INTERNATIONAL MONETARY FUND

HAITI

Debt Sustainability Analysis Update

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

Approved by Gilbert Terrier and Dominique Desruelle (IMF) and Carlos Braga and Rodrigo A. Chaves (IDA)

February 2, 2009

The debt sustainability analysis (DSA) was prepared jointly by Bank and Fund staffs in accordance with the standardized Debt Sustainability Framework (DSF) methodology for low-income countries (LICs). The DSA has also benefited from consultation with Inter-American Development Bank staff. As in the previous DSA,[1] *the findings indicate the risk of external debt distress is high given a present value (PV) of debt-to-exports ratio that is above the relevant policy-dependent threshold for an extended period in the baseline scenario and higher in alternative and shocks scenarios.*[2] *Haiti's weak export base is a key factor in its high risk of debt distress. An alternative scenario reflecting full delivery of HIPC and MDRI relief in FY 2009 has been included and shows that, following relief, Haiti's debt would remain below its indicative thresholds throughout the projection period. It is anticipated that the next LIC DSA will be prepared at the time of HIPC completion point.*

I. Background

1. **Haiti's public debt as of end-September 2008 is estimated at about 29 percent of GDP**. Most of the debt is owed to external creditors (25 percent of GDP), mainly the Inter-American Development Bank (42 percent of total external debt), the World Bank (34 percent), and bilateral creditors (15 percent). Most domestic public debt corresponds to Central Bank gourde-denominated obligations *vis-a-vis* the domestic banking system.

---

[1] *Country Report No. 08/117*

[2] Haiti is classified as a weak performer based on its three-year average score of 2.85 on the World Bank's Country Policy and Institutional Assessment index (CPIA). For a weak performer, the indicative thresholds for external debt sustainability are a PV of debt-to-GDP ratio of 30 percent, a PV of debt-to-exports ratio of 100 percent, a PV of debt-to-revenue ratio of 200 percent, a debt-service-to-exports ratio of 15 percent, and a debt service-to-revenue ratio of 25 percent. The DSF defines "weak" policy performers as those with CPIA ratings below 3.25.

2. **Upon reaching its HIPC completion point, Haiti will benefit from HIPC and MDRI debt relief on an irrevocable basis**. Haiti received a Paris Club treatment on Cologne terms in December 2006 and has received interim relief from multilateral creditors under the HIPC initiative. Haiti is working to fulfill remaining completion point triggers and hopes to reach its completion point under HIPC and also receive additional MDRI relief in FY 2009. An additional custom scenario has been included to show the effect of HIPC/MDRI relief on Haiti's debt ratios.

3. **Haiti is taking steps to strengthen its debt management capacity**. With the help of UNCTAD and the World Bank, Haiti is creating a single external debt database that will facilitate information sharing between the finance ministry and central bank. In addition, as part of the HIPC Capacity Building Program, Haiti is working with the Center for Latin American Monetary Studies (CEMLA) to enhance its debt management capacity.

II. ASSUMPTIONS

4. **The medium-term assumptions for the DSA have been revised to reflect a number of severe shocks**. These include food and fuel price spikes early in 2008 that led to an augmentation of the PRGF arrangement by 20 percent of quota, four successive hurricanes and tropical storms in August and September that caused losses amounting to 15 percent of GDP, and the effect of the international financial crisis on remittances and exports, which is only partly offset by falling international food and oil prices. The main assumptions for the DSA are summarized below (Table A1 includes the medium-term macroeconomic framework):

- *Growth and inflation:* GDP is assumed to be lower than in the previous DSA in FY 2008 (now projected to be 1.3 percent) and FY 2009 (now projected to be 2.5 percent) due to the impact of the natural disasters and slower global growth, while in the medium-term the real rate of growth is assumed to converge to 4.5 percent, as in the previous DSA. Prices are projected to fall from recent highs such that the GDP deflator (17 percent in 2008) would average 8.1 percent for 2008–2017 and 5 percent for 2018–28.

- *Fiscal policy:* After an initial deterioration in the overall fiscal deficit including grants to 3.9 percent of GDP in 2009, reflecting large near-term spending needs, this measure would improve to average 2.4 percent of GDP for 2008–17 and 1.2 percent of GDP for 2018–28.

- *Exports of goods and services:* decreased significantly in percent of GDP in FY 2008 and are expected to fall again in FY 2009 to 10.6 percent of GDP, and recover afterwards, averaging 13.4 percent of GDP for the 2018–28 period. The decrease in FY 2008 is explained by retooling in the export assembly industry to respond to buyer demands, as well as the initial impact of the natural disasters during late FY 2008. Export projections for FY 2009 were lowered both due to the negative impact of the hurricanes on agricultural production and tourism receipts, and reduced export demand linked to the economic slowdown in Haiti's main export markets. This is in contrast with the previous DSA, which assumed that the HOPE initiative would bring about strong export growth during FY 2009–10; the current DSA also assumes a positive impact of the HOPE initiative, but only beginning in FY 2010, after reconstruction of basic infrastructure.[3]

- *Imports of goods and services:* After a sharp jump in 2008 to 40 percent of GDP due largely to high oil and food prices, imports of goods and services are projected at 38.5 percent of GDP in 2009 and would gradually decline, averaging 36.4 percent of GDP for the 2018–28 period.

