

**FISCAL SUSTAINABILITY IN GHANA IN
THE POST-HIPC (MDRI) PERIOD**

BY

RESEARCH DEPARTMENT

BANK OF GHANA¹

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ABSTRACT

This paper ascertains the relationship between fiscal policy, government debt sustainability (with respect to concessional, non-concessional and domestic debt) and debt relief. A methodology is designed to compute the fiscal policy path that is compatible with debt sustainability in the post-HIPC period. The model examines the role of concessional debt, non-concessional debt and domestic debt, and also attempts to quantify the degree to which future debt sustainability depends not only on concessional debt (at subsidized interest rates) but also to a large extent, on the rate of accumulation of non-concessional and domestic debt.

Introduction

Ghana reached the enhanced HIPC Initiative decision point on February 2002 and qualified for debt relief under both the fiscal / openness and net present value of external debt-to-exports criteria. It was the former criterion that offered significant debt relief of US\$2,186 million or in nominal terms US\$3,700 million required to lower the net present value of external debt-to-government budget revenue ratio to 250 per cent.

In July 2004 Ghana reached the completion point in record time after it had made satisfactory progress on the implementation of all but one of the conditions (petroleum pricing reforms) for reaching the floating completion point. The amount of debt relief forgiven, helped to bring down Ghana's external debt ratios to sustainable levels.

The fundamental principle guiding the initiative is that in the post-HIPC era Ghana will be able to achieve "*external debt sustainability*" and thus will not require new rounds of debt forgiveness. The begging question however is the type of fiscal policy that will be consistent with debt sustainability in the post-HIPC period. To answer this requires a fiscal sustainability that goes beyond Ghana's external debt, and to consider the sustainability of public debt including both foreign (concessional, non-concessional) as well as domestic debt. Indeed, by ignoring the role of domestic debt, sustainability analyses may underestimate the magnitude of the fiscal effort that Ghana will have to make in the post-HIPC era.

Methodology

A model is used to compute the fiscal policy path that is compatible with government debt sustainability in the post-HIPC era. This model considers the role of *concessional debt*, *non-concessional debt* and *domestic debt*, and tries to quantify the degree to which future debt sustainability

depends not only on *concessional debt* but also to a very large extent on the rate of accumulation of both *non-concessional* and *domestic debt*.

Debt sustainability, Debt relief and Fiscal policy in Ghana (An Analytical Framework)

Generally, an economy is said to have achieved fiscal sustainability when the ratio of public sector debt-to-GDP is *stationary, and consistent* with the overall demand – both domestic and foreign – for government securities¹. A particularly important offspring of public sector sustainability analysis is the *computation of the public sector's primary balance* compatible with a sustainable and a stable *debt-to-GDP ratio*. This “sustainable primary balance” has become an increasingly important variable in macroeconomic analyses and is considered as a disbursement condition in IMF programs.

The Bank and the Fund have analyzed the external debt sustainability matters using the net present value of the country's external debt at its steady state level relative to GDP. Generally, it is considered that a ratio of the net present value of external debt-to-GDP of approximately 50 per cent is sustainable over the long run.

The model thus focuses on the dynamic behavior of key variables. Real exchange rate changes and its impact on fiscal sustainability will be dealt with in a subsequent paper.

The Basic Framework²

Three (3) types of debt that define the exact composition of Ghana's public and publicly guaranteed debt were considered namely:

- Concessional debt (CD)
- Non-concessional debt (NCD)
- Domestic debt (DD)

Assumptions:

- Only local residents hold type DD

¹ Debt ratio may be calculated relative to an alternative benchmark such as exports, revenue. See Milesi – Ferreti AND Razin (1996, 2000) and Edwards (2002).

² Edwards (2002)

- All the 3-types of debt categories are denominated in the U. S dollar currency.
- The economy is at a steady state.

At any moment in time, the total public sector debt is equal to the sum of CD, NCD and DD.

Also, at any time t , the net increase in total debt (dollar denominated) is equal to the sum of the increases in these 3-types of debt;

That is,

$$\Delta D_t = \Delta CD_t + \Delta NCD_t + \Delta DD_t$$

Operationally, the net debt increases (ΔD_t) are equal to the interest payments, plus the primary balance (pb), minus seigniorage.

More specifically;

$$\Delta D_t = (r_t^* CD_{t-1} + r_t NCD_{t-1} + r_t^D DD_{t-1}) + pb_t - \Delta B_t \text{ ----- (1)}$$

Let denote,

r_t^* , r_t , r_t^D as nominal interest rates of each type of debt and ΔB_t as the change in the seigniorage, and its actual magnitude will depend on the rate of domestic inflation, as well as on the ratio of the monetary base-to-nominal GDP.

The main interest of this study is to compute the primary balance-to-GDP ratio that is consistent with fiscal "sustainability" in the post debt forgiveness period

without loss of generality, the following assumptions were considered to achieve reasonable results.

- In the post-HIPC period the donor community is willing to increase its accumulation of Ghana's concessional debt at an annual rate of θ .
- Foreign private financial institutions are willing to accumulate non-concessional debt at a rate equal to α .
- Domestic debt holders at a rate equal to β .

In the long run, an important constraint is that none of the 3-type of debt-to-GDP ratio grows without limit. This simply will imply that in the long run these ratios should be bounded.

Let g denote the rate of GDP growth and Π^* the rate of U.S. inflation, then these constraints may be written as³:

$$\theta \leq (g + \Pi^*) ; \alpha \leq (g + \Pi^*) ; \beta \leq (g + \Pi^*) \text{ ----- (2)}$$

These conditions are required to ensure *convergence* of the primary balance ratio (pb / Y) through time. With regard to seigniorage, in the base case, the following assumptions were made; domestic rate of inflation Π (target), and that the income elasticity of demand for money is unity (1).

