INTERNATIONAL MONETARY FUND

GHANA

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STAFF REPORT FOR THE 2019 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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External and overall debt are at high risk of debt distress. Higher projected deficits and debt service over the medium term and wider coverage of debt have pushed the debt path up compared to the March DSA. In the baseline, external debt service continues to absorb a third of government revenues and remains well above thresholds for most of the forecast period. The present values of external and public debt-to-GDP ratios exceed their thresholds under the baseline for the first seven years and under all shock scenarios. Deviations are particularly large under the export shock for the external public debt, and commodity price shocks for the public debt. Nonetheless, debt is assessed as sustainable thanks to favorable market access, the authorities' commitment to macroeconomic stability and fiscal discipline, and the potential for steeper than assumed fiscal consolidation. In the short term, fiscal discipline is necessary to ensure debt sustainability and maintain market confidence, but external factors, including worsening global risk sentiment, still pose significant risks. Public debt management is benefitting from extensive technical assistance and training from the IMF and the World Bank.

Ghana: Joint Bank-Fund Debt Sustainability Analysis	
Risk of external debt distress	High
Overall risk of debt distress	High
Granularity in the risk rating	Sustainable
Application of judgment	No

BACKGROUND AND KEY ASSUMPTIONS

A. Public Debt Coverage

1. **The DSA covers public and publicly guaranteed debt of the central government.** It includes several state-owned enterprise (SOE) loans not explicitly guaranteed by the state for infrastructure and power projects, amounting to an average of 1.3 percent of GDP over the next five years.

	Subsectors of the public sector	Check box
1	Central government	X
2	State and local government	
3	Other elements in the general government	
4	o/w: Social security fund	
5	o/w: Extra budgetary funds (EBFs)	
6	Guarantees (to other entities in the public and private sector, including to SOEs)	X
7	Central bank (borrowed on behalf of the government)	X
8	Non-guaranteed SOE debt	

Public debt coverage and the magnitude of the contingent liability tailored stress test

B. Please customize elements of the contingent liability tailored test, as applicable.

		Default	Used for the analysis
1	The country's coverage of public debt	bank, government-guaranteed debt	
		Default	Used for the analysis
2	Other elements of the general government not captured in 1.	0 percent of GDP	0
3	SoE's debt (guaranteed and not guaranteed by the government) 1/	2 percent of GDP	3
4	PPP	35 percent of PPP stock	1.44
5	Financial market (the default value of 5 percent of GDP is the minimum value)	5 percent of GDP	5
	Total (2+3+4+5) (in percent of GDP)		9.4

2. **This DSA vintage includes projected disbursements from the non-concessional Sinohydro facility.** The US$2 billion non-government guaranteed loan, which will be channeled towards infrastructure development, is backed by collateral of future bauxite and processed aluminum exports (see Staff Report for the 7th and 8th review under the ECF arrangement).[1] Disbursements under the first tranche of about US$646 million are expected to commence in early 2020 with an execution rate of about US$100 million per year rising to US$200 million once more tranches are approved. The responsibility for servicing the loan will be transferred from the central government to Ghana Integrated Aluminum Development Corporation (GIADC), which will be given full control of the aluminum value chain.

3. **The financial sector clean-up costs and the materialization of contingent liabilities in the energy sector in 2018-19 highlight the risk from off-balance sheet liabilities.** The restructuring of the financial sector imposed additional costs of 4.6 percent of GDP in 2018–19. Energy sector costs covered by the budget and ESLA are estimated at about 1.5 percent of GDP in 2019 and 2020 and 1 percent of GDP annually from 2021–2024. In addition to these baseline costs, the DSA models separate fiscal shocks amounting to 5 percent of GDP from the financial sector and a conservative 3 percent of GDP from non-guaranteed SOE debt to reflect elevated risks from energy sector contingent liabilities. The contingent liability test also models shocks in which 35 percent of the outstanding public private partnership (PPP) arrangements become part of public debt.

4. **The DSA includes a suite of standard shock scenarios affecting GDP growth, the primary balance, exports, FDI, exchange rate, and a combined shock including all of the above at half strength.** Most shocks are calibrated at one standard deviation from the historical average. The exchange

[1] IMF Country Report No. 19/97.

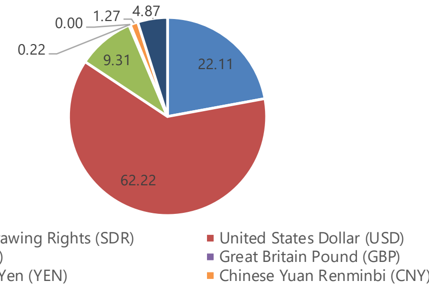
rate shock assumes a one-off 30 percent depreciation. Tailored stress tests were carried out on commodity prices since they represent over 50 percent of exports and on market access due to reliance on Eurobonds for financing. The tailored test simulates a 35 percent and 11 percent declines in fuel and non-fuel commodity prices respectively. The market financing shock simulates a 400 basis point increase in the cost of borrowing for three years and a shortening of average debt maturities to 5 years from the current average of 8 years.[2]

B. Debt Profile

5. External public debt in 2019 is estimated to be 4.8 percentage points higher than the March 2019 DSA vintage. Debt levels have risen, driven largely by one-off expenditures, a growing interest bill, and weak domestic revenue mobilization. Exceptional, one-off financial sector restructuring costs impacted fiscal performance in 2018-19, pushing the primary balance into negative territory and boosting the debt-to-GPD ratio. The materialization of energy sector costs from 2019 on constitutes an additional drag of at least 1 percentage point of GDP on the government deficit.

6. Total public debt is not expected to fall below the 55 percent of GDP threshold until 2026. The slow pace of decline compared to the previous DSA vintage derives from worse fiscal positions, higher projected interest rate costs (reflecting the rise in historical costs), and residuals. PPG debt also includes projected Sinohydro disbursements. More structurally, fiscal performance continues to be burdened by low government revenues and growing interest bill as deficit financing shifted from concessional to commercial sources. Partly due to the expected completion of the financial sector clean-up, the primary balance would become positive from 2021, but the debt-to-GDP ratio would only begin to decline in 2022 with growth rebounding as new oil concessions come on line.

Ghana: Currency Composition of External Debt End-March 2019



7. The authorities have been successful in tapping foreign and domestic debt markets to replace concessional financing, with mixed results for debt sustainability. Increased dependence on markets has led to higher interest rates and financing risks. Ghana successfully placed Eurobonds in 2018 and 2019 and institutional non-resident investors held over 26.6 percent of domestic debt as of September 2019. Market financing has been driving up the share of non-concessional borrowing, shortened debt maturity, and raised the effective nominal interest rate on external debt (including domestic debt held by non-residents) from 5.5 in 2017 to 7.6 percent in 2019. Market financing provides an opportunity to diversify financing sources and fine-tune the risk profile, but also exposes Ghana to spillovers from investors rebalancing their portfolios in response to weakening domestic policies and stresses in other EMs or global risk dynamics. Such rebalancing led to widening of spreads on Ghana's Eurobonds at the end of

[2] Latest information indicates that the EMBI spreads stands at 558 basis points.

2018 and again in August 2019. Overall, spreads have fallen by 160bps since the beginning of the year, partially offsetting the 330bps increase in 2018.

