INTERNATONAL MONETARY FUND

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BENIN

Joint IMF/World Bank Debt Sustainability Analysis 2009[1]

Prepared by the Staffs of the International Monetary Fund and
the International Development Association

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This update of the joint Bank-Fund debt sustainability analysis (DSA) confirms that Benin's risk of debt distress remains moderate. Under baseline projections, all external debt indicators remain below their indicative thresholds over the long run. However, debt ratios move rapidly toward the thresholds or breach them under less favorable scenarios. In particular, debt vulnerabilities would increase if the negative impact of the global crisis (on growth, exports, and fiscal revenue) turned out to be stronger than projected, or in the absence of structural reforms aimed at enhancing competitiveness. The prompt implementation of these reforms is therefore critical. Benin should continue to finance its fiscal deficit primarily through external grants and highly concessional loans.

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[1] Prepared by IMF and IDA staff in collaboration with the Beninese authorities and in consultation with the staff of the African Development Bank. The analysis updates the 2008 DSA (IMF Country Report for Benin 08/374, available at http://www.imf.org/external/country/BEN/index.htm). This DSA is conducted on a gross basis as no data on Benin's claims on nonresidents is available.

I. Introduction

1. This analysis updates the DSA performed In November 2008 (IMF Country Report No. 08/374; IDA/SecM 2008-0707), to take account of the negative impact of the global economic crisis on Benin. The crisis is expected to reduce growth in 2009 and 2010, weaken demand for exports and trade with Nigeria, and reduce inflows of remittances and foreign direct investments. The associated revenue shortfall and the use of automatic fiscal stabilizers to mitigate the impact of the crisis are expected to result in a financing gap of about CFAF 100 billion over two years, which is expected to be covered with highly concessional external financing.

II. Methodology

2. **This DSA uses the debt sustainability framework for low-income countries.**[2] Debt sustainability is assessed in relation to policy-dependent thresholds for debt stock and debt service burden indicators . The policy-dependent thresholds depend on the average of the rating of the Country Policy and Institutional Assessment (CPIA) index for 2005–07. According to this rating, Benin is classified as a medium performer in terms of the quality of policies and institutions.[3]

3. **Except for the estimated impact of the crisis in 2009–10, this DSA maintains the main macroeconomic and policy assumptions used in the previous DSA (Box 1)**. In particular, the baseline projections are anchored on the assumptions that: (i) key structural reforms aimed at enhancing competitiveness and growth (most notably through the restructuring of the energy and telecommunication sector) would be adopted over the medium term; (ii) the authorities would proceed with their plans to improve public infrastructure; and (iii) fiscal policy would aim at maintaining macroeconomic stability. Under these conditions, real GDP growth is expected to recover after the crisis period 2009–10 to a sustainable annual rate of 6 percent from 2012 onwards, consistent with the assumptions of the World Bank 2008 Country Economic Memorandum (CEM).

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[2] This DSA follows the IMF and World Bank Staff Guidance Note on the Application of the Joint Fund-Bank Debt Sustainability Framework for Low-Income Countries, October 9, 2008 (available at http://www.imf.org/external/np/exr/facts/jdsf.htm and http://go.worldbank.org/JBKAT4BH40).

[3] Benin's CPIA average index for the period 2005-07 was 3.6. A rating between 3.25 and 3.75 reflects medium performance; a rating above 3.75 corresponds to strong performance, and a rating below 3.25 corresponds to weak policy performance. Medium performance implies the following external debt sustainability thresholds: a net present value (NPV)-to-GDP ratio of 40 percent, and NPV of debt-to-exports ratio of 150 percent, an NPV of debt-to-revenue ratio of 250 percent; a debt service-to-exports ratio of 20 percent and a debt service-to-revenue ratio of 30 percent.

4. **The global economic crisis is projected to slow down growth and put pressure on fiscal accounts in 2009 and 2010**. Real GDP growth is projected to drop to 3.8 and 3.0 percent in 2009 and 2010, respectively, as global demand for Benin's exports declines, trade relations with Nigeria weaken, and inflows of workers' remittances and foreign direct investment fall; as a result, the external current account deficit is projected to widen to 10.3 percent of GDP in 2009 and to 9.7 percent of GDP in 2010. Lower food and commodity prices will reduce customs revenue, while the slowdown in economic activity will reduce direct and indirect taxation.

Box 1. Macroeconomic Assumptions

Medium term (2009–14): The projections are consistent with the macroeconomic framework of the sixth PRGF review and reflect: (i) the **impact of the crisis**, and (ii) **fiscal policies** aimed at maintaining macroeconomic stability, protecting vulnerable groups, and enhancing investment in public infrastructure. It also assumes the implementation of **structural reforms** aimed at increasing efficiency and competitiveness and improving the business climate. Consequently, after slowing down to 3–4 percent in 2009–10, real GDP growth is projected to go back to its long-term sustainable level of 6 percent, while fiscal prudence and the anchor of the fixed exchange rate peg gradually are expected to reduce inflation to 3 percent. After the initial fiscal expansion to mitigate the impact of the crisis, the primary deficit would be reduced to about 1 percent of GDP by 2014, reflecting improvements in public fiscal management and efforts to contain recurrent expenditures. The current account deficit is expected to narrow to 7 percent of GDP by 2014, as export receipts recover.

