INTERNATIONAL MONETARY FUND

GHANA

SECOND REVIEW UNDER THE EXTENDED CREDIT FACILITY ARRANGEMENT AND REQUEST FOR WAIVER FOR NONOBSERVANCE OF PERFORMANCE CRITERION—DEBT SUSTAINABILITY ANALYSIS

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Prepared by the International Monetary Fund and the International Development Association[1]

This DSA updates the previous one conducted in August, 2015. Ghana continues to face a high risk of debt distress based on updated borrowing assumptions and macroeconomic projections. The assessment of high risk is reinforced by vulnerabilities related to domestic debt. Although fiscal consolidation remains on track under the Extended Credit Facility (ECF), and debt trajectory and relevant indicators broadly remain the same, two indicators are projected to breach the policy-based thresholds under the baseline scenario due to the lowering of these thresholds associated with the deterioration in Ghana's CPIA scores over the past three years.[2] Due to the growing uncertainties over the prospects of emerging and frontier markets and the nearing of US's interest rate hike, the authorities decided to lower the issuance of a Eurobond to US$ 1 billion from the initially-envisaged US$ 1.5 billion. This short fall in financing was covered by larger domestic financing than planned. The unwinding of capital inflows to emerging / frontier markets and the rebalancing of portfolios by global investors, which could be driven by non-Ghana specific factors, may further complicate Ghana's access to financing in 2016. Achieving the ambitious fiscal targets envisaged under the Fund-supported program and an appropriate financing mix will be key to maintaining debt sustainability.

[1] Prepared in collaboration with Ghanaian authorities. The previous DSA was prepared in August 2015 (IMF Country Report No. 15/245).

[2] The World Bank's Country Policy and Institutions Assessment (CPIA) ranks Ghana as a medium performer in terms of the quality of policy and institutions (the average CPIA in 2012–14 is 3.61). Thus, the external debt burden thresholds for Ghana are (i) PV of debt-to-GDP ratio: 40 percent; (ii) PV of debt-to-exports ratio: 150 percent; (iii) PV of debt-to-revenue ratio: 250 percent; (iv) debt service-to-exports ratio: 20 percent: and (v) debt service-to-revenue ratio: 20 percent. The 2014 CPIA has been released recently by the World Bank and Ghana's score has deteriorated to 3.37, which contributed to the downgrading of Ghana to a medium performer from a high performer.

A. Background and Macroeconomic Assumptions

1. **While Ghana continued to meet all fiscal performance criteria for the second review under the ECF, budget financing is becoming more complicated due to global headwinds.** Ghana has over performed under the Fund-supported program on the fiscal front and is set to generate a small primary surplus in 2015 for the first time in the past decade. Though 2016 is an election year, the 2016 budget included additional fiscal measures to achieve an overall deficit of 5.3 percent of GDP, which is 0.5 percent of GDP lower than envisaged at the time of the first review to mitigate financing headwinds, and a larger primary fiscal surplus than previously projected. Budget financing is indeed becoming more complicated due to the uncertainties associated with the prospects of frontier market economies / commodity exporters, combined with the nearing of the US interest rate hike[3], leading to portfolio rebalancing of global investors – which could be driven by non-Ghana specific factors. Despite these global headwinds which began in mid-2015, the share of nonresidents' holdings[4] of domestic marketable debt stayed broadly stable.

2. **The terms of the 15-year Eurobond issued in October, 2015 were worse than assumed in the previous DSA.** Against the backdrop of unfavorable market conditions, Ghana needed to reduce the issuance of a Eurobond to US$ 1 billion from the initially planned amount of US$ 1.5 billion. While the Eurobond extended the average maturity of the external debt portfolio, the yields on Ghana's outstanding Eurobonds increased above two-digit levels at the time of the new issuance, and the coupon rate for the Eurobond was as high as 10.75 percent despite the World Bank's partial guarantee.

3. **Ghana's public gross financing needs (GFN) are among the highest of frontier / emerging markets at above 25 percent of GDP in 2015.** About half of the GFN is financed through short-term domestic debt. Rollover of domestic debt and domestic interest payments comprise around 60 percent and 25 percent of GFN, respectively. The shortfall in financing due to the lower-than-planned Eurobond issuance was filled with domestic financing, coinciding with the easing of domestic liquidity constraints, including through BoG's foreign exchange swap transactions with domestic banks. A key objective of the medium-term debt management strategy (MTDS)[5], is to reduce very high interest payments and to lengthen the average maturity of domestic debt by reducing the issuance of short-term domestic debt thereby reducing near-term gross financing needs. This strategy appears to