Note 1:

Alternative assumptions regarding the income elasticity of demand for money can be easily incorporated into the analysis.

From equations (1) and (2), the equation below is derived for the dynamic behavior of the sustainable primary balance-to-GDP ratio. This is the primary balance-to-GDP ratio that at any period of time t is consistent with the total debt-to-GDP ratio being on a sustainable path.

Note 2:

A positive value for (pb / Y) denotes *a primary deficit*.

Hence,

$$(\text{Pb} / Y)_t = [\lambda(X + Y + Z)] - [(g + \Pi)(B_0 / Y_0)] \text{----- (3)}$$

where,

$$\lambda = 1 / (1 + g + \Pi^*)$$

$$X = (CD_0 / Y_0) * (\theta - r_t^*) * \text{Exp}\{(\theta - g - \Pi^*)(t - 1)\}$$

$$Y = (CND_0 / Y_0) * (\alpha - r_t) * \text{Exp}\{(\alpha - g - \Pi^*)(t - 1)\}$$

$$Z = (DD_0 / Y_0) * (\beta - r_t^D) * \text{Exp}\{(\beta - g - \Pi^*)(t - 1)\}$$

where,

CD_0 / Y_0 represents the initial ratio of the face value of concessional debt-to-GDP ratio.

CND_0 / Y_0 represents the initial ratio of the face value of non-concessional debt-to-GDP ratio.

DD_0 / Y_0 represents the initial ratio of the face value of domestic debt-to-GDP ratio.²

³ since assuming that all debt categories is dollar denominated, we can write the rate of growth of dollar denominated GDP as the sum of the real GDP growth, plus the rate of U.S. inflation.

B_0 / Y_0 represents the initial ratio of base money-to-GDP ratio.

θ , α , β are the sustainable rates of growth of the 3-types of debt categories.

Public debt and Sustainable Fiscal Policy

Possible cases for the evolution of concessional debt, non-concessional debt and domestic debt through time are considered. More specifically:

Base line:

Let $0 \leq \phi \leq 1$

- We assume that the international community is willing to provide sufficient concessional funds during the post HIPC era. In this case, it is assumed that $\phi = 0.5$ such that $\theta = \phi g + \Pi^*$.
- We assume that the foreign private financial institutions are to maintain the same level of non-concessional debt immediately after HIPC through time. In this case, it is assumed that $\alpha = 0$
- We assume that domestic debt grows gradually through time such that $\beta = g + \Pi^*$
- We introduce the effect of debt cancellation from the MDRI into the analysis. That is (*Scenario 1: with application of debt cancellation*).

Scenario 2: Let $0 < \phi \leq 1$

- We assume that the international community is willing to provide sufficient concessional funds during the post HIPC era. In this case, it is assumed that $\phi = 0.5$ such that $\theta = \phi g + \Pi^*$.
- We assume that the foreign private financial institutions are willing to increase non-concessional funds in real terms from 2007(start with US\$300 million) through time. In this case, it is assumed that $\alpha = \phi g + \Pi^*$.
- We assume that domestic debt grows gradually through time such that $\beta = g + \Pi^*$

Scenario 3: Let $0 < \phi \leq 1$

- We assume that the international community is willing to provide sufficient concessional funds during the post HIPC era. In this case, it is assumed that $\phi = 0.5$ such that $\theta = \phi g + \Pi^*$.
- We assume that the foreign private financial institutions are willing to increase private non-concessional funds in real terms from 2007 (start with US\$500 million) through time. In this case, it is assumed such that $\alpha = \phi g + \Pi^*$.
- We assume that domestic debt grows gradually through time such that $\beta = g + \Pi^*$

Scenario 4: Let $0 < \phi \leq 1$

- We assume that the international community is willing to provide sufficient concessional funds during the post HIPC era. In this case, it is assumed that $\phi = 0.5$ such that $\theta = \phi g + \Pi^*$.
- We assume that the foreign private financial institutions are willing to increase private non-concessional funds in real terms from 2007 (start with US\$1 billion) through time. In this case, it is assumed that $\alpha = \phi g + \Pi^*$.
- We assume that domestic debt grows gradually through time such that $\beta = g + \Pi^*$

Explanations of Results and Analysis

Baseline: without application of debt cancellation under MDRI

Under the baseline assumptions and without the application of debt cancellation from the MDRI, we try to ascertain whether the government's future fiscal policy is consistent with debt sustainability in the post HIPC era. The analysis under this case revealed the following results:

- In 2005 government was expected to run a primary balance surplus of 4.15 per cent of GDP, with total debt-to-GDP of 81.8 per cent. Of which this ratio, concessional debt represented 57.9 per cent of GDP,

non-concessional debt was 6.4 per cent of GDP and domestic debt 17.6 per cent of GDP respectively. In 2006 government is expected to run a primary balance surplus of 3.61 per cent of GDP, 0.54 percentage points lower than in 2005. The total central government debt-to-GDP is expected to fall down to 73.9 per cent of GDP. The decline is attributed to expected rise in nominal GDP in 2006.

