INTERNATIONAL DEVELOPMENT ASSOCIATION

INTERNATIONAL MONETARY FUND

GHANA

Joint World Bank-IMF Debt Sustainability Analysis

September 2021

Prepared Jointly by the staffs of the International Development Association (IDA)

and the International Monetary Fund (IMF)

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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

External and overall debt are at high risk of debt distress. The external rating results from breaches of the present value (PV) of external debt to GDP until 2029, and breaches for debt service to exports and debt service to revenues over the full time horizon. The overall risk of debt distress is also high because the PV of public debt-to-GDP exceeds the benchmark for the full horizon. The PV of external PPG debt-to-exports ratio, the only indicator which remains below threshold under the baseline, would exceed the threshold for most of the forecast horizon under an export shock. A growth shock would send overall public debt on an ever-increasing path.

Public debt is sustainable provided that the authorities' medium-term consolidation plan (reflected in the baseline) is rigorously and credibly implemented to improve the primary balance, put debt on a declining trajectory, and ensure continued market access. However, inadequate implementation of the plan, growth slowdowns, and exogenous shocks, including longer exit from the pandemic, worsening global risk sentiment, and adverse terms of trade movements, pose significant risks to the outlook. Therefore, a deeper consolidation effort is crucial to make sustainability more robust to setbacks in policy implementation and exogenous shocks. Widening the debt perimeter and improving transparency can reduce the risks of the materialization of contingent liabilities and emergence of "hidden debt", particularly in SOEs and off-budget operations. Debt management aimed at reducing refinancing risks should also be undertaken to complement fiscal efforts.

Public Debt Coverage

1. The Debt Sustainability Analysis (DSA) mainly covers public and publicly guaranteed (PPG) debt of the central government. The DSA also includes guarantees to other entities in the public and private sector including state-owned enterprises (SOEs) and certain non-guaranteed SOE debt. Key among those are Energy Sector Levy Act (ESLA) debt in the energy sector; Ghana Educational Trust Fund (GETFund/Daakye) debt for education infrastructure; and debt related to the bauxite mining project with Sinohydro, which are not explicitly guaranteed by the state. The DSA does not include Cocobod, one of the largest SOEs operating on non-commercial terms and engaging in quasi-fiscal activity, which would have added 2.5 percent of GDP to public debt as of end-2020. Debts to independent power producers (IPPs) and gas producers, which are currently being reconciled, are also excluded.[1]

	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	X

2. The financial sector clean-up costs and energy sector losses highlight risks associated with off-balance sheet liabilities. Debt outstanding at the end of 2020 for the ESLA and GETFund/Daakye special-purpose vehicles was 2.0 and 0.4 percent of GDP, respectively. The financial sector restructuring is estimated to have cost 6.8 percent of GDP between 2017 and 2020, with further costs expected in 2021, while energy sector costs to the budget are estimated at 2.7 percent of GDP in 2020 and are projected at 2.7 percent of GDP in 2021 and 1 percent of GDP annually from 2022 onwards. The DSA does not cover the stock of domestic arrears accumulated in 2020, which are preliminarily estimated at 2.1 percent of GDP, since they are yet to be audited and reconciled. However, the baseline scenario includes a medium-term arrears clearance plan in the above-the-line spending projections[2].

1	The country's coverage of public debt	The central government, central 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

1/ The default shock of 2% of GDP will be triggered for countries whose government-guaranteed debt is not fully captured under the country's public debt definition (1.). If it is already included in the government debt (1.) and risks associated with SoE's debt not guaranteed by the government is assessed to be negligible, a country team may reduce this to 0%.

[1] Definition of external/domestic debt is on residency basis.

[2] Arrears are not associated with debt related payments.

3. The DSA models contingent fiscal liabilities from the financial sector, SOEs and PPPs in a stress test. In addition to the above costs included in the baseline, the DSA models separate fiscal shocks amounting to 5 percent of GDP from further financial sector costs and 3 percent of GDP from non-guaranteed SOE debt. The contingent liability test also models shocks in which 35 percent of the outstanding public private partnership (PPP) arrangements become part of public debt.

Ghana: Public Debt at end-2020

	USD billion	Percent of GDP
Public debt	**52.5**	**78.9**
External	**29.8**	**44.7**
Multilateral	8.3	12.4
o/w IMF	2.1	3.2
Bilateral	5.0	7.6
Paris Club	2.4	3.6
Non-Paris Club	2.7	4.0
o/w China	1.9	2.8
Commercial	16.5	24.7
o/w Eurobond	10.2	15.3
o/w Nonresidents	4.8	7.2
Domestic	**22.8**	**34.2**
Marketable	18.1	27.2
Banks	9.7	14.6
Nonbanks	8.4	12.6
Nonmarketable	4.6	7.0
Memo: Debt excl. ESLA, Daakye	51.0	76.6

Source: Ghanaian authorities and IMF staff estimates. Residency basis. Differences from authorities' figures are due to inclusion of debt held by certain SOEs and SPVs. Please refer to DSA paragraph 1 for details.

4. DSA stress tests reveal that growth, exports, commodity prices, and market access shocks are the most relevant for Ghana. 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 the above at half strength. Most shocks are calibrated at 1 standard deviation from historical average. The exchange rate shock assumes a one-off 30 percent depreciation in 2022. 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 commodity price test simulates a 35 percent and 11 percent drop to fuel and non-fuel commodity prices respectively. The market financing shock simulates a 400bps increase in the cost of borrowing for three years and a shortening of average maturities on external debt by 2 years from the current average of 12.9 years.

Debt Profile

5. A record primary government deficit boosted the debt stock and debt service in 2020. Real growth remained positive at 0.4 percent and the current account deficit was largely unchanged at 3.1 percent of GDP. However, a record primary deficit, which increased fivefold to 8.8 percent of GDP, fueled by higher spending and lower revenues, and an adverse real growth-interest rate differential pushed public debt up by 16 percentage points to 79 percent of GDP. The proportion of domestic currency debt has increased, leaving foreign currency and total debt levels still below the pre-HIPC/MDRI peak.

Box 1. Macroeconomic Assumptions

Economic activity: Real GDP growth is expected to rebound to 4.7 percent in 2021 thanks to the recovery of domestic activity, and reach an average of 5.2 percent over the medium term, mainly driven by oil production, with new oil discoveries and gas production offsetting declining production of existing fields. Non-oil growth is expected to reach 6.4 percent in 2021 and remain around 5 percent, on average, from 2022 onwards, thanks to gains in productivity stemming from improvements in business climate, digitalization and structural transformation.

Inflation and exchange rate: Inflation was 7.5 percent (y-o-y) in May but is expected to rise to around 9.6 percent by end-2021, and then gradually stabilize around the 8 percent target. The cedi depreciated only 3.9 percent against the dollar in 2020, driven by border closures, resilient export and remittance inflows, pandemic-related import contraction, and some support from the BOG. It has remained stable so far in 2021, as portfolio inflows resumed. Headline inflation is expected to drop over the medium term to reach 6 percent thanks to the gradual phase-out of monetary easing.