Table. Key Macroeconomic Assumptions

	2015	2016	2015-2020	2021-2035
Real GDP Growth	**(annual percentage change)**			
Previous DSA	3.5	5.7	5.8	5.8
Current DSA	3.0	5.4	5.8	5.8
Inflation (GDP deflator)	**(annual percentage change)**			
Previous DSA	14.3	9.0	9.2	7.0
Current DSA	14.2	12.7	9.6	7.1
Real interest rate (foreign debt)	**(percent)**			
Previous DSA	4.9	3.4	2.6	2.4
Current DSA	4.5	3.5	2.7	2.7
Current account balance	**(in percent of GDP)**			
Previous DSA	-8.3	-7.2	-5.7	-4.5
Current DSA	-8.2	-7.4	-6.4	-4.5
Primary fiscal balance	**(in percent of GDP)**			
Previous DSA	-0.3	0.4	1.5	0.4
Current DSA	-0.2	1.3	1.8	0.8

[3] The Federal Reserve has raised interest rates by a quarter percentage point on December 16.

[4] As in the previous DSA, this DSA uses the residency criterion for defining external debt to reflect properly the vulnerabilities associated with nonresidents' holdings of domestic debt. Nonresidents can purchase domestic bonds with a maturity of 3 years and longer. The authorities have recently opened up 2-year domestic debt for nonresidents.

[5] In April /May 2015, the IMF and World Bank provided technical assistance to develop the Medium-term Debt Management Strategy.

have produced some early results, as T-Bills rates have started to decline very recently. The GFN is projected to decline but will remain elevated at around 16 percent of GDP in 2020 under the current projections.

4. **The macroeconomic projections remain broadly unchanged since the previous DSA (see Table below).** Economic growth and fiscal performance are in line with earlier projections. The inflation rate for 2015 is expected to be slightly higher than the previous forecast, reflecting recent developments including the hikes in utility tariffs implemented in December. Similar to the patterns observed in recent years, the exchange rate has stabilized towards the end of the year. For 2015 as a whole, the current account deficit is projected to be slightly larger than the level in the original program. The medium-term projections of key macro variables remain broadly unchanged (see Box below).

5. **The new contracting of nonconcessional external debt has been lower than envisaged under the program, and the debt limits for 2016 would be set separately for a debtmanagement purpose and for projects.** As external financing continues to play a key role in reducing the reliance on short-term domestic debt, the former will be set at US$1,150 million, including up to US$1,000 million for a Eurobond issuance and other forms of non-concessional borrowing as well as up to US$ 150 million for World Bank's budget support. The debt limits for projects will be set at US$ 500 million on a cummulative basis from the beginning of 2015. The forthcoming external nonconcesional borrowing for improving the public debt profile should be carefully designed to avoid jeopardizing debt sustainability. It should be anchored in a DSA, the revised MTDS, and a comprehensive analysis of cost-risk tradeoffs of alternative debt management strategies, taking account of the risks associated with exchange rate fluctuations and an expected reduction of risk premia.

Box 1. Baseline Macroeconomic Assumptions

Real GDP-growth: Real growth is projected to decline to 3.0 percent in 2015, due mainly to fiscal consolidation under the program, power shortages owing to shortfalls in power generation, and the decline in non-oil commodity production. Growth is projected to pick up from 2016 onwards. In the long run, real GDP growth is assumed to stabilize at around 6 percent, with the possibility of new oil discoveries and gas production implying significant upside potential. Non-oil growth is expected to decelerate to 3 percent in 2015 but pick up to 4.5 percent in 2016, with a long-run steady-state growth rate of above 6 percent.

Inflation: Inflation (CPI) reached 17 percent in 2014 and is projected to remain at similar levels in 2015. Volatile exchange rates, power shortages, and the recent hikes in utility prices have weighed on BoG's efforts to reduce inflation. However, as fiscal dominance of monetary policy subsides under the fiscal consolidation program, including the elimination of central bank financing to the government from 2016 onwards, and BoG restores the effectiveness of its inflation targeting monetary policy framework, inflation should move back to close to BOG's medium-term target of 8^{2} 2 percent. Inflation rates are projected to converge to around 7 percent over the projection period.

Government balances: The overall cash fiscal deficit has been elevated at 10.2 percent of GDP in 2014, with interest expenditures amounting to some 6 percent of GDP. The program envisages an upfront and ambitious fiscal consolidation, including a decline in real wages through a strict payroll scrutiny and limited net hiring, combined with several tax measures. This is expected to bring the overall deficit down to 7.2 percent of GDP in 2015. The expected longer-term increase in hydrocarbon revenues will contribute to maintaining the overall deficits at a sustainable level. The primary surplus is projected to converge to close to zero percent of GDP in the long-run.

Current account balance: Over the past years the current account deficit has been unsustainably high at around 10 percent of GDP. The net impact on the current account of recent declines in oil prices would be relatively small given that Ghana still imports significant amount of refined oil. The price of oil is assumed to recover to around US$65 per barrel by 2019 from around US$ 53 in 2015, and subsequently stabilize in real terms over the medium term. With the tightening of fiscal and monetary policies, the current account deficit would improve to 6 percent of GDP in 2017 from around 8 percent in 2015. In the long-run, with increased oil/gas production and an improvement in oil prices, the deficit is projected to decline gradually to about 4 percent of GDP. Gross international reserves would stay comfortably above 3-month of imports in the near-term and increase steadily in the outer period.

