

CÔTE D'IVOIRE: JOINT BANK-FUND DEBT SUSTAINABILITY ANALYSIS

The external Low-Income Country Debt Sustainability Analysis (DSA) shows that Côte d'Ivoire is in debt distress with large external arrears. The public sector DSA suggests that Côte d'Ivoire's public debt is currently unsustainable. Key debt indicators are projected to fall below the country-specific indicative thresholds only after 2013.¹

I. BACKGROUND

1. **Côte d'Ivoire's public debt, including arrears, at the end of 2006 is estimated at US\$14.9 billion—84.8 percent of GDP.** *External public* debt accounted for US\$12.9 billion, or 73.3 percent of GDP, of which US\$6.2 billion was owed to Paris Club creditors, US\$2.7 billion to London Club creditors, US\$2.5 billion to the World Bank, US\$1.0 billion to the AfDB Group, and US\$0.2 billion to the IMF. Côte d'Ivoire's external public debt was stable at around 80 percent of GDP in 2002-04, and with very limited new borrowing and some repayments mainly to the Fund, declined somewhat thereafter (Figure 1). *Domestic* public debt (including arrears to suppliers) amounted to 11.5 percent of GDP at the end of 2006. *Private external* debt is estimated to have been US\$5.5 billion (31.1 percent of GDP) at that time. The staff's estimate is based on information on interest payments and therefore subject to considerable uncertainty. Thus, *total (public and private) external* debt stood at US\$18.3 billion, or 104.4 percent of GDP at end-2006.

2. **Côte d'Ivoire is in debt distress.** Since late 2002, large external arrears have been accumulating, rising from US\$0.4 billion, or 3.5 percent of GDP, in 2002 to US\$3.6 billion, 20.5 percent of GDP at end-2006. At that point, arrears to Paris Club creditors were 12.9 percent of GDP, to London Club creditors 2.5 percent, to the AfDB Group 2.4 percent, and to the World Bank 2.2 percent of GDP. Arrears account for a fourth of total external public debt. Côte d'Ivoire has no arrears to the IMF. Key debt indicators and debt distress thresholds are summarized in Table 1.

¹ This is the first debt sustainability analysis prepared for Côte d'Ivoire using the debt sustainability framework for low-income countries developed jointly by the World Bank and the IMF. The DSA, produced jointly by Bank and Fund staffs (Guidance Note SM/07/131; 4/17/2007), is based on external and public debt data from the Ivorian authorities, and on World Bank and IMF staff estimates. The IMF staff report on the 2007 Article IV Consultation (EBS/07/87) provides additional information. The previous external DSA, based on 2003 debt data, was part of the 2004 Article IV Staff Report (SM/04/85, 3/11/04).

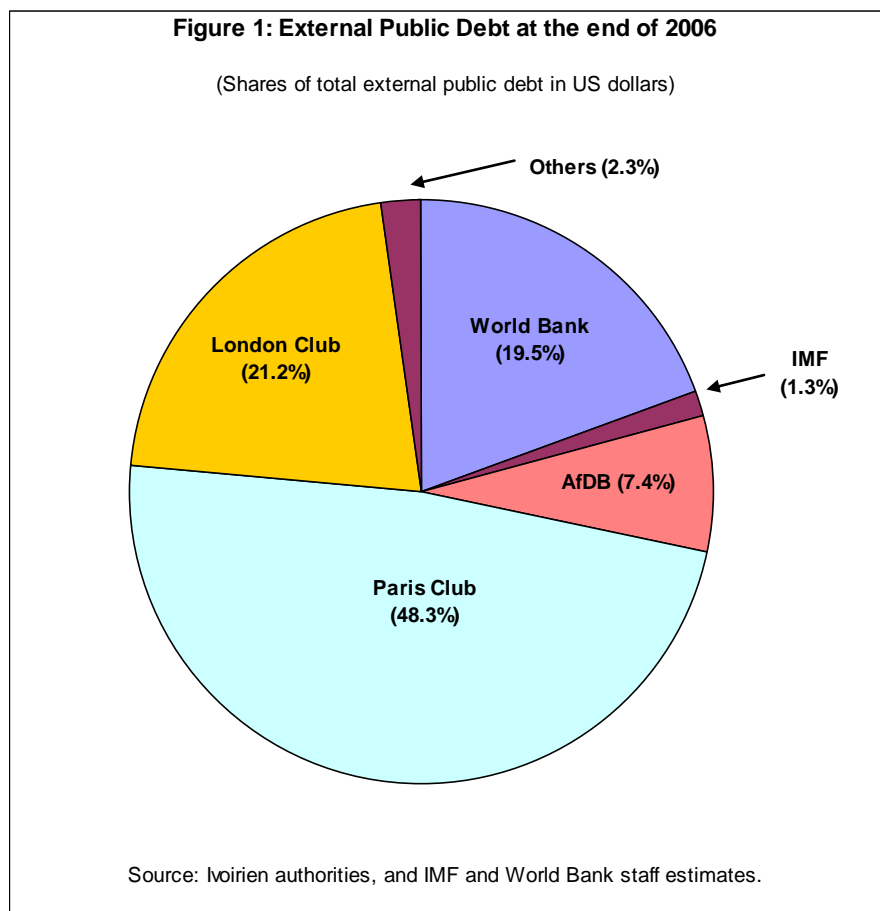


Table 1. Côte d'Ivoire: Selected External Public Debt Indicators

	Indicative Threshold ¹	2006 (Est.)	2027 (Proj.)
NPV of debt to GDP	30	64.0	33.0
NPV of debt to exports	100	124.7	107.1
NPV of debt to revenue (excl. grants)	200	351.1	169.8
Debt service to exports	15	9.0	9.8
Debt service to revenue (excl. grants)	25	25.4	15.5

Sources: Ivoirien authorities and IMF staff estimates.