	2021-2026	2027-2040
Real GDP (%	5.2	4.5
Inflation GDP Deflator	7.6	6.2
Nominal GDP (Million US$)	89,352	181,713
Average real interest rate on domestic debt	9.1	5.4
Average real interest rate on foreign debt	4.0	5.1
Revenue and Grants (% of GDP)	15.1	16.4
Grants (Percent of GDP)	0.2	0.0
Primary expenditure (% of GDP)	15.9	14.3
Primary balance (% of GDP)	-0.8	2.3
Exports of G&S (percent of GDP growth)	6.5	6.7
Non-interest current account balance (% of GDP)	-0.7	-0.2

Sources: Ghanaian Authorities and IMF staff estimates and projections

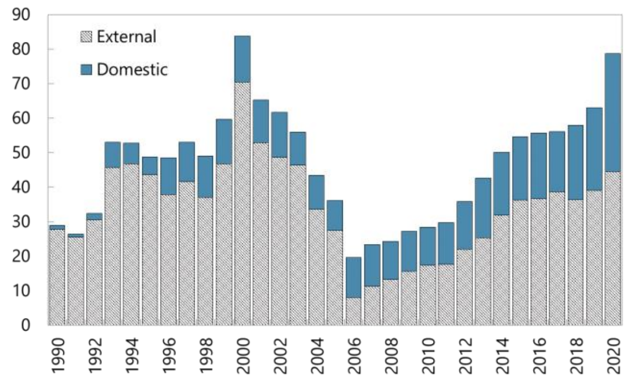
Government balance: The overall fiscal deficit is expected to reach 13.9 percent of GDP in 2021, reflecting continued COVID spending and financial and energy sector costs. Over the medium term, the government plans to improve the fiscal position through expenditure cuts in addition to the gradual end of COVID-related spending, combined with some revenue increases. As result, the budget deficit is expected to fall below 10 percent of GDP on average over the medium term.

Current account balance: The current account deficit is expected to widen in the medium term, reaching 4.8 percent of GDP in 2024 due mainly to import growth. As oil production expands gradually starting in 2024, the current account deficit will decline to a long-term average of around 3 percent of GDP. Gross foreign exchange reserves will initially fall because of the negative cash flow caused by the widening current account deficit and high external financing needs, but are expected to stabilize in the second half of the decade.

Financing flows: FDI inflows fell below 2 percent of GDP in 2020 but are expected to rebound to their pre-pandemic average of about 5 percent of GDP, reflecting pending investment in hydrocarbons and mining. Eurobond issuance is projected to average US$3 billion annually for the next five years, financing the current account deficit and rolling over maturing Eurobonds (a potential SDR allocation is not included in the forecast).

6. The sharp rise in local currency debt has increased interest costs and shortened maturities. Local currency debt rose from 30.7 percent of GDP at end-2019 to 40.8 percent of GDP at end-2020. The average time to maturity of local currency debt fell from 5.8 to 4.8 years, and average interest rates increased from 17.1 to 17.2 percent. For total public debt, liquidity indicators deteriorated, with debt service (including amortization) to revenues rising from 99 percent in 2019 to 130 percent in 2020 and gross financing needs (GFN) rising to 25.6 percent of GDP from 15.5 in 2019.

Ghana: Public Sector Debt
(Percent of GDP)



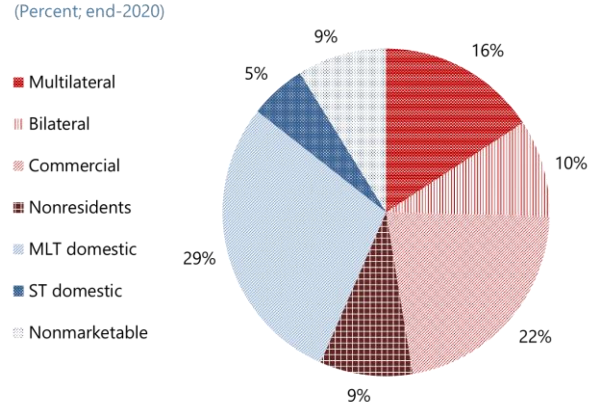
Sources: Ghanaian authorities and IMF staff calculations. Residency basis.

7. Local currency debt is expected to account for 78 percent of debt service burden in 2021. The sharp increase in local currency debt coupled with its relatively higher cost and shorter maturity compared to other financing sources has caused it to dominate debt-service costs and GFN.

Realism of Projections

8. Historically, staff projections tended to overestimate fiscal adjustment and thus underestimate overall debt growth, while more accurately estimating external debt. Compared to the five-year projection in the 2016 DSA, total public debt exceeded estimates by 37 percentage points of GDP due to higher than expected fiscal deficits, including financial sector cleanup and energy sector costs, and rising interest costs. The five year gap between actual and forecast debt level increased by 7.6 percentage points of GDP in 2020.

Ghana: Public Debt Composition
(Percent; end-2020)



Sources: Ghanaian authorities and IMF staff calculations

9. The baseline projected primary balance adjustment of 9 percent of GDP over four years is feasible, but ambitious. The outlook assumes a return to the pre-pandemic primary government deficit of 1.4 percent of GDP by 2022 and a 2.7 percent of GDP adjustment over the following three years. The consolidation falls within the top quartile for peers, underlining the ambitious nature of the government's plans, even discounting—as in staff's baseline—the authorities' expectations of a strong increase in tax revenues over the medium term. The expected rebound from the COVID-19 shock explains the disconnect between fiscal adjustment and accelerating growth in 2021-2022. The impact of public investment on GDP growth is consistent with the historical data.

Country Classification

10. **Ghana has a medium debt carrying capacity, unchanged from the last DSA vintage.** The composite CI score used to determine the debt carrying capacity is comprised of the World Bank's CPIA score and macro-economic fundamentals from the April 2021 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	3.563	1.37	50%
Real growth rate (in percent)	2.719	5.155	0.14	5%
Import coverage of reserves (in percent)	4.052	25.432	1.03	37%
Import coverage of reserves^2 (in percent)	-3.990	6.468	-0.26	-9%
Remittances (in percent)	2.022	3.231	0.07	2%
World economic growth (in percent)	13.520	3.078	0.42	15%
CI Score			2.77	100%
CI rating			Medium	

Applicable thresholds

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

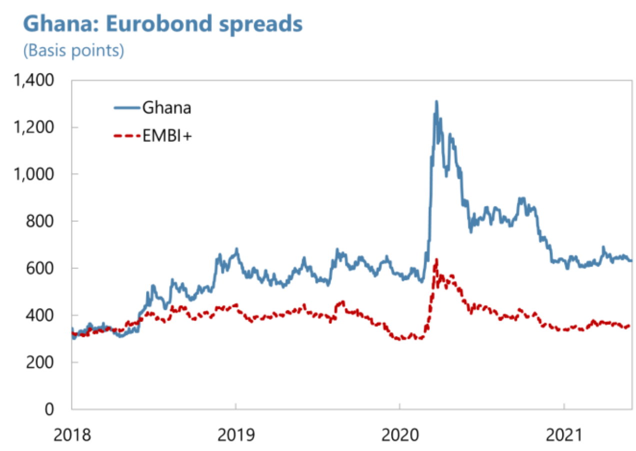
APPLICABLE	
TOTAL public debt benchmark	
PV of total public debt in percent of GDP	55

External DSA

11. **Under the baseline, three external debt ratios exceed thresholds, two of which over the full horizon.** The external PPG debt-to-GDP ratio is expected to remain above threshold until 2029. Debt service-to-exports and debt service-to-revenues ratios exceed their thresholds under the baseline scenario throughout the forecast horizon. The market access shock modeling a widening of spreads and reduction in maturities has the highest

impact on external debt service to revenues. The stress test yielding the highest ratios for the three remaining external indicators is the export shock, which models the incidence of an average decline in exports of 15 percent in 2022 and 2023 (=1 s.d. applied to historical average) against 4 percent growth in the baseline.