Box 1. Ghana: Underlying Assumptions in the DSA

Economic activity: Real GDP growth is expected to peak at 7 percent before remaining on average around 4.9 percent over the medium term, on the back of oil production. Oil production is currently expected to pick up in 2023, with new oil discoveries and gas production offsetting declining production of existing fields. Non-oil growth is expected to reach 6.1 percent in 2019 and to remain around 5 percent, on average, from 2020 and onward, thanks to gains in productivity stemming from improvements in business climate and government initiatives to close infrastructure gaps.

Inflation and exchange rate: With the new CPI rebase, inflation is expected to reach 7.7 percent on average in 2019, close to the central point of the target range of 8±2 percent. Cedi depreciation experienced during Q1 2019 led to an uptick in non-food inflation, partly offset by slower food inflation. Headline inflation is expected to drop over the medium term to reach 6 percent (the lower bound of the target range) in 2024 thanks to prudent monetary policies starting after the 2020 elections. After Q1 volatility in 2019, the Cedi stabilized thanks to BOG intervention but has overall depreciated by 13 percent between the beginning of the year and end-October.

Government balance: The overall fiscal deficit is expected to reach 7 percent of GDP in 2019, reflecting financial costs and unexpected energy amounting to 2.3 percent of GDP. The overall fiscal deficit will fall to 6.4 percent in 2020 thanks to lower financial sector costs. The overall balance excluding financial and energy sector costs will reach 5 percent in line with the fiscal rule. Fiscal policy is expected to be tightened after the 2020 elections. The overall fiscal deficit will improve to match the fiscal rule level from 2022, and the primary balance will slowly increase from -1.3 percent of GDP in 2019 to an average surplus of about 0.5 percent of GDP over the medium term.

Current account balance: The current account deficit is expected to remain at 3.1 percent of GDP in 2019. It is projected to further widen to 3.6 percent of GDP in 2020 reflecting decline in oil output and interest costs. The current account deficit will improve, particularly once new hydrocarbon facilities come on line in 2023, to an average of 2.4 percent of GDP thereafter. The non-interest current account will improve as well, reflecting maintenance of surpluses in the trade account. Gross foreign exchange reserves will improve steadily from 2022.

Financing flows: FDI inflows moderated to 4.2 percent of GDP in 2019 but given the pending investment in hydrocarbons are expected to recover to an average 5 percent in the medium term. Consistent with Ghana's improving income status and sustained market access, grant inflows are projected to significantly decline in the medium term. Borrowing is projected to become increasingly non-concessional (less than a 35 percent grant element), with the predominance of bonds including non-resident holdings of domestic credit. A US$3 billion Eurobond was successfully issued in 2019 of which US$1 billion was used for liability management. A series of Eurobond issuances is envisaged to cover the current account deficit and to roll over maturing Eurobonds, which are assumed to be repaid on an amortizing basis rather than as bullet payments.

Ghana: Macroeconomic Assumptions Comparison Table

	DSA June 2019		Current DSA	
	2018-2023	2024-2038	2019-2024	2025-2039
Real GDP (%	5.5	4.3	5.3	4.4
Inflation GDP Deflator	8.8	8.2	7.3	6.2
Nominal GDP (Million US$)	79,453	176,099	75,956	155,925
Average real interest rate on domestic debt	3.6	0.6	3.6	2.1
Average real interest rate on foreign debt	5.5	4.1	5.3	4.1
Revenue and Grants (% of GDP)	15.6	15.7	15.4	17.1
Primary expenditure (% of GDP)	15.1	14.7	15.2	14.8
Primary balance (% of GDP)	0.5	1.0	0.2	2.3
Exports of G&S (percent of GDP growth)	5.4	6.0	4.0	2.6
Non-interest current account balance (% of GDP)	-0.6	-0.1	0.1	0.6

Sources: Ghanaian Authorities and IMF staff estimates and projections

C. Realism of Projections

8. **The projected fiscal adjustment of 2.5 percent of GDP over three years falls within the top quartile for low income countries.** However, the size of the adjustment is affected by the one-off financial sector restructuring costs, without which the consolidation would be more limited. Furthermore, the fiscal adjustment in the baseline in line with the fiscal rules envisaging a 5 percent of GDP ceiling on the deficit and a positive primary balance introduced by the 2018 Fiscal Responsibility Act. GDP growth forecast is consistent with the projected fiscal adjustment and the impact of investment on GDP growth is consistent with the historical data.

D. Country Classification

9. **Ghana has a medium debt carrying capacity, unchanged from the last DSA vintage.** The composite index CI used to determine the debt carrying capacity is comprised of the World Bank's CPIA score and macro-economic fundamentals from the April 2019 WEO.

Calculation of the CI Index

Components	Coefficients (A)	10-year average values (B)	CI Score components (A*B) = (C)	Contribution of components
CPIA	0.385	3.548	1.37	49%
Real growth rate (in percent)	2.719	5.085	0.14	5%
Import coverage of reserves (in percent)	4.052	24.762	1.00	36%
Import coverage of reserves^2 (in percent)	-3.990	6.131	-0.24	-9%
Remittances (in percent)	2.022	3.362	0.07	2%
World economic growth (in percent)	13.520	3.559	0.48	17%
CI Score			2.81	100%
CI rating			Medium	

EXTERNAL AND PUBLIC DEBT SUSTAINABILITY

Applicable thresholds

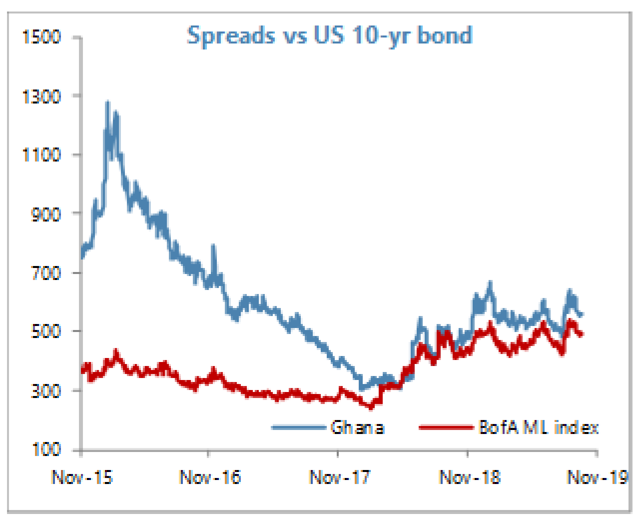
APPLICABLE	
EXTERNAL debt burden thresholds	
PV of debt in % of	
Exports	180
GDP	40
Debt service in % of	
Exports	15
Revenue	18

APPLICABLE	
TOTAL public debt benchmark	
PV of total public debt in percent of GDP	55

A. External Debt Sustainability Analysis

10. External debt sustainability remains at risk under most scenarios, particularly under adverse shocks to exports. The PV of external debt-to-GDP, debt service-to-exports and debt service-to-revenues exceed their thresholds under the baseline scenario. The test yielding the highest ratios is the export shock, which models the incidence of an average decline in exports of 13 percent in 2020–2021 (a one standard deviation shock applied to the historical average) against 4 percent growth in the baseline. External debt to GDP under this shock peaks in 2021 reaching 65 percent. The debt ratio declines slowly and remains above the threshold throughout the projected period. Furthermore, the primary balance test illustrates the impact of an average primary deficit of 4 percent of GDP in 2020–2021 against a surplus of 0.2 percent in the baseline. This scenario generates a high debt ratio peaking at 53 percent in 2021 which declines only slowly over the projection period.