Long term (2015–29): long-term projections reflect the impact of the structural reforms implemented in previous periods and the continuation of policies aimed at maintaining macroeconomic stability. Under these assumptions:

- **Real GDP growth** would average 6 percent;
- **Inflation** would remain at or below 3 percent;
- The **primary fiscal deficit** would stabilize at about 1 percent of GDP, following improvements in revenue collection (to above 20 percent of GDP, excluding grants) and continued efforts to contain nonpriority recurrent expenditures;
- The **current account deficit** would remain at about 5 percent of GDP, reflecting growing imports associated with economic expansion and foreign direct investment (FDI), as well as continuing inflows of remittances;
- Improved infrastructure and a more favorable business climate would attract net **foreign direct investment** averaging about 1 percent of GDP annually.
- Reflecting donors' support for Benin's infrastructural development and reform efforts, about one half of total gross financing needs are assumed to be covered by **external grants**.

5. **The impact of the crisis is however expected to be temporary.** With the expected recovery in the global economy in the second half of 2010, and prompted by continued structural reforms to improve competitiveness, investments in infrastructure, and a more efficient public administration, real GDP growth could recover to its full potential of 6 percent by 2012. Inflation would remain below 3 percent, and the current account deficit (excluding grants) would narrow to 7.1 percent of GDP by 2014, reflecting increasing exports and remittances. Ongoing inflows of public and private capital would help keep reserves above 5 months of imports of goods and services. Long-term downside risks associated with weaker reform efforts or a slower global recovery are captured in an alternative "no reform" scenario.

6. **A key assumption is that, in support of the implementation of the above-mentioned reforms, concessional financing from external donors would continue to be available throughout the projection period.** In particular, sufficient concessional funds would be available to fill the financing gaps in 2009 and 2010, permitting the use of automatic fiscal stabilizers to contain the impact of the crisis without compromising debt sustainability. Moreover, the average grant element on new external financing is assumed to remain at about 35 percent in the long term.

III. BACKGROUND

7. **Following debt relief under the HIPC and MDRI initiative, Benin's external debt remains at comfortable levels**. Benin reached the completion point under the Enhanced HIPC initiative in 2003, and benefited from further debt relief under the MDRI initiative in 2006. As a result, Benin's external debt stock declined from 47.7 percent of GDP at end-2002 to 14.6 percent of GDP at end-2008. In line with this reduction, external debt service was reduced from 2.2 percent of GDP to less than 0.6 percent over the same period.

8. **Government borrowing from the regional market increased significantly since 2006**. Outstanding regional government debt at end-2008 amounted to 4.3 percent of GDP. Net government borrowing in the regional market averaged 3.5 percent of GDP in 2007–08 and is expected to increase somewhat in the future, reflecting the authorities' interest in promoting the expansion of this market. Nevertheless, as borrowing conditions on this market are nonconcessional and the authorities are committed to a prudent borrowing strategy, it is assumed that—as has been the case in the past—borrowing from the regional market will continue to cover only a small fraction of overall financing needs, that will be primarily met with highly concessional external financing.

IV. ASSESSMENT OF EXTERNAL DEBT SUSTAINABILITY

9. **Under baseline assumptions, all external debt and debt service ratios remain below the policy-dependent thresholds throughout the projection period (Figure 1).** The

NPV of external debt is projected to stabilize at 15 percent of GDP in the long run, and debt service payments would remain below 8 percent of exports; the NPV of debt-to-exports ratio would remain well below the threshold of 150 percent and decline after 2014.

10. **Alternative scenarios and stress test indicates that Benin's external debt situation would worsen substantially in the event of shocks.** If exports in 2010–11 were to grow at one standard deviation below the historical average, the NPV of debt-to-exports ratio would rise well above the sustainability threshold in the medium term, peaking at 200 percent in 2014, before declining in the long run. If new public sector borrowing were obtained on less favorable terms, the NPV of debt-to-exports ratio would constantly increase over time and cross the sustainability threshold, but only after 2026.

11. **The risk of debt distress would increase markedly in the absence of structural reforms, particularly in the long run**. Under a "no reform scenario" characterized by real GDP growth rates, export growth rates, and primary fiscal deficits close to historical averages,[4] the NPV of debt-to-exports ratio would cross the sustainability threshold in 2018 and continue to increase thereafter. This scenario could also materialize if the global economic crisis were to have a permanent impact on Benin.

V. Assessment of Public Debt Sustainability

12. **Public debt indicators are projected to worsen markedly over time but would stabilize in the long run (Figure 2)**. While no explicit thresholds are defined for these indicators, the NPV of government debt would double in proportion to GDP (from 12 percent in 2008 to 24 percent in 2029) and to revenue and grants (from 54 percent in 2008 to 104 percent by 2029), while public debt service would increase from 7 percent of revenue and grants in 2008 to about 16 percent in 2029.