- From 2007 – 2009, the government is on the average expected to run primary balance surplus of 2.59 per cent of GDP with a corresponding average total debt-to-GDP ratio of 78.8 per cent. During this period the total debt-to-GDP ratio is expected to be stable and consistent with the average primary balance-to-GDP ratio. It is expected that government will achieve fiscal sustainability during the period.
- From 2010 – 2011, government again on the average is expected to run primary balance surplus of 2.63 per cent of GDP with an average total debt-to-GDP ratio of 77.0 per cent. During this period the government is expected to achieve fiscal sustainability.
- During the of 2012 – 2015, an average primary balance surplus of 2.64 per cent of GDP is expected to be ran by government with a corresponding average total debt-to-GDP ratio of 75.2 per cent. This ratio is expected to be stable and consistent with the average primary balance-to-GDP during the period. Fiscal sustainability is expected during this period.
- During the period of 2016 – 2017, average primary balance surplus of 2.45 per cent of GDP with a corresponding average total debt-to-GDP ratio of 73.9 per cent.
- From 2018 – 2020, government is on the average expected to run primary balance surplus of 2.16 per cent of GDP with a total debt-to-GDP ratio of 72.9 per cent.
- During the period of 2021 – 2025, government is on the average to run primary balance surplus of 1.72 per cent of GDP with an average total debt-to-GDP ratio of 71.7 per cent.

The above analysis has revealed that government fiscal policy is expected to be on a sustainable path that will require a measurable fiscal effort, on the assumption that there is a high optimism that the international

donors are very willing to provide sufficient concessionary funds immediately after the HIPC completion point and through time. This is expected to help achieving a sustainable level of public sector debt-to-GDP ratio that is consistent with primary balance-to-GDP through time.