12. To contain interest costs and rollover existing external debt, Ghana will need to maintain market access at the same level as in 2019-2021. In recent years, Ghana consistently tapped international capital markets. A Eurobond series totaling US$3 billion (out of a target range of US$3-5 billion) was issued in March 2021, with a weighted average maturity of 11 years at 8 percent, compared to a weighted average maturity of 17 years at 7.5 percent for the 2020 issue. Despite the emergence of new investors in government securities including investment firms, retail investors, pension funds, and individual investors, the ability of the domestic market to absorb further government lending remains dependent on the banking sector, where government securities account for over 40 percent of assets. Continued dependence on market access exposes Ghana to sudden changes in market sentiment, whether country-specific or affecting emerging and frontier markets more broadly.



Source: Bloomberg.

Public DSA

13. Under the baseline, public debt declines slowly over the long run but remains vulnerable to growth and terms of trade shocks. The PV of public debt, at 75.3 percent of GDP in 2020, is expected to remain above the 55 percent benchmark throughout the forecast horizon. The main drivers of the increase in the PV of public debt compared to the last published DSA were the revenue and expenditure shocks associated with the pandemic, which compounded the impact of fiscal slippages and the realization of contingent liabilities in finance and energy sectors. The downward trajectory of the PV of public debt is vulnerable to shocks. Growth shock modeling a fall of one standard deviation has the most severe impact on all public debt indicators..

14. Market financing module indicators underline the persistence of debt vulnerabilities over the forecasting horizon. Gross financing needs, at 25.6 percent of GDP in 2020, are expected to remain above the 14 percent benchmark throughout the forecast horizon. Spreads declined from the peaks reached at the outset of the pandemic and have stabilized at around 620bps, which are also above the benchmark, pointing to rollover and liquidity risks (Figure 5). Debt service (including amortization) to revenues exceeded 129 percent in 2020, and is projected to peak at 155 percent in 2026 before declining slowly, reflecting Ghana's low domestic revenue mobilization and continued dependency on borrowing. Growth and commodity price shocks have the strongest impact on debt service-to-revenue ratio.

CONCLUSION

15. The DSA underlines that debt sustainability can only be ensured by an aggressive and credible fiscal consolidation plan. Given the acceleration over 2020-21, public debt would not be sustainable if it continues to grow at current trends. Looking forward, the rigorous implementation of the fiscal consolidation underlying staff's baseline scenario, supported by continued market access, would ensure debt sustainability, but only narrowly, given the slow pace of decline of public debt over the long run. Furthermore, inadequate implementation of the medium-term fiscal consolidation plan, growth slowdowns, and exogenous shocks, including delayed exit from the pandemic, worsening global risk sentiment, and adverse terms of trade movements, pose significant liquidity and solvency risks to the outlook. Therefore, a deeper consolidation effort based on well-articulated measures is urgently needed to create a stronger inflexion in the debt trajectory, strengthen credibility, and create margins for the implementation of policies.

16. A wider public debt perimeter and better debt transparency are essential to prevent debt surprises and provide a more accurate picture of debt sustainability. Realization of contingent liabilities in the energy and financial sector, off-budget operations, and domestic arrears have been drivers of debt accumulation in the past. Furthermore, SOEs represent a potential source of government obligations, either in the form of undisclosed debt or contingent liabilities. Going forward, coverage of public debt could be made more comprehensive by including energy sector debts to the private sector (such as those related to independent power producers and gas projects) and debts of SOEs that engage in quasi-fiscal activities, such as Cocobod. This would also help reduce debt surprise risks.

17. Debt management can play a role in reducing debt vulnerabilities. Fiscal adjustment is the first-best solution to address debt vulnerabilities and reduce gross financing needs. These efforts should be complemented by improved debt management and liability management operations.

Authorities' Views

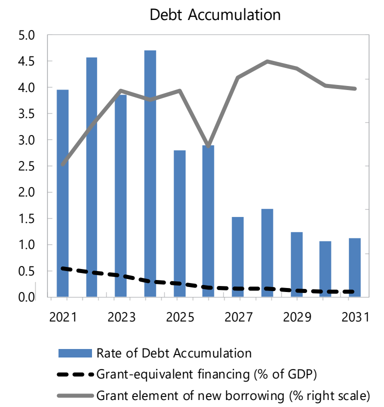
18. The authorities underscored their commitment to the fiscal consolidation agenda and improved debt management to guarantee macroeconomic stability. They stressed that a comprehensive view of debt vulnerabilities should be based on a forward-looking assessment, and remained confident that rapid growth, together with the government's strong commitment to macroeconomic stability, ongoing structural reforms and track record with capital markets, will allow Ghana to address its fiscal and debt vulnerabilities. The authorities highlighted advancements in debt management aimed at gradually lengthening maturities, using LMOs to retire expensive debt and attracting new investors with longer time horizon, including pension funds and insurers. The authorities also agreed with not including expenditure arrears in the public debt, noting that they were yet to be audited and the medium-term budget framework includes an above-the-line arrears clearance plan. The authorities disagreed with including Cocobod debt in public sector debt, as they see Cocobod as a primarily commercial operation that is not loss making.

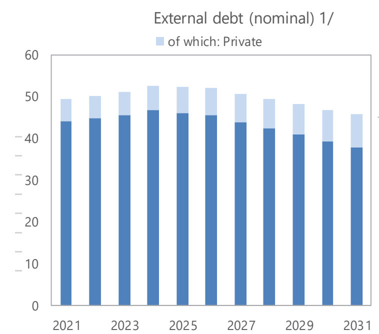
Table 1. Ghana: External Debt Sustainability Framework, Baseline Scenario, 2018-2041

(In percent of GDP, unless otherwise indicated)