11. The market financing module points to gross financing needs and other liquidity indicators above thresholds. At 15 percent of GDP, external gross financing needs (GFN) are above their 14 percent threshold. However, the Emerging Markets Bond Index Global (EMBIG) spread remains below financing risk threshold, reflecting Ghana's success in tapping international bond markets. The latest Eurobond, issued in March, was six times oversubscribed and, at 30 years, had one of the longest maturities in Africa. Secondary market spreads have declined since the beginning of the year but have yet to recover from the spike at the end of 2018 and remain volatile due to global uncertainty.



B. Public Debt Sustainability Analysis

12. Public debt exceeds its threshold by 11 percentage points on average for the first five years of the forecast under the baseline scenario, declining below the threshold after 2026. Fiscal slippages and realization of contingent liabilities in finance and energy will push the public debt-to-GDP ratio beyond the benchmark in 2019 despite the recent GDP rebasing. The ratio breaches its threshold under all shocks. The most severe scenario is the commodity price shocks, resulting in persistently high levels, with deviations reaching 88 percent in 2025 and not declining below 84 percent for the remainder of the forecast. The commodity price shock is also the most severe test for the debt service-to-revenue ratio. Under such shock, the debt service would absorb 103 percent of revenues in 2020.

CONCLUSION

13. Debt is deemed sustainable thanks to favorable market access, the authorities' commitment to macro-economic stability and fiscal discipline, and the potential for further fiscal consolidation. Ghana is at high risk of external public debt distress with thresholds breached on the PV of external debt to GDP ratio, the debt service-to-exports ratio, and the external debt service-to-revenues ratio, with the latter exceeding the threshold throughout the forecast horizon. The recently-announced 2020 budget confirms the authorities' focus to safeguard macro-economic stability. The country has also significant potential to increase domestic revenue mobilization. In the short term, continued sound policies will be critical for maintaining market confidence.

Authorities' views

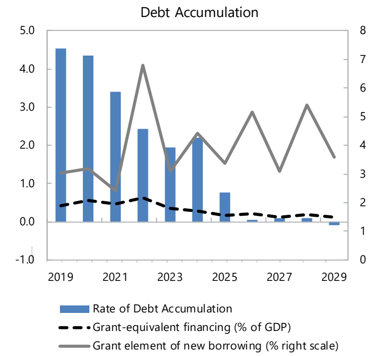
14. The authorities generally concurred with the DSA results and reiterated their commitment to fiscal discipline to preserve debt sustainability. They emphasized government's continued efforts to expand the tax base, improve tax compliance and enforcement, strengthen revenue administration, and tighten expenditure management and commitment controls. In addition, they felt that implementation of the "Ghana beyond Aid" agenda and the government's flagship programs would enhance growth and export potential, with resulting improvements in debt sustainability. The authorities also noted recent steps taken to strengthen fiscal risk management, including the creation of a Fiscal Risks Unit within the Ministry of Finance in 2018, the publication of a Fiscal Risks Statement, and improved PPP risk assessment capacity. Government is also building buffers through sinking funds and escrow accounts for public debt servicing, reprofiling of public debt to correct the yield curve, and implementing a tighter credit risks assessment framework on guarantees and on-lending to SOEs and public corporations. In this respect, the authorities felt that net debt measures would capture Ghana's overall debt profile better and suggested that the Fund's DSA could pay attention to both gross and net debt concepts.

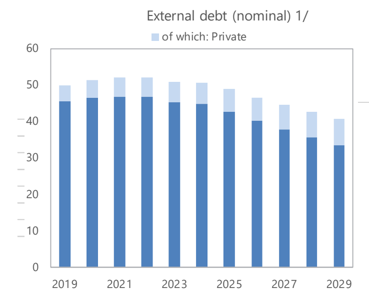
Table 1. Ghana: External Debt Sustainability Framework, Baseline Scenario, 2016–2039