Financing flows: Ghana has enjoyed high FDI inflows over the past years, even under increasing uncertainties surrounding the Ghanaian economy, reaching 8.7 percent of GDP in 2014, mainly driven by the hydrocarbon sector. Thanks to ongoing development of the existing fields, FDI is projected to remain at around 7 percent of GDP over the medium term, and then gradually decline to around 3 percent of GDP in the long run. Consistent with Ghana's improving income status and wealth, inflows from grants are projected to decline to less than 1 percent of GDP in the medium to long term. Borrowing is projected to become increasingly nonconcessional and these loans are expected to be used for key infrastructure projects raise the potential growth rate. A series of issuances of Eurobonds are envisaged to rollover maturing Eurobonds, which are assumed to be repaid in amortization payments rather than a bullet payment similar to the 2014 Eurobond.

B. External Debt Sustainability Analysis[6]

6. **While the basic picture remains the same as in the previous DSA, one additional debt indicator would breach the threshold under the baseline as a result of the lowering of policy-based thresholds.** Due to the deterioration in Ghana's CPIA scores over the last three years, the policy-dependent thresholds – against which relevant debt indicators are compared – have been lowered. Now the PV of debt-to-GDP ratio would breach the threshold by small margins in the initial few years in addition to the debt service-to-revenue ratio, though the former ratio is trending down with a peak in 2015[7]. While the trajectory of debt service-to-revenue ratio is somewhat smoother than before due to the longer maturity and 3-year amortization structure of the 2015 Eurobond, it has slightly shifted upward due to higher interest bills. Revenue enhancement measures supported by proactive debt management to further smooth and lengthen the maturity profile would improve this indicator.

7. **The debt outlook remains sensitive to shocks to the nominal exchange rate and net non-debt creating flows.** The relevant debt indicators tend to be worst and the most extreme (in 2025) under standard shocks to the exchange rate and net non-debt creating flows, with some marginal breaches of relevant indicators in addition to the debt service-to-revenue ratio. The historical scenario suggests that the

[6] Hereafter, public external debt covers those contracted or guaranteed by the central government, and major state-owned enterprises (SoEs), and short-term liabilities contracted by the central bank for a reserve management purpose. These BoG liabilities do not include swaps contracted with resident banks and fully collateralized credit lines with foreign institutions. It is worth noting that SOEs have significant amount of USD denominated obligations with resident commercial banks and possible USD-denominated arrears associated with their commercial activities, the total of which could exceed USD 1 billion

[7] The relatively larger breaches in the near-term are due in a large part to the BoG's short-term liabilities.

PV of debt-to-GDP ratio would also exceed the threshold mainly reflecting larger current account deficits and much lower FDI flows seen in the past decade.

C. Public Debt Sustainability Analysis

8. **Strong fiscal adjustments and an adequate financing package should be able to bring Ghana's total public debt back to a sustainable path (Table 4, Figure 3).** Fiscal adjustment has been gradually reducing fiscal dominance, including less reliance on central bank's financing. As confidence in economic policy improves, and accordingly the exchange rate and inflation stabilize, borrowing conditions on the domestic market– which accounts for a large share of financing – would also gradually improve. The relevant debt indicators are expected to improve with PV of public debt declining to around 40 percent of GDP by the end of the projection period.

9. **PV of debt-to-GDP ratio would breach the public debt benchmark as a result of the lowering of the policy-dependent threshold in the initial years.** The public debt benchmark was also lowered by the changes in CPIA, leading to breaches of the threshold in the baseline. Though all indicators show sustainable paths under the baseline scenario, they could be on an explosive path under the historical and the most extreme shock scenario (with abrupt real exchange rate depreciation).

D. Conclusion

10. **Sustained fiscal adjustment and an appropriate choice of financing options are crucially important at this juncture.** Under increasing uncertainties over the global economy, the Ghanaian authorities need to strike an appropriate balance between meeting imminent financing needs and extending maturity, and additional risks associated with exchange rate fluctuations. It remains essential that Ghana firmly maintain the ambitious fiscal consolidation envisaged under the Fund-supported program, including during the election year of 2016. It is also important to develop an appropriate overall financing package taking account of ever-changing market conditions and the best balance between external and domestic financing options. The possible waning of appetite for Ghanaian debt – due to both Ghana-specific and non-Ghana specific factors – continues to be one of the most significant risks. While Ghana is now classified as a lower middle-income country with limited access to concessional resources, it should continue to seek external loans on the most concessional terms possible.