	Actual		Projections								Average 8/	
	2019	2020	2021	2022	2023	2024	2025	2026	2031	2041	Historical	Projections
External debt (nominal) 1/	43.6	49.5	49.3	50.1	51.1	52.7	52.3	52.0	45.7	32.2	36.7	49.8
of which: public and publicly guaranteed (PPG)	39.0	44.7	44.2	44.8	45.4	46.8	46.1	45.6	37.9	22.2	32.8	43.4
Change in external debt	2.9	6.0	-0.2	0.8	0.9	1.6	-0.4	-0.2	-1.2	-3.2		
Identified net debt-creating flows	-3.8	0.5	-3.3	-2.8	-1.7	-2.0	-3.7	-3.4	-2.9	-4.5	-1.7	-3.0
Non-interest current account deficit	0.3	0.4	-0.6	0.8	1.6	1.9	1.0	1.1	0.0	-1.9	3.8	0.7
Deficit in balance of goods and services	1.9	3.6	1.7	3.0	3.9	4.1	2.9	2.7	1.8	1.5	5.9	2.5
Exports	37.4	32.2	32.9	31.7	30.2	29.3	29.6	29.6	28.2	28.7		
Imports	39.4	35.8	34.7	34.7	34.1	33.4	32.5	32.3	30.1	30.2		
Net current transfers (negative = inflow)	-5.0	-5.4	-4.4	-4.1	-3.9	-3.7	-3.5	-3.4	-2.7	-1.6	-4.2	-3.4
of which: official	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Other current account flows (negative = net inflow)	3.4	2.3	2.0	2.0	1.7	1.5	1.7	1.7	0.9	-1.8	2.1	1.6
Net FDI (negative = inflow)	-4.8	-1.9	-3.4	-3.5	-4.0	-4.5	-5.0	-5.0	-4.0	-3.3	-5.2	-4.4
Endogenous debt dynamics 2/	0.7	2.1	0.7	-0.1	0.7	0.6	0.2	0.6	1.1	0.6		
Contribution from nominal interest rate	2.4	2.7	2.9	2.7	2.8	3.0	3.1	3.1	2.8	2.2		
Contribution from real GDP growth	-2.6	-0.2	-2.1	-2.8	-2.2	-2.4	-2.8	-2.5	-1.7	-1.6		
Contribution from price and exchange rate changes	0.9	-0.4	...	...	...	...	...	...	...	...		
Residual 3/	6.7	5.4	3.1	3.6	2.6	3.6	3.3	3.1	1.7	1.4	4.1	2.7
of which: exceptional financing	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	...	40.0	39.9	40.9	41.8	43.4	43.0	42.8	36.2	21.5		
PV of PPG external debt-to-exports ratio	...	124.0	121.1	128.8	138.4	148.4	145.6	144.5	128.2	75.0		
PPG debt service-to-exports ratio	13.2	21.1	19.4	14.8	18.3	17.9	21.8	21.8	17.3	16.8		
PPG debt service-to-revenue ratio	36.1	55.5	44.1	32.2	37.5	34.7	42.4	41.8	28.6	28.4		
Gross external financing need (Million of U.S. dollars)	1082.6	4453.2	2679.5	2744.2	3984.6	3821.5	4040.0	4448.4	4295.8	6275.6		
Key macroeconomic assumptions												
Real GDP growth (in percent)	6.5	0.4	4.7	6.2	4.7	5.0	5.8	5.2	3.9	4.9	5.9	4.8
GDP deflator in US dollar terms (change in percent)	-4.6	-0.2	5.2	2.3	2.2	2.1	1.5	2.0	2.6	2.2	-0.8	2.5
Effective interest rate (percent) 4/	6.0	6.1	6.4	5.9	6.0	6.2	6.3	6.3	6.4	6.8	4.7	6.3
Growth of exports of G&S (US dollar terms, in percent)	13.7	13.7	12.5	4.8	1.9	3.7	8.5	7.5	5.0	8.9	12.9	6.2
Growth of imports of G&S (US dollar terms, in percent)	15.9	-8.7	6.6	8.8	5.1	5.0	4.4	6.7	5.1	7.8	6.7	5.7
Grant element of new public sector borrowing (in percent)	...	...	1.5	2.0	2.4	2.3	2.4	1.7	2.4	0.0	...	2.3
Government revenues (excluding grants, in percent of GDP)	13.7	12.3	14.5	14.6	14.7	15.1	15.2	15.5	17.1	16.9	12.9	15.7
Aid flows (in Million of US dollars) 5/	189.0	435.3	325.5	273.1	230.8	123.4	98.7	79.0	25.9	2.8		
Grant-equivalent financing (in percent of GDP) 6/	...	...	0.5	0.5	0.4	0.3	0.2	0.2	0.1	0.0	...	0.3
Grant-equivalent financing (in percent of external financing) 6/	...	...	6.7	6.7	6.0	4.0	3.8	2.8	2.8	0.1	...	4.2
Nominal GDP (Million of US dollars)	68,353	68,498	75,487	82,018	87,736	94,045	101,028	108,370	150,636	297,224		
Nominal dollar GDP growth	1.6	0.2	10.2	8.7	7.0	7.2	7.4	7.3	6.6	7.1	5.3	7.4
Memorandum items:												
PV of external debt 7/	...	44.8	45.0	46.3	47.5	49.3	49.2	49.3	44.0	31.5		
In percent of exports	...	138.9	136.5	145.7	157.0	168.6	166.5	166.3	155.8	109.9		
Total external debt service-to-exports ratio	16.2	24.8	23.2	19.0	22.8	22.8	26.9	27.2	24.1	25.4		
PV of PPG external debt (in Million of US dollars)		27,381	30,093	33,545	36,713	40,836	43,472	46,390	54,537	63,883		
(PVt-PVt-1)/GDPt-1 (in percent)			4.0	4.6	3.9	4.7	2.8	2.9	1.1	-1.5		
Non-interest current account deficit that stabilizes debt ratio	-2.6	-5.5	-0.4	0.0	0.7	0.3	1.5	1.3	1.2	1.3		

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) + Εα (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, Ε=nominal appreciation of the local currency, and α= share of local currency-denominated external debt in total external debt.

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.

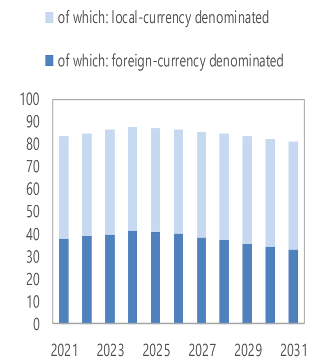
Table 2. Ghana: Public Sector Debt Sustainability Framework, Baseline Scenario, 2018-2041

