INTERNATIONAL MONETARY FUND

GHANA

STAFF REPORT FOR THE 2013 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS—UPDATE

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Prepared by the International Monetary Fund and the World Bank[1]

The analysis suggests that Ghana's risk of debt distress has risen, but remains moderate. Driven by expansionary fiscal policy in 2012, several of Ghana's public domestic and external debt indicators have deteriorated, but external debt burden indicators are projected to remain well below their respective indicative thresholds, provided fiscal consolidation is realized as planned and continues beyond the medium term. Total public debt is projected to stabilize at approximately 52 percent of GDP in the long run, with debt service absorbing more than 40 percent of government revenue. A more front-loaded adjustment would be needed to set the debt ratio on a declining trend.

[1] Prepared in collaboration with Ghanaian authorities. The previous DSA was prepared in November 2011 (IMF Country Report No. 12/36).

KEY ASSUMPTIONS UNDER THE BASELINE SCENARIO

1. **Macroeconomic assumptions are broadly in line with those in the November 2011 DSA, with deviations mainly related to the projection of oil production** (Box 1 and Tables 1–2). Revisions reflect: (i) updated information on proven reserves in the Jubilee field and recently assessed new fields; (ii) associated FDI inflows, particularly in 2016–2018; and (iii) a slightly higher share of non-concessional borrowing, consistent with Ghana's rising wealth and income status. By assuming a back-loaded production start for the newly assessed fields, and no production from future discoveries, the growth projections are conservative.

Table 1. Key Macroeconomic Assumptions

	2012	2013	2013-18	2019-31
Real growth	**(annual percentage change)**			
DSA-2011	8.5	7.4	5.6	5.5
DSA-2013	7.9	7.9	6.3	5.3
Level of nominal GDP	**(in millions U.S. dollar)**			
DSA-2011	43,396	46,994	57,363	119,840
DSA-2013	40,435	45,643	58,768	126,135
Inflation (GDP deflator)	**(annual percentage change)**			
DSA-2011	11.9	7.6	7.6	5.8
DSA-2013	13.3	13.7	10.7	6.9
Real interest rate (foreign debt)	**(percent)**			
DSA-2011	1.3	1.8	2.3	4.3
DSA-2013	1.1	1.6	1.6	3.5
Real interest rate (domestic debt)	**(percent)**			
DSA-2011	-1.2	4.8	3.0	3.2
DSA-2013	0.5	-1.1	1.8	4.2
Current account balance	**(percent)**			
DSA-2011	-6.0	-3.8	-4.5	-5.1
DSA-2013	-12.2	-11.9	-9.0	-6.4
Primary fiscal balance	**(in percent of GDP)**			
DSA-2011	0.7	1.4	0.8	-0.2
DSA-2013	-7.9	-6.5	-3.5	-0.5

2. **The projected debt dynamics are, however, contingent on successful fiscal consolidation.** Consistent with the authorities' plans, the baseline scenario assumes a reduction of the fiscal deficit (financing basis) to 6 percent of GDP in 2015. The long-run projections assume further gradual adjustment, consistent with the assumptions in the 2011 DSA.

Table 2. Official Borrowing Assumptions (in millions U.S. dollars)

	2012	2013	2014	2015	2016	2017	2018
Disbursements							
Multilateral	491	671	550	550	499	479	460
Bilateral	100	487	347	387	424	339	339
Commercial	735	750	1079	1279	1550	2607	2272
of which CDB	*193*	*750*	*1029*	*1029*	*0*	*0*	*0*
Total	**1326**	**1908**	**1976**	**2216**	**2473**	**3426**	**3072**

Box 1. Baseline Macroeconomic Assumptions

Real GDP-growth: After the acceleration of real GDP growth in 2011 to 15 percent, driven by oil production and a considerable expansion of the non-oil economy, Ghana experienced another year of high real GDP growth of almost 8 percent in 2012. Increased oil production is projected to keep the growth rate at this level in 2013. In the medium-term, growth is projected to moderate until production from new oil fields boosts output in 2018. In the long-run, real growth is assumed to stabilize at 5-6 percent, with new oil discoveries implying significant upside potential.

Inflation: CPI inflation increased in late 2012, and survey-based expectations point to a further rise to above 10 percent in 2013. Supported by an improvement in the policy mix, inflation is expected to decline in the medium run, with the GDP deflator stabilizing at 7-8 percent in 2018–2033.

Government balances: After widening to 7.9 percent of GDP in 2012, the primary deficit is projected to improve to 2.2 percent of GDP by 2015, and to gradually fall to less than 1 percent of GDP in the long run.

Current account balance: Notwithstanding strong export growth of 15 percent, the current account deficit widened to 12.2 percent of GDP in 2012, as a result of sharply rising imports. Owing to weaker terms of trade, the current account deficit is expected to remain close to 12 percent in 2013 and above 8 percent of GDP until 2017, driven by strong capital imports. Beginning in 2018, the deficit it is projected to gradually decline to approximately 4 percent of GDP in 2033, broadly in line with its optimal level according to Fund staff's external balance assessment.