Chart 1: Dynamic Path of "Sustainable" Primary-to-GDP ratios

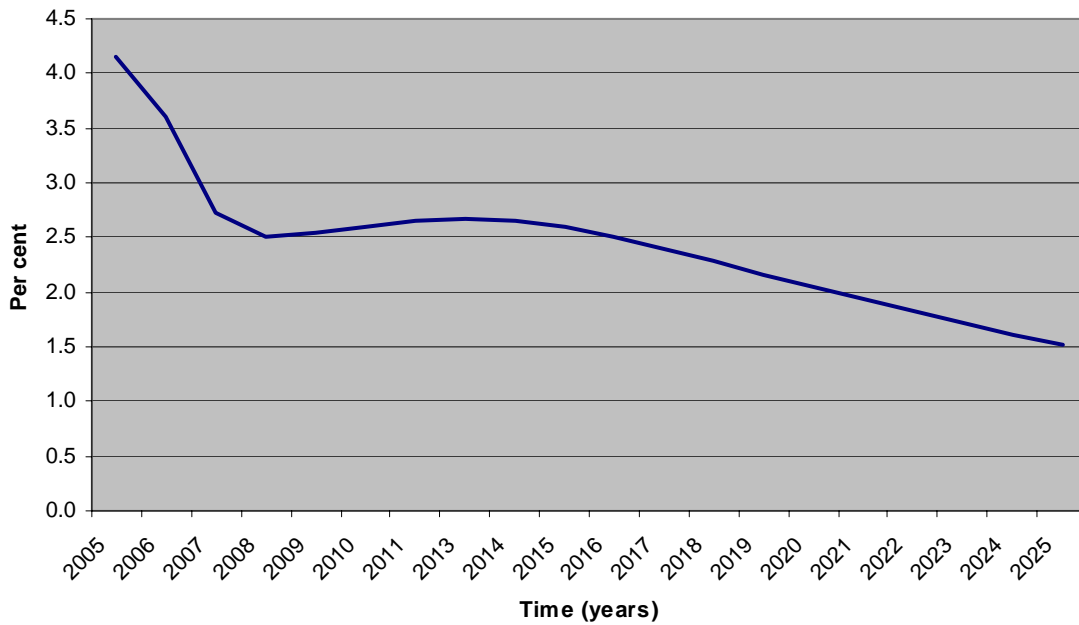


Chart 2: Total central Government Debt-to-GDP ratios

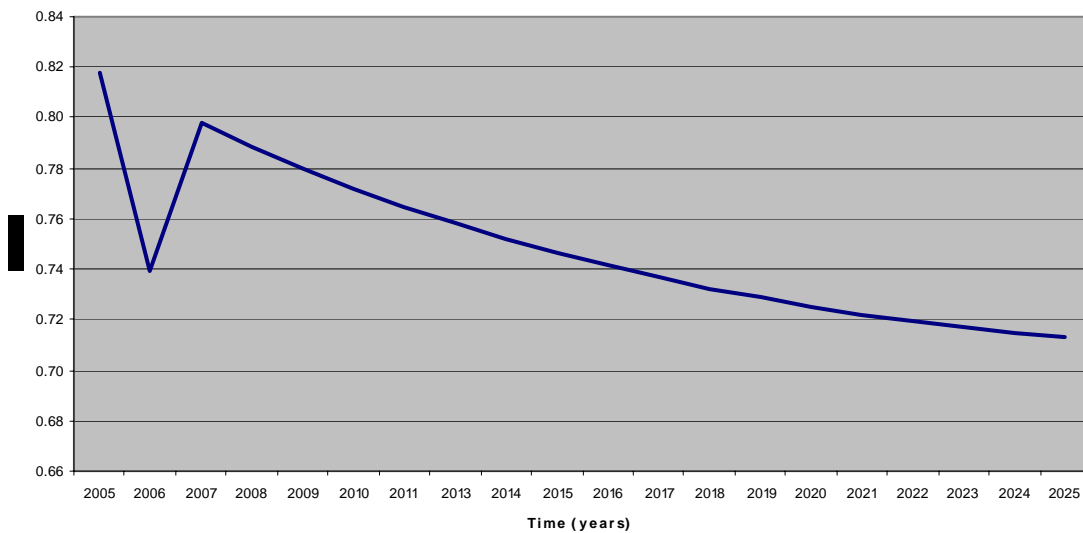


Chart3: Categories of debt-to-GDP ratios

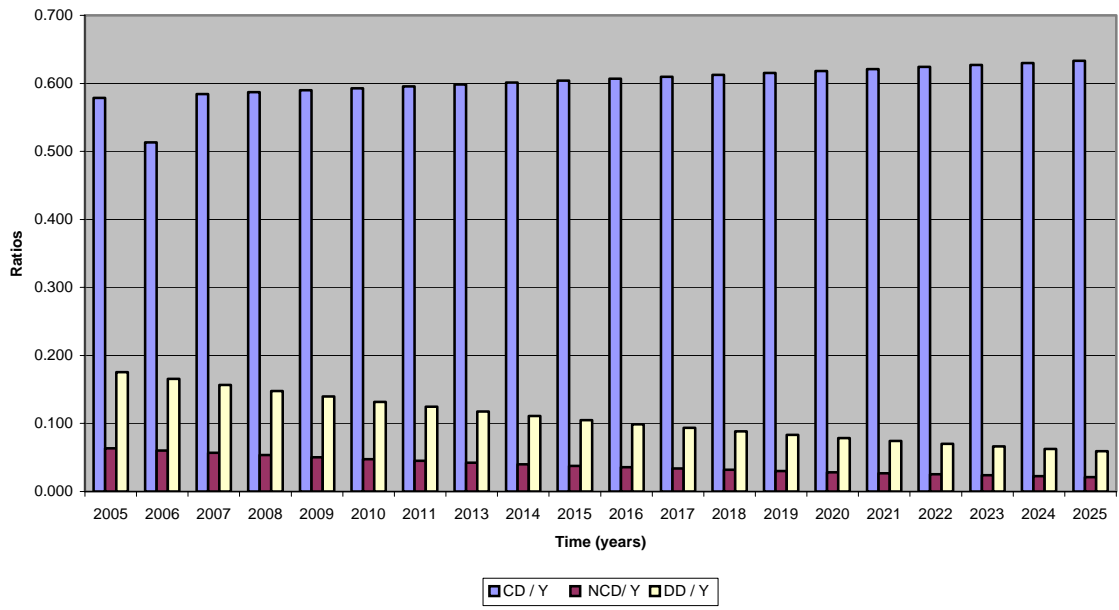


Table 1: Evolution of Ghana's debt-to-GDP ratio under Baseline scenario (before MDRI)

Time (t)	$(Pb / Y)_t$	CD / Y	NCD / Y	DD / Y	total debt / Y
2005	4.15	0.579	0.064	0.176	0.818
2006	3.61	0.513	0.060	0.166	0.739
2007	2.73	0.584	0.057	0.157	0.798
2008	2.51	0.587	0.054	0.148	0.788
2009	2.55	0.590	0.051	0.140	0.780
2010	2.61	0.593	0.048	0.132	0.772
2011	2.65	0.595	0.045	0.124	0.765
2013	2.67	0.598	0.042	0.118	0.758
2014	2.65	0.601	0.040	0.111	0.752
2015	2.59	0.604	0.038	0.105	0.747
2016	2.50	0.607	0.036	0.099	0.741
2017	2.40	0.610	0.034	0.093	0.737
2018	2.28	0.612	0.032	0.088	0.733
2019	2.16	0.615	0.030	0.083	0.729
2020	2.04	0.618	0.028	0.079	0.725
2021	1.93	0.621	0.027	0.074	0.722
2022	1.82	0.624	0.025	0.070	0.720
2023	1.72	0.627	0.024	0.066	0.717
2024	1.62	0.630	0.022	0.063	0.715
2025	1.53	0.633	0.021	0.059	0.713

Scenario 1: Base line with the application of debt Cancellation under the MDRI

with the baseline assumptions and with the application of debt cancellation from the MDRI, we try to ascertain the impact of the MDRI on government's future fiscal policy. The effect of debt cancellation will instantly reflect in the concessional debt level and concessional debt-to-GDP ratio. This will immediately impact positively on the total central government debt stock outstanding levels and to that of GDP ratio. The following results were examined:

- with the application of about US\$4,200.00 million as debt relief in 2006 under the MDRI, concessional debt-to-GDP ratio falls down to 20.9 per cent from the 57.9 per cent of GDP in 2005. This immediately impact positively forcing total debt-to-GDP ratio to tumble to 43.5 per cent in 2006 from 81.8 per cent of GDP in 2005 with a corresponding primary balance surplus tripping up to 4.73 per cent of GDP in 2006.
- From the period of 2007- 2011, the government is on the average expected to run primary balance surplus of 3.32 per cent of GDP with a corresponding total debt-to-GDP ratio of 40.3 per cent. During this period the total debt-to-GDP ratio is expected to be stable and consistent with the average primary balance-to-GDP ratio. It is expected that government will achieve fiscal sustainability during the period.
- The primary balance-to-GDP ratio is expected to fall down further to an average level of 2.89 per cent with a corresponding total debt-to-GDP ratio of 37.1 per cent from 2012 - 2014.
- During the period of 2015 - 2016 the primary balance surplus of 2.64 per cent of GDP is expected with an average total debt-to-GDP ratio of 35.7 per cent.
- From 2017 - 2019, government is on the average expected to run primary balance surplus of 2.30 per cent of GDP. Total debt-to-GDP ratio is expected to average 34.03 per cent. These ratios are expected to decline gradually through time. An expected average government primary balance surplus from 2020 - 2025 is 1.78 per cent of GDP with a corresponding average total debt-to-GDP ratio of 31.8 per cent.

The impact of debt cancellation under the MDRI has significantly impacted on the declining trends in the ratios and also partly by faster nominal GDP growth relative to how debt is growing through time.

