

Haiti: Joint Bank-Fund Debt Sustainability Analysis

The low-income country debt sustainability analysis (LIC DSA) indicates that Haiti's risk of debt distress is high, even after full delivery of HIPC debt relief and additional bilateral debt relief.¹ Debt relief from IDA under the MDRI would significantly reduce Haiti's risk of debt distress at the decision point. The inclusion of domestic debt in the debt sustainability analysis does not change the assessment of Haiti's risk of debt distress.

A. Introduction

The debt sustainability analysis presented in this document is based on the common standard framework for low-income countries approved by the IDA and IMF Boards in 2005.² It presents the projected path of Haiti's debt burden indicators under the LIC DSA methodology and draws conclusion on the forward-looking sustainability of external and public sector debt.

B. Baseline Scenario

The baseline scenario assumes the same long-run macroeconomic framework as the one underlying the HIPC debt sustainability analysis (Box 1 in the main text). Real GDP is projected to grow, on average, by 4.2 percent from FY2006 to FY2026, reflecting better security conditions, sustained political and macroeconomic stability, progress on economic governance, and improvements in social and economic infrastructure, contributing to higher private investment, including FDI. Inflation is expected to gradually decline from 12.0 percent in FY2006, stabilizing at 5.0 percent from 2011. The external current account deficit is anticipated to slowly improve from 7.6 percent of GDP in FY2006, to 5.2 percent by 2026. The improvement would reflect, to a large extent, robust export growth combined with a slowdown of import growth.

The baseline scenario assumes HIPC interim assistance after the decision point and irrevocable debt relief starting at the completion point, assumed at end-September 2008. This is consistent with the "conditional delivery of HIPC Initiative assistance" scenario in the HIPC DSA.

¹ The World Bank's Country Policy and Institutional Assessment (CPIA) rates Haiti as a poor performer. Under the joint World Bank/IMF debt sustainability framework, the corresponding thresholds are 30 percent for the NPV of debt to GDP ratio, 100 percent for the NPV of debt to exports ratio, and 15 percent for the debt service to exports ratio (Operational Framework for Debt Sustainability Framework in Low-Income Countries – Further Considerations, SM/05/109).

² See "Debt Sustainability in Low-Income Countries: Proposal for an Operational Framework and Policy Implications" and "Debt Sustainability in Low-Income Countries: Further Considerations on an Operational Framework and Policy Implications".

Box A1. Differences in methodologies and results between LIC and HIPC debt sustainability analysis.

Under the LIC DSA framework, Haiti's NPV of debt-to-exports ratio is estimated at 132.6 percent at end-2005, assuming unconditional delivery of HIPC Initiative assistance. This is 17.4 percentage points lower than the NPV of debt-to-exports ratio of 150 percent obtained using the HIPC methodology, after unconditional delivery of HIPC Initiative assistance (Table AP1). Three methodological differences between the HIPC and LIC DSA frameworks can explain the differences:

- **Discount rates.** Under the HIPC Initiative the rates used are the six-month averages of the currency-specific long-term commercial interest reference rates (CIRRs), which correspond to a maturity of approximately ten years. These are used to calculate the NPV on a loan-by-loan basis. The LIC DSA relies on aggregate debt service projections in US dollars, using the single discount rate for the US dollar (currently approximated 5 percent), which is higher than the average discount rate used for the HIPC DSA.
- **Exchange rates.** The HIPC DSA uses end-September 2005 exchange rates whereas the LIC DSA is based on WEO projections. **Variations after end-September 2005 have a small positive impact (2.9 percent) on the debt indicator.**
- **Denominator used to calculate the NPV of debt-to-exports ratios.** The denominator used under the HIPC Initiative is derived as a backward-looking three-year average. The LIC DSA framework focuses on the future path of the NPV of debt-to-exports ratio, and applies current-year's exports.

Haiti: Decomposition of the decrease in the NPV of debt-to-exports ratio at end-2005

Factors explaining the change in the NPV of debt-to-exports ratio	Impact of methodological change
HIPC methodology	150.0
Total change	-17.4
Exchange rates	2.9
Discount rate	-2.2
Exports of goods and services	-18.1
DSA methodology	132.6
<u>Memorandum items:</u>	
Current year's exports	597
Backward-looking three-year average	525

C. External Debt Sustainability

The baseline scenario, which assumes full delivery of HIPC Initiative assistance, indicates that Haiti is at high risk of debt distress. The NPV of debt-to-exports ratio remains above the indicative threshold (100 percent) until FY2021. However, Haiti's debt service-to-exports ratio remains below the indicative threshold (15 percent) over the entire projection period.

