-2005.
3/ Historical averages and standard deviations are derived over 2000-05.
4/ Derived as [r - g - r(1+g)]/(1+g+r+gr) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and r = growth rate of GDP deflator in U.S. dollar terms.
5/ 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.
6/ Assumes that NPV of private sector debt is equivalent to its face value.
7/ Average CFA F/US dollar exchange: 628.5, 510.8, and 502.2 in 2000-05, 2006-11, and 2012-26 respectively.
Average GDP deflator in CFA F terms: 2.8 percent, 2.4 percent, and 2.4 percent in 2000-05, 2006-2011, and 2012-26 respectively.
8/ Current-year interest payments devided by previous period debt stock.

Table 2. Benin: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2006-26
(In percent)

	Projections							
	2006	2007	2008	2009	2010	2011	**2016**	2026
NPV of debt-to-GDP ratio								
Baseline	11	11	11	12	12	13	**15**	15
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	11	13	16	19	23	27	**40**	48
A2. New public sector loans on less favorable terms in 2007-26 2/	11	11	13	14	16	17	**23**	29
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	11	12	13	15	16	17	**21**	24
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	11	13	17	18	18	18	**18**	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	11	12	13	14	14	15	**17**	18
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	11	13	16	16	16	17	**17**	16
B5. Combination of B1-B4 using one-half standard deviation shocks	11	12	16	17	17	17	**19**	17
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	11	19	20	20	21	21	**23**	21
NPV of debt-to-exports ratio								
Baseline	86	79	80	78	81	84	**99**	49
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	86	95	111	128	154	180	**271**	157
A2. New public sector loans on less favorable terms in 2007-26 2/	86	83	91	94	103	112	**155**	94
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	86	77	80	82	88	95	**122**	68
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	86	128	194	184	186	189	**196**	85
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	86	79	80	78	81	84	**99**	49
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	86	97	112	107	108	111	**117**	52
B5. Combination of B1-B4 using one-half standard deviation shocks	86	105	143	137	140	143	**155**	71
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	86	139	99	95	97	100	**110**	51
Debt service ratio								
Baseline	5	5	5	4	4	4	**5**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	5	5	5	5	6	7	**14**	14
A2. New public sector loans on less favorable terms in 2007-26 2/	5	5	8	11	14	17	**22**	12
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	5	5	5	5	5	5	**7**	5
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	5	7	8	9	9	9	**11**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	5	5	5	4	4	4	**5**	3
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	5	5	5	5	5	5	**6**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	5	6	7	7	7	7	**8**	5
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	5	5	5	5	5	5	**6**	4
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	29	29	29	29	29	29	**29**	29

Source: Staff projections and simulations.

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 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.