(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 8/	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2029	2039	Historical	Projections
External debt (nominal) 1/	41.9	43.8	45.4	50.0	51.2	52.0	52.1	50.9	50.6	40.7	27.2	33.2	48.2
of which: public and publicly guaranteed (PPG)	37.9	39.8	41.1	45.4	46.4	46.9	46.7	45.3	44.7	33.5	17.2	29.3	42.3
Change in external debt	0.5	2.0	1.5	4.6	1.3	0.7	0.1	-1.2	-0.3	-2.0	0.2		
Identified net debt-creating flows	-6.1	-5.5	-6.2	-4.1	-3.9	-3.3	-3.4	-5.6	-4.7	-4.7	-3.8	-2.0	-4.4
Non-interest current account deficit	3.1	1.3	0.8	-0.2	0.3	0.2	0.1	-0.6	-0.7	-0.4	-0.9	4.6	-0.4
Deficit in balance of goods and services	5.6	3.1	1.1	1.3	1.3	1.7	1.9	0.0	-0.2	1.1	1.1	7.5	0.7
Exports	31.8	34.6	34.4	33.9	34.4	33.1	31.8	32.2	31.3	25.2	17.3		
Imports	37.3	37.7	35.4	35.1	35.7	34.7	33.6	32.2	31.1	26.2	18.3		
Net current transfers (negative = inflow)	-2.6	-4.2	-3.9	-3.8	-3.7	-3.5	-3.4	-3.2	-3.1	-2.5	-1.6	-4.3	-3.1
of which: official	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Other current account flows (negative = net inflow)	0.2	2.4	3.7	2.4	2.7	2.1	1.6	2.6	2.5	1.0	-0.4	1.5	2.0
Net FDI (negative = inflow)	-6.3	-5.5	-4.4	-4.2	-4.7	-5.0	-5.0	-5.0	-5.0	-5.0	-3.0	-6.0	-4.9
Endogenous debt dynamics 2/	-2.9	-1.2	-2.5	0.3	0.5	1.4	1.6	0.0	1.0	0.7	0.1		
Contribution from nominal interest rate	2.1	2.1	2.3	3.3	3.3	3.4	3.4	3.2	3.2	2.4	1.3		
Contribution from real GDP growth	-1.3	-3.2	-2.5	-3.1	-2.8	-1.9	-1.8	-3.2	-2.1	-1.6	-1.2		
Contribution from price and exchange rate changes	-3.7	-0.2	-2.4	...	...	...	...	...	...	...	...		
Residual 3/	6.6	7.4	7.7	8.7	5.2	4.1	3.5	4.5	4.3	2.7	4.0	4.1	4.0
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		
Sustainability indicators													
PV of PPG external debt-to-GDP ratio	...	...	40.4	43.5	46.0	46.5	46.1	44.3	44.0	32.6	16.5		
PV of PPG external debt-to-exports ratio	...	...	117.6	128.6	133.7	140.5	145.2	137.7	140.5	129.5	95.7		
PPG debt service-to-exports ratio	2.0	4.9	17.1	16.9	15.7	16.6	17.4	17.0	15.6	17.3	13.4		
PPG debt service-to-revenue ratio	5.0	12.7	41.3	39.1	35.8	35.9	36.3	35.8	31.8	26.3	12.7		
Gross external financing need (Million of U.S. dollars)	-912.0	-944.4	2132.1	1680.0	1534.7	1461.1	1527.9	1073.7	557.9	909.8	2087.1		
Key macroeconomic assumptions													
Real GDP growth (in percent)	3.4	8.1	6.3	7.0	5.8	4.0	3.7	6.7	4.4	4.1	4.7	7.1	4.7
GDP deflator in US dollar terms (change in percent)	9.4	-0.8	4.5	-3.5	-1.6	2.2	2.2	1.6	1.4	2.4	2.1	-0.8	1.3
Effective interest rate (percent) 4/	5.7	5.5	5.9	7.6	6.8	7.0	6.8	6.6	6.6	5.9	5.3	4.1	6.6
Growth of exports of G&S (US dollar terms, in percent)	5.9	17.0	17.0	1.7	5.8	2.2	1.9	9.8	2.8	2.0	4.1	14.0	3.1
Growth of imports of G&S (US dollar terms, in percent)	-1.1	8.4	4.3	2.4	5.8	3.4	2.6	3.6	2.4	3.5	3.7	7.4	3.2
Grant element of new public sector borrowing (in percent)	...	...	...	3.0	3.2	2.4	6.8	3.1	4.4	3.6	1.3	...	4.0
Government revenues (excluding grants, in percent of GDP)	12.9	13.3	14.2	14.6	15.1	15.3	15.3	15.3	15.3	16.6	18.1	12.5	15.6
Aid flows (in Million of US dollars) 5/	291.7	352.7	180.3	170.0	619.5	455.1	938.9	470.3	535.7	350.6	235.3		
Grant-equivalent financing (in percent of GDP) 6/	...	...	...	0.4	0.6	0.5	0.6	0.4	0.3	0.1	0.0	...	0.3
Grant-equivalent financing (in percent of external financing) 6/	...	...	...	4.8	7.6	7.1	10.9	6.8	6.1	4.3	1.4	...	6.3
Nominal GDP (Million of US dollars)	54,989	58,978	65,518	67,638	70,424	74,866	79,335	86,009	91,053	125,327	242,017		
Nominal dollar GDP growth	13.2	7.3	11.1	3.2	4.1	6.3	6.0	8.4	5.9	6.6	6.9	6.4	6.1
Memorandum items:													
PV of external debt 7/	...	...	44.7	48.1	50.8	51.6	51.5	50.0	49.9	39.9	26.5		
In percent of exports	...	...	130.1	142.0	147.7	155.9	162.0	155.2	159.4	158.4	153.7		
Total external debt service-to-exports ratio	4.8	7.6	20.1	20.2	19.2	20.3	21.6	21.3	20.2	24.4	27.6		
PV of PPG external debt (in Million of US dollars)			26485.3	29448.7	32384.6	34783.7	36596.7	38139.4	40028.9	40857.3	39969.2		
(PVt-PVt-1)/GDPt-1 (in percent)				4.5	4.3	3.4	2.4	1.9	2.2	-0.1	1.2		
Non-interest current account deficit that stabilizes debt ratio	2.7	-0.7	-0.7	-4.8	-0.9	-0.5	-0.1	0.6	-0.4	1.6	-1.2		

Definition of external/domestic debt	**Residency-based**
Is there a material difference between the two criteria?	**Yes**





Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g) + Ɛα (1+r)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, ρ = growth rate of GDP deflator in U.S. dollar terms, Ɛ=nominal appreciation of the local currency, and α= share of local currency-denominated external debt i

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

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

6/ 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).

7/ Assumes that PV of private sector debt is equivalent to its face value.

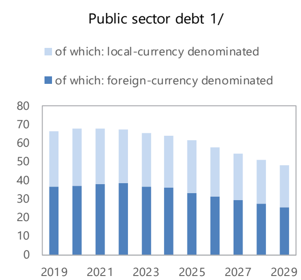
8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

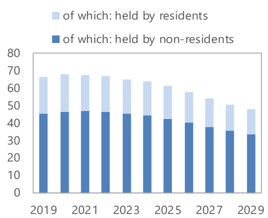
Table 2. Ghana: Public Debt Sustainability Framework, Baseline Scenario, 2016–2039

(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 6/	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2029	2039	Historical	Projections
Public sector debt 1/	57.5	57.7	62.5	66.5	67.9	67.8	67.3	65.2	64.1	47.9	19.5	45.4	61.0
of which: external debt	37.9	39.8	41.1	45.4	46.4	46.9	46.7	45.3	44.7	33.5	17.2	29.3	42.3
Change in public sector debt	2.2	0.2	4.8	3.9	1.5	-0.1	-0.5	-2.1	-1.2	-3.0	0.3		
Identified debt-creating flows	1.7	-2.5	0.7	2.7	-0.3	-0.5	-0.7	-2.0	-0.7	-2.8	0.3	0.1	-1.4
Primary deficit	1.9	-0.5	1.4	1.3	0.3	-0.6	-1.0	-0.6	-0.4	-2.2	0.6	2.1	-1.2
Revenue and grants	13.4	13.9	14.5	14.8	15.5	15.6	15.5	15.5	15.4	16.6	18.1	13.5	15.7
of which: grants	0.5	0.6	0.3	0.2	0.3	0.3	0.3	0.2	0.1	0.0	0.0		
Primary (noninterest) expenditure	15.3	13.4	15.9	16.1	15.7	14.9	14.5	14.8	15.0	14.4	18.8	15.7	14.5
Automatic debt dynamics	-0.2	-2.0	-0.1	1.3	-0.6	0.1	0.3	-1.3	-0.3	-0.5	-0.3		
Contribution from interest rate/growth differential	0.8	-1.1	-0.5	-0.9	-0.5	0.3	0.5	-1.7	-0.2	-0.4	-0.3		
of which: contribution from average real interest rate	2.6	3.3	2.9	3.1	3.1	2.9	2.9	2.5	2.5	1.6	0.5		
of which: contribution from real GDP growth	-1.8	-4.3	-3.4	-4.1	-3.6	-2.6	-2.4	-4.2	-2.8	-2.0	-0.9		
Contribution from real exchange rate depreciation	-1.0	-0.9	0.4	...	...	...	...	...	...	...	...		
Other identified debt-creating flows	0.0	0.0	-0.5	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	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Recognition of contingent liabilities (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		
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 debt creating or reducing flow (please specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual	0.5	2.7	4.1	3.5	1.7	0.2	0.0	0.3	-0.5	-0.4	0.0	3.1	0.2
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	63.9	67.4	68.7	68.5	67.7	65.5	64.2	47.7	19.1		
PV of public debt-to-revenue and grants ratio	...	...	441.2	456.5	444.2	439.6	436.0	422.9	416.0	287.1	105.2		
Debt service-to-revenue and grants ratio 3/	96.1	101.1	97.1	94.1	82.9	68.9	71.5	67.3	62.3	47.4	15.2		
Gross financing need 4/	14.8	13.5	14.9	15.2	13.1	10.1	10.0	9.8	9.2	5.6	3.4		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	3.4	8.1	6.3	7.0	5.8	4.0	3.7	6.7	4.4	4.1	4.7	7.1	4.7
Average nominal interest rate on external debt (in percent)	5.9	5.9	6.1	8.2	7.5	7.4	7.2	7.0	7.0	6.2	5.5	4.1	7.0
Average real interest rate on domestic debt (in percent)	5.1	9.0	7.1	4.3	4.5	3.5	3.5	2.8	3.0	2.3	0.4	5.3	3.2
Real exchange rate depreciation (in percent, + indicates depreciation)	-2.9	-2.9	1.3	...	...	...	...	...	...	...	...	2.4	...
Inflation rate (GDP deflator, in percent)	15.2	10.4	10.2	8.6	7.9	7.6	7.0	6.7	6.3	6.4	6.1	14.2	6.9
Growth of real primary spending (deflated by GDP deflator, in percent)	4.6	-5.4	25.8	8.6	3.3	-1.2	0.4	9.4	5.8	8.4	30.2	7.9	3.9
Primary deficit that stabilizes the debt-to-GDP ratio 5/	-0.3	-0.8	-3.5	-2.6	-1.2	-0.5	-0.5	1.4	0.8	0.8	0.4	-1.5	0.1
PV of contingent liabilities (not included in public sector debt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