The sensitivity analysis suggests that the external debt indicators could rapidly deteriorate if confronted by adverse shocks (see Table AP2). The sensitivity analysis examines the impact on debt indicators of permanent changes to baseline assumptions (alternative scenarios) as well as of temporary shocks to main variables (bound tests).

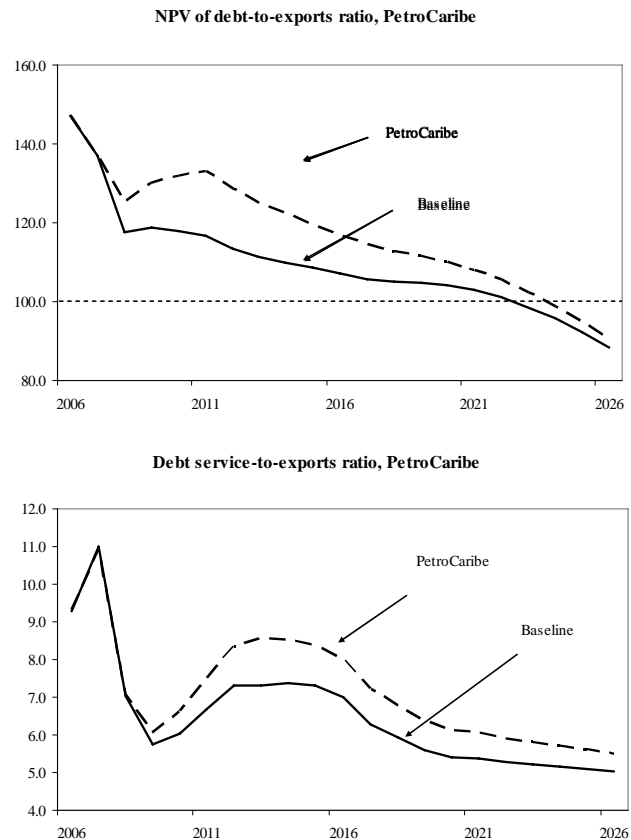
- The scenario based on historical averages of key variables gives the same conclusion as the baseline scenario. The NPV of debt-to-exports ratio is consistently above the threshold, but the other indicators remain below the indicative threshold over the projection period. The debt indicators under the historical scenario follow a somewhat higher trajectory than under the baseline scenario, reflecting the expected improvements in macroeconomic conditions compared to the last decade.
- Financial assistance provided under the MDRI would improve Haiti's debt situation. Including MDRI, which would reduce Haiti's debt by approximately US\$464.4 million in nominal terms, the NPV of external debt-to-exports ratio would fall below the 100 percent threshold at the completion point anticipated at end-September 2008.
- Participation in PetroCaribe could worsen debt sustainability, but does not lead to any additional breaches of indicative thresholds compared to the baseline scenario (see Box A2).
- The bound tests reveal some underlying vulnerabilities, particularly with respect to the export-based debt indicator. The export-based debt indicator worsens significantly in all scenarios. However, the GDP-based debt indicator remains below the indicative threshold with the exception of a combined adverse shock to all key variables (real GDP growth, export growth, US dollar GDP deflator, and non-debt creating capital inflows). The debt service indicators never breach the indicative threshold.

Box A2 : The impact on debt sustainability of PetroCaribe.

Under the PetroCaribe agreement, Haiti could obtain new concessional external financing from Venezuela. The agreement was ratified by the Parliament in August. At current oil prices, the accord provides for upfront payment of 60 percent of oil imported through the accord and payments for the remaining 40 percent over 25 years with a two year grace period at 1 percent annual interest. The underlying grant element is estimated at 49 percent at current US dollar discount rates.

Despite high concessionality, PetroCaribe could lead to a significant increase in external debt service payments in the medium and long run. The agreement does not specify the amount that could be imported under PetroCaribe, but based on earlier assessments, the staff projects that Haiti could receive about 4,500 barrels per day, or about 1/3 of current oil imports. Assuming oil imports of about 1.6 millions barrels a year under the PetroCaribe agreement over the next five years (FY2007-11), with oil prices in line with WEO assumptions, Haiti would accumulate annual gross flows of concessional resources of about 0.8 percent of GDP during FY2007-11. However, from FY2012, transfers become negative. Debt service payments related to PetroCaribe would peak at about 1 percent of exports in FY2013.

The increase in the external debt service payments reflects to fact that the authorities intend to use resources from PetroCaribe will be used to finance investment projects. It will be important to ensure that the returns to these projects, which can be expected to materialize in the long run, are adequate to amortize the accumulated debt.