- *Remittances:* Private transfers are now expected to decrease during FY 2009 to 16 percent of GDP due to the effects of the international financial crisis (the previous DSA assumed an increase) before recovering thereafter to average 17.7 percent for 2008–17 and 16.9 percent for 2018–28.

- As in the previous DSA and reflecting standard practice for countries in the interim period (between HIPC decision and completion points), the updated baseline scenario assumes interim HIPC relief but neither HIPC completion point nor MDRI relief.[4]

5. **The main differences with the baseline scenario in the previous DSA are as follows:**

- Updated macroeconomic framework, as described above;

- Incorporation of US$197 million (2.9 percent of GDP) of PetroCaribe-related debt, that will be mainly used to finance, during FY 2009, hurricane-related humanitarian and reconstruction spending;[5]

---

[3] HOPE refers to *Haitian Hemispheric Opportunity through Partnership Encouragement Act*; it provides for preferential access of Haitian apparel exports to the U.S. market.

[4] See *Staff Guidance Note on the Application of the Joint Bank-Fund Debt Sustainability Framework for Low-Income Countries*, available at www.imf.org and www.worldbank.org.

[5] These PetroCaribe-related resources constitute public external debt and are treated as such for the purpose of calculating their impact on gross public debt.

- Incorporation of the June PRGF augmentation of 20 percent of quota (US$26.6 million) and the current proposal for a PRGF augmentation of 30 percent of quota (US$37 million), to be disbursed in two tranches (20 percent upon completion of the fourth PRGF review and 10 percent upon completion of the fifth PRGF review).

6. The baseline scenario does not include future PetroCaribe-related public debt creating flows, as it is unclear: (i) what their magnitudes will be; (ii) when they will be disbursed; (iii) the form that they will take (i.e., whether they will be public or private external debt);[6] and (iv) given the steep drop in oil prices, whether they will continue to materialize.

III. External Debt Sustainability

7. **Haiti's external debt relative to exports remains high in the baseline scenario** (see Figure A1 and Tables A2 and A3 for the evolution of external debt ratios under the baseline and alternative/shock scenarios). The updated macroeconomic framework and the higher loan disbursements in FY 2009 worsen the expected path of Haiti's debt ratios compared with the previous DSA. In particular, the PV of external debt-to-exports ratio will increase as a consequence of higher nominal debt and lower exports, reaching 159 percent of GDP in 2013. The ratio declines subsequently as the impact of the HOPE initiative on export growth kicks in, but remains above the 100 percent of GDP threshold throughout the projection period, reflecting Haiti's weak export base.[7] The projected increase in the PV of the debt-to-exports ratio reflects both an increase in the NPV of external debt-to-GDP and a decrease in the ratio of exports of goods and services-to-GDP. In the baseline scenario, other debt stock and debt service ratios remain well below the relevant thresholds throughout the projection period.

8. **On account of the high initial debt ratios, key thresholds are breached when sensitivity analyses are conducted**. The analysis shows Haiti to be particularly vulnerable to lower non-debt creating flows such as remittances given a weak export base and to a combined shock to growth, exports, prices, and non-debt creating flows. Considering the most extreme shock for each indicator, the PV of debt-to-exports ratio would rise even farther above the threshold (to 214 percent in 2012 in the event of lower non-debt creating flows), the PV of debt-to-revenue ratio would breach the threshold (reaching 229 percent in 2011 with combined shocks), and the PV of debt-to-GDP ratio would remain only somewhat

[6] Under the most recent proposal, a Haitian-Venezuelan binational corporation would be created to intermediate the PetroCaribe resources and assume the liabilities.

[7] Also, remittances provide a reliable supply of foreign exchange. See previous LIC DSA in IMF Country Report 08/117.

below the threshold (27 percent by 2012 with combined shocks). All external debt stock indicators then decline over the projection period but remain above the baseline. Debt service indicators rise somewhat in alternative and shock scenarios but the impact is relatively limited. The alternative scenario based on historical values for key variables shows lower debt ratios primarily due to a smaller current account deficit than in the baseline scenario, which in turn reflects low levels of external financing in the past during periods of social and political conflict.

IV. Public Debt Sustainability

9. **In the baseline scenario, public debt indicators increase initially and then decline somewhat during the projection period** (see Figure A2 and Tables A4 and A5 for the evolution of public debt ratios under the baseline and alternative/shock scenarios). The PV of debt-to-GDP ratio rises to 20 percent in 2012 before falling to 16 percent by 2028. The PV of debt-to-revenue ratio has a similar profile, reaching 134 percent in 2011 before falling to 93 percent by 2028. Debt service-to-revenue rises to 9 percent in 2015 before falling to 8 percent by 2028.

10. **Alternative and shock scenarios put public debt on a steadily rising path throughout the projection period**. Instead of falling as under the baseline scenario, if growth is one standard deviation lower in 2008 and 2009, the PV of public debt-to-GDP ratio would grow to 34 percent in 2028 from 19 percent in 2008, while the PV of public debt-to-revenue ratio would reach 192 percent in 2028 compared to 134 percent. Debt service-to-revenue would rise but then remain flat under a growth shock. Keeping the primary balance at the 2008 level would lead to all public debt indicators rising consistently over the projection period. Using historical scenarios again yield lower debt levels.