13. **Stress tests highlight increased vulnerabilities under less favorable conditions**. If the primary fiscal balance were maintained at the level projected for 2009, the NPV of public debt would rise to 38 percent of GDP and 166 percent of revenue by 2029, raising concerns about the sustainability of public debt. Under a no-reform scenario (with key variables at their historical average), the NPV of public debt would rise to 28 percent of GDP and 121 percent of revenue and grants by 2029.

14. **Public debt indicators would worsen under an alternative financing scenario**. If the share of government financing needs covered by borrowing in the regional market were 20 percentage points larger than in the baseline (under unchanged fiscal deficit projections),[5]

[4] This scenario is described in more detail in IMF Country Report No. 08/374; IDA/SecM2008-0707.

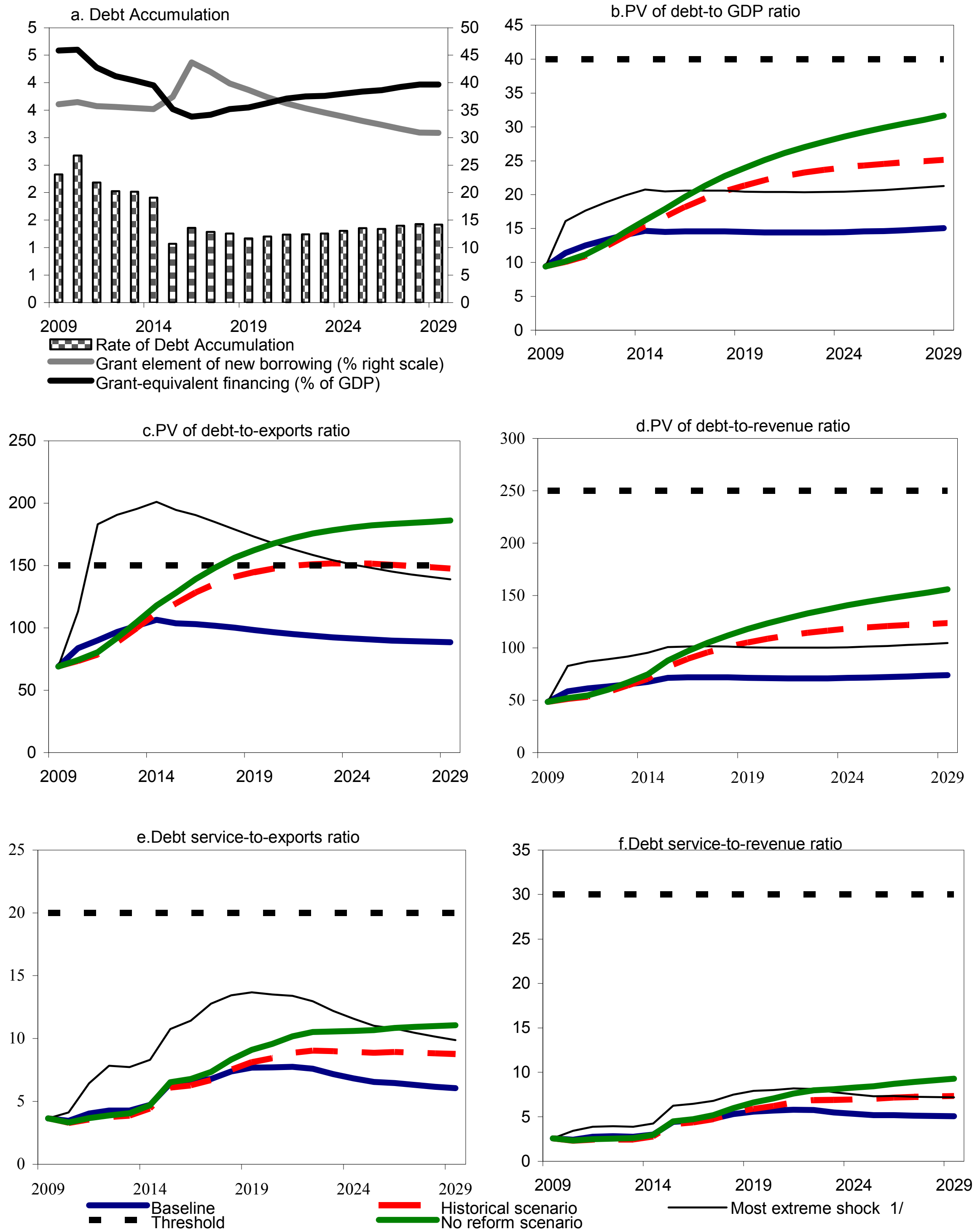
[5] This scenario is described in more detail in IMF Country Report No. 08/374; IDA/SecM2008-0707.

government debt would rise to 32 percent of GDP by 2029, the NPV of government debt would rise to 113 percent of revenue and grants; most notably, public debt service would rise to 22 percent of GDP. These results reconfirm the ones in the previous DSA about the need for a prudent borrowing policy to limit the net issuance of nonconcessional domestic debt in the regional market to less than 0.5 percent of GDP annually.