¹ Indicative policy-dependent threshold for a weak policy performer.

3. **Côte d'Ivoire has not yet benefited from debt relief under the enhanced HIPC Initiative and MDRI.** Because it belongs to the group of countries grandfathered for HIPC

eligibility, it could be eligible for HIPC and MDRI debt relief.^{2,3} With domestic revenues exceeding 15 percent of GDP, and exports exceeding 30 percent of GDP, Côte d'Ivoire could qualify under the “fiscal window”, and a net present value (NPV) of debt-to-revenue target of 250 percent would apply.⁴

4. **The last Paris Club rescheduling for Côte d'Ivoire took place in April 2002.** At the time, Paris Club creditors granted the country rescheduling on Lyon terms covering almost US\$2 billion in arrears and current maturities through end-2004. The creditors agreed to top up the reduction rate to Cologne terms as soon as Côte d'Ivoire reached the decision point under the enhanced HIPC Initiative. Because of the outbreak of armed conflict in September 2002, the debt relief envisaged under the agreement was only partly achieved.

² Under the original HIPC Initiative, Côte d'Ivoire had reached the decision point in 1998, but not the completion point. In March 2002, IDA and the IMF Boards discussed the preliminary decision point document under the enhanced HIPC Initiative (EBS/02/45), but the decision point, foreseen for late 2002, was not considered because of the crisis and interruption of the PRGF-supported program.

³ See “Heavily Indebted Poor Countries (HIPC) Initiative – Issues Related to the Sunset Clause”, IDA/R2006-0175 (August 18, 2006) and SM/06/288 (August 17, 2006).

⁴ The HIPC methodology to calculate the NPV of debt-to-revenue ratio differs from the calculation in this analysis. No direct conclusions can thus be drawn from this analysis to the HIPC debt reduction factor.

II. UNDERLYING DSA ASSUMPTIONS

5. **The medium-term macroeconomic assumptions underlying the baseline scenario are based on durable resolution of the socio-political conflict and a steady recovery after years of civil conflict (Box 1).** Real GDP growth would gradually pick up from its stagnation during the 2000-06 crisis and settle at around 5 percent, comparable both to the 1994-99 pre-crisis average and the 1960-80 average. The primary balance is assumed to steadily decline from a surplus (1 percent of GDP on average during 2007-12) to a deficit of 2 percent of GDP during 2013-27 because of increasing public expenditures for social and investment needs. It is assumed that initial external assistance resumes in 2007 and expands after clearance of World Bank arrears in the second half of 2007 in the context of an economic program supported by IMF Emergency Post Conflict Assistance.⁵ AfDB arrears would be cleared under its Post-Conflict Facility in 2008. For this LIC-DSA, it is assumed that all other arrears, including to Paris Club and commercial creditors, would be rescheduled on non-concessional terms (zero average grant element).⁶ Any arrears clearance would require a comprehensive economic reform program that would, inter alia, address the country's presently limited capacity to repay its creditors. The DSA does not take into account contingent liabilities due to data limitations. With a CPIA average rating of 2.56 for 2004-2006, the indicative debt burden thresholds for "weak policy" apply to Côte d'Ivoire.

6. **The previous external DSA for Côte d'Ivoire assumed lower GDP growth, but much more favorable current account balances.** Real GDP growth was projected to average 4.0 percent for the first five recovery years and 4.5 percent for the rest of the period; the new estimates are 4.3 and 5.2 percent. The upward revision of the growth scenario largely reflects the improved political outlook, substantially increased oil and gas production, and expected structural reforms in the cocoa, coffee, cotton, energy and financial sectors. The old DSA projected export growth in US dollar terms at 7.1 percent throughout the projection period, compared to 4.7 percent for 2007-12 and 6.7 percent for 2013-2027 in the new DSA. The old DSA assumed non-interest current account surpluses whereas this DSA projects an average deficit of 2½ percent of GDP for 2013-2027. This DSA also assumes a lower grant element for new borrowing. The higher oil production in this DSA also adds some 1 percent of GDP to government revenue compared to the old DSA. Despite somewhat stronger growth in GDP, with heavier debt accumulation the debt dynamics of the current DSA lead to debt indicators that are above those of the previous DSA.

⁵ Under an understanding between the World Bank and the Ivoirien authorities, the government of Côte d'Ivoire has agreed to complete its arrears clearance to the World Bank by the first quarter of 2008. The authorities' economic program, to be supported by IMF EPCA, foresees achieving that already in 2007.

⁶ For the share of this debt that is not multilateral or official bilateral, but on commercial terms, a grace period of 5 years and a maturity of 10 years is assumed.

Box 1. Macroeconomic Assumptions for the Baseline Scenario

Real GDP growth: After 1.7 percent real GDP growth in 2007, a sustained recovery is projected to start in 2008 with growth of 3.5 percent, progressively accelerating to peak at 6.5 percent in 2012. The average growth rate in 2013- 2027 is 5 percent, close to the pre-crisis average of 5 percent as well as the growth achieved during 1960–80. In this scenario, the growth during the recovery phase through 2012 would come from renewed confidence and enhanced security; a return to full capacity utilization in transport and industry; and new investments, especially in communication and energy. Longer-term growth would be sustained by investment, helped by structural reforms in the energy, cocoa, coffee and cotton sectors.

Inflation: Inflation is projected at about 3 percent for the entire projection period.

Real exchange rate and terms of trade: The real effective exchange rate is projected to stay broadly constant throughout the projection period. The terms of trade are projected to worsen in 2007, to improve through 2010, and to remain broadly constant thereafter.

Current account balance: The current account balance (including official transfers) is projected to decline steadily from a surplus of 2 percent of GDP in 2007 to a deficit of 3 percent in 2013 and to stay at about this level until 2027. This would reflect strong import growth (especially for investment), outpacing exports. As oil exports start declining after 2010, nonoil exports (in US dollar terms) are assumed to pick up gradually during 2007-12 and grow steadily at 7 percent a year thereafter, compared with 8 percent during 1994-2006.