V. HIPC/MDRI Debt Relief in FY 2009

11. **Debt relief at the HIPC completion point would substantially improve Haiti's debt situation**. A custom scenario has been added and is shown in Figures A1 and A2. Assuming that HIPC completion point and associated MDRI relief materialize in FY 2009, the PV of the external debt-to-exports ratio would fall below Haiti's indicative debt burden threshold of 100 percent in the medium-term immediately, and would remain just below the threshold throughout the projection period. Other indicators, which were already more favorable than the PV of debt-to-exports measure, would all be noticeably lower due to HIPC/MDRI relief.

VI. Conclusions

12. **Haiti's risk of external debt distress remains high** given a PV of debt-to-exports ratio far above the indicative threshold in the baseline scenario. Alternative and shock scenarios highlight additional risks in terms of Haiti's debt stock measures, even while debt

service indicators remain below the relevant thresholds in all scenarios. In terms of public debt, there is a risk of steadily rising debt ratios under alternative assumptions or in the event of shocks.

13. **Debt relief will help improve sustainability although additional measures are needed**. HIPC/MDRI relief would bring the PV of debt-to-exports ratio below the relevant indicative threshold, but with little cushion in the likely event of future shocks. Securing lasting debt sustainability will depend on: a prudent borrowing strategy, for which efforts to strengthen debt management should help, and steps to enhance Haiti's small export base, including through improved security and infrastructure to boost trade, especially given preferential opportunities. Better security and infrastructure could also catalyze higher foreign direct investment flows and reduce risks related to reliance on very high levels of remittances. Finally, sustained reform progress to bolster institutions and policy implementation capacity would increase Haiti's ability to handle a higher level of debt.

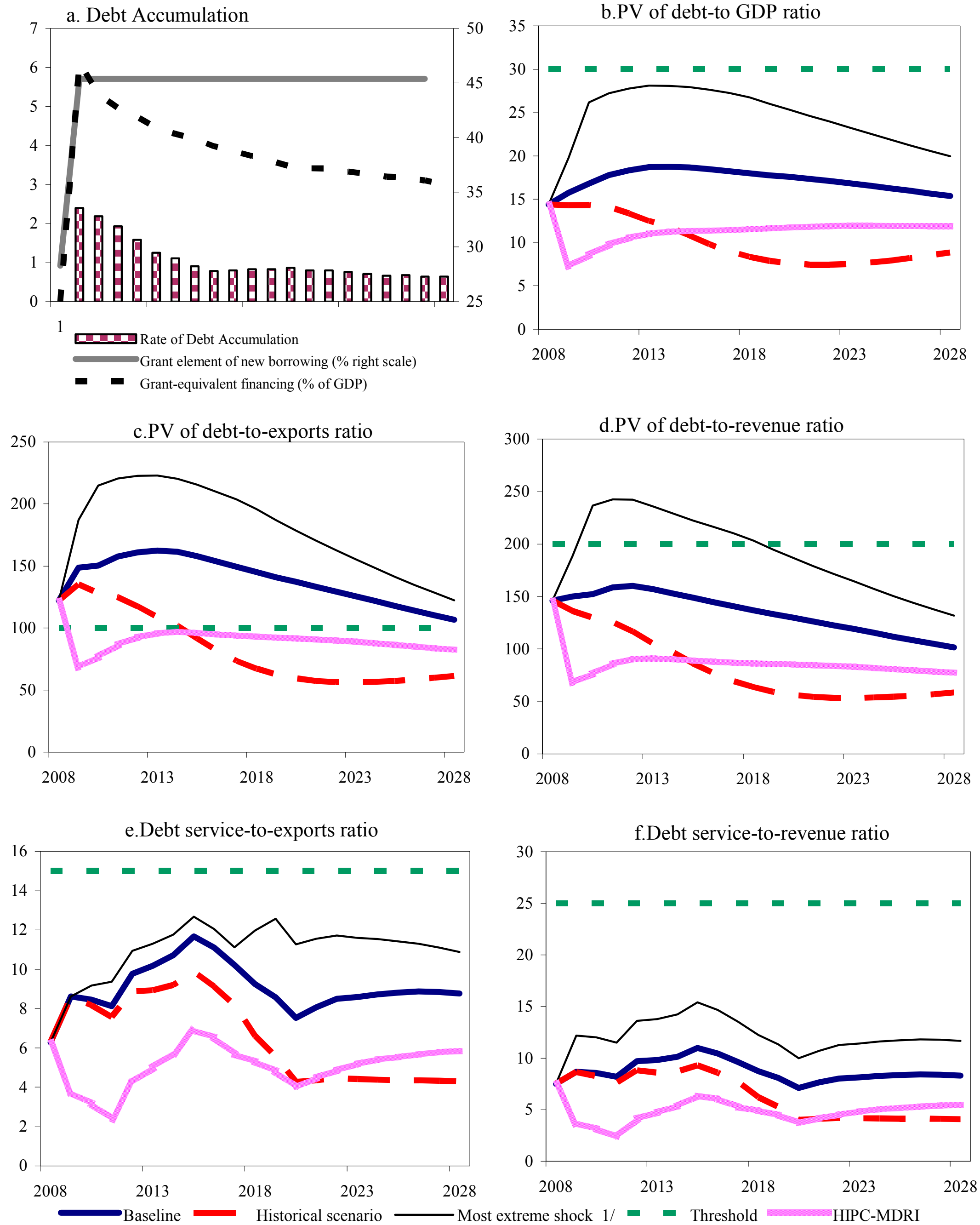
Table A1. Haiti: Long-Term Macroeconomic Assumptions, 2008-28
Fiscal Year Ending September 30