Financing flows: Ghana continued to attract significant FDI of above 8 percent of GDP in 2012, the main part of which was related to the oil sector. Driven by the discovery of new fields, FDI is projected to stay close to 7 percent of GDP until 2018, and then to gradually decline to 4 percent of GDP by 2033. Consistent with Ghana's improving income status and wealth, inflows from grants are projected to decline to less than ½ percent of GDP in the medium to long term. Borrowing is projected to become increasingly non-concessional with above 90 percent of loans. The Eurobond, which the authorities are considering, is not included in this DSA, but could help smooth rollover needs and actually reduce total debt service cost by replacing more expensive borrowing from the less liquid domestic market.

EXTERNAL AND PUBLIC DEBT SUSTAINABILITY

A. External Debt Sustainability Analysis

Baseline scenario

3. Ghana's external debt indicators are all projected to remain below the relevant indicative thresholds. The projected level and composition of external debt is broadly in line with the November 2011 DSA, with a deterioration of export-based indicators caused by a downward revision in the terms of trade, but an improvement in the revenue indicators, reflecting further improvements in revenue administration and tax collection. All indicators remain below their respective thresholds in the baseline scenario (Table 3 and Figure 1A and Table 3A).

Table 3. Indicators of External Debt Vulnerabilities (Baseline)

	2018	2023	2031
PV of debt-to-GDP ratio			
DSA-2011	27.4	29.8	32.6
DSA-2013	26.1	29.5	24.8
Threshold	*50.0*	*50.0*	*50.0*
PV of debt-to-exports ratio			
DSA-2011	72.1	79.4	83.0
DSA-2013	82.7	96.7	80.4
Threshold	*200.0*	*200.0*	*200.0*
PV of debt-to-revenue ratio			
DSA-2011	140.4	162.3	182.0
DSA-2013	120.7	138.3	115.4
Threshold	*300.0*	*300.0*	*300.0*
Debt service-to-exports ratio			
DSA-2011	6.3	10.5	13.1
DSA-2013	6.4	12.8	14.2
Threshold	*25.0*	*25.0*	*25.0*
Debt service-to-revenue ratio			
DSA-2011	12.2	21.5	28.8
DSA-2013	9.4	18.4	20.4
Threshold	*22.0*	*22.0*	*22.0*

Standard stress tests

4. Standard stress tests confirm a moderate risk of debt distress (Figure 1A and Table 3A). Though pushed up, all three stock indicators as well as the debt service-to-export ratio remain under their respective thresholds even under the standardized stress tests. However, the debt service to-revenue-ratio—which is already close to its threshold level in the baseline scenario—increases to 26–30 under the most extreme shock which constitutes a one-time 30 percent depreciation relative to the baseline in 2014. While having a more moderate impact, a decrease of non-debt creating flows to their historical averages minus one standard deviation would also result in a breach of the debt service-to-revenue threshold.

B. Public Debt Sustainability Analysis

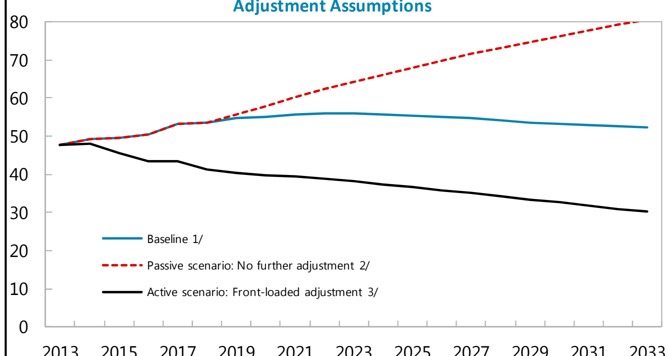
5. Additional risks arise from the sharp increase in domestic debt, as indicated by the total public debt dynamics (Table 4 and Figure 2A). Both considered stock indicators of public debt have deteriorated significantly compared with the November 2011 assessment, with domestic currency debt now exceeding external debt. On the basis of the authorities' plans to decrease the fiscal deficit by 6 percentage points of GDP by 2015, and assuming further gradual consolidation in the medium to long term, Ghana's present value of total public debt would stay at around 52 percent of GDP in the long run, leaving the country vulnerable to shocks. This is 10 percent of GDP higher than in the previous DSA, of which about 2 percent is attributable to the decrease in the discount rate from 4 to 3 percent. Debt service is projected to be lower compared to the previous assessments, mainly reflecting less conservative assumptions on the maturity profile of domestic borrowing, consistent with the authorities' intentions.[2] However, even assuming longer maturities for domestic debt and an improvement of revenues in percent of GDP in response to ongoing administrative reforms, public debt service would still absorb 40 percent of government revenue. Standard stress tests confirm the case for additional consolidation in the medium to long term to keep public debt sustainable and provide buffers against plausible shocks (Table 4A).