Government balance: The primary balance (total revenue and grants less non-interest expenditure) is projected to stay in surplus (averaging 1 percent of GDP) in 2007-12 and to turn to a deficit (averaging 2 percent of GDP) in 2013-27. The declining trend reflects, in terms of GDP, constant overall revenue, but rising non-oil revenue and gradually increasing public expenditures, in line with increasing borrowing capacity.

External assistance, scaling up and concessionality: The baseline scenario assumes that grants (mainly for projects) will remain close to their current level of just over 1 percent of GDP. Project loans are assumed to grow gradually from ½ percent of GDP in 2007 to 2 percent from 2012. The residual external financing need, which fluctuates as a function of fiscal operations, is assumed to be covered mainly by multilateral creditors (average grant element 47 percent) and the remainder by bilaterals (average grant element 35 percent), and commercial creditors (nonconcessional). During the projection period, financing would gradually shift to less concessional sources, leading to a gradual decline in the average grant element.

Domestic borrowing is assumed to be supporting the government's spending needs, with domestic public debt (excluding arrears) gradually declining from 6½ percent of GDP in 2007 to 4 percent in 2027. Arrears to domestic suppliers are projected to decline from 4 percent of GDP in 2006 to zero percent from 2015.

Real interest rates: The average real interest rate on domestic debt is estimated at 0.4 percent in 2007, rising to about 3 percent in 2015 and staying there until 2027.

III. EXTERNAL DSA

A. Baseline

7. **In the baseline scenario, all NPV indicators are above the country-specific indicative thresholds for “weak policies” in 2007 and decline gradually over time.** The NPV of public and publicly guaranteed (PPG) debt-to-GDP ratio starts out at 59 percent in 2007, about double the country-specific indicative threshold and declines gradually to 33 percent in 2027. Given Côte d’Ivoire’s solid export base, the NPV of PPG debt-to-exports ratio, is only slightly above the threshold in 2007, but remains above it through 2027. The NPV of PPG debt-to-revenue ratio, at over 300 percent in 2007, drops below the 200 percent threshold in 2015 (Tables 2 and 3, and Figure 2). For all ratios the downward trend is due to relatively prudent new external borrowing on concessional terms.

8. **In the baseline scenario, the debt service indicators are never significantly above the thresholds.** Figure 2 shows a characteristic hump-shape for the debt service-to-exports and the debt service-to-revenue ratios because the grace period assumed for the commercial debt share contracted under the arrears clearance operation in 2008 would end in 2013 and the 10-year maturity would be reached in 2018. For the same reason, the upward trend in the rate of (net) debt accumulation is dampened between 2013 and 2017.⁷

B. Alternative Scenarios and Stress Tests

9. **The alternative scenarios and stress tests bear particular weight in assessing risks to Côte d’Ivoire’s debt situation** given the fragility of the peace process. The standard alternative scenarios and stress tests in both the external and public DSA templates capture well the key vulnerabilities, but some modifications were necessary to account for the civil conflict.

10. **For all NPV indicators, the historical scenario leads to much less favorable debt dynamics than the baseline.** The historical scenario (A1 in Table 3) has been modified by taking the 1997-2001 averages (rather than the standard 1997-2006 averages) for all relevant variables in order to exclude the past five years of civil strife. With this modification, it assumes, *inter alia*, constant real GDP growth of 1.5 percent and a constant noninterest current account surplus of 2.4 percent of GDP from 2008 on. For all NPV indicators the historical scenario reverses the downward trend of the baseline, with all indicators above the respective thresholds.

11. **Both debt service indicators are higher in the historical scenario than in the baseline.** In the historical scenario, the indicators exceed country-specific thresholds

⁷ See ¶5 and footnote 6.

from 2013 for the debt service-to-exports ratio and 2009 for the debt service-to-revenue ratio, reflecting a much higher debt stock in this scenario.

12. Assuming new public sector loans at less favorable terms worsens the debt scenario considerably, emphasizing the critical need for a prudent borrowing strategy.

With an interest rate 2 percentage points higher than in the baseline (A2 in Table 3), the ratios of the NPV of debt to GDP, exports and revenue would be about 50 percent above their baseline levels toward the end of the projection period.

13. The stress tests do not reverse the baseline trends but increase all debt indicators significantly. The most extreme shocks for the NPV of debt-to-GDP, the NPV of debt-to-revenue and the debt service-to-revenue ratios consist of a combination of shocks (test B5 in Table 3). For the NPV of debt- and debt service-to-exports ratios, the most extreme shock is export value growth one standard deviation lower than the historical average in 2008 and 2009 (test B2 in Table 3). For all indicators, the curves in Figure 2 shift up relative to the baseline almost in parallel, with the NPV indicators converging only slowly back to the baseline, while the debt service indicators do not converge.

IV. PUBLIC DSA

A. Baseline

14. The indicators for the NPV of total public debt are high but decline gradually in the baseline scenario. The NPV of debt-to-GDP and NPV of debt-to-revenue ratios drop faster at the beginning of the projection period than toward the end, reflecting primary surpluses in the early years. But also in the later years, the primary deficits remain below the debt-stabilizing primary deficit, thus gradually reducing debt (Tables 4 and 5, Figure 3).

15. The debt service-to-revenue ratio trends downward only slowly. Starting out at 27 percent in 2007, it reaches 19 percent in 2027. In between, Figure 3 displays the same hump-shaped profile discussed for the external DSA (see ¶8).