	2008	2009	2010	2011	2012	2013	2018	2028	Averages 2008-17	Averages 2018-28
	(Annual percentage change)									
National income and prices										
GDP at constant prices	1.3	2.5	2.7	3.2	3.3	3.4	4.3	4.5	3.2	4.5
GDP deflator	17.0	12.0	10.0	8.0	7.0	6.0	5.0	5.0	8.1	5.0
Real GDP per capita (local currency)	-0.4	0.8	1.0	1.6	1.7	1.8	2.8	3.2	1.6	3.1
Consumer prices (period average)	14.4	12.8	9.0	7.5	6.0	5.5	5.0	5.0	7.6	5.0
External sector (value in US$)										
Exports of goods and non-factor services	7.3	-4.3	12.7	6.3	6.5	5.9	7.5	7.5	6.3	7.6
Imports of goods and non-factor services	22.4	2.8	2.7	6.7	7.2	3.9	5.5	5.7	6.5	5.7
Central government (value in G)										
Total revenue and grants	9.0	29.1	4.6	12.0	11.9	12.6	10.4	10.1	12.2	10.5
Central government revenue 1/	15.7	22.1	19.0	13.0	13.0	14.0	11.2	11.2	14.3	11.3
Central government primary expenditure	37.2	34.9	5.3	8.9	8.5	8.8	10.2	10.3	14.1	10.5
	(In percent of GDP, unless otherwise indicated)									
National income										
Consumption	102.2	96.9	97.2	96.3	95.9	94.0	94.0	89.8	95.9	91.9
Private	95.6	89.8	90.2	89.5	89.2	87.4	87.1	82.4	89.2	84.6
Public	6.6	7.1	6.9	6.8	6.6	6.5	7.0	7.5	6.7	7.3
Investment	26.0	31.0	28.7	29.9	30.9	32.3	30.4	31.6	30.3	31.0
Private	19.1	22.0	21.0	22.5	23.5	25.0	23.0	23.0	22.8	23.0
Public	6.9	9.0	7.7	7.4	7.4	7.3	7.4	8.6	7.5	8.0
GDP per capita (US dollars)	728	765	802	832	864	892	1,083	1,700	881	1,368
External sector										
Non-interest current account deficit	-2.9	-4.4	-3.0	-3.4	-3.4	-3.0	-2.4	-1.7	-3.0	-2.0
Exports of goods and non-factor services	11.8	10.6	11.2	11.3	11.4	11.5	12.4	14.4	11.5	13.4
Imports of goods and non-factor services	40.0	38.5	37.1	37.5	38.1	37.8	36.9	35.9	37.8	36.4
External current account balance 1/	-8.6	-11.9	-8.4	-8.2	-8.5	-8.1	-7.0	-4.9	-8.3	-5.9
External current account balance 2/	-2.6	-4.4	-3.0	-3.0	-2.9	-2.6	-2.3	-1.5	-2.8	-1.9
Liquid gross reserves (in months of imports of G&S)	2.9	2.6	2.7	2.9	3.0	3.2	3.1	2.9	3.0	3.0
Central government										
Central government overall balance 2/	-2.8	-3.9	-3.6	-3.1	-2.6	-2.1	-1.3	-1.2	-2.4	-1.2
Total revenue and grants	13.9	15.6	14.5	14.6	14.7	15.1	16.0	17.2	15.1	16.6
Central government revenue 1/	9.9	10.5	11.1	11.2	11.5	11.9	13.2	15.2	11.7	14.2
Central government primary expenditure	16.1	18.9	17.6	17.2	16.9	16.7	16.9	18.1	17.0	17.5

1/ Excluding grants

2/ Including grants

Figure A1. Haiti: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2008-2028 1/



Source: Staff projections and simulations.

1/ The most extreme stress test is the test that yields the highest ratio in 2018. In figure b. it corresponds to a Combination shock; in c. to a Non-debt flows shock; in d. to a Combination shock; in e. to a Non-debt flows shock and in picture f. to a One-time depreciation shock