Table 4. Indicators of Public Debt Vulnerabilities (Baseline)

	2018	2023	2031
PV of debt-to-GDP ratio			
DSA-2011	35.4	38.0	41.8
DSA-2013	53.4	56.1	52.9
PV of debt-to-revenue ratio			
DSA-2011	175.0	202.9	231.5
DSA-2013	239.7	258.4	244.5
Debt service to revenue ratio			
DSA-2011	32.8	44.7	53.3
DSA-2013	29.1	37.6	40.0

6. Customized scenarios imply that additional consolidation of 3 percent of GDP by 2015 would set public debt dynamics on a much more benign path (Figure 1). Two additional scenarios were compared with the baseline scenario: The "passive scenario" assumes no further adjustment beyond that programmed for 2015, implying a steadily increasing debt-to-GDP ratio. Alternatively, a more front-loaded "active scenario", with additional savings of 3 percent of GDP by 2015—through, for instance, a far reaching removal of tax exemptions and a rationalization of the wage bill—would be needed to set the debt ratio on a more benign trend, providing growing fiscal space in the long run.

Figure 1: Present Value of Debt-to-GDP Ratio under Different Adjustment Assumptions



1/ Incorporates budget provisions for 2013-15, and gradual further adjustment in primary balance.
2/ Incorporates budget provisions for 2013-15, and no further adjustment in primary balance.
3/ Incorporates additional adjustment of 3 percent of GDP by 2015, and unchanged primary balance thereafter.

[2] The World Bank is providing technical assistance to strengthen the capacity of the debt office and deepen the domestic debt market.

CONCLUSIONS

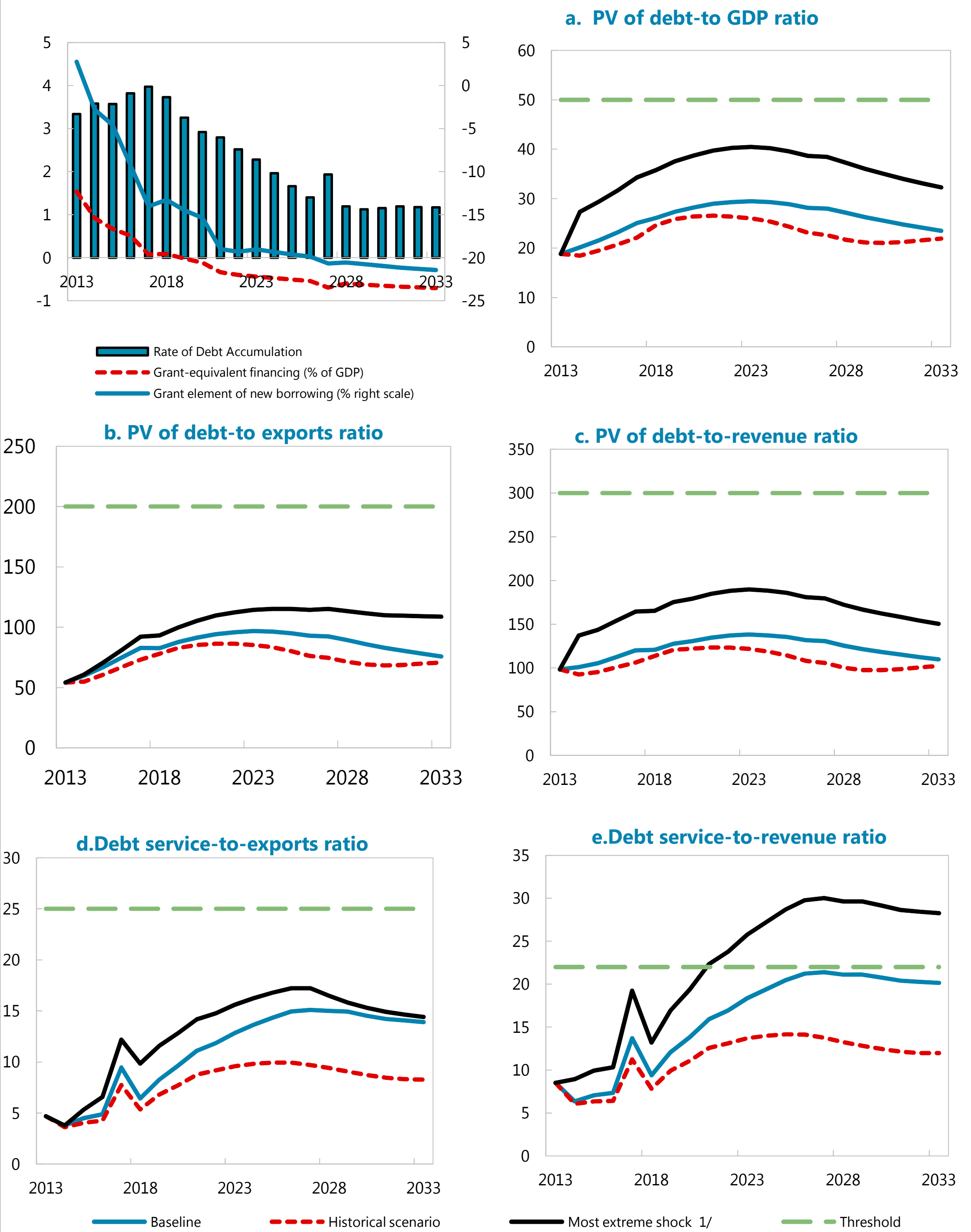
7. While Ghana's public debt situation has worsened since the last DSA, risks of distress remain moderate. Deteriorations in the debt indicators relative to exports are mainly driven by a weaker external outlook, while fiscal slippages in 2012 have set total public debt on a less favorable path. Revenue-based indicators have overall improved compared to the last DSA, but the debt service-to-revenue ratio still presents the most pronounced risk.