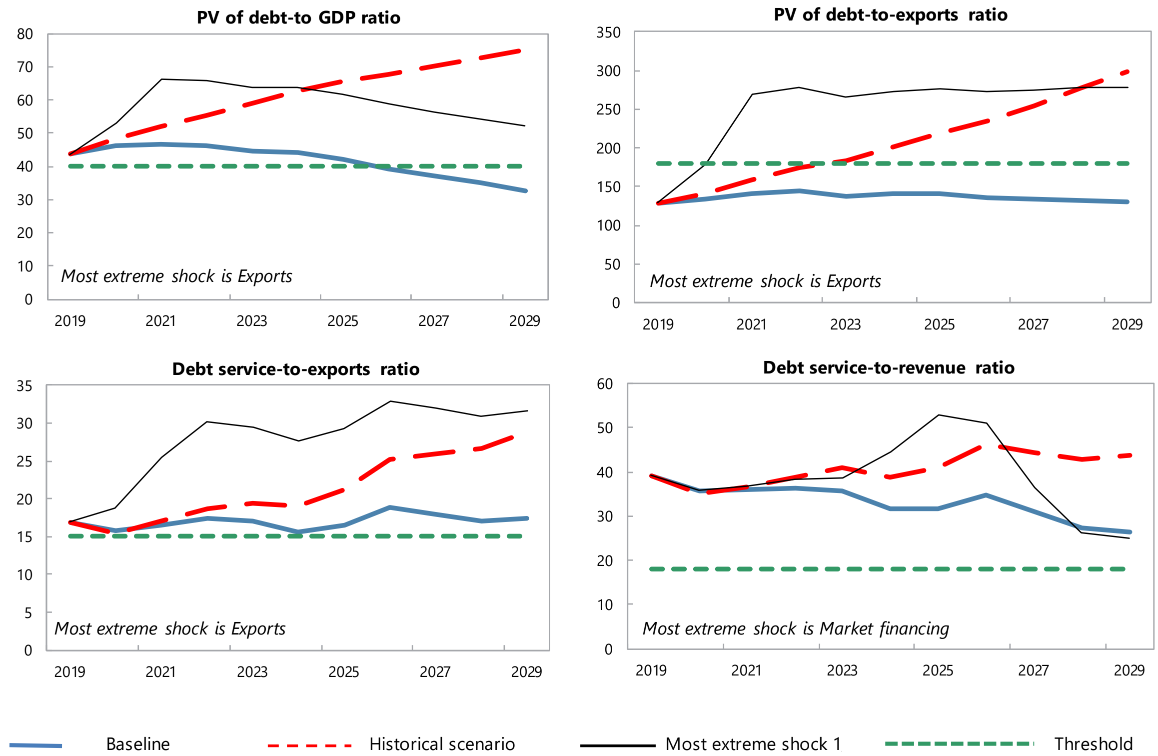
Definition of external/domestic debt	**Residency-based**
Is there a material difference between the two criteria?	**Yes**





Sources: Country authorities; and staff estimates and projections.
1/ Coverage of debt: The central government, central bank, government-guaranteed debt. Definition of external debt is Residency-based.
2/ The underlying PV of external debt-to-GDP ratio under the public DSA differs from the external DSA with the size of differences depending on exchange rates projections.
3/ Debt service is defined as the sum of interest and amortization of medium and long-term, and short-term debt.
4/ 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 and other debt creating/reducing flows.
5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio ((-): a primary surplus), which would stabilizes the debt ratio only in the year in question.
6/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

Figure 1. Ghana: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2019–2029



Customization of Default Settings	Size	Interactions
Tailored Tests		
Combined CLs	Yes	
Natural Disasters	n.a.	n.a.
Commodity Prices 2/	No	No
Market Financing	No	No

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	7.1%	8.0%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	15	20
Avg. grace period	8	17

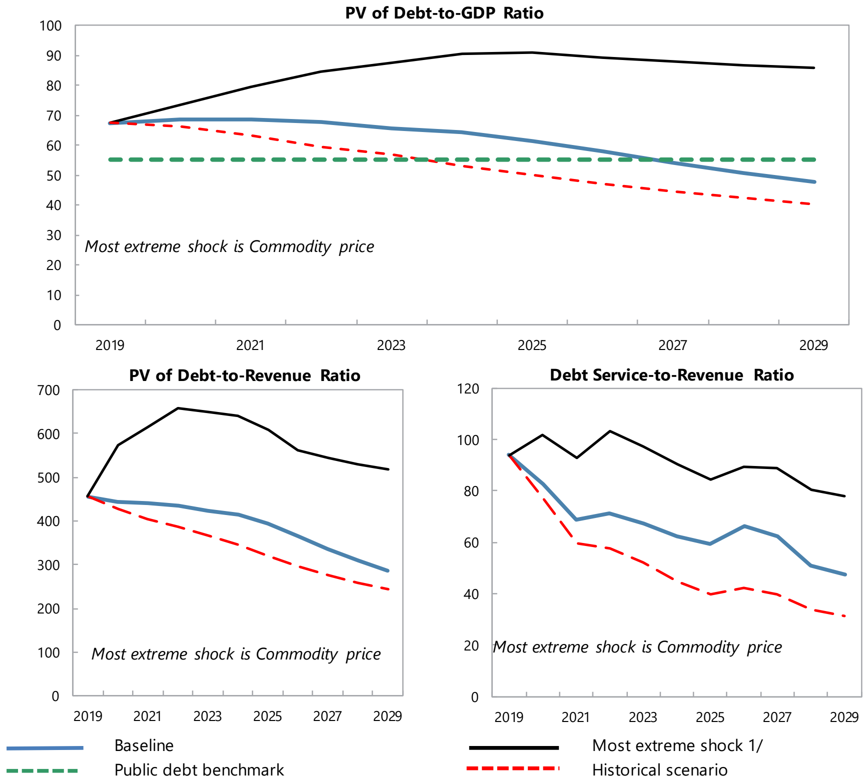
* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2029. Stress tests with one-off breaches are also presented (if any), while these one-off breaches are deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Figure 2. Ghana: Indicators of Public Debt under Alternative Scenarios, 2019–2029



Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	51%	51%
Domestic medium and long-term	32%	32%
Domestic short-term	18%	18%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	7.1%	8.0%
Avg. maturity (incl. grace period)	15	20
Avg. grace period	8	17
Domestic MLT debt		
Avg. real interest rate on new borrowing	3.5%	4.0%
Avg. maturity (incl. grace period)	5	7
Avg. grace period	4	6
Domestic short-term debt		
Avg. real interest rate	1.1%	2.0%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2029. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Table 3. Ghana: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2019–2029

(In percent)

					Projections 1/						
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
PV of debt-to GDP ratio											
Baseline	**44**	**46**	**46**	**46**	**44**	**44**	**42**	39	37	35	33
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	**44**	**48**	**52**	**55**	**59**	**63**	**66**	**68**	**70**	**73**	**75**
B. Bound Tests											
B1. Real GDP growth	**44**	**49**	**53**	**53**	**51**	**50**	**48**	**45**	**42**	40	37
B2. Primary balance	**44**	**48**	**53**	**53**	**52**	**51**	**49**	**47**	**45**	**43**	**41**
B3. Exports	**44**	**53**	**66**	**66**	**64**	**64**	**62**	**59**	**56**	**54**	**52**
B4. Other flows 3/	**44**	**48**	**51**	**50**	**49**	**48**	**46**	**44**	**41**	39	37
B5. Depreciation	**44**	**56**	**54**	**54**	**51**	**51**	**48**	**45**	**42**	39	36
B6. Combination of B1-B5	**44**	**52**	**56**	**56**	**54**	**54**	**52**	**49**	**47**	**45**	**42**
C. Tailored Tests											
C1. Combined contingent liabilities	**44**	**51**	**52**	**52**	**50**	**50**	**48**	**46**	**44**	**42**	**40**
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	**44**	**47**	**49**	**49**	**48**	**48**	**46**	**43**	**41**	38	36
C4. Market Financing	**44**	**51**	**52**	**52**	**51**	**50**	**48**	**45**	**42**	39	36
Threshold	40	40	40	40	40	40	40	40	40	40	40
PV of debt-to-exports ratio											
Baseline	129	134	141	145	138	141	140	136	133	132	130
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	129	140	158	174	**183**	**201**	**219**	**234**	**253**	**276**	**298**
B. Bound Tests											
B1. Real GDP growth	129	134	141	145	138	141	140	136	133	132	130
B2. Primary balance	129	139	161	168	160	164	165	161	161	164	163
B3. Exports	129	179	**268**	**279**	**266**	**273**	**276**	**273**	**274**	**277**	**278**
B4. Other flows 3/	129	140	153	159	151	154	154	151	149	149	147
B5. Depreciation	129	128	129	133	126	128	127	122	119	117	113
B6. Combination of B1-B5	129	157	154	**190**	**182**	**187**	**188**	**185**	**184**	**185**	**183**
C. Tailored Tests											
C1. Combined contingent liabilities	129	148	158	164	156	160	161	157	159	161	159
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	129	134	145	153	147	152	153	148	146	145	141
C4. Market Financing	129	134	141	147	140	144	144	138	134	132	127
Threshold	180	180	180	180	180	180	180	180	180	180	180
Debt service-to-exports ratio											
Baseline	**17**	**16**	**17**	**17**	**17**	**16**	**16**	**19**	**18**	**17**	**17**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	**17**	**15**	**17**	**19**	**19**	**19**	**21**	**25**	**26**	**27**	**29**
B. Bound Tests											
B1. Real GDP growth	**17**	**16**	**17**	**17**	**17**	**16**	**16**	**19**	**18**	**17**	**17**
B2. Primary balance	**17**	**16**	**17**	**19**	**19**	**17**	**18**	**21**	**20**	**19**	**20**
B3. Exports	**17**	**19**	**26**	**30**	**29**	**28**	**29**	**33**	**32**	**31**	**32**
B4. Other flows 3/	**17**	**16**	**17**	**18**	**18**	**17**	**18**	**20**	**19**	**18**	**19**
B5. Depreciation	**17**	**16**	**16**	**16**	**16**	15	**15**	**18**	**17**	**16**	**16**
B6. Combination of B1-B5	**17**	**17**	**21**	**23**	**22**	**21**	**22**	**25**	**24**	**23**	**23**
C. Tailored Tests											
C1. Combined contingent liabilities	**17**	**16**	**18**	**19**	**18**	**17**	**18**	**21**	**20**	**19**	**20**
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	**17**	**16**	**17**	**18**	**18**	**17**	**18**	**21**	**20**	**18**	**19**
C4. Market Financing	**17**	**16**	**17**	**18**	**18**	**22**	**27**	**28**	**21**	**16**	**16**
Threshold	15	15	15	15	15	15	15	15	15	15	15
Debt service-to-revenue ratio											
Baseline	**39**	**36**	**36**	**36**	**36**	**32**	**32**	**35**	**31**	**27**	**26**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	**39**	**35**	**37**	**39**	**41**	**39**	**41**	**46**	**44**	**43**	**44**
B. Bound Tests											
B1. Real GDP growth	**39**	**38**	**41**	**42**	**41**	**36**	**36**	**40**	**36**	**31**	**30**
B2. Primary balance	**39**	**36**	**37**	**40**	**39**	**35**	**35**	**38**	**34**	**31**	**30**
B3. Exports	**39**	**37**	**41**	**47**	**46**	**42**	**42**	**45**	**41**	**37**	**36**
B4. Other flows 3/	**39**	**36**	**37**	**38**	**38**	**34**	**34**	**37**	**33**	**29**	**28**
B5. Depreciation	**39**	**46**	**44**	**44**	**43**	**38**	**38**	**42**	**37**	**32**	**31**
B6. Combination of B1-B5	**39**	**38**	**42**	**44**	**43**	**39**	**39**	**42**	**38**	**34**	**33**
C. Tailored Tests											
C1. Combined contingent liabilities	**39**	**36**	**38**	**39**	**39**	**35**	**35**	**38**	**34**	**31**	**30**
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	**39**	**44**	**45**	**47**	**44**	**38**	**36**	**38**	**34**	**30**	**29**
C4. Market Financing	**39**	**36**	**37**	**38**	**38**	**44**	**53**	**51**	**36**	**26**	**25**
Threshold	18	18	18	18	18	18	18	18	18	18	18

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the threshold.
2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
3/ Includes official and private transfers and FDI.