11. **The authorities broadly concurred with the staff's views,** and shared the view that continuous fiscal consolidation and the best financing mix would be key to maintaining fiscal sustainability. They remain concerned about the risk of losing market access at acceptable rates and seek to prepare alternative financing options given market uncertainties.

Table 1. Ghana: External Debt Sustainability Framework, Baseline Scenario, 2012-2035 1/

(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections									
	2012	2013	2014			2015	2016	2017	2018	2019	2020	2015-2020 Average	2025	2035	2021-2035 Average
External debt (nominal) 1/	**34.1**	**35.2**	**48.5**			**56.0**	**58.2**	**55.9**	**53.6**	**51.2**	**49.8**		**42.5**	**32.3**	
of which: public and publicly guaranteed (PPG)	28.9	30.7	42.9			52.0	54.2	51.9	49.6	47.2	45.8		38.5	28.3	
Change in external debt	5.5	1.1	13.3			7.5	2.2	-2.2	-2.4	-2.4	-1.4		-1.3	-0.6	
Identified net debt-creating flows	2.2	1.0	9.3			-1.3	-3.1	-5.9	-3.0	-4.3	-4.8		-2.5	0.0	
Non-interest current account deficit	**10.6**	**10.5**	**7.3**	**8.3**	**2.1**	**5.8**	**5.1**	**3.8**	**5.3**	**3.4**	**2.5**		**3.0**	**2.8**	2.9
Deficit in balance of goods and services	12.4	13.2	10.3			12.3	10.3	8.3	8.8	6.6	5.5		6.7	5.4	
Exports	40.1	33.9	39.5			43.9	42.0	43.4	43.3	42.6	41.6		34.4	27.0	
Imports	52.5	47.1	49.8			56.2	52.3	51.7	52.1	49.2	47.1		41.1	32.4	
Net current transfers (negative = inflow)	-5.7	-4.1	-5.2	-7.1	1.7	-7.3	-6.4	-5.9	-5.1	-4.8	-4.5		-3.5	-1.9	-3.0
of which: official	-0.6	-0.2	0.0			-0.7	-0.1	0.0	-0.1	-0.1	0.0		0.0	0.0	
Other current account flows (negative = net inflow)	3.9	1.4	2.2			0.8	1.1	1.4	1.6	1.7	1.5		-0.2	-0.7	
Net FDI (negative = inflow)	**-7.9**	**-6.7**	**-8.7**	**-6.4**	**3.1**	**-8.0**	**-7.7**	**-7.5**	**-7.0**	**-6.5**	**-6.5**		**-5.1**	**-2.4**	-4.3
Endogenous debt dynamics 2/	**-0.5**	**-2.7**	**10.6**			**0.9**	**-0.4**	**-2.2**	**-1.3**	**-1.2**	**-0.8**		**-0.5**	**-0.5**	
Contribution from nominal interest rate	1.2	1.5	2.3			2.5	2.4	2.4	2.0	1.8	1.8		1.8	1.5	
Contribution from real GDP growth	-2.2	-2.2	-1.7			-1.6	-2.8	-4.6	-3.3	-3.1	-2.6		-2.2	-1.9	
Contribution from price and exchange rate changes	0.5	-2.0	10.1			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**3.3**	**0.1**	**4.0**			**8.8**	**5.3**	**3.7**	**0.6**	**1.9**	**3.4**		**1.2**	**-0.6**	
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/	...	...	45.2			49.1	50.6	48.6	46.1	43.7	42.5		38.0	29.4	
In percent of exports	...	...	114.5			111.8	120.6	112.0	106.3	102.7	102.1		110.4	108.7	
PV of PPG external debt	**...**	**...**	**39.6**			**45.1**	**46.6**	**44.6**	**42.1**	**39.7**	**38.5**		**34.0**	**25.4**	
In percent of exports	**...**	**...**	**100.3**			**102.7**	**111.1**	**102.8**	**97.0**	**93.3**	**92.5**		**98.8**	**94.0**	
In percent of government revenues	**...**	**...**	**223.8**			**235.4**	**228.9**	**223.1**	**208.7**	**191.2**	**188.0**		**169.8**	**134.3**	
Debt service-to-exports ratio (in percent)	**8.6**	**9.9**	**14.5**			**19.5**	**15.8**	**18.1**	**12.7**	**12.3**	**14.3**		**16.3**	**20.0**	