8. Robust growth, a realization of the planned fiscal consolidation, and further adjustment in the long run are essential to achieving the projected debt paths. The baseline scenario assumes the authorities' envisaged consolidation of 6 percent of GDP by 2015 followed by gradual further consolidation in the long run. These measures will help stabilize the public debt ratio at a still elevated level of about 52 percent of GDP. More ambitious upfront adjustment could set the debt ratio on a much more favorable path.

9. The authorities broadly agree with the analysis, but consider the projections to be on the conservative side. In particular, they expect larger growth dividends from infrastructure investments in the context of a more rapid development of the oil and gas sector and overall higher potential GDP growth. A more optimistic growth projection would result in stronger debt indicators.

Appendix

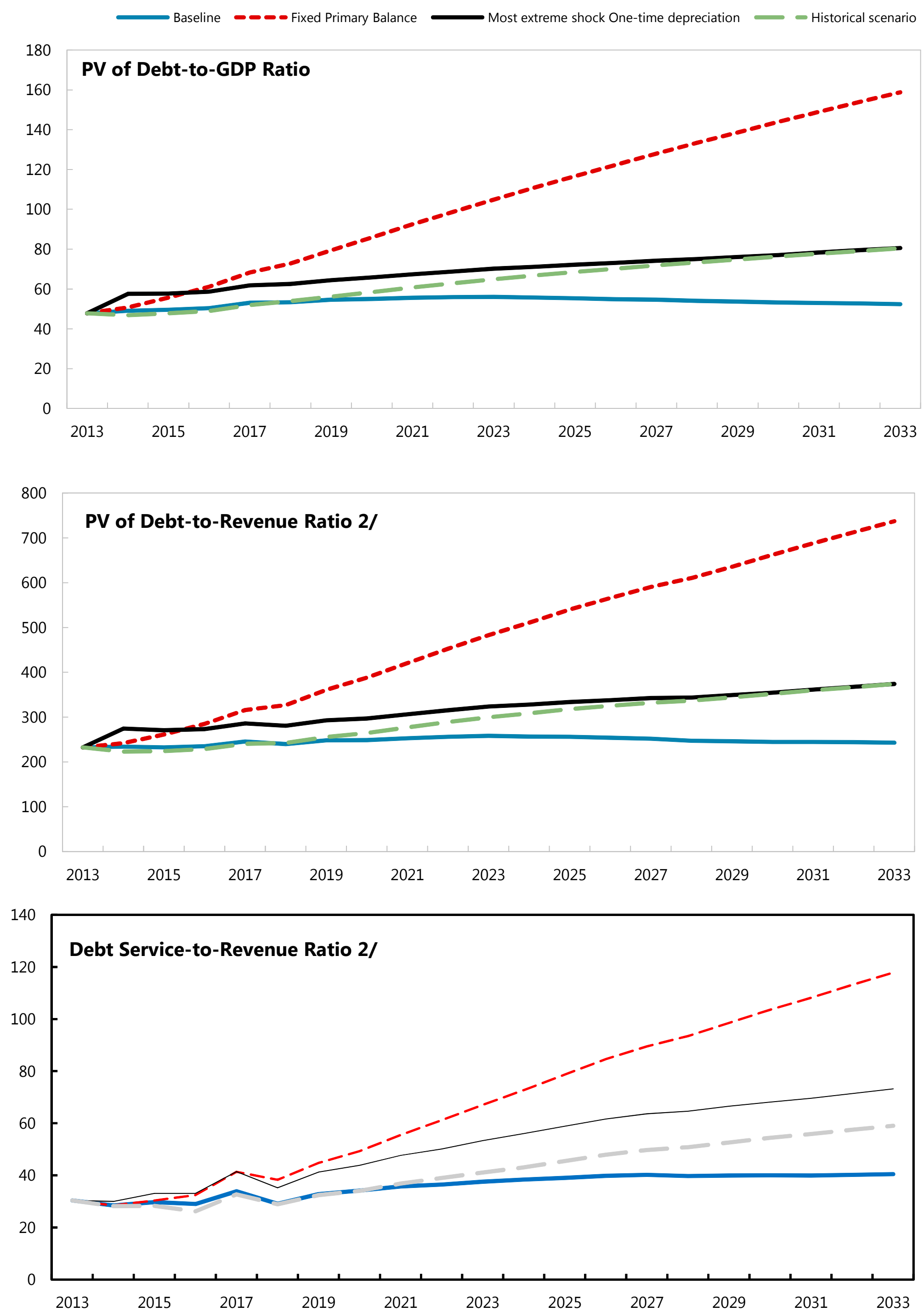
Figure 1A. Ghana: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2013–2033 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2023. In figure b. it corresponds to a One-time depreciation shock; in c. to a Terms shock; in d. to a One-time depreciation shock; in e. to a Non-debt flows shock and in figure f. to a One-time depreciation shock

Figure 2A. Ghana: Indicators of Public Debt Under Alternative Scenarios, 2013–2033 1/



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2023.
2/ Revenues are defined inclusive of grants.