B. Alternative Scenarios and Stress Tests

16. An alternative “no policy reform” scenario reflects a continued forced restraint on spending as during the crisis and leads to a gradual repayment of public debt. The “no policy reform” scenario (A2 in Table 5) has been modified compared to the template in that the primary balance is unchanged from 2006 rather than from 2007 because the primary balance in 2007 already reflects an ambitious reform effort under the envisaged IMF EPCA-supported program. Thus, the “no policy reform” scenario assumes a constant zero primary balance, which characterized the crisis years with almost no new net financing. Also, this scenario assumes real GDP growth to remain at its 2006 level of 0.9 percent so as to match a crisis primary balance with a crisis growth rate. In this scenario, all indicators are initially

above the baseline, but fall below it after 2016, with the NPV indicators reaching zero before 2027.

17. **In the scenario with permanently lower GDP growth, the debt ratios remain broadly unchanged and thus are increasingly above the baseline.** Scenario A3 in Table 5 implies that the 2008-2027 average real GDP growth rate drops to 4.5 percent from 5 percent in the baseline. The elimination of the baseline's downward trend in debt ratios because of lower GDP growth underscores the importance of structural reforms leading to the return of private sector confidence and an improved business climate that are needed for a robust economic recovery.

18. **The most extreme stress tests reverse the trends observed in the baseline scenario; the majority of the remaining stress tests slow down the improvement in debt indicators.** The most extreme stress test for all indicators consists of real GDP growth at the historical average minus one standard deviation in 2008-09, replacing the baseline growth rates of 3.5 in 2008 and 4.9 percent in 2009 by -1.9 percent each. Such a shock would send the NPV of debt-to-GDP ratio upward; it would reach 95 percent in 2027, compared to 37 percent in the baseline scenario. A similar picture emerges for the NPV of debt-to-revenue and debt service-to-revenue ratios. These results underscore the sensitivity of the debt dynamics to the growth assumptions.

V. DEBT DISTRESS QUALIFICATION AND CONCLUSIONS

19. **In the staffs' view, Côte d'Ivoire is in debt distress.** As in the previous DSA, the external NPV of debt ratios, although declining, are well above country-specific indicative thresholds for most of 2007-2015. The public DSA does not change this assessment. The alternative scenarios and bound tests indicate that the debt indicators are sensitive to shocks that significantly prolong the period during which key ratios are above the thresholds. In particular, the debt dynamics are vulnerable to lower real GDP growth and lower export growth. These vulnerabilities underscore the importance of a stable socioeconomic environment and sound policies to permit a sustained improvement in economic performance.

20. **The staffs have discussed this DSA with the authorities.** The authorities generally agreed with the staffs' assessment and expressed their ambition to access the enhanced HIPC Initiative. Côte d'Ivoire's debt management capacity and debt statistics are broadly adequate for effective debt sustainability analysis.

Table 2. Côte d'Ivoire: External Debt Sustainability Framework, Baseline Scenario, 2004-2027 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections						2007-12 Average		2013-27 Average		
	2004	2005	2006			2007	2008	2009	2010	2011	2012	2017	2027			
External debt (nominal) 1/	122.3	118.1	104.4			97.6	89.2	81.5	75.5	70.6	66.0			53.3	42.6	
o/w public and publicly guaranteed (PPG)	80.8	77.6	73.3			71.0	66.3	63.1	60.2	57.9	55.8			50.1	42.6	
Change in external debt	-9.2	-4.3	-13.7			-6.8	-8.3	-7.7	-6.0	-4.9	-4.6			-1.9	-0.8	
Identified net debt-creating flows	-18.1	-8.7	-12.8			-5.7	-6.3	-6.5	-5.8	-4.6	-4.1			-1.0	0.0	
Non-interest current account deficit	-5.5	-4.0	-6.0	-5.0	3.6	-4.8	-3.3	-3.3	-2.1	-0.7	0.3			2.2	2.4	
Deficit in balance of goods and services	-9.2	-7.5	-10.3			-8.1	-6.7	-5.7	-4.6	-3.2	-2.1			-0.3	0.8	
Exports	48.6	51.1	51.3			48.4	46.4	44.7	42.4	40.6	39.3			34.6	30.9	
Imports	39.4	43.6	41.0			40.2	39.7	38.9	37.8	37.4	37.2			34.3	31.7	
Net current transfers (negative = inflow)	3.0	2.8	2.8	3.2	0.4	1.1	1.1	1.0	0.9	0.8	0.6			0.4	0.4	
o/w official	0.1	0.1	0.2			-1.7	-1.1	-1.0	-1.0	-0.9	-1.0			-0.9	-0.9	
Other current account flows (negative = net inflow)	0.7	0.6	1.5			2.3	2.4	1.4	1.6	1.7	1.9			2.1	1.2	
Net FDI (negative = inflow)	-1.8	-1.9	-1.8	-2.3	0.7	-1.8	-2.0	-2.1	-2.2	-2.3	-2.4			-1.8	-1.1	
Endogenous debt dynamics 2/	-10.8	-2.7	-5.1			0.9	-1.0	-1.1	-1.5	-1.6	-2.1			-1.4	-1.2	
Contribution from nominal interest rate	3.9	3.8	3.0			2.5	2.2	3.0	2.7	2.4	2.1			1.1	0.8	
Contribution from real GDP growth	-2.1	-1.4	-0.9			-1.6	-3.2	-4.1	-4.2	-4.0	-4.2			-2.5	-2.1	
Contribution from price and exchange rate changes	-12.7	-5.1	-7.1			...	...	...	...	...	...			...	...
Residual (3-4) 3/	8.9	4.4	-0.9			-1.1	-2.0	-1.2	-0.2	-0.3	-0.4			-0.8	-0.8	
o/w exceptional financing	-6.2	-4.7	-3.5			-0.5	18.8	0.0	0.0	0.0	0.0			0.0	0.0	
NPV of external debt 4/	...	...	95.0			85.4	78.2	70.3	64.0	58.8	53.9			39.3	33.0
In percent of exports	...	...	185.2			176.6	168.4	157.2	151.1	144.7	137.1			113.4	107.0
NPV of PPG external debt	...	...	64.0			58.9	55.3	51.9	48.8	46.1	43.7			36.0	33.0
In percent of exports	...	...	124.7			121.7	119.0	116.1	115.0	113.5	111.2			104.1	107.1
In percent of government revenues	...	...	351.1			302.6	281.8	263.4	248.9	236.1	224.6			185.1	169.8
Debt service-to-exports ratio (in percent)	25.5	22.4	18.1			22.3	17.1	24.3	18.0	16.7	16.0			17.1	11.7	
PPG debt service-to-exports ratio (in percent)	13.8	10.7	8.9			8.2	7.7	9.6	8.8	8.7	8.2			13.6	9.8	
PPG debt service-to-revenue ratio (in percent)	38.2	32.1	25.1			20.3	18.2	21.7	19.1	18.0	16.5			24.1	15.5	
Total gross financing need (billions of U.S. dollars)	2.2	2.2	1.6			1.9	1.6	2.2	1.7	1.8	2.0			3.2	5.0	
Non-interest current account deficit that stabilizes debt ratio	3.7	0.2	7.7			2.0	5.1	4.4	3.9	4.2	4.9			4.1	3.2	
Key macroeconomic assumptions																
Real GDP growth (in percent)	1.8	1.2	0.9	0.9	2.8	1.7	3.5	4.9	5.6	5.8	6.5	4.7	4.9	5.1	5.1	
GDP deflator in US dollar terms (change in percent)	10.6	4.4	6.4	3.3	10.1	8.8	5.3	3.0	3.3	3.3	3.6	4.5	3.2	3.1	3.2	
Effective interest rate (percent) 5/	3.4	3.3	2.7	2.9	0.8	2.7	2.4	3.6	3.6	3.4	3.3	3.2	2.1	2.1	2.2	
Growth of exports of G&S (US dollar terms, in percent)	19.3	11.2	7.7	6.8	12.6	4.3	4.7	3.9	3.4	4.8	6.9	4.7	4.3	8.1	6.7	
Growth of imports of G&S (US dollar terms, in percent)	27.0	17.1	0.7	7.8	12.8	8.7	7.7	5.8	5.9	8.1	9.8	7.7	5.7	7.3	7.3	
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	47.4	0.1	35.8	34.7	35.6	34.5	31.3	28.2	22.1	27.2
Aid flows (in billions of US dollars) 7/	0.2	0.2	0.1			0.3	0.4	0.5	0.6	0.7	1.0			1.4	3.2	
o/w Grants	0.1	0.2	0.1			0.3	0.3	0.3	0.3	0.3	0.4			0.5	1.2	
o/w Concessional loans	0.1	0.0	0.0			0.1	0.1	0.2	0.3	0.4	0.6			0.9	2.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			2.5	1.4	2.6	2.6	2.7	2.8			3.1	2.3
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			66.1	5.9	52.1	50.2	49.1	47.5			39.0	36.9
<i>Memorandum items:</i>																
Nominal GDP (billions of US dollars)	15.5	16.4	17.6			19.4	21.2	22.9	25.0	27.3	30.1			44.9	100.9	
(NPVt-NPVt-1)/GDPt-1 (in percent)	...	...	...			1.2	1.4	0.8	1.3	1.6	2.2	1.4	1.9	2.6	2.3