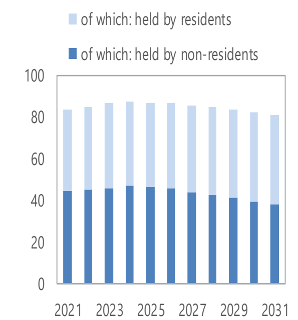
(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 6/	
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2031	2041	Historical	Projections
Public sector debt 1/, 7/	57.9	62.9	78.9	83.5	84.9	86.4	87.4	87.0	86.5	81.2	58.9	52.3	84.8
of which: external debt	36.4	39.0	44.7	44.2	44.8	45.4	46.8	46.1	45.6	37.9	22.2	32.8	43.4
Change in public sector debt	0.6	5.0	16.0	4.6	1.3	1.5	1.0	-0.5	-0.5	-1.2	-2.2		
Identified debt-creating flows	0.9	3.9	12.6	5.4	2.0	2.3	1.7	0.3	0.3	-0.9	-2.0	1.8	0.9
Primary deficit	1.4	1.7	8.8	5.9	1.4	0.2	-0.3	-1.3	-1.4	-2.1	-2.4	2.7	-0.5
Revenue and grants	14.1	14.0	12.9	14.9	15.0	15.0	15.2	15.3	15.5	17.1	16.9	13.6	15.8
of which: grants	0.3	0.3	0.6	0.4	0.3	0.3	0.1	0.1	0.1	0.0	0.0		
Primary (noninterest) expenditure	15.5	15.7	21.8	20.8	16.4	15.2	14.9	14.0	14.2	15.0	14.5	16.2	15.3
Automatic debt dynamics	0.1	2.2	3.7	-0.5	0.6	2.1	2.1	1.6	1.6	1.2	0.4		
Contribution from interest rate/growth differential	-0.3	0.1	4.3	0.3	0.5	2.0	2.0	1.4	1.6	1.3	0.4		
of which: contribution from average real interest rate	3.1	3.6	4.5	3.8	5.4	5.8	6.1	6.2	5.8	4.4	3.2		
of which: contribution from real GDP growth	-3.3	-3.5	-0.3	-3.6	-4.9	-3.8	-4.1	-4.8	-4.3	-3.1	-2.8		
Contribution from real exchange rate depreciation	0.3	2.1	-0.5	...	...	...	...	...	...	...	...		
Other identified debt-creating flows	-0.5	0.0	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)	-0.5	0.0	0.0	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	-0.3	1.1	3.4	-1.6	-0.6	-0.7	-0.7	-0.6	-0.8	-0.5	-0.2	2.9	-0.7
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	75.3	80.3	82.0	83.8	85.1	84.9	84.6	80.1	58.5		
PV of public debt-to-revenue and grants ratio	...	...	582.8	538.1	548.0	559.2	559.1	555.1	544.2	467.8	346.0		
Debt service-to-revenue and grants ratio 3/	90.1	99.3	129.8	123.3	120.3	150.2	145.6	153.7	154.7	126.5	109.0		
Gross financing need 4/	13.5	15.6	25.6	24.3	19.4	22.7	21.8	22.2	22.7	19.6	16.0		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	6.2	6.5	0.4	4.7	6.2	4.7	5.0	5.8	5.2	3.9	4.9	5.9	4.8
Average nominal interest rate on external debt (in percent)	6.1	6.4	6.7	6.7	6.1	6.3	6.5	6.6	6.7	6.8	7.6	4.9	6.7
Average real interest rate on domestic debt (in percent)	8.0	8.6	9.1	6.7	9.8	9.9	10.3	10.4	9.4	6.2	5.7	7.0	8.7
Real exchange rate depreciation (in percent, + indicates depreciation)	1.1	7.7	-1.6	...	...	...	...	...	...	...	...	3.0	...
Inflation rate (GDP deflator, in percent)	10.6	8.5	7.1	11.2	7.7	7.2	6.9	6.1	6.4	6.5	6.0	13.4	7.0
Growth of real primary spending (deflated by GDP deflator, in percent)	25.4	8.1	39.2	0.2	-16.6	-2.8	3.0	-0.5	6.4	6.9	-5.7	11.1	1.6
Primary deficit that stabilizes the debt-to-GDP ratio 5/	0.8	-3.3	-7.2	1.3	0.1	-1.3	-1.4	-0.8	-0.8	-0.8	-0.2	-3.2	-0.7
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

Public sector debt 1/, 7/





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.

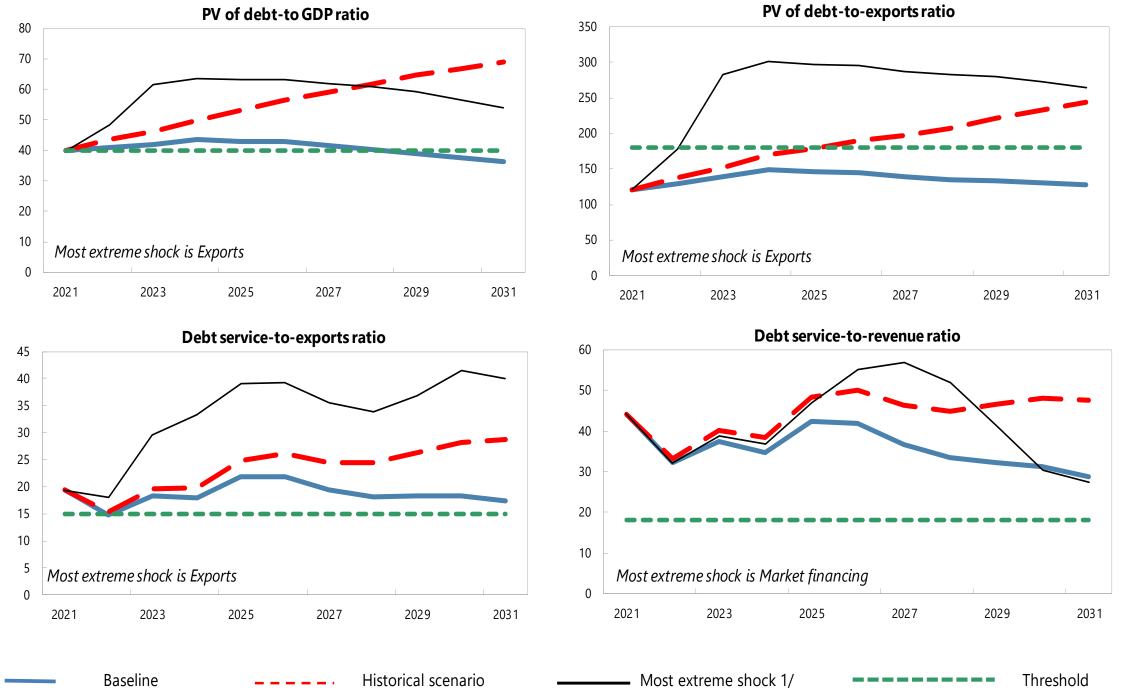
4/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period and other debt creating/reducing flows.

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.

7/Public debt data differ from authorities' figures due to inclusion of debt held by certain SOEs and SPV. Please refer to DSA paragraph 1 for details.

Figure 1. Ghana: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2021-2031



Customization of Default Settings		
	Size	Interactions
Standardized Tests	Yes	
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	9.4%	9.0%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	13	13
Avg. grace period	6	6

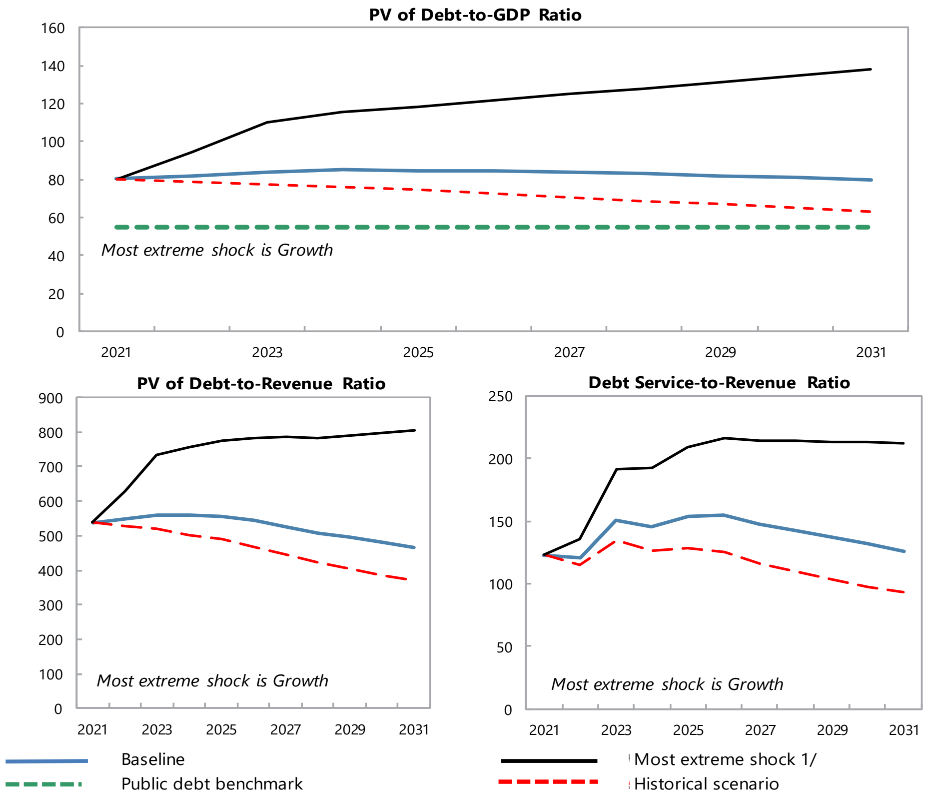
* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