PPG debt service-to-exports ratio (in percent)	**5.8**	**7.2**	**11.7**			**16.7**	**14.1**	**16.4**	**11.0**	**10.6**	**12.5**		**14.1**	**17.3**	
PPG debt service-to-revenue ratio (in percent)	**13.6**	**15.1**	**26.0**			**38.4**	**29.0**	**35.5**	**23.7**	**21.6**	**25.4**		**24.2**	**24.7**	
Total gross financing need (Millions of U.S. dollars)	2587.8	3387.6	1682.6			2729.9	1916.9	1978.0	1762.2	1101.5	1037.0		2742.0	10361.3	
Non-interest current account deficit that stabilizes debt ratio	5.1	9.4	-6.0			-1.7	2.9	6.0	7.6	5.8	3.9		4.3	3.5	
Key macroeconomic assumptions															
Real GDP growth (in percent)	8.0	7.3	4.0	7.3	2.9	3.0	5.4	8.6	6.3	6.3	5.4	5.8	5.5	6.4	5.8
GDP deflator in US dollar terms (change in percent)	-1.9	6.2	-22.3	3.6	12.7	-9.3	4.2	0.2	2.1	2.3	1.4	0.1	2.3	2.1	2.3
Effective interest rate (percent) 5/	4.3	4.9	5.2	3.8	1.1	4.7	4.6	4.4	3.9	3.8	3.8	4.2	4.3	4.9	4.5
Growth of exports of G&S (US dollar terms, in percent)	15.2	-3.6	-5.9	17.2	17.1	3.8	5.0	12.5	8.4	6.7	4.4	6.8	4.8	6.1	5.2
Growth of imports of G&S (US dollar terms, in percent)	12.8	2.3	-14.5	15.0	17.8	5.3	2.2	7.6	9.4	2.5	2.4	4.9	5.1	6.3	5.6
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	-4.6	9.0	3.7	16.8	14.6	7.3	7.8	-2.9	-2.8	-2.8
Government revenues (excluding grants, in percent of GDP)	17.0	16.3	17.7			19.1	20.4	20.0	20.1	20.8	20.5		20.0	18.9	19.7
Aid flows (in Millions of US dollars) 7/	646.1	224.0	277.8			793.2	589.5	403.2	349.6	432.8	323.5		115.3	8.6	
of which: Grants	646.1	224.0	277.8			545.6	401.9	281.4	235.0	330.9	243.7		79.9	8.6	
of which: Concessional loans	0.0	0.0	0.0			247.6	187.6	121.8	114.6	101.9	79.8		35.4	0.0	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			1.0	1.8	0.9	1.3	1.3	0.8		0.0	-0.1	-0.1
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			7.7	18.5	11.2	24.8	25.9	15.0		-0.7	-2.7	-1.1
Memorandum items:															
Nominal GDP (Millions of US dollars)	41939	47806	38616			36068	39613	43114	46779	50842	54296		77715	177633	
Nominal dollar GDP growth	6.0	14.0	-19.2			-6.6	9.8	8.8	8.5	8.7	6.8	6.0	7.9	8.6	8.2
PV of PPG external debt (in Millions of US dollars)			14051			15814	17585	18641	19177	19702	20377		25862	44110	
(PVt-PVt-1)/GDPt-1 (in percent)						4.6	4.9	2.7	1.2	1.1	1.3	2.6	1.7	1.6	1.6
Gross workers' remittances (Millions of US dollars)	1760	1524	1638			1966	2045	2096	2138	2181	2224		2456	2982	
PV of PPG external debt (in percent of GDP + remittances)	...	...	38.0			42.8	44.3	42.5	40.2	38.1	37.0		33.0	25.0	
PV of PPG external debt (in percent of exports + remittances)	...	...	90.5			91.4	98.9	92.4	87.8	84.8	84.2		90.5	88.5	
Debt service of PPG external debt (in percent of exports + remittanc	...	...	10.5			14.9	12.6	14.7	10.0	9.6	11.4		12.9	16.3	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt. PPG debt is based on the residency criterion, thus including domestic debt held by nonresidents.
PPG debt also includes SoE's debt and the central bank's liabilities for a reserve management purpose.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) 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 2. Ghana: Public Sector Debt Sustainability Framework, Baseline Scenario, 2012-2035