VI. Conclusions

15. **Altogether, this DSA confirms that Benin faces a moderate risk of debt distress and underlines the importance of proceeding with the structural reform agenda.** In particular, the impact of the global economic crisis is not expected to significantly worsen the outlook for debt sustainability, provided the authorities stick to highly concessional financing to close the financing gaps. The prompt implementation of structural reforms will be critical to enhance growth, expand exports, attract foreign direct investments and contain the fiscal deficit, thus improving long-term debt dynamics. The authorities should also continue to cover their financing needs primarily with highly concessional external assistance. In the absence of such assistance, the government should consider reducing nonpriority public spending.

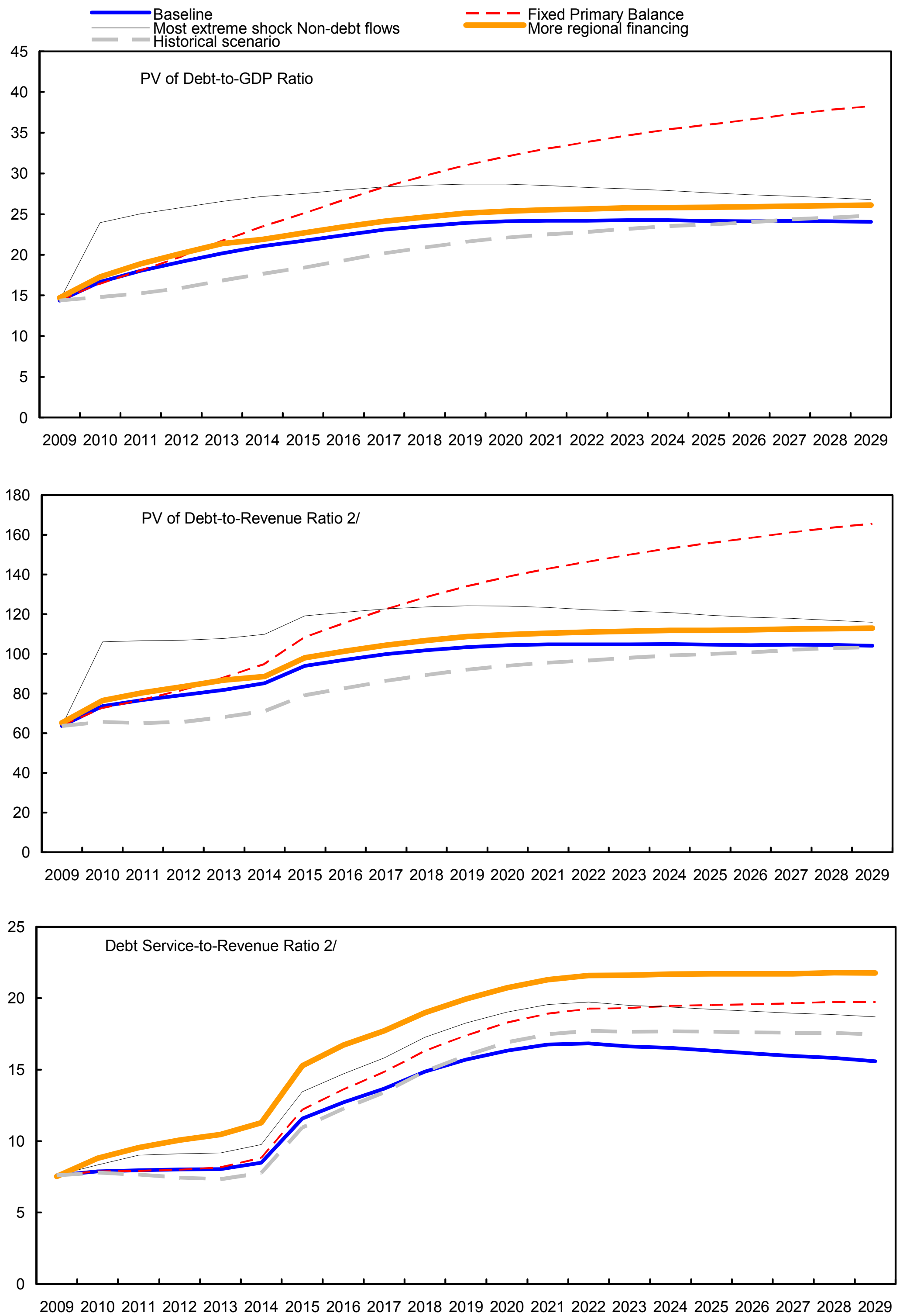
Figure 1. Benin: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2009-2029 1/



Source: Staff projections and simulations.

1/ The most extreme stress test is the test that yields the highest ratio in 2019. In figure b. it corresponds to a One-time depreciation shock; in c. to a Exports shock; in d. to a One-time depreciation shock; in e. to a Exports shock and in picture f. to a One-time depreciation shock

Figure 2. Benin: Indicators of Public Debt Under Alternative Scenarios, 2009-2029 1/



Sources: Country authorities; and Fund staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2019.

2/ Revenues are defined inclusive of grants.