Chart 1: Dynamic Path of "Sustainable" Primay Balance-to-GDP

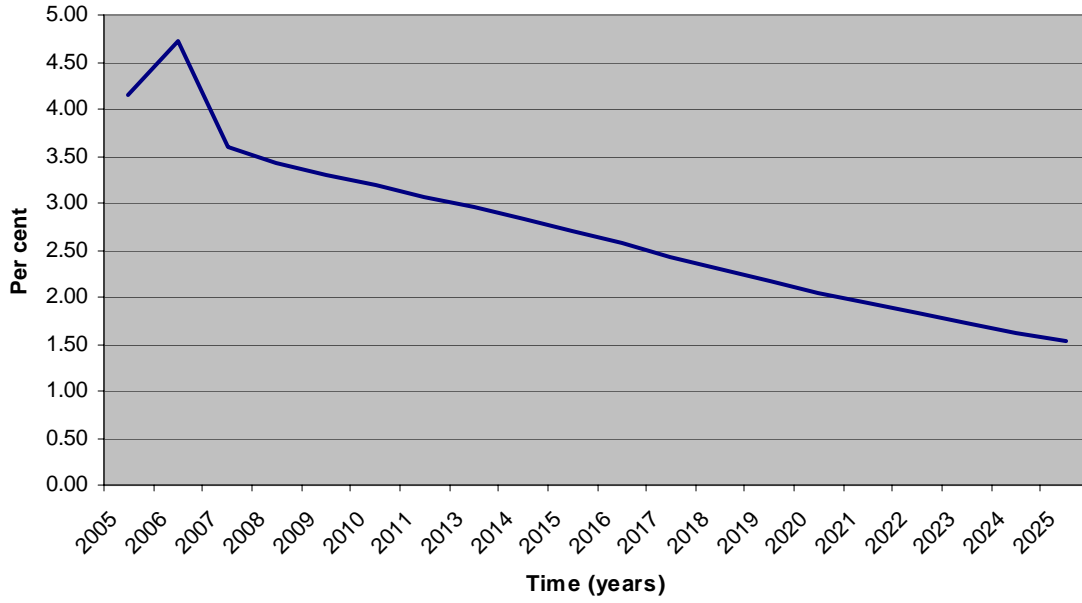


Chart 2: Total Central Government Debt-to-GDP ratios

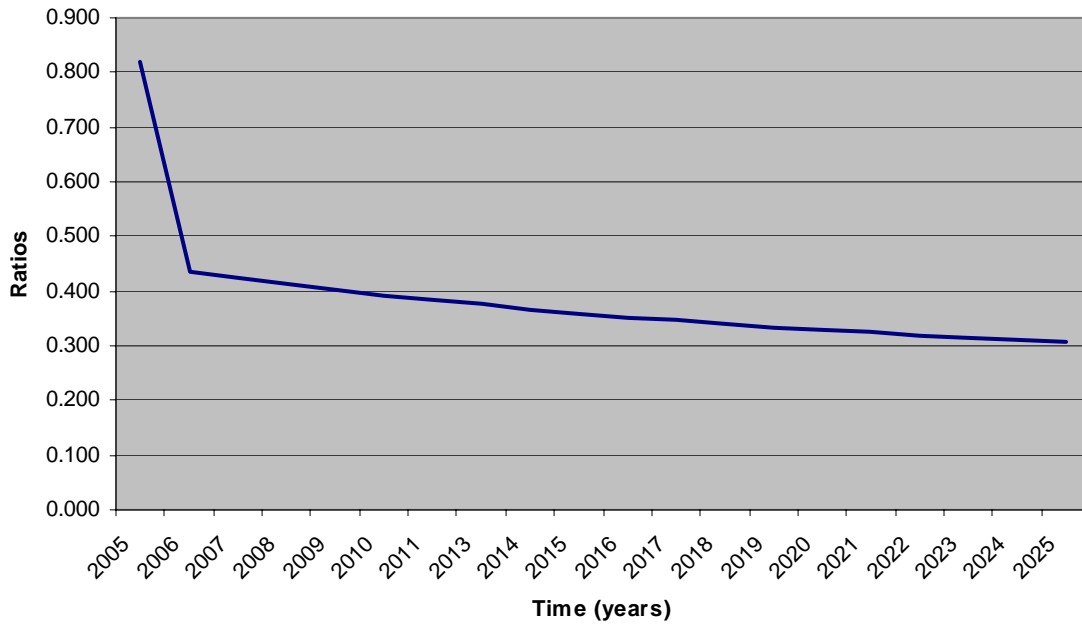


Chart 3: Categories of Debt-to-GDP ratios

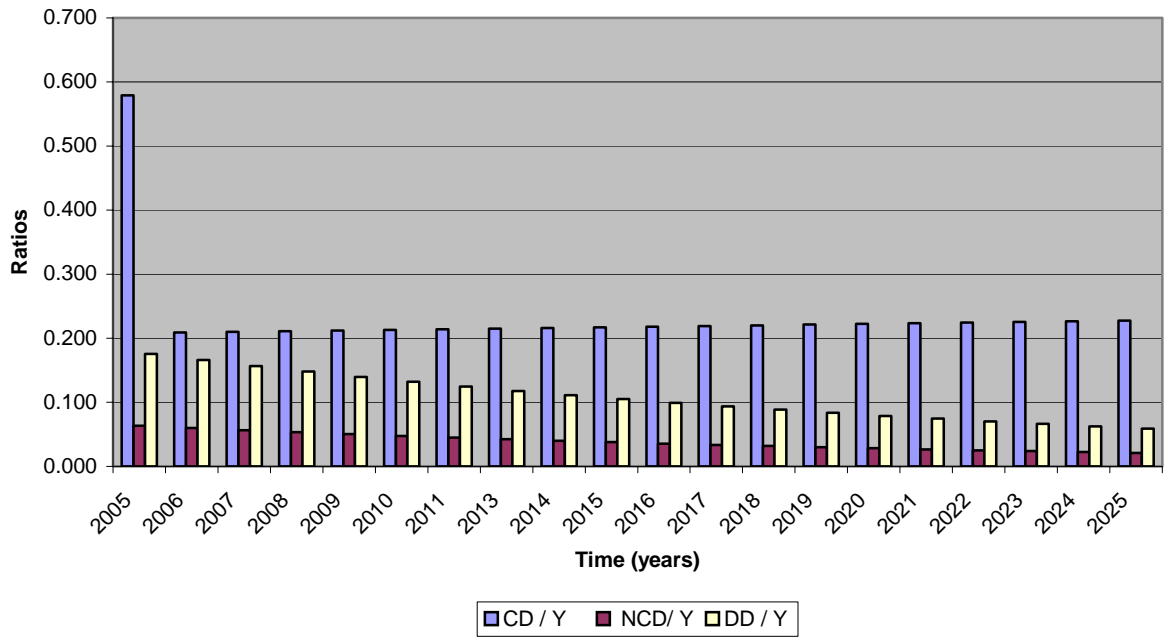


Table 1: Evolution of Ghana's debt-to-GDP ratio under scenario 1(after MDRI)

Time (t)	(Pb /Y) _t	CD / Y	NCD/ Y	DD / Y	total debt /Y
2005	4.15	0.579	0.064	0.176	0.818
2006	4.73	0.209	0.060	0.166	0.435
2007	3.60	0.210	0.057	0.157	0.423
2008	3.44	0.211	0.054	0.148	0.412
2009	3.30	0.212	0.051	0.140	0.402
2010	3.18	0.213	0.048	0.132	0.393
2011	3.07	0.214	0.045	0.124	0.384
2013	2.95	0.215	0.042	0.118	0.375
2014	2.83	0.216	0.040	0.111	0.367
2015	2.70	0.217	0.038	0.105	0.360
2016	2.57	0.218	0.036	0.099	0.353
2017	2.43	0.219	0.034	0.093	0.346
2018	2.30	0.220	0.032	0.088	0.340
2019	2.17	0.221	0.030	0.083	0.335
2020	2.05	0.222	0.028	0.079	0.329
2021	1.93	0.223	0.027	0.074	0.324
2022	1.82	0.224	0.025	0.070	0.320
2023	1.72	0.225	0.024	0.066	0.316
2024	1.62	0.227	0.022	0.063	0.312
2025	1.53	0.228	0.021	0.059	0.308

Scenario 2: In 2007 when Ghana assess funds from the International Capital Market-US\$300M

By the assumptions under this scenario and on that Ghana intends to assess an amount of US\$300 million from the ICM in 2007. We try to ascertain whether the government's future fiscal policy is consistent with debt sustainability in the post HIPC (MDRI) era. The analysis under this case revealed the following results:

- By end-2007, government will be expected to run primary balance surplus of 3.4 per cent of GDP, about 1.34 percentage points lower than in 2006 with total debt-to-GDP ratio stumbling to 49.3 per cent from a lower level of 43.5 per cent in 2006. This is partly as a result of non-concessional debt-to-GDP ratio tripping up to 9.8 per cent from 6.0 per cent in 2006 and on the assumption that concessional debt-to-GDP will grow through time.