(In percent of GDP, unless otherwise indicated)

	Actual			Average 5/	Standard Deviation 5/	Estimate	Projections								
	2012	2013	2014			2015	2016	2017	2018	2019	2020	2015-20 Average	2025	2035	2021-35 Average
Public sector debt 1/	49.6	56.7	70.7			77.9	78.3	74.3	68.8	63.4	59.5		54.5	40.3	
of which: foreign-currency denominated	28.9	30.7	42.9			52.0	54.2	51.9	49.6	47.2	45.8		38.5	28.3	
Change in public sector debt	7.5	7.1	14.0			7.2	0.3	-4.0	-5.5	-5.4	-3.9		-0.9	-1.4	
Identified debt-creating flows	6.9	5.0	11.6			3.4	-2.3	-5.2	-4.6	-3.3	-1.8		-2.0	-1.0	
Primary deficit	8.6	5.6	3.3	3.9	2.5	-0.1	-1.5	-2.3	-2.0	-1.3	-0.7	-1.3	-0.9	-0.1	-0.6
Revenue and grants	18.5	16.7	18.4			20.7	21.4	20.6	20.7	21.4	20.9		20.1	18.9	
of which: grants	1.5	0.5	0.7			1.5	1.0	0.7	0.5	0.7	0.4		0.1	0.0	
Primary (noninterest) expenditure	27.1	22.3	21.7			20.5	19.9	18.3	18.6	20.1	20.2		19.2	18.9	
Automatic debt dynamics	-1.7	-0.6	8.3			3.5	-0.8	-2.8	-2.6	-2.0	-1.0		-1.1	-0.9	
Contribution from interest rate/growth differential	-3.0	-1.3	0.2			1.3	-0.6	-2.8	-2.4	-2.0	-1.4		-1.1	-0.9	
of which: contribution from average real interest rate	0.1	2.0	2.4			3.3	3.5	3.4	2.0	2.1	1.8		1.8	1.6	
of which: contribution from real GDP growth	-3.1	-3.4	-2.2			-2.1	-4.0	-6.2	-4.4	-4.1	-3.2		-2.9	-2.5	
Contribution from real exchange rate depreciation	1.3	0.8	8.1			2.3	-0.2	-0.1	-0.2	0.0	0.4		...	...	
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	0.7	2.1	2.4			3.8	2.6	1.2	-0.8	-2.1	-2.1		1.1	-0.5	
Other Sustainability Indicators															
PV of public sector debt	...	...	67.4			71.0	70.7	66.9	61.3	55.9	52.2		50.1	37.4	
of which: foreign-currency denominated	...	...	39.6			45.1	46.6	44.6	42.1	39.7	38.5		34.0	25.4	
of which: external	...	...	39.6			45.1	46.6	44.6	42.1	39.7	38.5		34.0	25.4	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	22.3	22.2	25.7			27.9	24.4	20.7	17.4	16.5	15.1		12.1	11.0	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	365.9			343.8	330.7	324.1	296.8	261.1	249.7		248.6	197.6	
PV of public sector debt-to-revenue ratio (in percent)	...	...	380.8			370.9	347.1	334.7	304.2	269.2	255.2		249.9	197.7	
of which: external 3/	...	...	223.8			235.4	228.9	223.1	208.7	191.2	188.0		169.8	134.3	
Debt service-to-revenue and grants ratio (in percent) 4/	39.0	59.7	74.9			76.6	63.5	68.6	53.1	47.7	43.4		40.7	37.8	
Debt service-to-revenue ratio (in percent) 4/	42.5	61.4	78.0			82.6	66.6	70.8	54.5	49.2	44.4		40.9	37.8	
Primary deficit that stabilizes the debt-to-GDP ratio	1.0	-1.5	-10.7			-7.4	-1.8	1.7	3.5	4.1	3.1		0.0	1.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	8.0	7.3	4.0	7.3	2.9	3.0	5.4	8.6	6.3	6.3	5.4	5.8	5.5	6.4	5.8
Average nominal interest rate on forex debt (in percent)	4.8	5.7	5.9	4.3	1.4	5.5	5.1	4.8	4.2	4.1	4.1	4.6	4.8	5.6	5.0
Average real interest rate on domestic debt (in percent)	-2.8	4.7	4.3	-0.1	4.3	5.5	7.0	9.1	4.9	6.8	6.3	6.6	6.1	5.8	6.3
Real exchange rate depreciation (in percent, + indicates depreciation	5.9	2.8	26.3	0.5	11.1	5.2	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	16.6	15.6	16.7	15.7	2.3	14.2	12.7	8.6	8.0	7.6	6.6	9.6	6.9	7.0	7.1
Growth of real primary spending (deflated by GDP deflator, in percer	42.8	-11.7	1.3	3.3	14.4	-2.5	2.0	0.0	8.3	14.8	5.5	4.7	5.5	4.2	5.3
Grant element of new external borrowing (in percent)	...	...	...	...	...	-4.6	9.0	3.7	16.8	14.6	7.3	7.8	-2.9	-2.8	...

Sources: Country authorities; and staff estimates and projections.

1/ The external debt covers the central government, SoEs, and the central bank's liabiliteis contracted for a reserve management purpose. The domestic debt covers the debt stock of the central government. In this table, *foreign-currency denominated* should be read as "*external*".