D. Public Sector Debt Sustainability

Under the baseline scenario, Haiti's public debt (including domestic debt) is expected to remain broadly constant (see Table AP3). In the short run the country is expected to continue to rely heavily on external financing, especially external grants. This, together with

high revenue efforts and a slow expansion of the public sector, should contain debt-creating financing of the budget and thereby help to maintain fiscal sustainability. A relatively low initial public debt burden and the positive outlook for revenue performance and growth would allow the country to run a primary deficit of on average 1.2 percent of GDP over the long run without threatening long-term sustainability.

A projected slowdown in external grant financing is expected to be counterbalanced by higher internal revenues and a gradual increase of domestic borrowing. Domestic debt is expected to increase from about 2.0 percent of GDP in the medium term to 7.4 percent of GDP by FY2026. The expected increase in domestic debt is anticipated to contribute to the development of the domestic financial market.

The evolution of public debt remains robust under alternative scenarios and bound tests (see Table AP4). However, low growth (scenario B1) could distort the debt trajectory leading to an increase of 11 percentage points in the NPV of debt-to-GDP ratio between FY2006 and FY2026. In the short and medium-term, projected debt trends shown in the baseline scenarios are closely aligned with trends prevailing under macroeconomic assumptions in line with historical trends. Given growth and revenue projections above historical trends, debt projections divert from historical developments in the long run.

E. Debt Distress Classification and Conclusion

Haiti's risk of debt distress is high. Under the baseline scenario – which includes HIPC Initiative assistance - the NPV of debt-to-exports ratio remains above the LIC DSA threshold (100 percent) until FY2021, whereas the other debt indicators remain below the threshold over the projection period. The sensitivity analysis has highlighted the fact that Haiti's external debt situation is vulnerable to shocks.

Public sector domestic debt is not projected to add significant risk to the debt outlook. Increased revenue efforts and a slow expansion of the public sector will help to maintain fiscal sustainability in the medium and long run.

Table AP1. Haiti: External Debt Sustainability Framework, Baseline Scenario, 2006-2026 1/
(In percent of GDP, unless otherwise indicated)