- During the period of 2008 - 2010, government is on the average expected to run primary balance surplus of 3.05 per cent of GDP with total debt-to-GDP ratio of 48.2 per cent. Between these periods, non-concessional debt-to-GDP ratio average about 10.2 per cent, showing a marginal increase from 9.8 per cent in 2007. The government is expected to achieve fiscal sustainability as total debt-to-GDP ratio is expected to be stable and consistent with a sustainable primary balance-to-GDP ratio during the period.
- From 2011 - 2014, government again on the average is expected to run primary balance surplus of 2.76 per cent of GDP with a corresponding total debt-to-GDP ratio of 46.9 per cent. Although primary balance-to-GDP ratio is expected to tumble marginally down, but with stable and consistent total debt-to-GDP ratio during the period, fiscal sustainability will be achieved.
- From 2015 - 2018, government again on the average is expected to run primary balance surplus of 2.4 per cent of GDP with a corresponding total debt-to-GDP ratio of 45.8 per cent. The government is expected to achieve fiscal sustainability as total debt-to-GDP ratio is expected to be stable and consistent with a sustainable primary balance-to-GDP ratio during the period.
- During the period of 2019 - 2025, government again on the average is expected to run primary balance surplus of 1.7 per cent of GDP with a total debt-to-GDP ratio

of 45.0 per cent, which stable and consistent with a sustainable primary balance-to-GDP ratio during the period. The government is expected to achieve fiscal sustainability during this period.

The above analysis has shown that even with a mix of growing concessional debt and non-concessional debt, stable debt-to-GDP ratios that are consistent with sustainable primary balance-to-GDP ratios are expected through time. These are expected to ensure that government's future fiscal policy is consistent with debt sustainability in the post HIPC era.