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 3. Ghana: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015-2035

(In percent)

	Projections							
	2015	2016	2017	2018	2019	2020	**2025**	2035
PV of debt-to GDP ratio								
Baseline	45	47	45	42	40	38	**34**	25
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	45	51	54	53	55	57	**57**	34
A2. New public sector loans on less favorable terms in 2015-2035 2	45	46	46	45	44	43	**41**	37
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	45	45	45	43	40	39	**35**	26
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	45	46	52	49	47	45	**36**	25
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	45	51	54	52	49	47	**42**	31
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	45	50	53	51	48	46	**36**	25
B5. Combination of B1-B4 using one-half standard deviation shocks	45	50	55	53	50	48	**39**	28
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	45	62	60	57	54	52	**46**	35
PV of debt-to-exports ratio								
Baseline	103	111	103	97	93	92	**99**	94
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	103	122	124	123	129	138	**164**	124
A2. New public sector loans on less favorable terms in 2015-2035 2	103	110	107	104	103	104	**120**	138
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	103	106	99	94	90	89	**96**	91
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	103	116	141	134	129	128	**123**	108
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	103	106	99	94	90	89	**96**	91
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	103	119	123	117	113	111	**105**	92
B5. Combination of B1-B4 using one-half standard deviation shocks	103	107	113	107	103	102	**101**	91
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	103	106	99	94	90	89	**96**	91
PV of debt-to-revenue ratio								
Baseline	235	229	223	209	191	188	**170**	134
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	235	251	268	265	264	280	**282**	178
A2. New public sector loans on less favorable terms in 2015-2035 2	235	227	233	224	210	211	**207**	198
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	235	220	226	212	194	191	**173**	137
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	235	227	259	244	225	221	**179**	131
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	235	249	273	256	234	230	**208**	164
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	235	245	267	252	232	226	**181**	131
B5. Combination of B1-B4 using one-half standard deviation shocks	235	244	277	261	239	235	**197**	147
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	235	306	303	284	260	256	**231**	183

Table 3. Ghana: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2015-2035 (concluded)

(In percent)

Debt service-to-exports ratio

Baseline	17	14	16	11	11	12	**14**	17
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	17	14	16	12	11	14	**22**	22
A2. New public sector loans on less favorable terms in 2015-2035 2	17	14	15	9	8	10	**15**	22
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	17	14	16	11	11	12	**14**	17
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	17	15	20	14	14	16	**20**	20
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	17	14	16	11	11	12	**14**	17
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	17	14	17	12	12	15	**17**	17
B5. Combination of B1-B4 using one-half standard deviation shocks	17	14	17	12	11	14	**16**	17
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	17	14	16	11	11	12	**14**	17

Debt service-to-revenue ratio

Baseline	38	29	36	24	22	25	**24**	25
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2015-2035 1/	38	29	36	25	23	29	**38**	32
A2. New public sector loans on less favorable terms in 2015-2035 2	38	29	33	19	16	19	**26**	32
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2016-2017	38	29	37	25	23	27	**25**	26
B2. Export value growth at historical average minus one standard deviation in 2016-2017 3/	38	29	36	26	24	28	**29**	25
B3. US dollar GDP deflator at historical average minus one standard deviation in 2016-2017	38	33	45	30	27	32	**30**	31
B4. Net non-debt creating flows at historical average minus one standard deviation in 2016-2017 4/	38	29	37	26	24	31	**30**	25
B5. Combination of B1-B4 using one-half standard deviation shocks	38	31	41	28	26	31	**31**	28
B6. One-time 30 percent nominal depreciation relative to the baseline in 2016 5/	38	41	50	33	30	35	**34**	34
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	-4	-4	-4	-4	-4	-4	**-4**	-4

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 4. Ghana: Sensitivity Analysis for Key Indicators of Public Debt, 2015-2035