Table 1A.: External Debt Sustainability Framework, Baseline Scenario, 2010–2033 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections									
	2010	2011	2012			2013	2014	2015	2016	2017	2018	2013-2018 Average	2023	2033	2019-2033 Average
External debt (nominal) 1/	**27.2**	**26.6**	**26.2**			**26.5**	**27.3**	**28.1**	**28.6**	**29.4**	**29.6**		**30.8**	**25.5**	
of which: public and publicly guaranteed (PPG)	19.4	19.7	21.9			22.5	23.5	24.5	25.7	26.9	27.5		29.7	23.2	
Change in external debt	0.1	-0.6	-0.4			0.3	0.7	0.8	0.5	0.8	0.2		-0.1	-0.4	
Identified net debt-creating flows	-4.6	-3.8	2.9			2.7	0.8	0.5	0.5	0.5	-1.5		0.0	-1.0	
Non-interest current account deficit	**8.0**	**8.6**	**11.5**	**6.9**	**3.8**	**11.3**	**8.5**	**8.0**	**7.8**	**7.7**	**6.4**	**8.3**	**5.3**	**2.9**	**4.6**
Deficit in balance of goods and services	14.2	12.7	12.9			15.5	12.9	12.2	12.0	11.7	10.1		8.5	4.5	
Exports	29.3	37.7	41.6			34.7	33.5	32.2	30.9	30.2	31.6		30.5	31.0	
Imports	43.5	50.3	54.4			50.2	46.5	44.4	42.9	42.0	41.7		39.0	35.5	
Net current transfers (negative = inflow)	-7.2	-6.7	-5.9			-6.1	-5.9	-5.7	-5.7	-5.5	-4.7		-3.9	-2.3	
of which: official	-0.6	-0.6	-0.6			-0.5	-0.4	-0.3	-0.4	-0.3	-0.2		-0.1	0.0	
Other current account flows (negative = net inflow)	1.1	2.6	4.6			1.9	1.4	1.5	1.6	1.4	1.0		0.7	0.8	
Net FDI (negative = inflow)	**-7.9**	**-8.3**	**-8.1**	**-5.4**	**4.0**	**-7.3**	**-6.8**	**-6.8**	**-6.8**	**-6.8**	**-6.8**	**-6.9**	**-5.4**	**-4.1**	**-5.0**
Endogenous debt dynamics 2/	**-4.8**	**-4.0**	**-0.4**	**-5.2**	**5.4**	**-1.3**	**-0.9**	**-0.7**	**-0.5**	**-0.4**	**-1.1**	**-0.8**	**0.1**	**0.2**	**0.1**
Contribution from nominal interest rate	0.6	0.6	0.7			0.6	0.6	0.6	0.8	1.0	1.1		1.6	1.5	
Contribution from real GDP growth	-1.7	-3.4	-2.0			-1.8	-1.5	-1.4	-1.3	-1.3	-2.1		-1.5	-1.3	
Contribution from price and exchange rate changes	-3.6	-1.2	0.9			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**4.8**	**3.2**	**-3.3**	**-1.0**	**10.9**	**-2.4**	**-0.1**	**0.4**	**0.0**	**0.3**	**1.7**	**0.0**	**-0.1**	**0.6**	**0.0**
of which: exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	22.1			22.8	23.9	25.2	26.2	27.6	28.2		30.6	25.8	
In percent of exports	...	...	53.1			65.8	71.4	78.2	84.5	91.3	89.2		100.4	83.1	
PV of PPG external debt	**...**	**...**	**17.7**			**18.8**	**20.1**	**21.6**	**23.2**	**25.1**	**26.1**		**29.5**	**23.5**	
In percent of exports	**...**	**...**	**42.5**			**54.1**	**60.1**	**67.0**	**74.9**	**82.9**	**82.7**		**96.7**	**75.8**	
In percent of government revenues	**...**	**...**	**99.8**			**98.4**	**101.0**	**105.4**	**112.7**	**120.3**	**120.7**		**138.3**	**109.8**	