Chart 1: Dynamic Path of "Sustainable" Primary Balance to-GDP

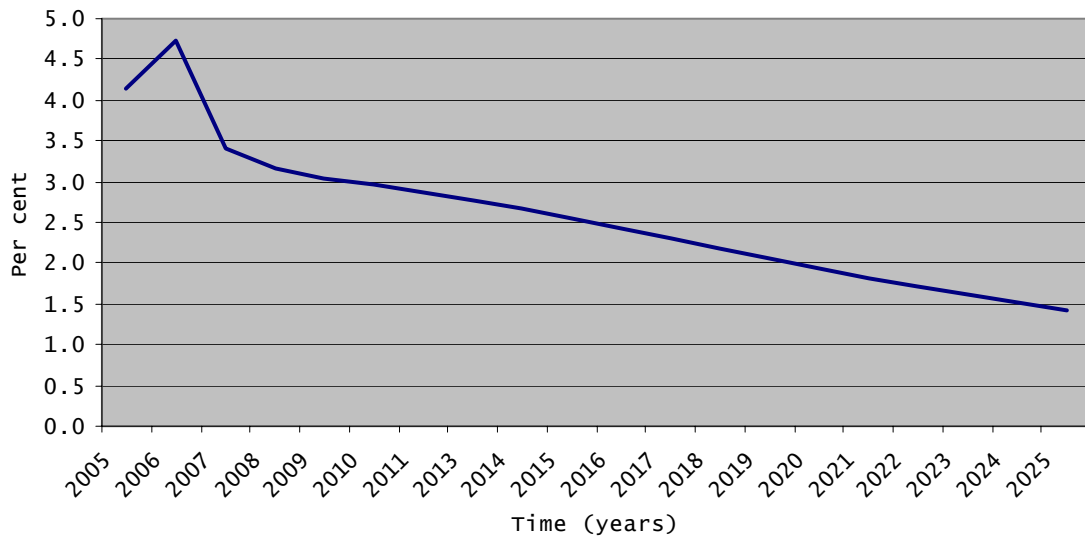


Chart 2: Total Central government debt-to-GDP ratio

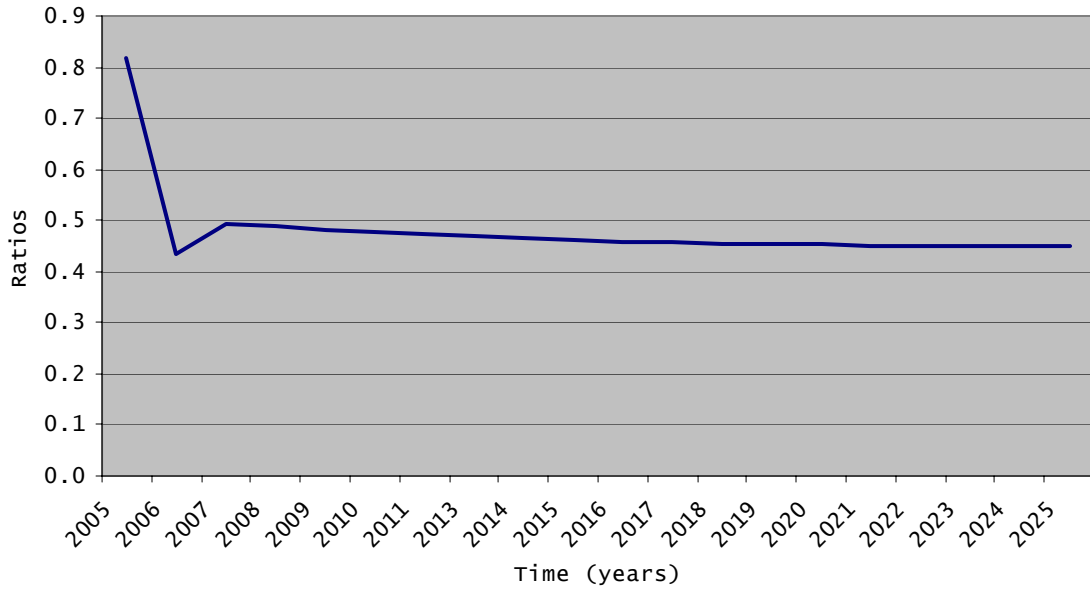


Chart 3: Categories of Debt-to-GDP ratio

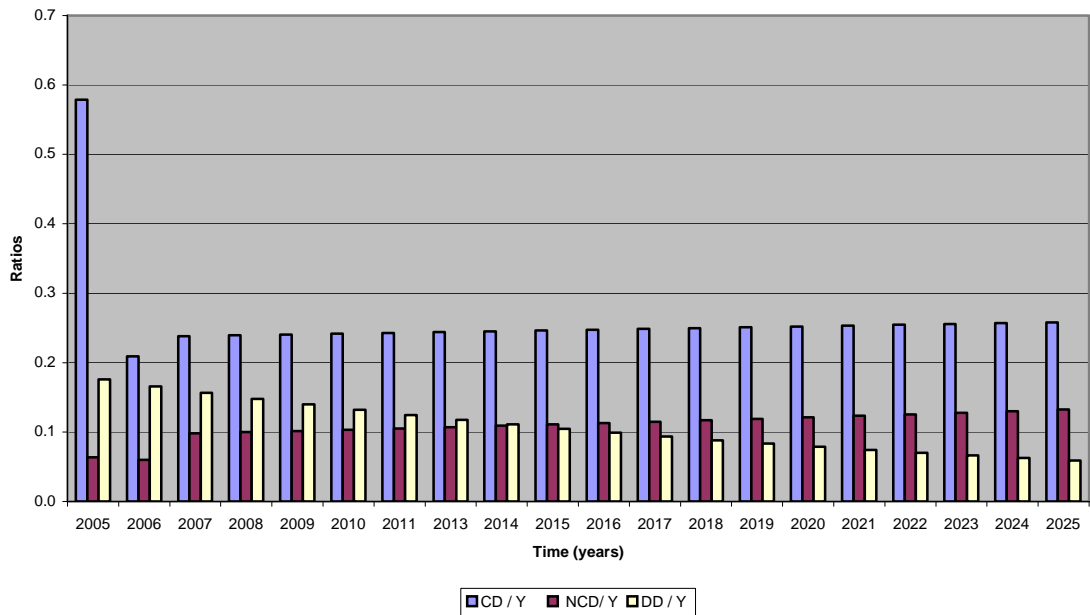


Table 1: Evolution of Ghana's debt-to-GDP ratio under scenario 2

Time (t)	$(P_b / Y)_t$	CD / Y	NCD / Y	DD / Y	total debt / Y
2005	4.15	0.579	0.064	0.176	0.818
2006	4.73	0.209	0.060	0.166	0.435
2007	3.39	0.238	0.098	0.157	0.493
2008	3.15	0.239	0.100	0.148	0.487
2009	3.05	0.241	0.102	0.140	0.482
2010	2.95	0.242	0.104	0.132	0.477
2011	2.86	0.243	0.105	0.124	0.473
2013	2.77	0.244	0.107	0.118	0.469
2014	2.66	0.245	0.109	0.111	0.465
2015	2.55	0.246	0.111	0.105	0.462
2016	2.43	0.247	0.113	0.099	0.459
2017	2.30	0.249	0.115	0.093	0.457
2018	2.18	0.250	0.117	0.088	0.455
2019	2.05	0.251	0.119	0.083	0.453
2020	1.94	0.252	0.121	0.079	0.452
2021	1.82	0.253	0.123	0.074	0.451
2022	1.72	0.255	0.126	0.070	0.450
2023	1.62	0.256	0.128	0.066	0.450
2024	1.52	0.257	0.130	0.063	0.450
2025	1.43	0.258	0.132	0.059	0.450

Scenario 3: In 2007 when Ghana assess funds from the International Capital Market-US\$500M

Under this scenario and by the assumptions, Ghana intends to assess an amount of US\$500 million from the ICM in 2007. We then try to find out whether the government's future fiscal policy is consistent with debt sustainability in the post HIPC (MDRI) era. The analysis under this case revealed the following results:

- By end-2007, government will be expected to run primary balance surplus of 3.4 per cent of GDP, about 1.34 percentage points lower than in 2006 with total debt-to-GDP ratio stumbling to 51.1 per cent from a lower level of 43.5 per cent in 2006. This is partly as a result of non-concessional debt-to-GDP ratio tripping up to 11.6 per cent from 6.0 per cent in 2006 and on the assumption that concessional debt-to-GDP will grow through time.