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 2031. 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, 2021-2031



Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	26%	26%
Domestic medium and long-term	68%	68%
Domestic short-term	6%	6%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	9.4%	9.0%
Avg. maturity (incl. grace period)	13	13
Avg. grace period	6	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	8.2%	4.0%
Avg. maturity (incl. grace period)	5	5
Avg. grace period	0	0
Domestic short-term debt		
Avg. real interest rate	5.3%	5.3%

* 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 2031. 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, 2021-2031 (in percent)

	Projections 1/										
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
PV of debt-to GDP ratio											
Baseline	40	**41**	**42**	**43**	**43**	**43**	**41**	**40**	39	37	36
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	40	**43**	**46**	**50**	**53**	**56**	**59**	**62**	**65**	**67**	**69**
B. Bound Tests											
B1. Real GDP growth	40	**46**	**53**	**55**	**54**	**54**	**52**	**51**	**49**	**47**	**46**
B2. Primary balance	40	**42**	**45**	**47**	**47**	**47**	**46**	**46**	**44**	**43**	**42**
B3. Exports	40	**48**	**62**	**63**	**63**	**63**	**62**	**61**	**59**	**57**	**54**
B4. Other flows 3/	40	**43**	**46**	**48**	**48**	**47**	**46**	**45**	**44**	**42**	**40**
B5. Depreciation	40	**53**	**50**	**52**	**52**	**51**	**49**	**47**	**46**	**44**	**43**
B6. Combination of B1-B5	40	**50**	**53**	**56**	**55**	**55**	**54**	**53**	**51**	**50**	**48**
C. Tailored Tests											
C1. Combined contingent liabilities	40	**43**	**45**	**47**	**47**	**47**	**46**	**45**	**44**	**43**	**42**
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	40	**42**	**44**	**46**	**46**	**45**	**44**	**43**	**41**	39	38
C4. Market Financing	40	**46**	**47**	**49**	**49**	**49**	**47**	**46**	**44**	**42**	40
Threshold	40	40	40	40	40	40	40	40	40	40	40
PV of debt-to-exports ratio											
Baseline	121	129	138	148	146	145	139	134	133	131	128
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	121	137	152	170	179	**190**	**197**	**207**	**221**	**232**	**244**
B. Bound Tests											
B1. Real GDP growth	121	129	138	148	146	145	139	134	133	131	128
B2. Primary balance	121	132	150	162	160	160	155	152	151	150	148
B3. Exports	121	178	**282**	**301**	**296**	**296**	**287**	**282**	**280**	**273**	**265**
B4. Other flows 3/	121	136	153	164	161	160	154	150	149	146	142
B5. Depreciation	121	122	120	129	127	125	119	115	113	112	111
B6. Combination of B1-B5	121	154	151	**197**	**194**	**194**	**188**	**184**	**182**	179	176
C. Tailored Tests											
C1. Combined contingent liabilities	121	137	148	160	158	159	154	151	150	149	148
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	121	129	143	155	153	153	147	142	140	137	134
C4. Market Financing	121	129	139	150	149	148	142	137	134	130	126
Threshold	180	180	180	180	180	180	180	180	180	180	180
Debt service-to-exports ratio											
Baseline	**19**	15	**18**	**18**	**22**	**22**	**19**	**18**	**18**	**18**	**17**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	**19**	**15**	**20**	**20**	**25**	**26**	**24**	**24**	**26**	**28**	**29**
B. Bound Tests											
B1. Real GDP growth	**19**	15	**18**	**18**	**22**	**22**	**19**	**18**	**18**	**18**	**17**
B2. Primary balance	**19**	15	**19**	**19**	**23**	**23**	**21**	**20**	**20**	**21**	**20**
B3. Exports	**19**	**18**	**29**	**33**	**39**	**39**	**36**	**34**	**37**	**42**	**40**
B4. Other flows 3/	**19**	15	**19**	**19**	**23**	**23**	**21**	**19**	**20**	**21**	**20**
B5. Depreciation	**19**	15	**18**	**16**	**20**	**20**	**18**	**17**	**16**	15	14
B6. Combination of B1-B5	**19**	**16**	**24**	**24**	**29**	**29**	**26**	**24**	**26**	**26**	**25**
C. Tailored Tests											
C1. Combined contingent liabilities	**19**	15	**19**	**19**	**23**	**23**	**21**	**19**	**20**	**20**	**19**
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	**19**	15	**19**	**19**	**23**	**23**	**21**	**19**	**19**	**20**	**18**
C4. Market Financing	**19**	15	**19**	**19**	**24**	**29**	**30**	**28**	**23**	**18**	**17**
Threshold	15	15	15	15	15	15	15	15	15	15	15
Debt service-to-revenue ratio											
Baseline	**44**	**32**	**38**	**35**	**42**	**42**	**37**	**33**	**32**	**31**	**29**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	**44**	**33**	**40**	**38**	**48**	**50**	**46**	**45**	**47**	**48**	**48**
B. Bound Tests											
B1. Real GDP growth	**44**	**37**	**47**	**44**	**54**	**53**	**46**	**42**	**41**	**39**	**36**
B2. Primary balance	**44**	**32**	**38**	**37**	**45**	**44**	**39**	**36**	**36**	**35**	**33**
B3. Exports	**44**	**33**	**44**	**47**	**55**	**54**	**48**	**45**	**47**	**51**	**48**
B4. Other flows 3/	**44**	**32**	**39**	**37**	**45**	**44**	**39**	**36**	**36**	**36**	**33**
B5. Depreciation	**44**	**44**	**50**	**44**	**54**	**53**	**46**	**42**	**39**	**35**	**32**
B6. Combination of B1-B5	**44**	**36**	**47**	**45**	**54**	**53**	**47**	**43**	**44**	**43**	**40**
C. Tailored Tests											
C1. Combined contingent liabilities	**44**	**32**	**39**	**36**	**44**	**44**	**39**	**36**	**35**	**34**	**31**
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**	**38**	**45**	**42**	**50**	**48**	**40**	**35**	**34**	**33**	**30**
C4. Market Financing	**44**	**32**	**39**	**37**	**47**	**55**	**57**	**52**	**41**	**30**	**27**
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.