Debt service-to-exports ratio (in percent)	**8.1**	**6.6**	**6.5**			**6.9**	**6.0**	**6.6**	**7.0**	**11.3**	**7.9**		**13.6**	**15.1**	
PPG debt service-to-exports ratio (in percent)	**1.9**	**3.2**	**3.0**			**4.7**	**3.8**	**4.5**	**4.9**	**9.5**	**6.4**		**12.8**	**13.9**	
PPG debt service-to-revenue ratio (in percent)	**3.8**	**6.9**	**7.0**			**8.5**	**6.4**	**7.1**	**7.4**	**13.7**	**9.4**		**18.4**	**20.1**	
Total gross financing need (Millions of U.S. dollars)	815	1058	2442			2917	1873	1856	1955	2834	1530		4270	7727	
Non-interest current account deficit that stabilizes debt ratio	7.9	9.1	11.9	11.6	11.8	11.0	7.8	7.2	7.3	6.9	6.2	7.7	5.4	3.3	4.9
Key macroeconomic assumptions															
Real GDP growth (in percent)	8.0	15.0	7.9	7.2	3.1	7.9	6.1	5.5	5.1	5.1	8.0	6.3	5.2	5.5	5.3
GDP deflator in US dollar terms (change in percent)	15.5	4.7	-3.3	8.3	10.4	4.6	4.5	4.3	4.4	3.4	2.3	3.9	2.1	2.2	2.2
Effective interest rate (percent) 5/	2.8	2.6	2.6	2.3	0.5	2.5	2.3	2.6	3.0	3.7	4.0	3.0	5.4	6.2	5.6
Growth of exports of G&S (US dollar terms, in percent)	24.0	54.7	15.1	21.1	13.5	-5.7	7.0	5.6	5.4	6.1	15.5	5.7	7.0	8.0	7.4
Growth of imports of G&S (US dollar terms, in percent)	27.3	39.4	12.8	21.5	13.7	4.2	2.6	5.1	6.1	6.2	9.7	5.6	6.2	7.0	6.4
Grant element of new public sector borrowing (in percent)	...	...	...			2.8	-2.8	-4.6	-9.3	-14.1	-13.3	-6.9	-19.0	-21.4	-19.5
Government revenues (excluding grants, in percent of GDP)	14.5	17.3	17.7			19.1	19.9	20.5	20.6	20.8	21.6		21.3	21.4	
Aid flows (in Millions of US dollars) 7/	755.1	784.1	641.8			1101.8	871.8	826.2	848.3	828.9	757.2		417.9	294.9	
of which: Grants	755.1	784.1	641.8			648.3	521.8	476.2	540.8	533.3	472.9		417.9	294.9	
of which: Concessional loans	...	...	...			453.5	350.0	350.0	307.5	295.6	284.3		0.0	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			1.5	0.9	0.7	0.5	0.1	0.1		-0.4	-0.7	
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			27.4	18.7	13.9	10.3	1.3	1.8		-9.1	-17.4	
Memorandum items:															
Nominal GDP (Millions of US dollars)	32,186	38,752	40,435	25,402	9,827	45,643	50,588	55,681	61,057	66,339	73,300	58,768	104,994	219,166	137,486
Nominal dollar GDP growth	24.8	20.4	4.3	16.1	11.2	12.9	10.8	10.1	9.7	8.7	10.5	10.4	7.4	7.8	7.6
PV of PPG external debt (in percent of GDP + remittances)	...	...	17.7	...	...	18.8	20.1	21.6	23.2	25.1	26.1	22.5	29.5	23.5	27.3
PV of PPG external debt (in percent of exports + remittances)	...	...	42.5	...	...	54.1	60.1	67.0	74.9	82.9	82.7	70.3	96.7	75.8	89.0
Debt service of PPG external debt (in percent of exports + remittances)	...	...	3.0	...	...	4.7	3.8	4.5	4.9	9.5	6.4	5.6	12.8	13.9	13.2