	Actual						Historical Average 6/	Standard Deviation 6/	Projections									
	2000	2001	2002	2003	2004	2005			2006	2007	2008	2009	2010	2011	2006-11 Average	2016	2026	2012-26 Average
External debt (nominal) 1/	28.9	32.6	35.2	43.9	38.3	29.5			28.0	25.9	24.6	25.4	26.1	26.5		25.6	22.5	
o/w public and publicly guaranteed (PPG)	28.9	32.6	35.2	43.9	38.3	29.5			28.0	25.9	24.6	25.4	26.1	26.5		25.6	22.5	
Change in external debt	0.4	3.7	2.7	8.7	-5.6	-8.7			-1.5	-2.1	-1.4	0.9	0.7	0.3		-0.1	-0.9	
Identified net debt-creating flows	2.2	4.8	2.0	7.1	-6.0	-8.4			-1.5	-0.2	-0.8	-0.9	-0.8	-1.0		0.3	-1.0	
Non-interest current account deficit	0.6	1.7	0.6	1.0	0.8	-1.7	0.3	1.0	-0.3	0.9	0.3	0.3	0.4	0.3		1.8	0.9	
Deficit in balance of goods and services	21.6	23.9	23.1	32.0	29.3	27.0			29.1	30.1	28.5	28.3	28.6	28.0		27.5	24.4	
Exports	12.7	12.3	12.6	15.8	14.4	13.9			13.3	13.2	13.3	13.6	14.0	14.2		14.4	15.4	
Imports	34.3	36.2	35.7	47.9	43.8	40.8			42.4	43.3	41.8	42.0	42.6	42.2		41.9	39.8	
Net current transfers (negative = inflow)	-20.2	-21.8	-22.6	-31.0	-28.4	-29.1	-21.4	6.3	-29.3	-29.1	-27.9	-27.7	-27.6	-27.1		-25.1	-23.0	
Other current account flows (negative = net inflow)	-0.7	-0.3	0.0	0.0	-0.1	0.4			0.0	-0.1	-0.2	-0.3	-0.5	-0.6		-0.6	-0.5	
Net FDI (negative = inflow)	-0.2	-0.1	-0.1	-0.5	-0.2	-0.2	-0.3	0.2	-1.0	-0.4	-0.4	-0.5	-0.5	-0.6		-0.7	-1.2	
Endogenous debt dynamics 2/	1.8	3.2	1.6	6.6	-6.7	-6.4			-0.3	-0.7	-0.7	-0.7	-0.7	-0.7		-0.8	-0.7	
Contribution from nominal interest rate	0.4	0.3	0.4	0.5	0.5	0.4			0.4	0.3	0.3	0.3	0.3	0.3		0.3	0.2	
Contribution from real GDP growth	-0.3	0.3	0.1	-0.2	1.3	-0.6			-0.7	-1.0	-1.0	-0.9	-1.0	-1.0		-1.1	-1.0	
Contribution from price and exchange rate changes	1.7	2.5	1.1	6.2	-8.5	-6.3			...	...	...	...	...	...		...	...
Residual (3-4) 3/	-1.9	-1.1	0.7	1.6	0.4	-0.4			0.0	-1.9	-0.5	1.7	1.5	1.3		-0.4	0.1	
o/w exceptional financing	-0.2	-0.3	-0.8	0.0	-0.6	1.0			-0.2	0.8	0.0	0.0	0.0	0.0		0.0	0.0	
NPV of external debt 4/	...	...	...	...	...	20.8			19.6	18.1	15.7	16.2	16.5	16.6		15.4	13.6
In percent of exports	...	...	...	...	...	149.9			147.1	137.1	117.6	118.7	117.9	116.7		107.1	88.3
NPV of PPG external debt	...	...	...	...	...	20.8			19.6	18.1	15.7	16.2	16.5	16.6		15.4	13.6
In percent of exports	...	...	...	...	...	149.9			147.1	137.1	117.6	118.7	117.9	116.7		107.1	88.3
Debt service-to-exports ratio (in percent)	7.9	8.7	7.9	8.7	9.1	8.5			9.3	11.0	7.0	5.8	6.0	6.7		7.0	5.0	
PPG debt service-to-exports ratio (in percent)	7.9	8.7	7.9	8.7	9.1	8.5			9.3	11.0	7.0	5.8	6.0	6.7		7.0	5.0	
Total gross financing need (millions of U.S. dollars)	56.4	98.0	49.4	56.7	68.8	-32.4			0.7	102.9	44.2	33.9	48.0	44.9		194.2	83.2	
Non-interest current account deficit that stabilizes debt ratio	0.3	-2.0	-2.1	-7.7	6.4	7.0			1.2	3.0	1.6	-0.6	-0.3	0.0		1.9	1.8	
Key macroeconomic assumptions																		
Real GDP growth (in percent)	0.9	-1.0	-0.3	0.4	-3.5	1.8	1.0	2.2	2.5	4.0	4.0	4.0	4.0	4.0	3.7	4.5	4.5	4.4
GDP deflator in US dollar terms (change in percent)	-5.6	-8.1	-3.2	-15.1	23.9	19.7	3.7	12.8	7.1	6.7	4.9	1.7	2.1	2.1	4.1	1.9	1.9	1.9
Effective interest rate (percent) 5/	1.2	1.0	1.2	1.2	1.4	1.3	1.2	0.2	1.5	1.1	1.3	1.1	1.1	1.2	1.2	1.2	1.1	1.1
Growth of exports of G&S (US dollar terms, in percent)	-4.8	-12.0	-1.3	7.2	8.9	17.1	11.2	16.3	5.7	9.5	10.5	8.0	9.2	7.7	8.4	6.8	7.6	7.0
Growth of imports of G&S (US dollar terms, in percent)	8.0	-4.0	-4.8	14.4	9.2	13.7	8.6	8.7	14.0	13.2	5.4	6.2	7.8	5.2	8.6	6.2	5.9	6.0
Grant element of new public sector borrowing (in percent)	48.4	43.3	49.0	49.0	50.9	52.5	48.9	52.4	52.4	52.4
<i>Memorandum item:</i>																		
Nominal GDP (millions of US dollars)	3953.8	3596.4	3472.2	2960.3	3537.7	4310.3			4733.9	5250.4	5725.7	6055.3	6430.9	6829.8		9236.3	17385.3	

Source: Staff simulations.

1/ Includes both public and private sector external debt.

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

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

4/ Assumes that 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.