Table 1a.: External Debt Sustainability Framework, Baseline Scenario, 2006-2029 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average	Standard Deviation	Projections									
	2006	2007	2008			2009	2010	2011	2012	2013	2014	2009-2014 Average	2019	2029	2015-2029 Average
External debt (nominal) 1/	12.2	13.2	14.6			17.8	20.4	21.5	22.3	22.9	23.4		21.8	23.4	
o/w public and publicly guaranteed (PPG)	11.5	12.6	14.1			17.4	20.2	21.4	22.2	22.9	23.4		21.8	23.4	
Change in external debt	-26.6	1.0	1.4			3.2	2.6	1.1	0.7	0.6	0.5		-0.2	0.3	
Identified net debt-creating flows	1.8	3.4	3.3			7.6	7.2	5.5	4.4	3.9	3.7		3.1	3.7	
Non-interest current account deficit	5.3	9.7	8.0	7.0	1.4	9.4	8.9	7.9	7.2	6.7	6.4		5.1	5.1	5.1
Deficit in balance of goods and services	11.3	15.3	13.6			14.0	13.1	12.4	11.9	11.4	11.0		11.9	14.0	
Exports 2/	11.4	16.2	16.2			13.6	13.6	13.9	13.8	13.8	13.8		14.7	17.0	
Imports	22.7	31.6	29.8			27.6	26.8	26.2	25.6	25.2	24.8		26.6	31.0	
Net current transfers (negative = inflow)	-6.3	-5.6	-5.6	-5.8	0.5	-4.7	-4.5	-4.7	-4.9	-5.0	-5.0		-6.2	-6.2	-6.2
o/w official	-3.1	-2.8	-3.1			-2.7	-2.6	-2.7	-2.7	-2.8	-2.8		-3.1	-3.7	
Other current account flows (negative = net inflow)	0.2	-0.1	0.0			0.1	0.2	0.2	0.2	0.2	0.3		-0.6	-2.7	
Net FDI (negative = inflow)	-1.2	-4.7	-2.6	-0.8	1.6	-1.6	-1.4	-1.6	-1.9	-1.9	-1.7		-1.2	-0.6	-1.0
Endogenous debt dynamics 3/	-2.4	-1.6	-2.1			-0.3	-0.3	-0.8	-0.9	-0.9	-1.0		-0.8	-0.9	-0.9
Contribution from nominal interest rate	0.4	0.2	0.2			0.3	0.2	0.3	0.3	0.3	0.3		0.4	0.4	
Contribution from real GDP growth	-1.4	-0.5	-0.5			-0.6	-0.5	-1.1	-1.2	-1.2	-1.3		-1.2	-1.3	
Contribution from price and exchange rate changes	-1.5	-1.3	-1.7			…	…	…	…	…	…		…	…	
Residual (3-4) 4/	-28.4	-2.4	-2.0			-4.4	-4.6	-4.4	-3.7	-3.2	-3.2		-3.3	-3.3	-3.3
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	
PV of external debt 5/	...	...	7.1			9.8	11.7	12.7	13.4	14.1	14.7		14.5	15.0	
In percent of exports 2/	...	...	43.7			72.0	85.6	91.5	97.3	101.8	106.7		98.4	88.5	
PV of PPG external debt	...	...	6.6			9.4	11.4	12.5	13.3	14.1	14.7		14.5	15.0	
In percent of exports 2/	...	...	41.0			69.3	83.7	90.3	96.8	101.8	106.7		98.4	88.5	
In percent of government revenues	...	...	34.2			48.5	58.6	61.4	63.3	65.1	67.6		71.4	74.1	
Debt service-to-exports ratio (in percent) 2/	198.7	1.4	3.4			4.6	4.3	4.7	4.9	4.8	4.8		7.7	6.1	
PPG debt service-to-exports ratio (in percent) 2/	198.7	1.2	2.7			3.7	3.5	4.0	4.3	4.3	4.7		7.7	6.1	
PPG debt service-to-revenue ratio (in percent)	133.9	0.9	2.3			2.6	2.4	2.7	2.8	2.7	3.0		5.6	5.1	
Total gross financing need (Billions of U.S. dollars)	1.3	0.3	0.4			0.5	0.5	0.5	0.5	0.5	0.5		0.7	1.9	
Non-interest current account deficit that stabilizes debt ratio	31.9	8.7	6.7			6.2	6.3	6.8	6.5	6.0	5.8		5.4	4.8	
Key macroeconomic assumptions															
Real GDP growth (in percent)	3.8	4.6	5.0	4.4	1.0	3.8	3.0	5.7	6.0	6.0	6.0	5.1	6.0	6.0	6.0
GDP deflator in US dollar terms (change in percent)	3.9	12.0	15.1	6.2	9.3	-8.2	2.7	2.9	2.9	2.9	2.6	1.0	2.5	2.4	2.5
Effective interest rate (percent) 6/	1.2	2.2	1.7	1.4	0.4	1.8	1.2	1.4	1.4	1.4	1.5	1.4	1.8	1.7	1.7
Growth of exports of G&S (US dollar terms, in percent) 2/	-5.3	67.5	20.7	12.3	23.2	-20.1	6.3	10.5	8.4	9.6	8.3	3.8	10.2	10.2	10.2
Growth of imports of G&S (US dollar terms, in percent)	9.5	62.9	14.3	13.4	20.2	-11.7	2.5	6.5	6.6	7.3	7.0	3.0	10.3	10.3	10.3
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	36.1	36.5	35.8	35.6	35.4	35.2	35.7	38.7	30.8	35.8
Government revenues (excluding grants, in percent of GDP)	16.8	20.6	19.4			19.4	19.5	20.4	21.1	21.6	21.7		20.3	20.3	20.3
Aid flows (in Billions of US dollars) 7/	0.2	0.3	0.3			0.4	0.4	0.4	0.5	0.5	0.5		0.4	0.9	
o/w Grants	0.1	0.2	0.1			0.2	0.2	0.2	0.2	0.3	0.3		0.4	0.9	
o/w Concessional loans	0.1	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.2		0.0	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			4.6	4.6	4.3	4.1	4.0	4.0		3.5	4.0	3.7
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			64.6	64.3	67.7	68.7	68.8	69.2		75.0	60.3	69.5
Memorandum items:															
Nominal GDP (Billions of US dollars)	4.7	5.6	6.7			6.4	6.8	7.4	8.0	8.8	9.5		14.5	33.1	
Nominal dollar GDP growth	7.8	17.2	20.8			-4.6	5.8	8.8	9.1	9.1	8.8	**6.1**	8.7	8.6	8.7
PV of PPG external debt (in Billions of US dollars)			0.4			0.6	0.8	0.9	1.1	1.2	1.4		2.1	5.0	
(PVt-PVt-1)/GDPt-1 (in percent)						2.3	2.7	2.2	2.0	2.0	1.9	2.2	1.2	1.4	1.3