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt. Excludes USD dominated promissory notes of 303.7mn. to state-owned enterprises

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 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 2A. Ghana: Public Sector Debt Sustainability Framework, Baseline Scenario, 2010–2033

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
												2013-18			2019-33
	2010	2011	2012	Average 5/	Standard 5/	2013	2014	2015	2016	2017	2018	Average	2023	2033	Average
Public sector debt 1/	**45.7**	**42.5**	**50.2**			**51.4**	**52.5**	**52.5**	**52.9**	**54.9**	**54.8**		**56.3**	**52.1**	
of which: foreign-currency denominated	19.4	19.7	21.9			22.5	23.5	24.5	25.7	26.9	27.5		29.7	23.2	
Public Sector debt, excluding arrears	**37.4**	**39.5**	**47.2**			**50.3**	**52.5**	**52.5**	**52.9**	**54.9**	**54.8**		**56.3**	**52.1**	
Change in public sector debt	9.6	-3.1	7.7			1.3	1.0	0.0	0.4	2.1	-0.1		0.0	-0.4	
Identified debt-creating flows	2.4	-3.9	5.5			2.2	1.5	-0.3	0.1	0.7	-0.3		-0.1	-0.4	
Primary deficit	4.8	1.3	7.9	3.4	2.6	6.5	5.1	2.3	2.3	2.3	2.2	3.5	0.7	0.3	0.5
Revenue and grants	16.8	19.3	19.3			20.5	21.0	21.3	21.4	21.6	22.3		21.7	21.6	
of which: grants	2.3	2.0	1.6			1.4	1.0	0.9	0.9	0.8	0.6		0.4	0.1	
Primary (noninterest) expenditure	21.6	20.6	27.2			27.0	26.1	23.6	23.8	23.9	24.5		22.4	21.9	
Automatic debt dynamics	-3.1	-6.1	-2.2			-4.2	-3.5	-2.6	-2.1	-1.6	-2.5		-0.7	-0.7	
Contribution from interest rate/growth differential	-1.1	-6.2	-2.8			-3.7	-2.7	-1.9	-1.5	-1.2	-2.5		-0.7	-0.7	
of which: contribution from average real interest rate	1.5	-0.2	0.3			0.0	0.3	0.8	1.0	1.4	1.6		2.0	2.0	
of which: contribution from real GDP growth	-2.7	-6.0	-3.1			-3.7	-3.0	-2.7	-2.5	-2.5	-4.1		-2.8	-2.7	
Contribution from real exchange rate depreciation	-2.0	0.1	0.6			-0.6	-0.8	-0.7	-0.6	-0.4	-0.1		...	...	
Other identified debt-creating flows	0.7	0.8	-0.2			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		0.0	0.0	
Privatization receipts (negative)	1.0	1.0	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)	-0.3	-0.2	-0.2			-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		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	7.2	0.8	2.2			-0.9	-0.5	0.3	0.3	1.4	0.2		0.1	0.0	
Other Sustainability Indicators															
PV of public sector debt	...	...	46.0			47.7	49.1	49.5	50.4	53.1	53.4		56.1	52.4	
of which: foreign-currency denominated	...	...	17.7			18.8	20.1	21.6	23.2	25.1	26.1		29.5	23.5	
of which: external	...	...	17.7			18.8	20.1	21.6	23.2	25.1	26.1		29.5	23.5	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	12.1	11.3	17.8			18.5	19.6	17.3	17.0	18.0	17.2		17.1	17.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	238.6			232.7	234.3	232.4	235.0	245.5	239.7		258.4	243.1	
PV of public sector debt-to-revenue ratio (in percent)	...	...	259.9			250.0	246.4	242.1	245.1	254.9	246.8		263.2	244.6	
of which: external 3/	...	...	99.8			98.4	101.0	105.4	112.7	120.3	120.7		138.3	109.8	
Debt service-to-revenue and grants ratio (in percent) 4/	23.7	25.4	27.0			30.3	28.5	29.7	29.0	33.9	29.1		37.6	40.5	
Debt service-to-revenue ratio (in percent) 4/	27.6	28.4	29.5			32.6	30.0	31.0	30.3	35.2	29.9		38.3	40.7	
Primary deficit that stabilizes the debt-to-GDP ratio	-4.8	4.5	0.2			5.3	4.1	2.3	1.9	0.2	2.3		0.6	0.7	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	8.0	15.0	7.9	7.2	3.1	7.9	6.1	5.5	5.1	5.1	8.0	6.3	5.2	5.5	5.3
Average nominal interest rate on forex debt (in percent)	0.0	3.6	2.9	0.7	1.4	3.0	2.7	3.0	3.4	4.1	4.3	3.4	5.6	6.8	5.9
Average real interest rate on domestic debt (in percent)	1.7	-1.9	0.5	-1.0	3.8	-1.1	0.1	1.9	2.5	3.2	4.1	1.8	4.4	3.7	4.1
Real exchange rate depreciation (in percent, + indicates depreciation)	-10.2	0.6	3.0	-5.1	7.8	-2.8	-3.6	-2.9	-2.7	-1.5	-0.2	-2.3	0.1	0.0	0.0
Inflation rate (GDP deflator, in percent)	16.5	13.0	13.3	17.2	5.2	13.7	12.8	11.1	10.3	8.8	7.4	10.7	6.8	6.9	6.9
Growth of real primary spending (deflated by GDP deflator, in percent)	15.2	9.9	42.3	15.1	13.5	7.3	2.4	-4.4	5.7	5.8	10.5	4.5	4.5	4.3	4.5
Grant element of new external borrowing (in percent)	...	...	...	...	...	2.8	-2.8	-4.6	-9.3	-14.1	-13.3	-6.9	-19.0	-21.4	-19.5

Sources: Country authorities; and staff estimates and projections.

1/ Excluding arrears to state-owned 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 3A. Ghana: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2013–2033
(In percent)