Table AP2. Haiti: 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	20	18	16	16	17	17	15	14
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	17	17	17	18	19	19	17	15
A2. New public sector loans on less favorable terms in 2007-26 2/	17	16	17	18	19	19	21	21
A3. PetroCaribe agreement	20	18	17	18	18	19	17	14
A4. MDRI	20	18	11	12	12	13	13	13
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	17	17	17	18	18	18	17	15
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	17	17	18	19	19	19	18	15
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	17	18	21	22	22	22	21	18
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	17	23	29	29	29	29	26	19
B5. Combination of B1-B4 using one-half standard deviation shocks	17	26	38	39	39	38	35	24
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	17	22	22	22	23	23	21	19
NPV of debt-to-exports ratio								
Baseline	147	137	118	119	118	117	107	88
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	130	125	129	132	133	135	117	101
A2. New public sector loans on less favorable terms in 2007-26 2/	130	121	124	129	133	136	143	139
A3. PetroCaribe agreement	130	137	125	130	132	133	117	90
A4. MDRI	147	137	83	86	87	89	87	83
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	130	120	117	119	118	117	107	88
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	130	146	183	184	181	179	163	127
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	130	120	117	119	118	117	107	88
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	130	174	217	215	209	205	184	121
B5. Combination of B1-B4 using one-half standard deviation shocks	130	183	255	252	246	240	215	140
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	130	120	117	119	118	117	107	88
Debt service ratio								
Baseline	9	11	7	6	6	7	7	5
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2007-26 1/	9	12	8	6	7	8	8	6
A2. New public sector loans on less favorable terms in 2007-26 2/	9	11	7	6	7	8	8	9
A3. PetroCaribe agreement	9	11	7	6	7	8	8	6
A4. MDRI	9	11	7	5	5	4	6	4
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	9	11	7	6	6	7	7	5
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	9	13	10	8	9	9	10	7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	9	11	7	6	6	7	7	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	9	11	8	8	8	8	10	8
B5. Combination of B1-B4 using one-half standard deviation shocks	9	12	9	9	9	10	12	9
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	9	11	7	6	6	7	7	5
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	51	51	51	51	51	51	51	51

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 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 AP3. Haiti: Public Sector Debt Sustainability Framework, Baseline Scenario, 2003-2026
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 5/ ⁵	Standard Deviation 5/ ⁵	Estimate					Projections			
	2003	2004	2005			2006	2007	2008	2009	2010	2011	2006-11 Average	2016	2026	2012-26 Average
Public sector debt 1/	47.6	40.8	32.8			32.0	29.2	27.3	27.6	28.0	28.2		29.5	29.8
o/w foreign-currency denominated	43.9	38.3	29.5			28.0	25.9	24.6	25.4	26.1	26.5		25.6	22.5
Change in public sector debt	9.0	-6.8	-8.0			-0.8	-2.8	-1.9	0.3	0.4	0.2		0.1	0.0
Identified debt-creating flows	6.9	-10.5	-0.6			-5.6	0.0	0.0	0.0	0.2	0.2		0.0	-0.1
Primary deficit	2.6	0.4	0.0	0.5	1.4	0.1	1.0	1.0	1.2	1.4	1.4	1.0	1.3	1.2
Revenue and grants	9.1	10.2	13.2			13.6	15.5	15.6	16.0	16.3	16.8		17.6	19.0
of which: grants	0.1	1.3	3.5			3.3	5.5	5.2	5.1	5.0	5.1		4.3	2.7
Primary (noninterest) expenditure	11.7	10.5	13.1			13.6	16.4	16.7	17.2	17.7	18.2		18.9	20.2
Automatic debt dynamics	4.3	-10.9	-0.6			-5.7	-0.7	-0.9	-0.9	-1.1	-1.1		-1.2	-1.2
Contribution from interest rate/growth differential	-0.5	0.8	-1.4			-0.6	-1.0	-1.0	-0.9	-0.9	-1.0		-1.2	-1.2
of which: contribution from average real interest rate	-0.4	-0.9	-0.7			0.2	0.2	0.2	0.2	0.1	0.1		0.0	0.1
of which: contribution from real GDP growth	-0.1	1.7	-0.7			-0.8	-1.2	-1.1	-1.0	-1.1	-1.1		-1.3	-1.3
Contribution from real exchange rate depreciation	4.8	-11.7	0.8			-5.1	0.3	0.0	0.0	-0.1	-0.1		...	...
Other identified debt-creating flows	0.0	0.0	0.0			0.0	-0.3	-0.1	-0.2	-0.2	-0.1		-0.1	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	-0.3	-0.1	-0.2	-0.2	-0.1		-0.1	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	2.2	3.7	-7.4			4.8	-2.8	-1.9	0.3	0.2	0.0		0.1	0.0
NPV of public sector debt	...	...	24.1			23.6	21.3	18.4	18.3	18.4	18.3		19.3	21.0
o/w foreign-currency denominated	...	...	20.8			19.6	18.1	15.7	16.2	16.5	16.6		15.4	13.6
o/w external	...	...	20.8			19.6	18.1	15.7	16.2	16.5	16.6		15.4	13.6
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		0.0	0.0
Gross financing need 2/	4.4	3.2	1.4			2.1	2.7	2.6	2.6	2.8	2.7		2.7	2.9
NPV of public sector debt-to-revenue ratio (in percent) 3/	...	...	182.9			173.9	137.6	117.7	114.3	112.7	108.9		109.7	110.2
o/w external	...	...	158.0			144.6	116.6	100.3	100.8	101.3	98.5		87.8	71.5
Debt service-to-revenue ratio (in percent) 3/ 4/	19.2	16.0	10.9			15.1	11.5	10.0	9.1	8.5	7.6		7.9	9.0
Primary deficit that stabilizes the debt-to-GDP ratio	-6.4	7.2	8.0			0.9	3.8	2.9	0.9	1.0	1.2		1.2	1.2
Key macroeconomic and fiscal assumptions														
Real GDP growth (in percent)	0.4	-3.5	1.8	1.0	2.2	2.5	4.0	4.0	4.0	4.0	4.0	3.7	4.5	4.5
Average nominal interest rate on forex debt (in percent)	1.8	1.3	1.3	1.4	0.2	1.5	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1
Average real interest rate on domestic currency debt (in percent)	-9.8	-9.2	-4.7	2.6	11.3	18.2	11.2	11.5	13.5	15.5	15.3	14.2	5.9	4.5
Real exchange rate depreciation (in percent, + indicates depreciation)	13.8	-26.0	2.2	1.3	21.9	-17.9	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	26.9	21.5	17.6	13.9	6.5	13.9	8.1	8.0	7.3	6.7	5.7	8.3	5.0	5.0
Growth of real primary spending (deflated by GDP deflator, in percent)	10.1	-13.2	26.8	6.2	11.8	6.5	25.3	5.5	7.2	7.2	6.9	9.8	5.3	5.0
Grant element of new external borrowing (in percent)	0.1	0.7	0.6	0.6	0.4	0.6	0.7	0.8	0.8	0.8	0.9	0.8	0.9	0.9