Source: Staff simulations.

1/ Includes both public and private sector external debt.

3/ 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.

4/ Residuals include changes in gross foreign assets, disbursements of capital grants, valuation adjustments, and, for projections, contribution from price and exchange rate changes. Projected values reflect the assumptions of the DSA performed in November (IMF Country Report No. 08/374; IDA/SecM2008-0707).

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

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

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

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

Table 1b.Benin: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009-2029
(In percent)

	Projections							
	2009	2010	2011	2012	2013	2014	**2019**	2029
PV of debt-to GDP ratio								
Baseline	9	11	13	13	14	15	**14**	15
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2009-2029 1/	9	10	11	12	14	15	**21**	25
A2. New public sector loans on less favorable terms in 2009-2029 2	9	12	14	16	17	18	**19**	28
A3. No-reform scenario	9	10	11	13	14	16	**24**	32
A4. Larger financing on the regional market	9	10	11	11	12	12	**11**	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	9	11	13	14	14	15	**15**	15
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	9	13	17	18	18	19	**17**	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	9	12	14	15	16	17	**16**	17
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	9	12	15	15	16	17	**16**	15
B5. Combination of B1-B4 using one-half standard deviation shocks	9	12	16	16	17	18	**17**	16
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	9	16	18	19	20	21	**20**	21
PV of debt-to-exports ratio								
Baseline	69	84	90	97	102	107	**98**	89
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2009-2029 1/	69	73	78	88	99	111	**144**	147
A2. New public sector loans on less favorable terms in 2009-2029 2	69	91	104	115	125	134	**130**	164
A3. No-reform scenario	69	74	80	92	104	117	**162**	185
A4. Larger financing on the regional market	65	75	79	83	85	87	**77**	64
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	69	84	90	97	102	107	**98**	89
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	69	114	183	191	196	202	**173**	139
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	69	84	90	97	102	107	**98**	89
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	69	91	106	112	116	120	**107**	91
B5. Combination of B1-B4 using one-half standard deviation shocks	69	94	126	133	138	143	**126**	106
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	69	84	90	97	102	107	**98**	89
PV of debt-to-revenue ratio								
Baseline	49	59	61	63	65	68	**71**	74
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2009-2029 1/	49	51	53	58	64	70	**105**	123
A2. New public sector loans on less favorable terms in 2009-2029 2	49	64	71	75	80	85	**94**	138
A3. No-reform scenario	49	52	55	60	67	74	**118**	155
A4. Larger financing on the regional market	45	52	54	54	55	55	**56**	54
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	49	58	63	64	66	69	**73**	75
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	49	67	84	84	85	86	**85**	79
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	49	62	69	71	73	76	**80**	84
B4. Net non-debt creating flows at historical average minus one standard deviation in 2010-2011 4/	49	63	72	73	74	76	**78**	76
B5. Combination of B1-B4 using one-half standard deviation shocks	49	62	77	78	79	81	**82**	79
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	49	83	87	89	92	95	**101**	105

Table 1b.Benin: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2009-2029 (continued)
(In percent)