Source: Staff simulations.

1/ Includes both public and private sector external debt.

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

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

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

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

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

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

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

Table 3. Côte d'Ivoire: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2007-27
(In percent)

	Projections							
	2007	2008	2009	2010	2011	2012	2017	2027
NPV of debt-to-GDP ratio								
Baseline	59	55	52	49	46	44	36	33
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-27 1/	59	62	65	69	71	74	79	117
A2. New public sector loans on less favorable terms in 2008-27 2/	59	60	57	54	52	50	49	51
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	59	58	58	54	51	49	40	37
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	59	62	69	65	62	59	46	35
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	59	68	76	72	68	64	53	49
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	59	57	55	52	49	47	38	33
B5. Combination of B1-B4 using one-half standard deviation shocks	59	73	93	88	84	79	62	49
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	59	77	73	68	64	61	50	46
NPV of debt-to-exports ratio								
Baseline	122	119	116	115	113	111	104	107
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	122	134	146	162	176	189	230	379
A2. New public sector loans on less favorable terms in 2007-26 2/	122	128	127	128	128	128	140	166
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	122	119	116	115	113	111	104	107
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	122	163	230	229	227	222	196	167
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	122	119	116	115	113	111	104	107
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	122	123	124	123	121	119	110	108
B5. Combination of B1-B4 using one-half standard deviation shocks	122	149	190	189	187	183	163	144
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	122	119	116	115	113	111	104	107
NPV of debt-to-revenue ratio								
Baseline	303	282	263	249	236	225	185	170
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	303	316	332	351	366	382	408	602
A2. New public sector loans on less favorable terms in 2007-26 2/	303	304	289	277	267	259	249	263
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	303	295	293	277	263	250	206	189
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	303	315	351	333	317	301	234	178
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	303	346	388	366	347	330	272	250
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	303	291	281	266	253	240	195	171
B5. Combination of B1-B4 using one-half standard deviation shocks	303	371	474	450	428	407	319	250
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	303	394	368	348	330	314	259	237

Table 3. Côte d'Ivoire: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2007-27 (continued)
(In percent)