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

1/ General government. Using gross debt.

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 including 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 AP4. Haiti: Sensitivity Analysis for Key Indicators of Public Debt 2006-2026

	Projections							
	2006	2007	2008	2009	2010	2011	2016	2026
NPV of Debt-to-GDP Ratio								
Baseline	24	21	18	18	18	18	19	21
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	24	22	19	19	19	19	21	28
A2. Primary balance is unchanged from 2006	24	21	17	17	16	16	14	11
A3. Permanently lower GDP growth 1/	24	21	19	19	19	19	22	29
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2007-2008	24	23	21	22	23	23	27	35
B2. Primary balance is at historical average minus one standard deviations in 2007-2008	24	22	19	19	19	19	20	21
B3. Combination of B1-B2 using one half standard deviation shocks	24	22	20	20	20	19	19	20
B4. One-time 30 percent real depreciation in 2007	24	30	26	26	25	24	23	23
B5. 10 percent of GDP increase in other debt-creating flows in 2007	24	27	23	23	23	23	23	24
NPV of Debt-to-Revenue Ratio 2/								
Baseline	174	138	118	114	113	109	110	110
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	174	139	119	116	114	110	111	127
A2. Primary balance is unchanged from 2006	174	135	112	105	99	92	78	60
A3. Permanently lower GDP growth 1/	174	138	119	116	116	113	122	151
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2007-2008	174	144	132	132	134	133	151	181
B2. Primary balance is at historical average minus one standard deviations in 2007-2008	174	141	123	119	118	114	114	113
B3. Combination of B1-B2 using one half standard deviation shocks	174	142	125	120	117	111	106	101
B4. One-time 30 percent real depreciation in 2007	174	197	169	159	152	143	130	121
B5. 10 percent of GDP increase in other debt-creating flows in 2007	174	172	149	144	141	136	133	124
Debt Service-to-Revenue Ratio 2/								
Baseline	15	12	10	9	9	8	8	9
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	15	12	10	9	9	8	9	12
A2. Primary balance is unchanged from 2006	15	12	9	8	8	7	7	6
A3. Permanently lower GDP growth 1/	15	12	10	9	9	8	9	11
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2007-2008	15	12	11	11	10	9	10	13
B2. Primary balance is at historical average minus one standard deviations in 2007-2008	15	12	11	10	9	8	8	9
B3. Combination of B1-B2 using one half standard deviation shocks	15	12	11	10	9	8	8	9
B4. One-time 30 percent real depreciation in 2007	15	12	11	10	9	9	9	10
B5. 10 percent of GDP increase in other debt-creating flows in 2007	15	12	17	10	9	8	8	10