Debt service-to-exports ratio

Baseline	4	3	4	4	4	5	**8**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2009-2029 1/	4	3	4	4	4	4	**8**	9
A2. New public sector loans on less favorable terms in 2009-2029 2	4	3	4	4	4	5	**8**	10
A3. No-reform scenario	4	3	4	4	4	5	**9**	11
A4. Larger financing on the regional market	4	3	4	4	4	4	**6**	5
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	4	3	4	4	4	5	**8**	6
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	4	4	6	8	8	8	**14**	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	4	3	4	4	4	5	**8**	6
B4. Net non-debt creating flow s at historical average minus one standard deviation in 2010-2011 4/	4	3	4	5	5	5	**8**	6
B5. Combination of B1-B4 using one-half standard deviation shocks	4	4	5	6	6	6	**10**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	4	3	4	4	4	5	**8**	6

Debt service-to-revenue ratio

Baseline	3	2	3	3	3	3	**6**	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2009-2029 1/	3	2	2	2	2	3	**6**	7
A2. New public sector loans on less favorable terms in 2009-2029 2	3	2	3	3	3	3	**6**	8
A3. No-reform scenario	3	2	2	3	3	3	**7**	9
A4. Larger financing on the regional market	2	2	3	2	2	3	**5**	4
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2010-2011	3	2	3	3	3	3	**6**	5
B2. Export value growth at historical average minus one standard deviation in 2010-2011 3/	3	2	3	3	3	4	**7**	6
B3. US dollar GDP deflator at historical average minus one standard deviation in 2010-2011	3	3	3	3	3	3	**6**	6
B4. Net non-debt creating flow s at historical average minus one standard deviation in 2010-2011 4/	3	2	3	3	3	3	**6**	5
B5. Combination of B1-B4 using one-half standard deviation shocks	3	2	3	3	3	3	**6**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2010 5/	3	3	4	4	4	4	**8**	7
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.

Table 2a.Benin: Public Sector Debt Sustainability Framework, Baseline Scenario, 2006-2029
(In percent of GDP, unless otherwise indicated)

	Actual			Average	Standard Deviation	Estimate	Projections								
	2006	2007	2008			2009	2010	2011	2012	2013	2014	2009-14 Average	2019	2029	2015-29 Average
Public sector debt 1/	12.4	15.5	18.4			22.4	25.4	26.9	28.0	29.0	29.8		31.2	32.4	
o/w foreign-currency denominated	11.5	12.6	14.1			17.4	20.2	21.4	22.2	22.9	23.4		21.8	23.4	
Change in public sector debt	-27.9	3.1	3.0			3.9	3.0	1.5	1.1	1.0	0.8		0.2	0.1	
Identified debt-creating flows	-5.9	-3.4	0.8			2.1	1.7	0.3	-0.4	-0.8	-0.9		-1.0	-1.1	
Primary deficit	0.0	-1.8	1.4	0.4	1.5	2.4	2.7	2.0	1.5	1.1	1.1	1.8	0.7	0.7	0.8
Revenue and grants	19.1	23.6	21.2			22.6	22.6	23.5	24.1	24.6	24.7		23.1	23.1	23.1
of which: grants	2.2	3.0	1.7			3.2	3.1	3.1	3.1	3.0	3.0		2.8	2.8	2.8
Primary (noninterest) expenditure	19.1	21.8	22.5			24.9	25.3	25.5	25.7	25.8	25.9		23.8	23.8	23.9
Automatic debt dynamics	-6.0	-1.7	-0.6			-0.3	-1.0	-1.7	-1.9	-2.0	-2.0		-1.7	-1.8	
Contribution from interest rate/growth differential	-2.2	-0.7	-0.8			-0.6	-0.5	-1.3	-1.6	-1.8	-1.9		-1.6	-1.7	
of which: contribution from average real interest rate	-0.8	-0.1	-0.1			0.1	0.1	0.1	-0.1	-0.2	-0.2		0.2	0.1	
of which: contribution from real GDP growth	-1.5	-0.6	-0.7			-0.7	-0.7	-1.4	-1.5	-1.6	-1.6		-1.8	-1.8	
Contribution from real exchange rate depreciation	-3.7	-1.0	0.2			0.3	-0.4	-0.5	-0.3	-0.2	-0.1		...	...	
Other identified debt-creating flows	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes 2/	-22.0	6.5	2.2			1.8	1.3	1.2	1.4	1.8	1.7		1.2	1.2	1.2
Other Sustainability Indicators															
PV of public sector debt	0.9	2.9	11.5			14.4	16.7	18.0	19.1	20.2	21.1		23.9	24.0	
o/w foreign-currency denominated	0.0	0.0	7.2			9.4	11.4	12.5	13.3	14.1	14.7		14.5	15.1	
o/w external	...	...	7.2			9.4	11.4	12.5	13.3	14.1	14.7		14.5	15.1	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	22.6	-1.6	2.8			4.1	4.5	3.9	3.5	3.1	3.2		4.4	4.3	
PV of public sector debt-to-revenue and grants ratio (in percent)	4.9	12.4	54.2			63.7	73.7	76.7	79.2	81.9	85.2		103.4	104.1	
PV of public sector debt-to-revenue ratio (in percent)	5.5	14.2	59.0			74.1	85.5	88.5	90.8	93.4	96.9		117.7	118.4	
o/w external 4/	…	…	36.9			48.6	58.6	61.4	63.2	65.1	67.6		71.4	74.1	
Debt service-to-revenue and grants ratio (in percent) 5/	118.2	0.8	6.8			7.6	7.9	8.0	8.0	8.0	8.5		15.7	15.6	
Debt service-to-revenue ratio (in percent) 5/	134.0	0.9	7.4			8.8	9.1	9.2	9.2	9.2	9.7		17.9	17.7	
Primary deficit that stabilizes the debt-to-GDP ratio	28.0	-4.8	-1.6			-1.6	-0.4	0.5	0.4	0.1	0.3		0.5	0.6	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	3.8	4.6	5.0	4.4	1.0	3.8	3.0	5.7	6.0	6.0	6.0	5.1	6.0	6.0	6.0
Average nominal interest rate on forex debt (in percent)	1.2	1.9	1.5	1.3	0.3	1.6	1.1	1.3	1.4	1.4	1.4	1.4	1.8	1.7	1.7
Average real interest rate on domestic debt (in percent)	-2.5	-2.5	-1.4	1.4	3.4	1.1	0.0	-0.6	-1.1	-1.6	-1.8	-0.7	2.3	2.1	2.2
Real exchange rate depreciation (in percent, + indicates depreciation)	-10.1	-9.3	2.0	-5.2	9.1	1.9	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	3.1	2.6	7.2	3.0	2.1	3.2	3.0	2.8	2.7	2.7	2.7	2.8	3.0	3.0	3.0
Growth of real primary spending (deflated by GDP deflator, in percent)	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	…	…	36.1	36.5	35.8	35.6	35.4	35.2	35.7	38.7	30.8	...