	Projections							
	2007	2008	2009	2010	2011	2012	2017	2027
Debt service-to-exports ratio								
Baseline	8	8	10	9	9	8	14	10
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-27 1/	8	9	12	12	14	14	39	48
A2. New public sector loans on less favorable terms in 2008-27 2/	8	8	10	10	10	9	14	14
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	8	8	10	9	9	8	14	10
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	8	9	15	15	15	14	25	17
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	8	8	10	9	9	8	14	10
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	8	8	10	9	9	8	14	10
B5. Combination of B1-B4 using one-half standard deviation shocks	8	9	13	13	12	12	21	14
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	8	8	10	9	9	8	14	10
Debt service-to-revenue ratio								
Baseline	20	18	22	19	18	17	24	16
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-27 1/	20	20	27	27	28	29	69	75
A2. New public sector loans on less favorable terms in 2008-27 2/	20	18	24	21	20	19	25	23
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2008-09	20	19	24	21	20	18	27	17
B2. Export value growth at historical average minus one standard deviation in 2008-09 3/	20	18	23	22	20	19	30	18
B3. US dollar GDP deflator at historical average minus one standard deviation in 2008-09	20	22	32	28	27	24	36	23
B4. Net non-debt creating flows at historical average minus one standard deviation in 2008-09 4/	20	18	22	20	19	17	25	16
B5. Combination of B1-B4 using one-half standard deviation shocks	20	22	32	30	28	26	41	25
B6. One-time 30 percent nominal depreciation relative to the baseline in 2008 5/	20	25	30	27	25	23	34	22
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	25	25	25	25	25	25	25	25

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.

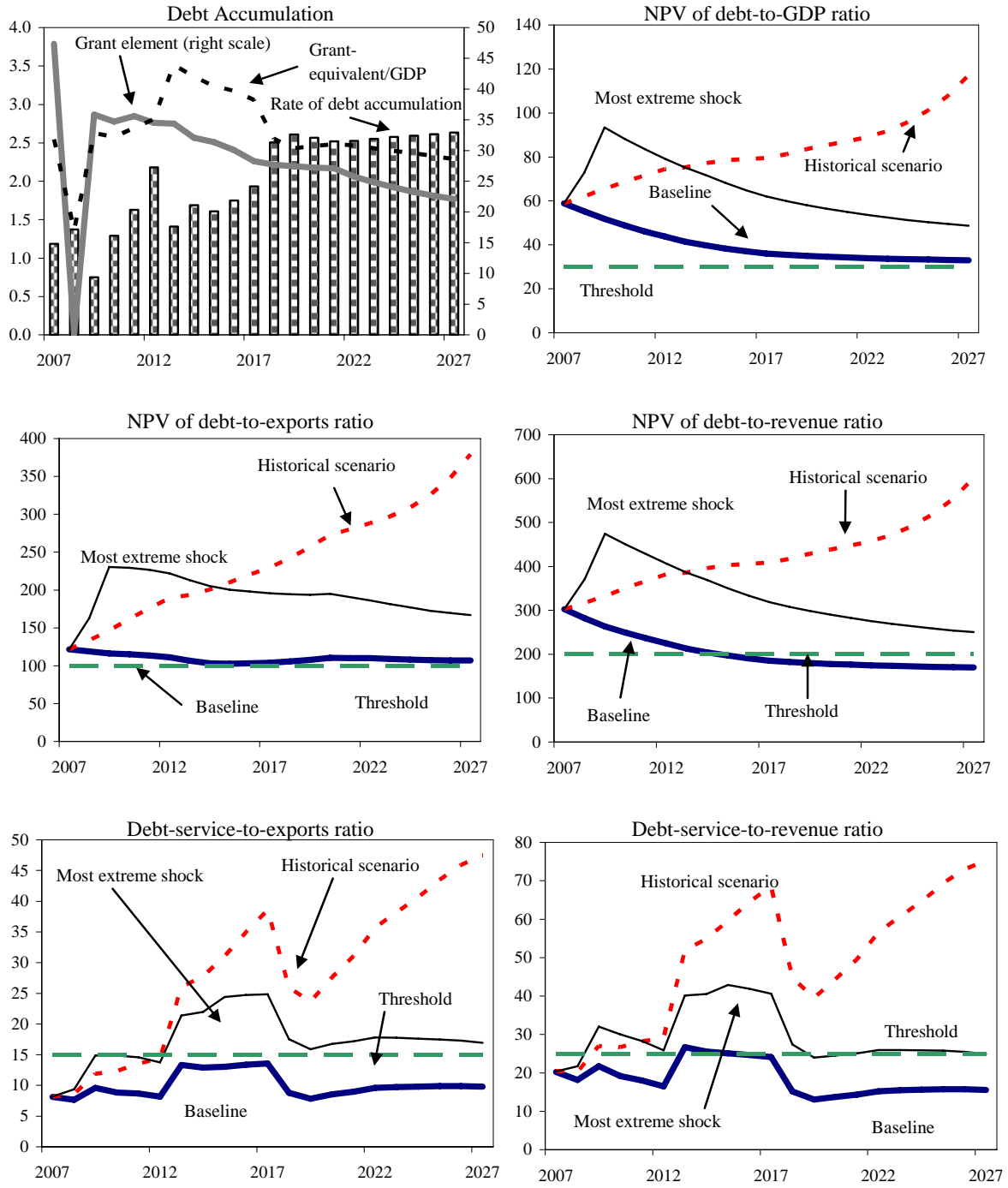
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).

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.

Figure 2. Côte d'Ivoire: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2007-2027



Source: Staff projections and simulations.