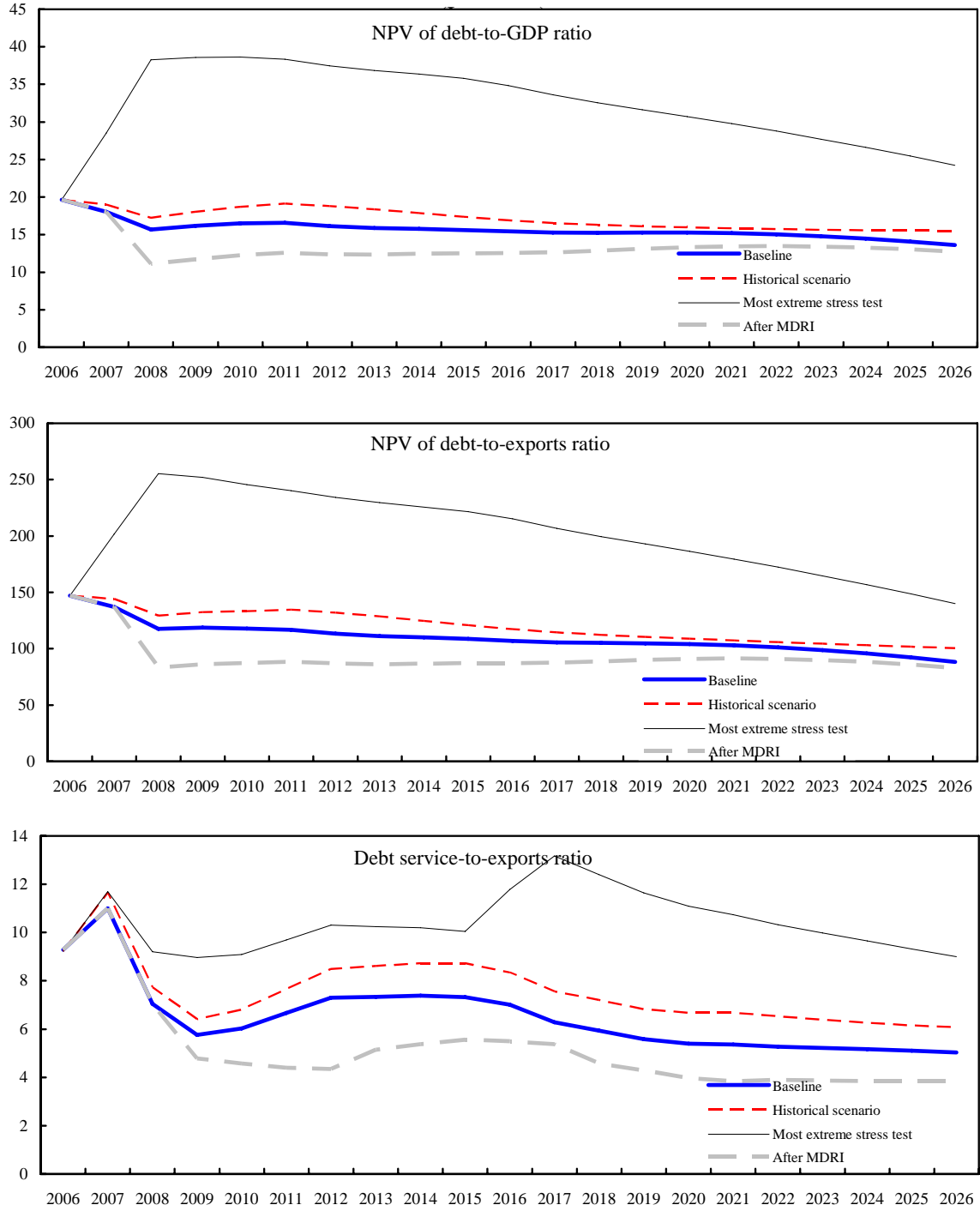
Sources: Fund staff estimates and projections.

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.