Table A2. Haiti: External Debt Sustainability Framework, Baseline Scenario, 2005-2028 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 0 Average 0	Standard Deviation	Projections									
	2005	2006	2007			2008	2009	2010	2011	2012	2013	2008-2013 Average	2018	2028	2014-2028 Average
External debt (nominal) 1/	**34.3**	**28.1**	**24.4**			**25.1**	**26.6**	**28.6**	**30.0**	**30.7**	**30.9**		**29.3**	**24.5**	
o/w public and publicly guaranteed (PPG)	34.3	28.1	24.4			25.1	25.7	27.7	29.2	30.0	30.2		28.9	24.4	
Change in external debt	-0.3	-6.2	-3.6			0.6	1.5	2.0	1.5	0.7	0.2		-0.5	-0.4	
Identified net debt-creating flows	-9.4	-5.6	-6.9			1.9	3.6	1.5	1.4	1.5	1.2		0.2	-1.0	
Non-interest current account deficit	**-1.8**	**1.4**	**0.1**	**1.0**	**1.2**	**2.3**	**4.2**	**2.7**	**2.6**	**2.6**	**2.3**		**1.9**	**1.3**	1.7
Deficit in balance of goods and services	28.9	29.7	25.1			28.2	27.9	25.9	26.2	26.7	26.3		24.5	21.5	
Exports	14.0	14.4	12.7			11.8	10.6	11.2	11.3	11.4	11.5		12.4	14.4	
Imports	42.9	44.2	37.8			40.0	38.5	37.1	37.5	38.1	37.8		36.9	35.9	
Net current transfers (negative = inflow)	-30.5	-28.3	-24.7	-23.8	5.7	-25.3	-23.5	-22.9	-22.9	-23.4	-23.3		-22.1	-19.8	-21.4
o/w official	-7.6	-7.9	-6.4			-6.0	-7.5	-5.4	-5.2	-5.5	-5.5		-4.7	-3.4	
Other current account flows (negative = net inflow)	-0.2	-0.1	-0.2			-0.6	-0.2	-0.3	-0.7	-0.8	-0.7		-0.4	-0.4	
Net FDI (negative = inflow)	**-0.6**	**-3.3**	**-1.2**	**-0.7**	**1.0**	**-0.4**	**-0.3**	**-0.8**	**-0.7**	**-0.5**	**-0.5**		**-0.9**	**-1.5**	-1.1
Endogenous debt dynamics 2/	**-7.0**	**-3.7**	**-5.8**			**0.0**	**-0.3**	**-0.4**	**-0.5**	**-0.6**	**-0.7**		**-0.9**	**-0.8**	
Contribution from nominal interest rate	-0.8	0.0	0.1			0.3	0.3	0.3	0.3	0.3	0.3		0.3	0.3	
Contribution from real GDP growth	-0.5	-0.7	-0.8			-0.3	-0.6	-0.7	-0.9	-0.9	-1.0		-1.2	-1.1	
Contribution from price and exchange rate changes	-5.7	-3.0	-5.2			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**9.1**	**-0.6**	**3.3**			**-1.3**	**-2.0**	**0.4**	**0.1**	**-0.9**	**-1.0**		**-0.7**	**0.6**	
o/w exceptional financing	1.0	-0.2	-0.6			-0.6	-0.6	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	16.7			14.4	16.7	17.7	18.6	19.1	19.4		18.4	15.5	
In percent of exports	...	...	131.2			122.1	157.7	158.3	164.8	167.5	168.3		148.2	107.2	
PV of PPG external debt	**...**	**...**	**16.7**			**14.4**	**15.7**	**16.8**	**17.8**	**18.4**	**18.7**		**18.0**	**15.4**	
In percent of exports	**...**	**...**	**131.2**			**122.1**	**148.8**	**150.3**	**157.6**	**161.1**	**162.5**		**145.1**	**106.7**	
In percent of government revenues	**...**	**...**	**165.4**			**146.0**	**150.0**	**152.2**	**158.8**	**160.2**	**156.9**		**136.9**	**101.5**	
Debt service-to-exports ratio (in percent)	**5.7**	**5.3**	**6.8**			**6.3**	**8.6**	**8.5**	**8.1**	**9.8**	**10.2**		**9.2**	**8.8**	
PPG debt service-to-exports ratio (in percent)	**5.7**	**5.3**	**6.8**			**6.3**	**8.6**	**8.5**	**8.1**	**9.8**	**10.2**		**9.2**	**8.8**	
PPG debt service-to-revenue ratio (in percent)	**8.2**	**7.7**	**8.5**			**7.5**	**8.7**	**8.6**	**8.2**	**9.7**	**9.8**		**8.7**	**8.3**	
Total gross financing need (Billions of U.S. dollars)	-0.1	-0.1	0.0			0.2	0.4	0.2	0.2	0.3	0.3		0.3	0.2	
Non-interest current account deficit that stabilizes debt ratio	-1.5	7.6	3.8			1.7	2.6	0.7	1.2	1.9	2.1		2.5	1.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	1.8	2.3	3.4	0.9	2.1	1.3	2.5	2.7	3.2	3.3	3.4	2.7	4.3	4.5	4.0
GDP deflator in US dollar terms (change in percent)	19.7	9.7	22.7	6.0	13.6	14.4	4.2	3.8	2.1	2.2	1.4	4.7	1.4	1.4	1.8
Effective interest rate (percent) 5/	-2.8	0.1	0.5	-0.3	1.2	1.3	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.2
Growth of exports of G&S (US dollar terms, in percent)	18.3	15.5	12.1	8.1	11.4	7.3	-4.3	12.7	6.3	6.5	5.9	5.7	7.5	7.5	7.5
Growth of imports of G&S (US dollar terms, in percent)	19.6	15.4	8.7	11.1	9.7	22.4	2.8	2.7	6.7	7.2	3.9	7.6	5.5	5.7	5.5
Grant element of new public sector borrowing (in percent)	...	...	...	...	...		28.3	45.4	45.4	45.4	45.4		45.4	45.4	45.4
Government revenues (excluding grants, in percent of GDP)	9.7	10.0	10.1			9.9	10.5	11.1	11.2	11.5	11.9		13.2	15.2	13.8
Aid flows (in Billions of US dollars) 7/	0.1	0.2	0.3			0.3	0.4	0.5	0.5	0.5	0.5		0.5	0.8	
o/w Grants	0.1	0.2	0.3			0.3	0.4	0.3	0.3	0.3	0.3		0.4	0.5	
o/w Concessional loans	0.0	0.0	0.0			0.0	0.0	0.2	0.2	0.2	0.2		0.2	0.3	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			...	6.1	5.3	5.0	4.7	4.4		3.7	3.0	3.5
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			...	71.2	70.1	71.8	72.9	74.9		77.8	72.6	76.0
Memorandum items:															
Nominal GDP (Billions of US dollars)	4.3	4.8	6.1			7.1	7.6	8.1	8.5	9.0	9.4		12.4	22.2	
Nominal dollar GDP growth	21.8	12.2	26.9			15.8	6.8	6.6	5.4	5.5	4.8	7.5	5.8	6.0	5.9
PV of PPG external debt (in Billions of US dollars)			1.0			1.0	1.2	1.4	1.5	1.7	1.8		2.2	3.4	
(PVt-PVt-1)/GDPt-1 (in percent)						0.0	2.4	2.2	1.9	1.6	1.2	1.6	0.8	0.6	0.8

Source: Staff simulations.