Sources: Country authorities; and Fund staff estimates and projections.

1/ Gross debt of the central government.

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/ Residuals include the net accumulation of government deposits at banks. Projected values reflect the assumptions of the DSA performed in November (IMF Country Report No. 08/374; IDA/SecM2008-0707), incorporating an accumulation of deposits associated with the growth in nominal current expenditure.

4/ Revenues excluding grants.

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

Table 2b.Benin: Sensitivity Analysis for Key Indicators of Public Debt 2009-2029

		Projections						
	2009	2010	2011	2012	2013	2014	2019	2029
PV of Debt-to-GDP Ratio								
Baseline	14	17	18	19	20	21	24	24
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	14	15	15	16	17	18	22	25
A2. Primary balance is unchanged from 2009	14	16	18	20	22	23	31	38
A3. Permanently lower GDP growth 1/	14	17	18	19	21	22	26	30
A4. Alternative Scenario : more financing on the regional market	15	17	19	20	21	22	25	26
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2010-2011	14	17	19	20	21	22	26	28
B2. Primary balance is at historical average minus one standard deviations in 2010-2011	14	16	17	19	20	21	24	24
B3. Combination of B1-B2 using one half standard deviation shocks	14	15	17	18	19	20	24	25
B4. One-time 30 percent real depreciation in 2010	14	20	21	21	22	23	25	23
B5. 10 percent of GDP increase in other debt-creating flows in 2010	14	24	25	26	27	27	29	27
PV of Debt-to-Revenue Ratio 2/								
Baseline	64	74	77	79	82	85	103	104
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	64	66	65	66	68	71	92	103
A2. Primary balance is unchanged from 2009	64	73	77	82	88	95	134	166
A3. Permanently lower GDP growth 1/	64	74	77	80	84	88	112	130
A4. Alternative Scenario : more financing on the regional market	65	76	80	84	87	89	109	113
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2010-2011	64	73	79	83	86	91	114	121
B2. Primary balance is at historical average minus one standard deviations in 2010-2011	64	71	74	77	80	83	102	103
B3. Combination of B1-B2 using one half standard deviation shocks	64	68	70	74	77	82	103	109
B4. One-time 30 percent real depreciation in 2010	64	89	89	89	90	91	107	101
B5. 10 percent of GDP increase in other debt-creating flows in 2010	64	106	107	107	108	110	124	116
Debt Service-to-Revenue Ratio 2/								
Baseline	8	8	8	8	8	8	16	16
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	8	8	8	7	7	8	16	17
A2. Primary balance is unchanged from 2009	8	8	8	8	8	9	17	20
A3. Permanently lower GDP growth 1/	8	8	8	8	8	9	16	18
A4. Alternative Scenario : more financing on the regional market	8	9	10	10	10	11	20	22
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2010-2011	8	8	8	8	8	9	16	17
B2. Primary balance is at historical average minus one standard deviations in 2010-2011	8	8	8	8	8	8	16	15
B3. Combination of B1-B2 using one half standard deviation shocks	8	8	8	8	8	8	16	16
B4. One-time 30 percent real depreciation in 2010	8	8	9	9	9	10	18	19
B5. 10 percent of GDP increase in other debt-creating flows in 2010	8	8	9	10	10	10	17	17

Sources: Country authorities; and Fund 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.