	Projections							
	2013	2014	2015	2016	2017	2018	**2023**	2033
PV of debt-to GDP ratio								
Baseline	19	20	22	23	25	26	**29**	24
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	19	18	20	21	22	25	**26**	22
A2. New public sector loans on less favorable terms in 2013-2033 2	19	20	23	25	28	29	**35**	34
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	19	20	22	23	25	26	**30**	24
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	19	19	20	22	23	25	**28**	23
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	19	21	24	26	28	29	**33**	26
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	19	25	32	33	34	34	**33**	24
B5. Combination of B1-B4 using one-half standard deviation shocks	19	19	17	19	21	23	**28**	23
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	19	27	29	32	34	36	**40**	32
PV of debt-to-exports ratio								
Baseline	54	60	67	75	83	83	**97**	76
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	54	55	61	67	73	78	**85**	71
A2. New public sector loans on less favorable terms in 2013-2033 2	54	61	71	81	92	93	**114**	109
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	54	58	65	73	81	81	**95**	74
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	54	57	60	68	76	76	**91**	72
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	54	58	65	73	81	81	**95**	74
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	54	75	98	106	112	107	**109**	76
B5. Combination of B1-B4 using one-half standard deviation shocks	54	53	45	52	59	60	**76**	63
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	54	58	65	73	81	81	**95**	74
PV of debt-to-revenue ratio								
Baseline	98	101	105	113	120	121	**138**	110
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	98	93	95	101	106	114	**122**	102
A2. New public sector loans on less favorable terms in 2013-2033 2	98	102	111	122	134	136	**164**	157
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	98	100	106	113	121	122	**140**	111
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	98	97	97	105	112	114	**133**	107
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	98	104	116	125	133	134	**154**	122
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	98	126	155	160	163	157	**156**	110
B5. Combination of B1-B4 using one-half standard deviation shocks	98	97	83	92	101	104	**130**	109
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	98	137	144	154	165	165	**190**	151

Table 3A. Ghana: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2013-2033 (continued)

(In percent)

	Projections							
	2013	2014	2015	2016	2017	2018	**2023**	2033
Debt service-to-exports ratio								
Baseline	5	4	4	5	9	6	**13**	14
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	5	4	4	4	8	5	**10**	8
A2. New public sector loans on less favorable terms in 2013-2033 2/	5	4	4	4	9	5	**14**	22
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	5	4	4	5	9	6	**13**	14
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	5	4	4	5	9	6	**12**	14
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	5	4	4	5	9	6	**13**	14
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	5	4	5	7	12	10	**16**	14
B5. Combination of B1-B4 using one-half standard deviation shocks	5	4	4	4	8	4	**10**	12
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	5	4	4	5	9	6	**13**	14
Debt service-to-revenue ratio								
Baseline	9	6	7	7	14	9	**18**	20
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	9	6	6	6	11	8	**14**	12
A2. New public sector loans on less favorable terms in 2013-2033 2/	9	6	6	7	13	8	**20**	32
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	9	6	7	8	14	10	**19**	21
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	9	6	7	7	13	9	**18**	20
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	9	7	8	8	16	11	**21**	23
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	9	6	8	10	18	14	**22**	21
B5. Combination of B1-B4 using one-half standard deviation shocks	9	6	7	6	13	8	**17**	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	9	9	10	10	19	13	**26**	28
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	-25	-25	-25	-25	-25	-25	**-25**	-25

Sources: Country authorities; and staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.

2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline., while grace and maturity periods are the same as in the baseline.

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

4/ Includes official and private transfers and FDI.

5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.

6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 4A. Ghana: Sensitivity Analysis for Key Indicators of Public Debt 2013–2033

	Projections							
	2013	2014	2015	2016	2017	2018	2023	2033
PV of Debt-to-GDP Ratio								
Baseline	48	49	50	50	53	53	56	52
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	48	47	48	49	52	54	65	80
A2. Primary balance is unchanged from 2010-2012 average*	48	51	56	61	68	73	105	159
A3. Permanently lower GDP growth 1/	48	50	51	52	56	57	68	91
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	48	50	52	54	57	58	65	67
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	48	50	55	55	58	58	61	56
B3. Combination of B1-B2 using one half standard deviation shocks	48	49	52	53	56	56	59	55
B4. One-time 30 percent real depreciation in 2014	48	58	58	59	62	63	70	81
B5. 10 percent of GDP increase in other debt-creating flows in 2014	48	60	60	61	64	63	65	61
PV of Debt-to-Revenue Ratio 2/								
Baseline	233	234	232	235	245	240	258	243
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	233	223	224	229	240	243	300	374
A2. Primary balance is unchanged from 2010-2012 average*	233	242	261	285	316	327	483	737
A3. Permanently lower GDP growth 1/	233	236	237	244	259	257	314	423
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	233	240	245	251	265	262	298	311
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	233	239	256	259	269	261	279	262
B3. Combination of B1-B2 using one half standard deviation shocks	233	233	243	246	257	250	270	255
B4. One-time 30 percent real depreciation in 2014	233	275	271	273	286	281	324	374
B5. 10 percent of GDP increase in other debt-creating flows in 2014	233	287	283	285	294	285	302	281
Debt Service-to-Revenue Ratio 2/								
Baseline	30	28	30	29	34	29	38	40
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	30	28	28	26	33	29	41	59
A2. Primary balance is unchanged from 2010-2012 average*	30	28	30	32	41	38	67	118
A3. Permanently lower GDP growth 1/	30	29	30	30	35	31	45	67
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	30	29	31	31	36	31	43	51
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	30	28	30	32	39	32	41	44
B3. Combination of B1-B2 using one half standard deviation shocks	30	29	30	30	37	30	39	42
B4. One-time 30 percent real depreciation in 2014	30	30	33	33	41	35	53	73
B5. 10 percent of GDP increase in other debt-creating flows in 2014	30	28	34	41	40	34	46	47

Sources: Country authorities; and staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.

2/ Revenues are defined inclusive of grants.