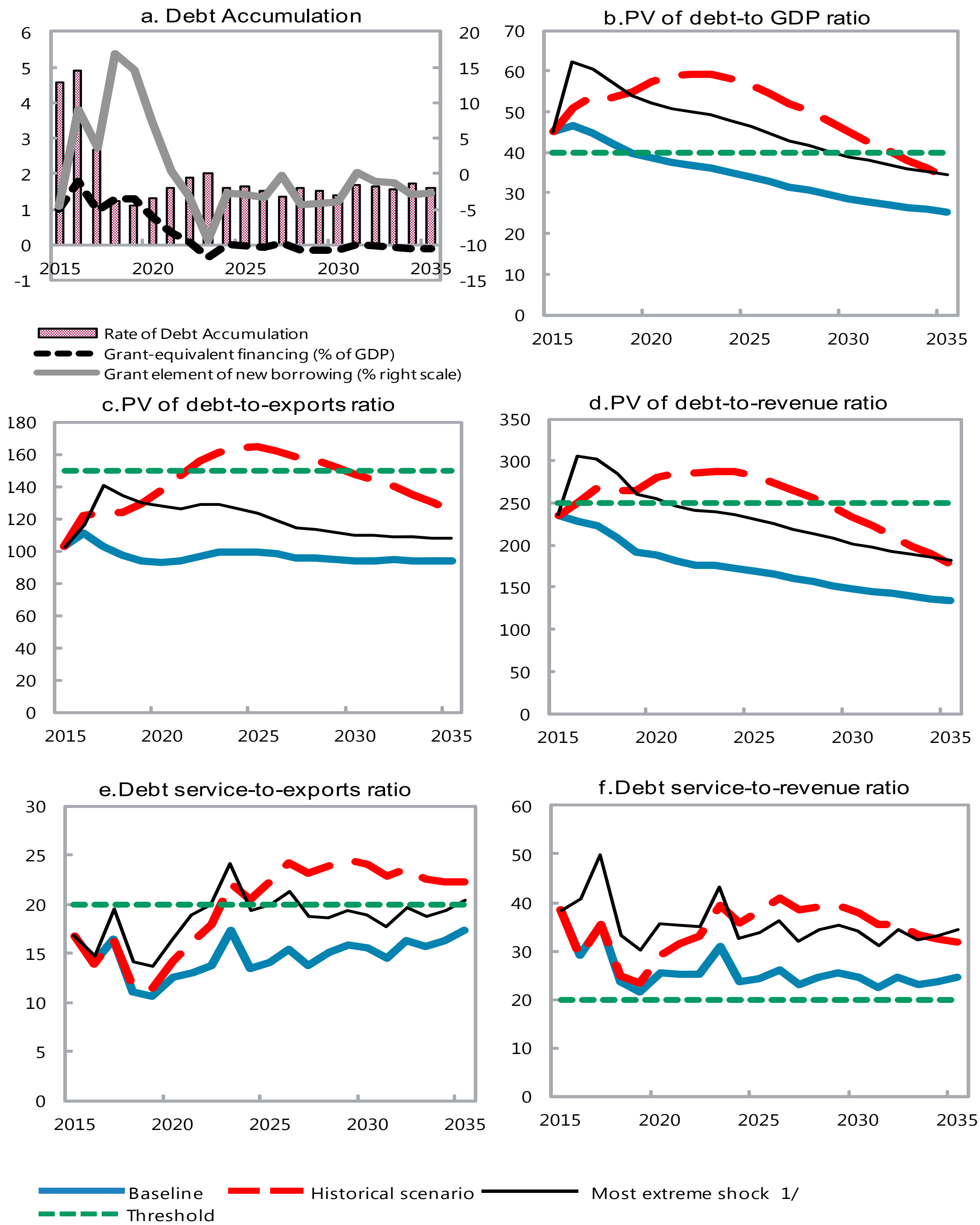
	Projections							
	2015	2016	2017	2018	2019	2020	2025	2035
PV of Debt-to-GDP Ratio								
Baseline	71	71	67	61	56	52	50	37
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	71	75	78	78	77	77	90	98
A2. Primary balance is unchanged from 2015	71	72	70	67	62	59	62	48
A3. Permanently lower GDP growth 1/	71	71	68	63	58	55	60	65
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	71	72	71	66	62	59	61	55
B2. Primary balance is at historical average minus one standard deviations in 2016-201	71	79	84	78	72	68	65	49
B3. Combination of B1-B2 using one half standard deviation shocks	71	77	83	77	72	68	67	54
B4. One-time 30 percent real depreciation in 2016	71	93	88	82	77	73	76	72
B5. 10 percent of GDP increase in other debt-creating flows in 2016	71	81	77	71	65	61	59	44
PV of Debt-to-Revenue Ratio 2/								
Baseline	344	331	324	297	261	250	249	198
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	344	351	380	378	359	366	446	517
A2. Primary balance is unchanged from 2015	344	337	342	323	291	284	310	254
A3. Permanently lower GDP growth 1/	344	333	329	305	272	265	297	346
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	344	334	345	322	288	282	305	291
B2. Primary balance is at historical average minus one standard deviations in 2016-201	344	369	406	376	335	325	321	257
B3. Combination of B1-B2 using one half standard deviation shocks	344	362	402	374	335	326	334	288
B4. One-time 30 percent real depreciation in 2016	344	435	428	398	358	351	376	381
B5. 10 percent of GDP increase in other debt-creating flows in 2016	344	379	372	343	304	294	291	232
Debt Service-to-Revenue Ratio 2/								
Baseline	77	63	69	53	48	43	41	38
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	77	62	70	55	51	47	58	73
A2. Primary balance is unchanged from 2015	77	63	69	54	49	45	47	47
A3. Permanently lower GDP growth 1/	77	64	69	54	49	45	45	55
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2016-20	77	64	72	56	51	46	47	50
B2. Primary balance is at historical average minus one standard deviations in 2016-201	77	63	71	58	52	47	52	47
B3. Combination of B1-B2 using one half standard deviation shocks	77	63	72	58	52	48	53	50
B4. One-time 30 percent real depreciation in 2016	77	71	86	66	60	58	64	76
B5. 10 percent of GDP increase in other debt-creating flows in 2016	77	63	71	56	50	46	47	43

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.

Figure 1. Ghana: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2015-2035 1/



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio on or before 2025. In figure b. it corresponds to a One-time depreciation shock; in c. to a Exports shock; in d. to a One-time depreciation shock; in e. to a Exports shock and in figure f. to a Threshold for a High performer shock