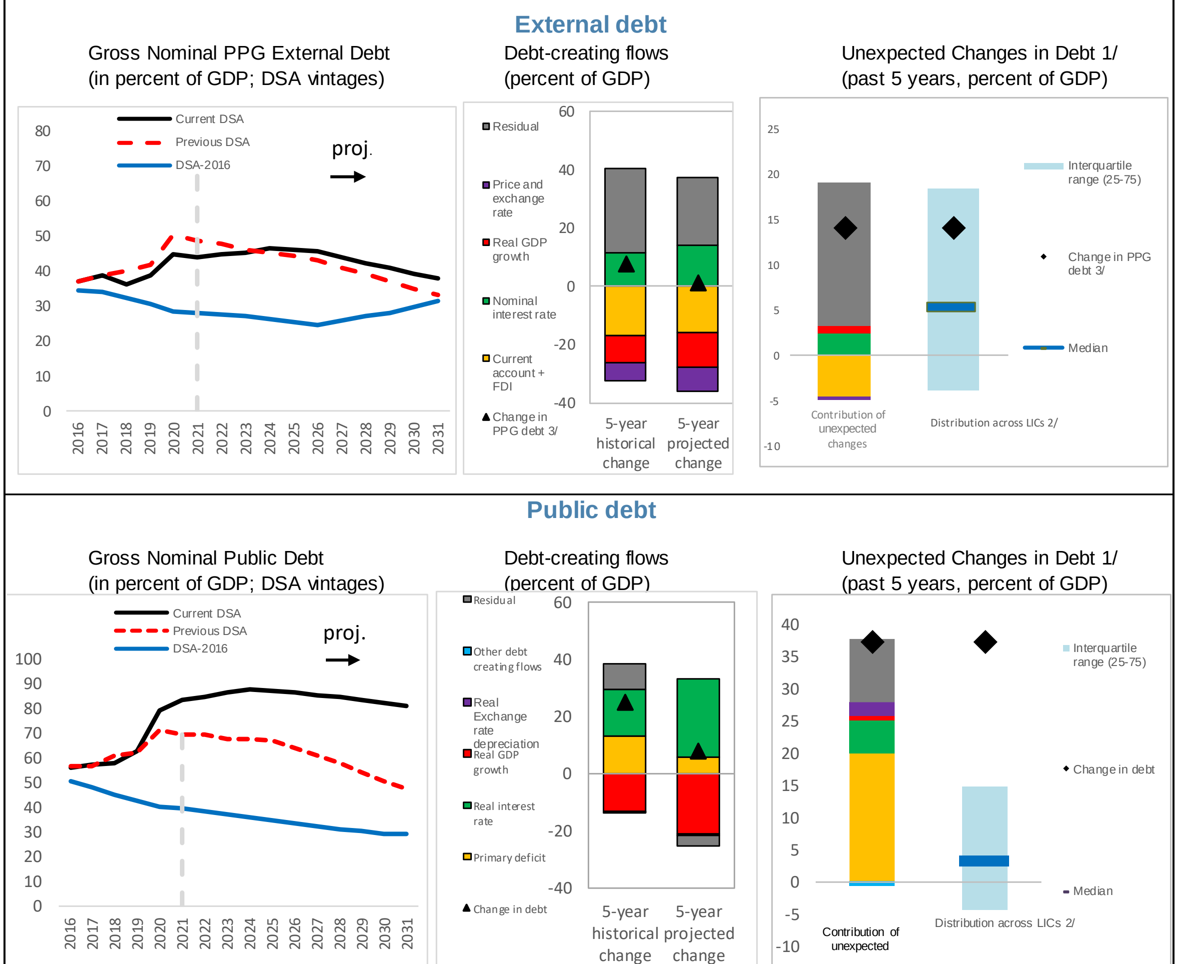
Table 4. Ghana: Sensitivity Analysis for Key Indicators of Public Debt , 2021-2031

(in percent)

	Projections 1/										
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PV of Debt-to-GDP Ratio											
Baseline	**80**	**82**	**84**	**85**	**85**	**85**	**84**	**83**	**82**	**81**	**80**
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	**80**	**79**	**78**	**76**	**75**	**73**	**71**	**69**	**67**	**65**	**63**
B. Bound Tests											
B1. Real GDP growth	**80**	**94**	**110**	**115**	**119**	**122**	**125**	**128**	**132**	**135**	**138**
B2. Primary balance	**80**	**86**	**93**	**95**	**94**	**94**	**93**	**92**	**91**	**90**	**89**
B3. Exports	**80**	**88**	**100**	**101**	**101**	**101**	**100**	**100**	**99**	**97**	**95**
B4. Other flows 3/	**80**	**84**	**88**	**90**	**90**	**89**	**89**	**88**	**87**	**86**	**84**
B5. Depreciation	**80**	**94**	**94**	**94**	**93**	**92**	**91**	**90**	**90**	**89**	**88**
B6. Combination of B1-B5	**80**	**83**	**91**	**92**	**92**	**92**	**92**	**91**	**91**	**90**	**90**
C. Tailored Tests											
C1. Combined contingent liabilities	**80**	**91**	**93**	**94**	**93**	**93**	**92**	**91**	**90**	**89**	**88**
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	**80**	**87**	**95**	**104**	**109**	**114**	**117**	**120**	**124**	**127**	**130**
C4. Market Financing	**80**	**82**	**84**	**86**	**86**	**86**	**85**	**84**	**83**	**81**	**79**
Public debt benchmark	55	55	55	55	55	55	55	55	55	55	55
PV of Debt-to-Revenue Ratio											
Baseline	538	548	559	559	555	544	528	508	495	482	468
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	538	529	519	502	489	469	446	422	404	387	371
B. Bound Tests											
B1. Real GDP growth	538	629	733	757	775	785	787	784	792	800	807
B2. Primary balance	538	573	624	621	615	603	584	563	549	536	522
B3. Exports	538	586	666	665	662	650	633	612	596	574	552
B4. Other flows 3/	538	563	590	590	586	575	558	538	524	508	492
B5. Depreciation	538	631	630	619	609	593	574	553	540	528	516
B6. Combination of B1-B5	538	556	607	607	604	593	578	558	547	535	523
C. Tailored Tests											
C1. Combined contingent liabilities	538	608	618	615	609	596	578	557	543	530	516
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	538	677	741	789	795	786	765	737	744	752	759
C4. Market Financing	538	548	560	562	561	552	535	513	497	480	464
Debt Service-to-Revenue Ratio											
Baseline	123	120	150	146	154	155	148	143	137	132	127
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2021-2031 2/	123	115	135	126	129	125	116	109	103	98	93
B. Bound Tests											
B1. Real GDP growth	123	136	192	193	209	217	215	214	213	213	213
B2. Primary balance	123	120	158	163	170	172	166	159	152	148	143
B3. Exports	123	120	153	154	162	163	156	151	148	148	142
B4. Other flows 3/	123	120	151	148	156	157	150	145	141	137	131
B5. Depreciation	123	117	155	152	165	169	163	160	156	153	149
B6. Combination of B1-B5	123	119	154	157	165	167	161	156	150	145	140
C. Tailored Tests											
C1. Combined contingent liabilities	123	120	167	161	170	171	165	156	150	145	139
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	123	142	188	196	210	213	207	200	199	199	199
C4. Market Financing	123	120	151	148	158	168	168	161	146	131	125

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



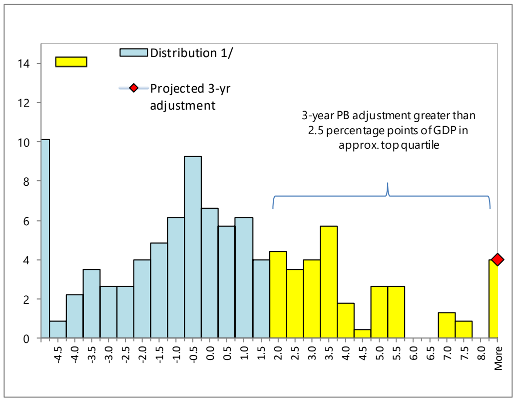
1/ Difference between anticipated and actual contributions on debt ratios.