Table 4. Ghana: Sensitivity Analysis for Key Indicators of Public Debt, 2019–2029

in percent

	Projections 1/										
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
PV of Debt-to-GDP Ratio											
Baseline	**67**	**69**	**69**	**68**	**65**	**64**	**62**	**58**	54	51	48
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	**67**	**66**	**63**	**60**	**57**	53	50	47	45	42	40
B. Bound Tests											
B1. Real GDP growth	**67**	**75**	**82**	**83**	**83**	**84**	**83**	**81**	**80**	**78**	**77**
B2. Primary balance	**67**	**73**	**79**	**79**	**77**	**76**	**73**	**69**	**66**	**63**	**60**
B3. Exports	**67**	**74**	**84**	**84**	**81**	**80**	**78**	**74**	**70**	**67**	**64**
B4. Other flows 3/	**67**	**71**	**73**	**72**	**70**	**69**	**66**	**62**	**59**	**55**	52
B5. Depreciation	**67**	**78**	**77**	**75**	**73**	**71**	**68**	**64**	**60**	**56**	53
B6. Combination of B1-B5	**67**	**70**	**76**	**75**	**73**	**72**	**70**	**66**	**63**	**60**	**57**
C. Tailored Tests											
C1. Combined contingent liabilities	**67**	**78**	**78**	**78**	**75**	**74**	**72**	**68**	**65**	**61**	**58**
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	**67**	**74**	**80**	**85**	**88**	**91**	**91**	**89**	**88**	**87**	**86**
C4. Market Financing	**67**	**69**	**69**	**68**	**66**	**65**	**63**	**59**	54	51	47
Public debt benchmark	55	55	55	55	55	55	55	55	55	55	55
PV of Debt-to-Revenue Ratio											
Baseline	457	444	440	436	423	416	393	364	336	310	287
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	457	428	406	386	368	345	320	298	277	259	243
B. Bound Tests											
B1. Real GDP growth	457	481	524	535	535	543	532	513	493	478	466
B2. Primary balance	457	469	510	508	495	490	467	438	408	382	359
B3. Exports	457	481	542	539	526	520	497	467	437	410	387
B4. Other flows 3/	457	458	467	464	451	444	421	392	363	337	314
B5. Depreciation	457	505	494	486	469	459	434	403	371	343	319
B6. Combination of B1-B5	457	454	485	484	473	468	447	419	391	366	344
C. Tailored Tests											
C1. Combined contingent liabilities	457	506	501	499	487	481	459	430	401	375	352
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	457	574	614	658	648	642	608	563	544	529	517
C4. Market Financing	457	444	441	439	428	423	401	369	337	309	284
Debt Service-to-Revenue Ratio											
Baseline	94	83	69	71	67	62	59	67	62	51	47
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2019-2029 2/	94	77	60	58	52	45	40	42	40	34	31
B. Bound Tests											
B1. Real GDP growth	94	88	80	86	83	78	76	86	83	73	71
B2. Primary balance	94	83	75	83	75	69	66	73	73	64	56
B3. Exports	94	83	72	79	75	70	67	74	70	59	55
B4. Other flows 3/	94	83	70	74	69	64	62	69	64	53	49
B5. Depreciation	94	83	75	78	75	70	67	75	70	60	56
B6. Combination of B1-B5	94	81	71	80	73	68	65	72	68	60	55
C. Tailored Tests											
C1. Combined contingent liabilities	94	83	84	79	73	68	65	72	77	60	55
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	94	102	93	103	97	90	85	89	89	80	78
C4. Market Financing	94	83	70	73	70	75	81	83	68	50	46

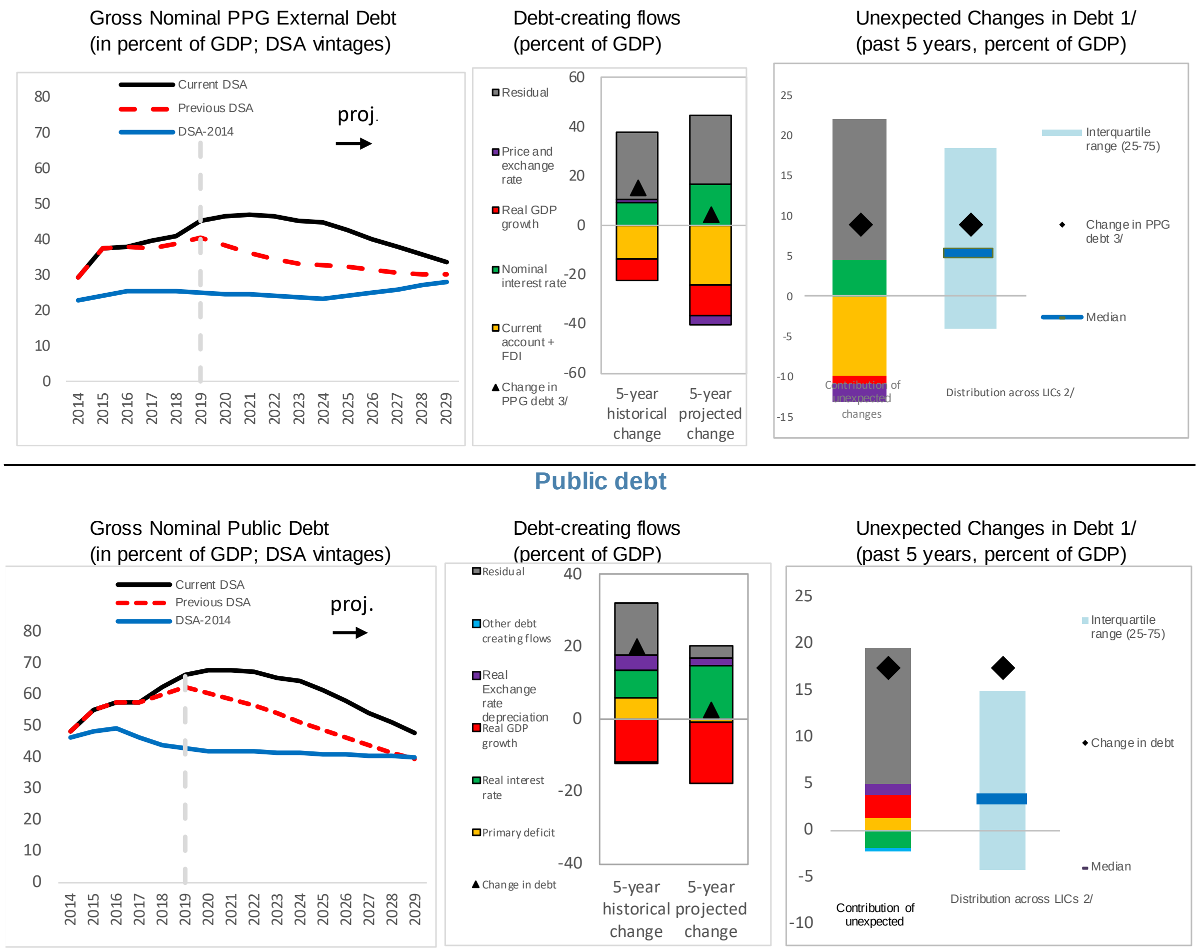
Sources: Country authorities; and staff estimates and projections.

1/ A bold value indicates a breach of the benchmark.

2/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.

3/ Includes official and private transfers and FDI.

Figure 3. Ghana: Drivers of Debt Dynamics—Baseline Scenario



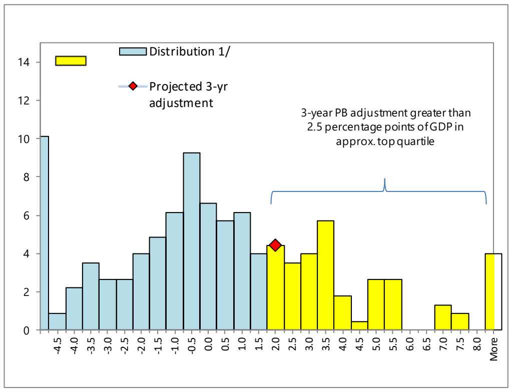
1/ Difference between anticipated and actual contributions on debt ratios.