1/ Includes both public and private sector external debt.
2/ 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.
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 PV 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 PV of new debt).

Table A3.Haiti: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2008-2028
(In percent)

	Projections							
	2008	2009	2010	2011	2012	2013	**2018**	2028
PV of debt-to GDP ratio								
Baseline	14	16	17	18	18	19	**18**	15
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	14	14	14	14	13	13	**8**	9
A2. New public sector loans on less favorable terms in 2008-2028 2	14	16	17	18	19	19	**18**	16
A3. HIPC & MDRI Delivered in 2009	14	7	9	10	11	11	**12**	12
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	14	16	18	19	20	20	**19**	17
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	14	16	18	19	19	19	**19**	16
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	14	18	21	23	23	24	**23**	19
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	14	20	24	25	25	26	**24**	18
B5. Combination of B1-B4 using one-half standard deviation shocks	14	20	26	27	28	28	**27**	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	14	22	24	25	26	26	**25**	22
PV of debt-to-exports ratio								
Baseline	122	149	150	158	161	162	**145**	107
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	122	135	128	125	117	109	**67**	61
A2. New public sector loans on less favorable terms in 2008-2028 2	122	147	153	160	164	166	**148**	112
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	122	149	150	157	161	162	**145**	107
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	122	147	182	190	194	195	**174**	125
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	122	149	150	157	161	162	**145**	107
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	122	187	215	221	223	223	**196**	122
B5. Combination of B1-B4 using one-half standard deviation shocks	122	162	208	214	216	217	**191**	123
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	122	149	150	157	161	162	**145**	107
PV of debt-to-revenue ratio								
Baseline	146	150	152	159	160	157	**137**	102
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	146	136	130	126	117	105	**63**	58
A2. New public sector loans on less favorable terms in 2008-2028 2	146	148	155	162	163	160	**139**	107
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	146	156	164	171	173	169	**147**	109
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	146	149	159	166	167	163	**142**	103
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	146	169	192	201	202	198	**173**	128
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	146	189	217	222	221	215	**185**	116
B5. Combination of B1-B4 using one-half standard deviation shocks	146	189	237	243	242	236	**203**	132
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	146	211	214	223	225	220	**192**	142

Table A3.Haiti: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2008-2028 (continued)
(In percent)

Debt service-to-exports ratio

Baseline	6	9	8	8	10	10	**9**	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	6	9	8	8	9	9	**7**	4
A2. New public sector loans on less favorable terms in 2008-2028 2	6	9	9	10	11	12	**11**	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	6	9	8	8	10	10	**9**	9
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	6	9	10	10	11	12	**11**	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	6	9	8	8	10	10	**9**	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	6	9	9	9	11	11	**12**	11
B5. Combination of B1-B4 using one-half standard deviation shocks	6	8	9	9	11	11	**11**	11
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	6	9	8	8	10	10	**9**	9