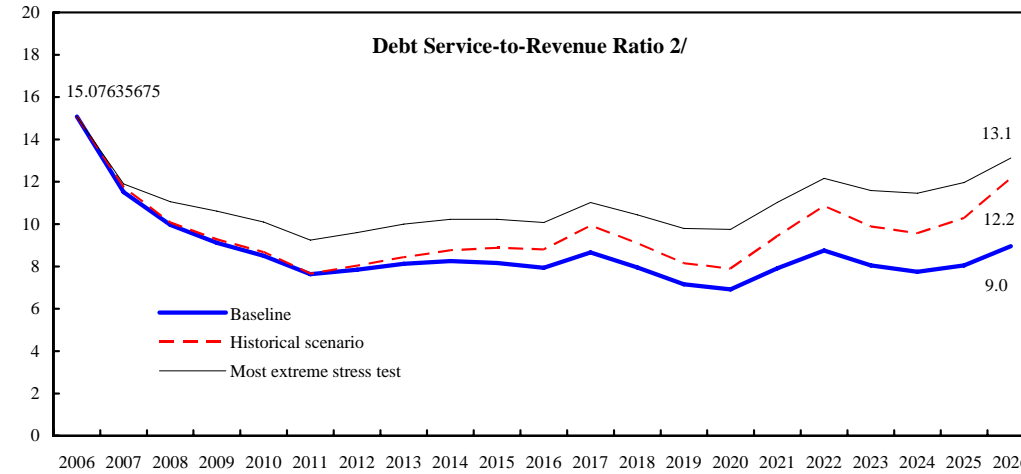
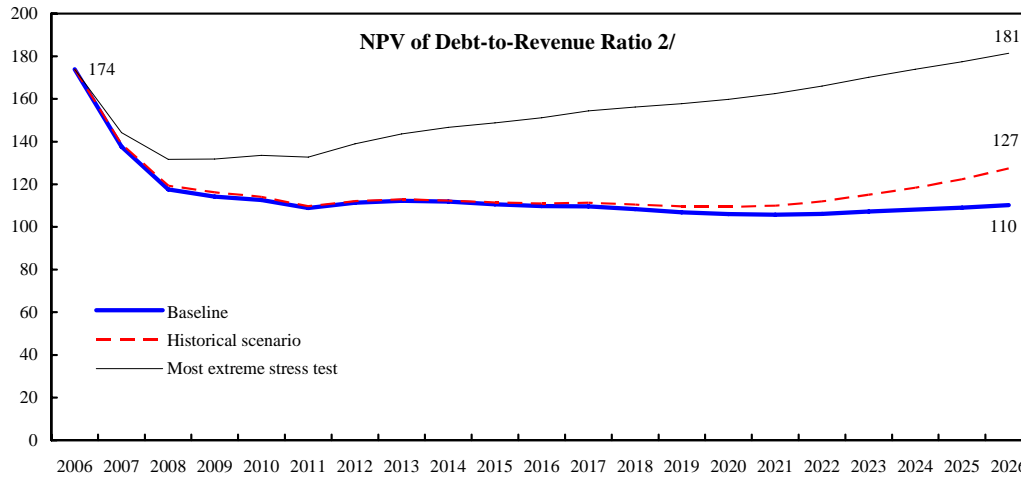
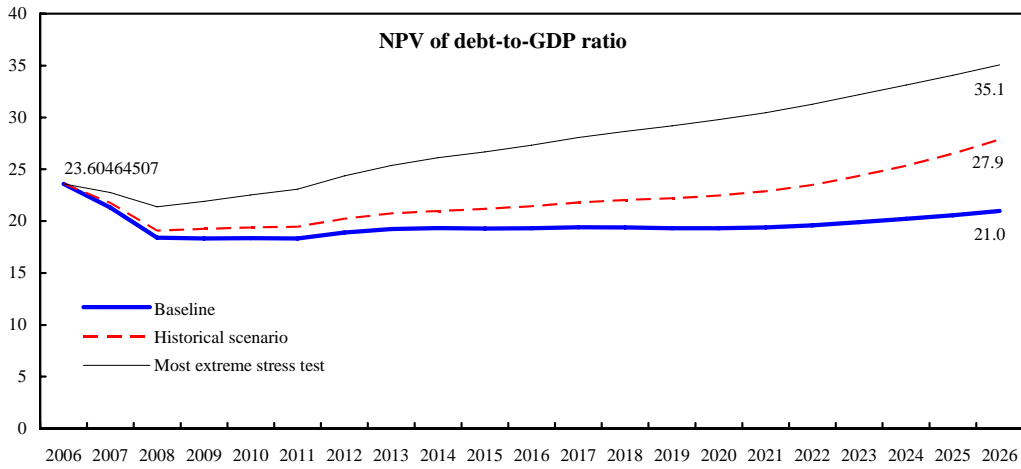
Figure AP1. Haiti: Indicators of Public and Publicly Guaranteed External Debt

Under Alternative Scenarios, 2006-2026



Source: Staff projections and simulations.

Figure AP2. Haiti: Indicators of Public Debt Under Alternative Scenarios, 2006-2026 1/



Source: Staff projections and simulations.

1/ Most extreme stress test is test that yields highest ratio in 2016.

2/ Revenue including grants.