Table 4. Côte d'Ivoire: Public Sector Debt Sustainability Framework, Baseline Scenario, 2004-2027
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 5/	Standard Deviation 5/	Estimate					Projections				
	2004	2005	2006			2007	2008	2009	2010	2011	2012	2007-12 Average	2017	2027	2013-27 Average
Public sector debt 1/	92.0	89.1	84.8			81.2	75.3	71.0	67.0	63.8	60.9		53.7	46.2	
o/w foreign-currency denominated	80.8	77.6	73.3			71.0	66.3	63.1	60.2	57.9	55.8		50.1	42.6	
Change in public sector debt	...	-2.9	-4.4			-3.6	-5.9	-4.3	-4.0	-3.2	-3.0		-1.0	-0.5	
Identified debt-creating flows	...	7.2	-11.3			-5.0	-6.3	-4.5	-4.3	-3.5	-3.2		-0.8	1.0	
Primary deficit	-0.6	-0.3	0.0	-1.5	1.4	-1.8	-1.6	-1.3	-0.5	0.2	0.9	-0.7	2.3	3.5	
Revenue and grants	18.4	18.2	18.8			20.8	21.0	21.0	20.8	20.7	20.6		20.6	20.6	
of which: grants	0.9	1.1	0.6			1.4	1.3	1.3	1.2	1.2	1.2		1.2	1.2	
Primary (noninterest) expenditure	17.9	17.8	18.8			19.0	19.4	19.7	20.3	20.8	21.6		22.9	24.2	
Automatic debt dynamics	...	7.6	-11.3			-3.2	-4.7	-3.2	-3.7	-3.7	-4.2		-3.1	-2.6	
Contribution from interest rate/growth differential	...	-1.8	-1.7			-1.4	-3.0	-2.6	-2.9	-2.9	-3.3		-2.5	-2.1	
of which: contribution from average real interest rate	...	-0.7	-1.0			0.0	-0.3	1.0	0.8	0.8	0.6		0.0	0.1	
of which: contribution from real GDP growth	...	-1.1	-0.8			-1.4	-2.8	-3.5	-3.7	-3.7	-3.9		-2.5	-2.3	
Contribution from real exchange rate depreciation	-5.0	9.4	-9.5			-1.8	-1.7	-0.7	-0.9	-0.8	-0.9		...	...
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	...	-10.1	6.9			1.4	0.3	0.2	0.3	0.3	0.3		-0.2	-1.4	
NPV of public sector debt	11.2	11.5	75.4			69.0	64.2	59.7	55.6	52.0	48.8		39.6	36.6	
o/w foreign-currency denominated	0.0	0.0	64.0			58.9	55.3	51.9	48.8	46.1	43.7		36.0	33.0	
o/w external	...	...	64.0			58.9	55.3	51.9	48.8	46.1	43.7		36.0	33.0
NPV of contingent liabilities (not included in public sector debt)	...	...	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Gross financing need 2/	-0.8	0.3	4.8			4.1	11.4	5.2	5.3	5.6	5.9		7.9	6.3	
NPV of public sector debt-to-revenue and grants ratio (in percent)	61.0	63.3	400.7			331.4	306.5	284.9	267.2	251.7	236.4		192.0	177.5	
NPV of public sector debt-to-revenue ratio (in percent)	64.3	67.4	414.0			354.8	327.4	303.3	283.8	266.5	250.6		203.6	188.3	
o/w external 3/	...	...	351.1			302.6	281.8	263.4	248.9	236.1	224.6		185.1	169.8
Debt service-to-revenue and grants ratio (in percent) 4/	12.0	11.3	33.4			26.8	24.6	27.5	24.6	23.2	21.2		27.5	19.4	
Debt service-to-revenue ratio (in percent) 4/	12.7	12.1	34.5			28.7	26.3	29.3	26.1	24.5	22.5		29.2	20.6	
Primary deficit that stabilizes the debt-to-GDP ratio	...	2.5	4.4			1.8	4.4	3.0	3.4	3.4	3.9		3.3	4.0	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	1.8	1.2	0.9	0.9	2.8	1.7	3.5	4.9	5.6	5.8	6.5	4.7	4.9	5.1	
Average nominal interest rate on forex debt (in percent)	2.3	2.3	2.0	2.4	0.5	1.7	1.6	3.3	3.3	3.1	3.0	2.7	1.9	2.1	
Average nominal interest rate on domestic debt (in percent)	-0.5	2.8	3.0	1.2	1.9	2.2	3.4	3.6	3.8	4.1	4.3	3.6	6.0	6.0	
Average real interest rate (in percent)	...	-0.8	-1.1	...	...	0.0	-0.3	1.4	1.3	1.2	1.1	0.8	0.1	0.3
Real discount rate on foreign-currency debt (in percent)	2.1	1.9	2.0	2.8	0.7	3.2	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	
Average real interest rate on domestic currency debt (in percent)	-1.1	-1.3	-2.4	-1.6	0.6	0.4	-0.5	1.1	1.2	1.7	1.6	0.9	2.7	2.8	
Real exchange rate depreciation (in percent, + indicates depreciation)	-6.3	11.8	-12.5	-0.7	13.0	-2.6	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	0.6	4.2	5.6	3.1	2.2	1.7	3.9	2.5	2.6	2.4	2.6	2.6	3.2	3.1	
Growth of real primary spending (deflated by GDP deflator, in percent)	4.3	0.9	6.5	2.1	9.4	2.9	5.5	6.5	8.6	8.7	10.4	7.1	5.9	5.6	
Grant element of new external borrowing (in percent)	...	...	43.2	43.2	...	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2

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

1/ Gross debt of central government, excluding local or regional governments, government agencies and public enterprises.

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

3/ Revenues excluding grants.

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

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

Table 5. Côte d'Ivoire: Sensitivity Analyses for Key Indicators of Public Debt 2007-2027
(In percent)