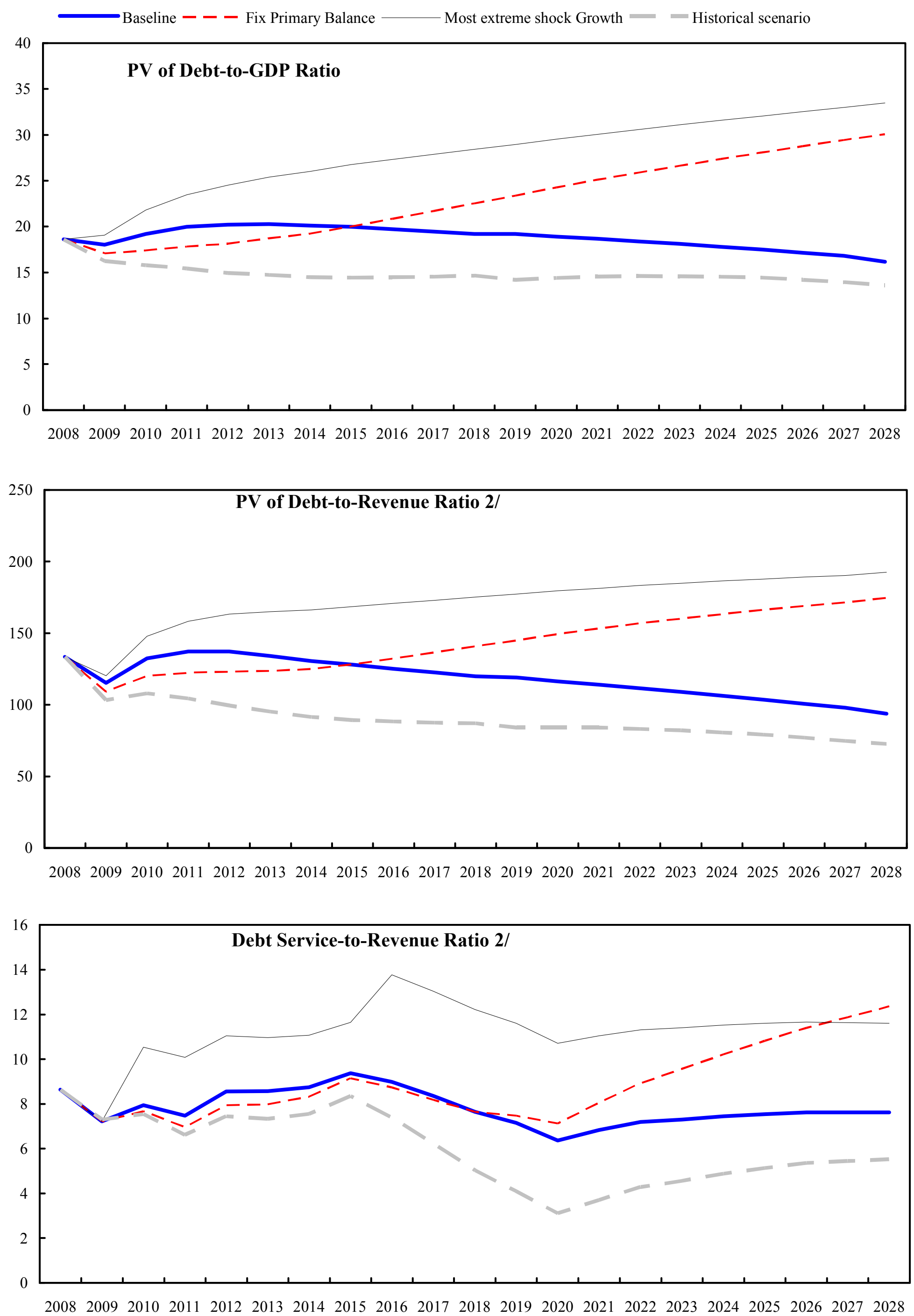
Debt service-to-revenue ratio

Baseline	8	9	9	8	10	10	**9**	8
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2008-2028 1/	8	9	8	8	9	9	**6**	4
A2. New public sector loans on less favorable terms in 2008-2028 2	8	9	9	10	11	11	**10**	7
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2009-2010	8	9	9	9	10	11	**9**	9
B2. Export value growth at historical average minus one standard deviation in 2009-2010 3/	8	9	9	8	10	10	**9**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2009-2010	8	10	11	10	12	12	**11**	11
B4. Net non-debt creating flows at historical average minus one standard deviation in 2009-2010 4/	8	9	9	9	11	11	**11**	10
B5. Combination of B1-B4 using one-half standard deviation shocks	8	9	10	11	12	12	**12**	12
B6. One-time 30 percent nominal depreciation relative to the baseline in 2009 5/	8	12	12	12	14	14	**12**	12
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	44	44	44	44	44	44	**44**	44

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 A2.Haiti: Indicators of Public Debt Under Alternative Scenarios, 2008-2028 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 2018.

2/ Revenues are defined inclusive of grants.

Table A4.Haiti: Public Sector Debt Sustainability Framework, Baseline Scenario, 2005-2028
(In percent of GDP, unless otherwise indicated)