2/ Distribution across LICs for which LIC DSAs were produced.

3/ Given the relatively low private external debt for average low-income countries, a ppt change in PPG external debt should be largely explained by the drivers of the external debt dynamics equation.

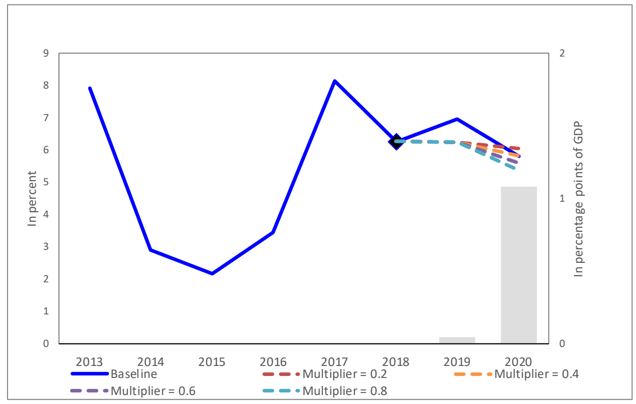
Figure 4. Ghana: Realism Tools

3-Year Adjustment in Primary Balance
(Percentage points of GDP)



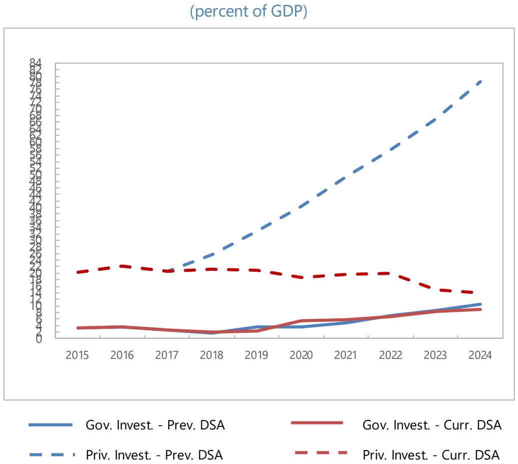
1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

Fiscal Adjustment and Possible Growth Paths 1/



1/ Bars refer to annual projected fiscal adjustment (right-hand side scale) and lines show possible real GDP growth paths under different fiscal multipliers (left-hand side scale).

Public and Private Investment Rates
(percent of GDP)



Contribution to Real GDP growth
(percent, 5-year average)

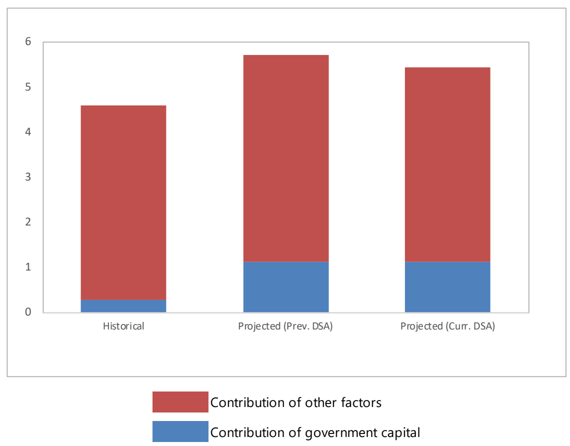
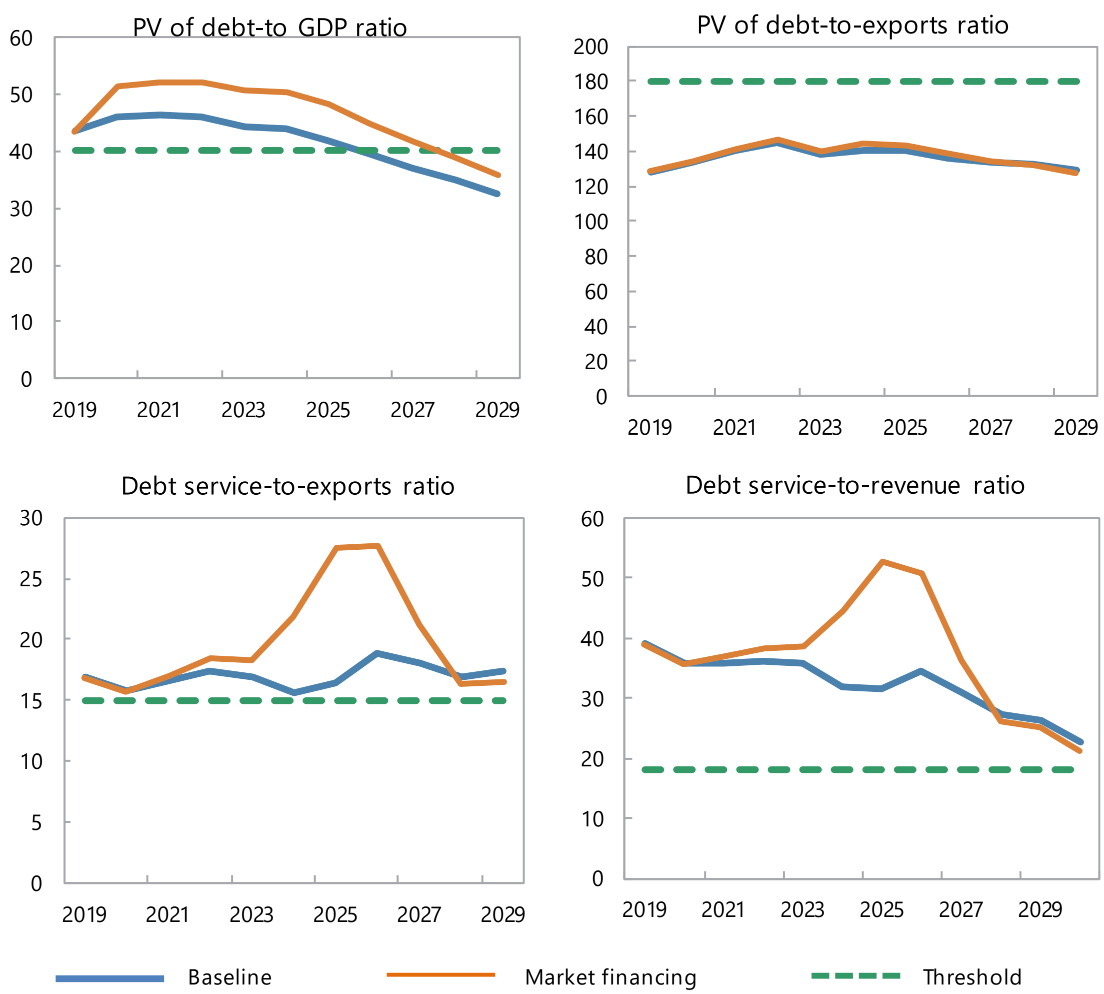


Figure 5. Ghana: Market-Financing Risk Indicators

	GFN 1/	EMBI 2/
Benchmarks	14	570
Values	15	558
Breach of benchmark	Yes	No
Potential heightened liquidity needs	Moderate	

1/ Maximum gross financing needs (GFN) over 3-year baseline projection horizon.
2/ EMBI spreads correspond to the latest available data.



Sources: Country authorities; and staff estimates and projections.