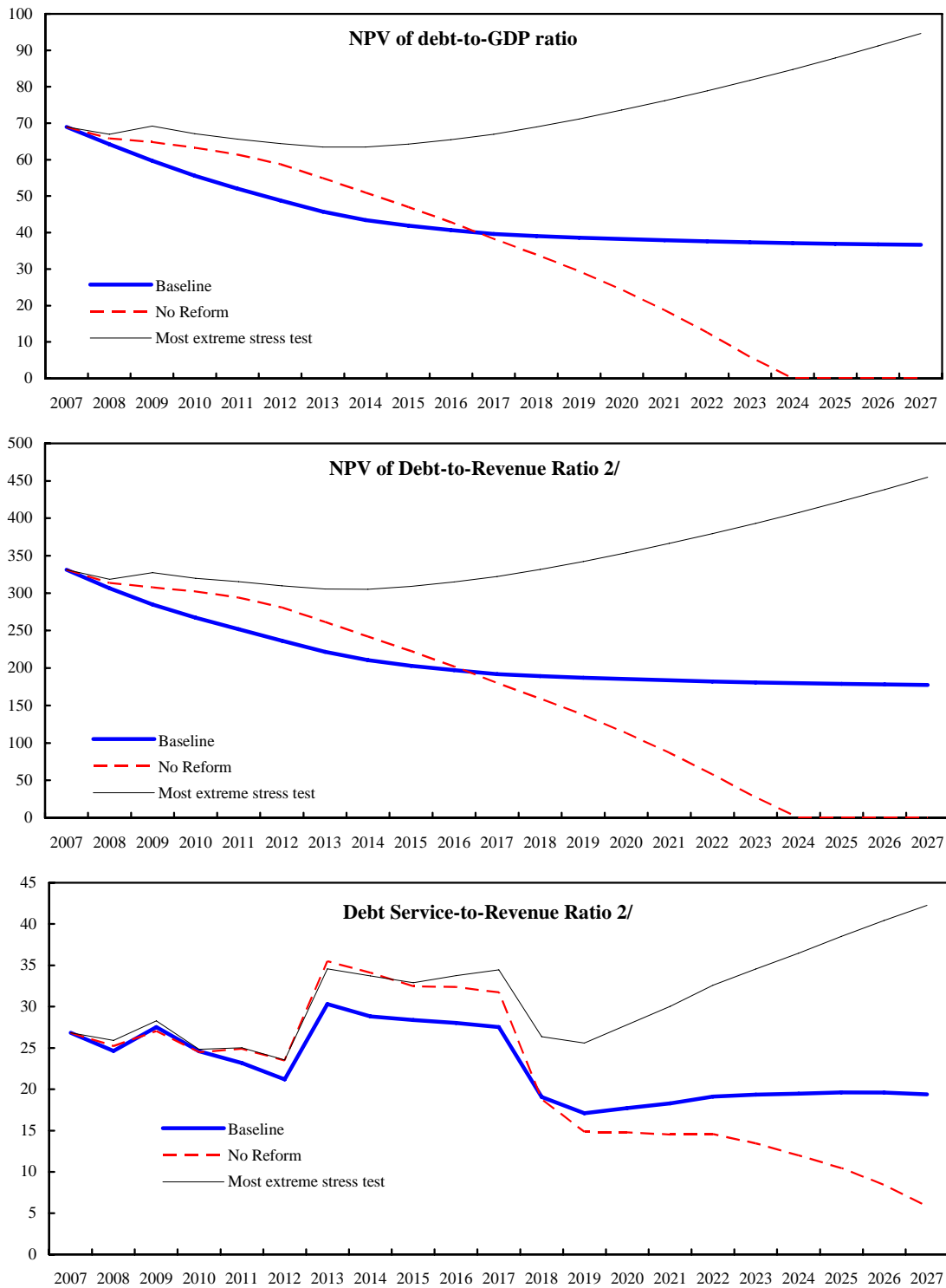
	Projections							
	2007	2008	2009	2010	2011	2012	2017	2027
NPV of Debt-to-GDP Ratio								
Baseline	69	64	60	56	52	49	40	37
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	69	64	61	57	53	48	16	0
A2. Primary balance and real GDP growth is unchanged from 2006	69	66	65	63	61	59	38	0
A3. Permanently lower GDP growth 1/	69	63	58	54	51	48	44	69
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	69	67	69	67	66	64	67	95
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	69	64	60	56	52	48	37	36
B3. Combination of B1-B2 using one half standard deviation shocks	69	66	64	59	55	50	36	30
B4. One-time 30 percent real depreciation in 2008	69	86	80	74	68	63	47	44
B5. 10 percent of GDP increase in other debt-creating flows in 2008	69	75	70	65	61	57	45	44
NPV of Debt-to-Revenue Ratio 2/								
Baseline	331	306	285	267	252	236	192	178
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	331	304	288	273	254	231	74	0
A2. Primary balance and real GDP growth is unchanged from 2006	331	314	308	302	294	281	180	0
A3. Permanently lower GDP growth 1/	331	299	278	261	247	234	213	333
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	331	319	327	320	315	310	322	455
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	331	305	288	267	249	232	178	172
B3. Combination of B1-B2 using one half standard deviation shocks	331	313	305	283	263	242	175	147
B4. One-time 30 percent real depreciation in 2008	331	409	379	353	330	305	229	214
B5. 10 percent of GDP increase in other debt-creating flows in 2008	331	357	333	312	293	274	219	212
Debt Service-to-Revenue Ratio 2/								
Baseline	27	25	28	25	23	21	28	19
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	27	25	26	23	23	21	24	0
A2. Primary balance and real GDP growth is unchanged from 2006	27	25	27	24	25	23	32	6
A3. Permanently lower GDP growth 1/	27	25	25	21	21	19	26	31
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2008-2009	27	26	28	25	25	24	34	42
B2. Primary balance is at historical average minus one standard deviations in 2008-2009	27	25	25	22	21	19	24	19
B3. Combination of B1-B2 using one half standard deviation shocks	27	26	27	23	22	20	25	17
B4. One-time 30 percent real depreciation in 2008	27	26	29	25	24	22	26	23
B5. 10 percent of GDP increase in other debt-creating flows in 2008	27	25	28	26	24	22	28	23

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 20 (i.e., the length of the projection period).

2/ Revenues are defined inclusive of grants.

Figure 3. Côte d'Ivoire: Indicators of Public Debt Under Alternative Scenarios, 2007-2027 1/



Source: Staff projections and simulations.

1/ Most extreme stress test is test that yields highest ratio in 2017.

2/ Revenue including grants.