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.

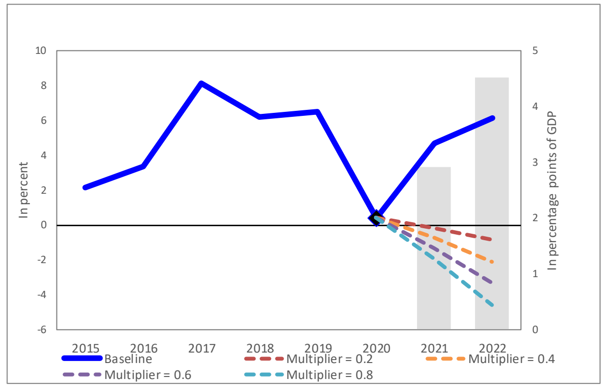
Figure 4. Ghana: Realism tools

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



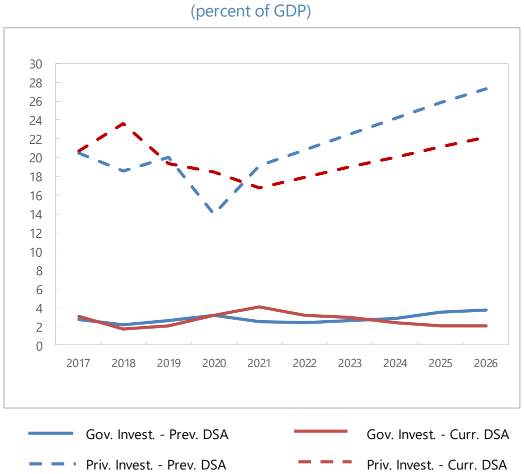
1/ Data cover Fund-supported programs for LICs (excluding emergency financing) approved since 1990. The size of 3-year adjustment from program inception is found on the horizontal axis; the percent of sample is found on the vertical axis.

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)

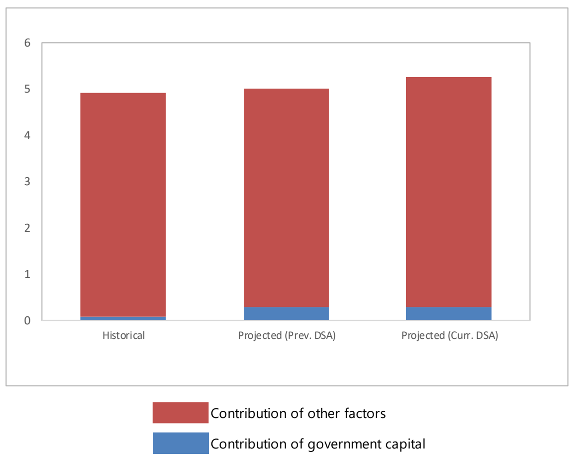
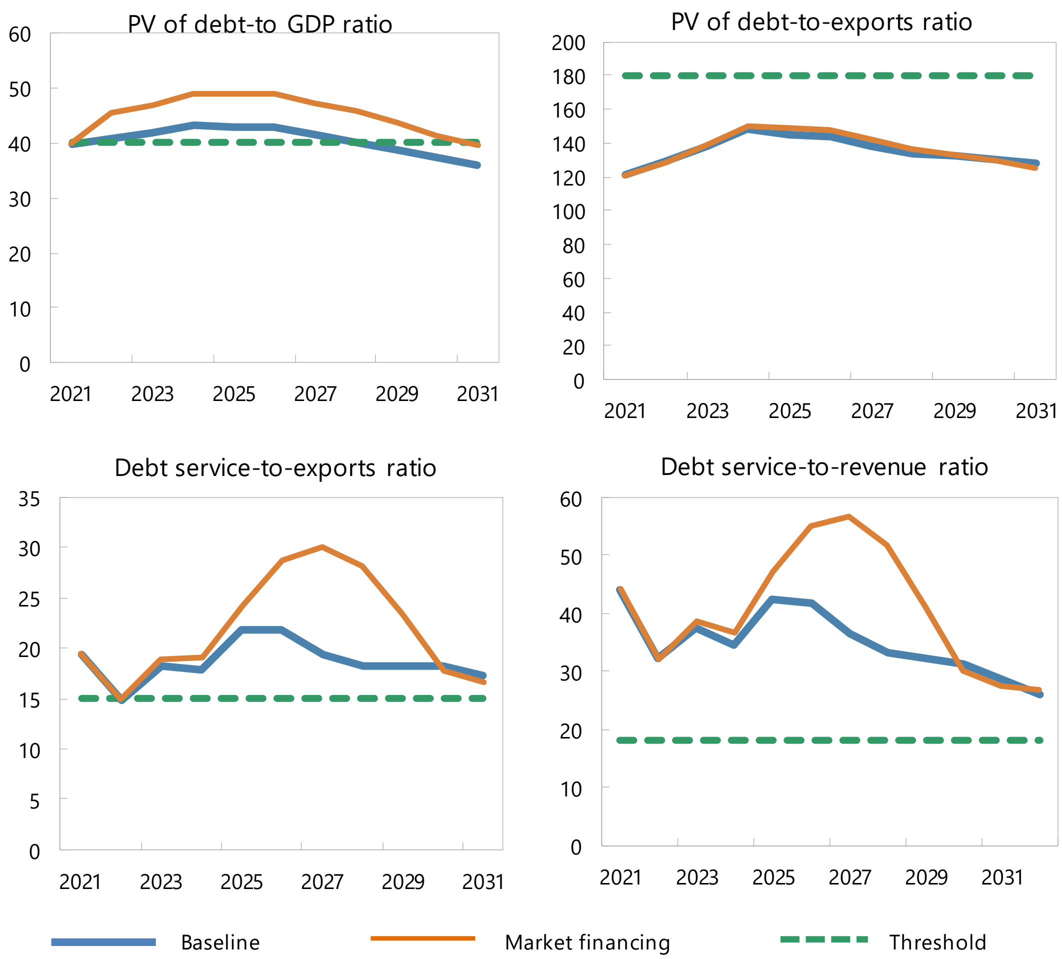


Figure 5. Ghana: Market-Financing Risk Indicators

	GFN 1/	EMBI 2/
Benchmarks	14	570
Values	24	620
Breach of benchmark	Yes	Yes
Potential heightened liquidity needs	High	

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.