	Actual			Average	Standard Deviation	Estimate	Projections								
	2005	2006	2007			2008	2009	2010	2011	2012	2013	2008-13 Average	2018	2028	2014-28 Average
Public sector debt 1/	37.5	32.0	28.4			28.6	27.5	29.5	30.9	31.5	31.6		30.0	25.1	
o/w foreign-currency denominated	34.3	28.1	24.4			25.1	25.7	27.7	29.2	30.0	30.2		28.9	24.4	
Change in public sector debt	0.5	-5.6	-3.6			0.2	-1.1	2.0	1.4	0.6	0.1		-0.5	-0.4	
Identified debt-creating flows	0.2	-6.9	-6.5			0.5	1.3	1.8	1.5	0.7	0.3		-0.4	-0.3	
Primary deficit	2.2	1.1	-1.3	1.0	1.3	2.2	3.2	3.1	2.6	2.1	1.6	2.5	0.9	0.9	0.9
Revenue and grants	13.1	13.2	15.1			13.9	15.6	14.5	14.6	14.7	15.1		16.0	17.2	
of which: grants	3.5	3.2	5.0			4.0	5.1	3.4	3.3	3.3	3.2		2.8	2.1	
Primary (noninterest) expenditure	15.3	14.3	13.9			16.1	18.9	17.6	17.2	16.9	16.7		16.9	18.1	
Automatic debt dynamics	-2.0	-8.0	-5.2			-1.6	-1.9	-1.3	-1.2	-1.4	-1.3		-1.3	-1.2	
Contribution from interest rate/growth differential	-2.8	-1.6	-1.5			-0.7	-0.9	-0.8	-1.1	-1.2	-1.2		-1.5	-1.3	
of which: contribution from average real interest rate	-2.2	-0.8	-0.5			-0.3	-0.2	-0.1	-0.2	-0.2	-0.2		-0.2	-0.2	
of which: contribution from real GDP growth	-0.7	-0.8	-1.1			-0.4	-0.7	-0.7	-0.9	-1.0	-1.0		-1.3	-1.1	
Contribution from real exchange rate depreciation	0.9	-6.3	-3.7			-1.0	-1.0	-0.5	-0.1	-0.3	-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	0.3	1.3	2.8			-0.3	-2.5	0.2	0.0	-0.2	-0.1		-0.1	-0.1	
Other Sustainability Indicators															
PV of public sector debt	3.3	3.9	20.2			18.6	18.0	19.2	20.0	20.2	20.3		19.2	16.2	
o/w foreign-currency denominated	0.0	0.0	16.3			15.1	16.2	17.3	18.3	18.7	18.9		18.1	15.5	
o/w external	...	...	16.3			15.1	16.2	17.3	18.3	18.7	18.9		18.1	15.5	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	5.3	5.3	3.5			6.7	7.4	5.9	5.4	4.9	4.3		3.2	2.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	24.9	29.4	133.5			133.6	115.3	132.4	137.3	137.2	134.0		119.9	93.9	
PV of public sector debt-to-revenue ratio (in percent)	33.8	38.8	199.8			188.2	171.7	173.4	178.2	176.4	170.1		145.8	106.6	
o/w external 3/	…	…	160.9			152.5	154.4	156.7	163.0	163.4	158.4		137.6	102.0	
Debt service-to-revenue and grants ratio (in percent) 4/	7.5	10.9	8.8			8.6	7.2	7.9	7.5	8.6	8.6		7.7	7.6	
Debt service-to-revenue ratio (in percent) 4/	10.2	14.3	13.2			12.2	10.8	10.4	9.7	11.0	10.9		9.3	8.7	
Primary deficit that stabilizes the debt-to-GDP ratio	1.7	6.7	2.3			1.9	4.4	1.1	1.2	1.6	1.5		1.4	1.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	1.81	2.31	3.44	0.89	2.09	1.27	2.50	2.70	3.20	3.30	3.40	2.73	4.30	4.50	4.01
Average nominal interest rate on forex debt (in percent)	-2.77	0.14	0.51	-0.31	1.19	1.30	1.13	1.25	1.23	1.21	1.19	1.22	1.21	1.10	1.18
Average real interest rate on domestic debt (in percent)	-7.25	6.71	2.85	3.53	7.63	-2.69	-4.38	2.39	2.10	2.50	3.06	0.50	2.24	2.24	1.92
Real exchange rate depreciation (in percent, + indicates depreciation)	2.68	-19.52	-13.75	0.20	25.90	-4.04	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	17.56	16.60	10.70	14.59	6.06	17.00	12.00	10.00	8.00	7.00	6.00	10.00	5.00	5.00	5.38
Growth of real primary spending (deflated by GDP deflator, in percent)	0.48	-0.04	0.00	0.08	0.19	0.18	0.20	-0.04	0.01	0.01	0.03	0.06	0.05	0.05	0.05
Grant element of new external borrowing (in percent)	...	...	...	…	…	...	28.29	45.39	45.39	45.39	45.39	41.97	45.39	45.39	...

Sources: Country authorities; and Fund staff estimates and projections.
1/ For the purpose of the analysis, the public sector includes the central government and the central bank. Debt is in gross terms
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 A5.Haiti: Sensitivity Analysis for Key Indicators of Public Debt 2008-2028

	Projections							
	2008	2009	2010	2011	2012	2013	2018	2028
PV of Debt-to-GDP Ratio								
Baseline	19	18	19	20	20	20	19	16
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	19	16	16	15	15	15	15	14
A2. Primary balance is unchanged from 2008	19	17	17	18	18	19	23	30
A3. Permanently lower GDP growth 1/	19	18	19	21	21	21	23	29
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	19	19	22	23	24	25	28	33
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	19	17	18	18	19	19	18	15
B3. Combination of B1-B2 using one half standard deviation shocks	19	17	17	19	20	20	22	26
B4. One-time 30 percent real depreciation in 2009	19	25	25	25	25	25	24	22
B5. 10 percent of GDP increase in other debt-creating flows in 2009	19	27	28	29	29	29	27	23
PV of Debt-to-Revenue Ratio 2/								
Baseline	134	115	132	137	137	134	120	94
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	134	103	108	105	100	95	87	73
A2. Primary balance is unchanged from 2008	134	109	120	122	123	124	141	175
A3. Permanently lower GDP growth 1/	134	116	134	141	142	141	141	166
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	134	120	148	158	163	165	175	193
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	134	110	121	126	127	124	111	87
B3. Combination of B1-B2 using one half standard deviation shocks	134	108	117	127	131	132	138	148
B4. One-time 30 percent real depreciation in 2009	134	157	171	172	169	163	148	128
B5. 10 percent of GDP increase in other debt-creating flows in 2009	134	173	193	197	196	190	170	133
Debt Service-to-Revenue Ratio 2/								
Baseline	9	7	8	7	9	9	8	8
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	9	7	8	7	7	7	5	6
A2. Primary balance is unchanged from 2008	9	7	8	7	8	8	8	12
A3. Permanently lower GDP growth 1/	9	7	8	8	9	9	9	12
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2009-2010	9	7	9	8	10	10	10	14
B2. Primary balance is at historical average minus one standard deviations in 2009-2010	9	7	8	7	8	8	7	7
B3. Combination of B1-B2 using one half standard deviation shocks	9	7	8	7	8	8	8	11
B4. One-time 30 percent real depreciation in 2009	9	9	11	11	12	13	12	14
B5. 10 percent of GDP increase in other debt-creating flows in 2009	9	7	11	10	11	11	12	12

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 length of the projection period.
2/ Revenues are defined inclusive of grants.