- In 2008 government is expected to run primary balance surplus of 3.14 per cent of GDP with total debt-to-GDP ratio of 50.6 per cent. Although both ratios fell marginally in 2008, non-concessional debt-to-GDP ratio increases marginally to 11.8 per cent, 0.2 percentage points lower than in 2007.
- From 2009 – 2010 on the average government is expected to run primary balance surplus of 2.99 per cent of GDP with a corresponding average total debt-to-GDP ratio of 50.0 per cent.
- During the period of 2011 – 2014, government on the average is expected to run primary balance surplus of 2.75 per cent of GDP, with a corresponding total debt-to-GDP ratio of 48.8 per cent. The government is expected to achieve fiscal sustainability as total debt-to-GDP ratio is expected to be relatively stable and consistent with a sustainable primary balance-to-GDP ratio during the period.
- From 2015 – 2019, government again on the average is anticipated to run primary surplus of 2.69 per cent of GDP, with a corresponding total debt-to-GDP ratio awaiting to be stable and averaging 48.9 per cent. It is anticipated that government fiscal policy will be sustainable during the period.
- During the period of 2020 – 2025, government anticipates to achieve Fiscal sustainability. On the average government is expected to run primary balance

surplus of 1.66 per cent of GDP, with a corresponding total debt-to-GDP ratio of 47.4 per cent.

The above analysis again has revealed that government even with a mix borrowing of concessional and an increased non-concessional loans, will expect to run its fiscal policies on a sustainable path which will be stable and consistent with total debt-to-GDP ratios not exceeding 50 percent in the long run. Although, primary balance-to-GDP ratios will be tumbling gradually down to 1.66 per cent in 2025 from relatively high of 3.4 per cent.

Chart 1: Dynamic Path of "Sustainable" Primary Balance-to-GDP

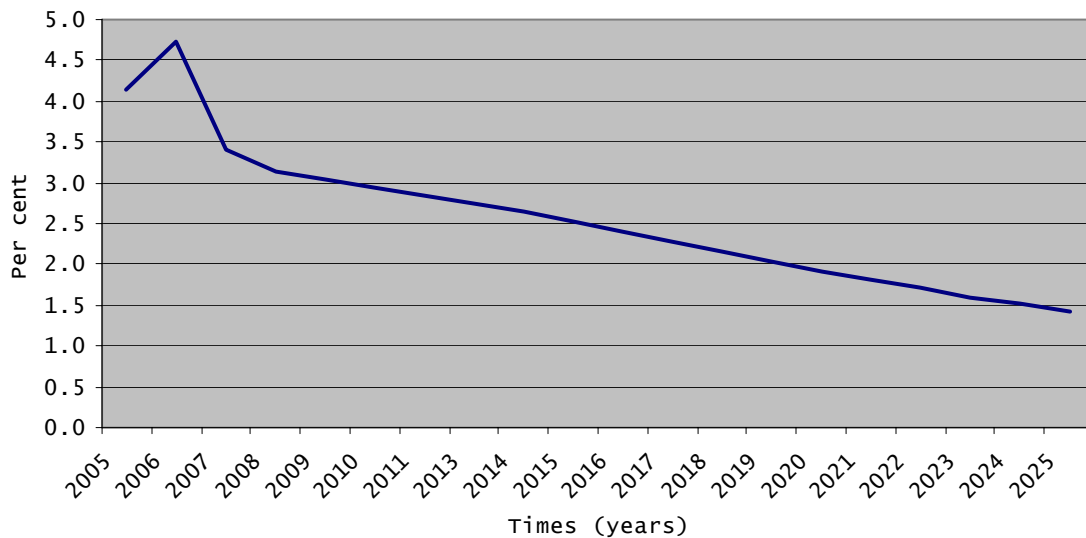


Chart 2: Total Central Government Debt-to-GDP

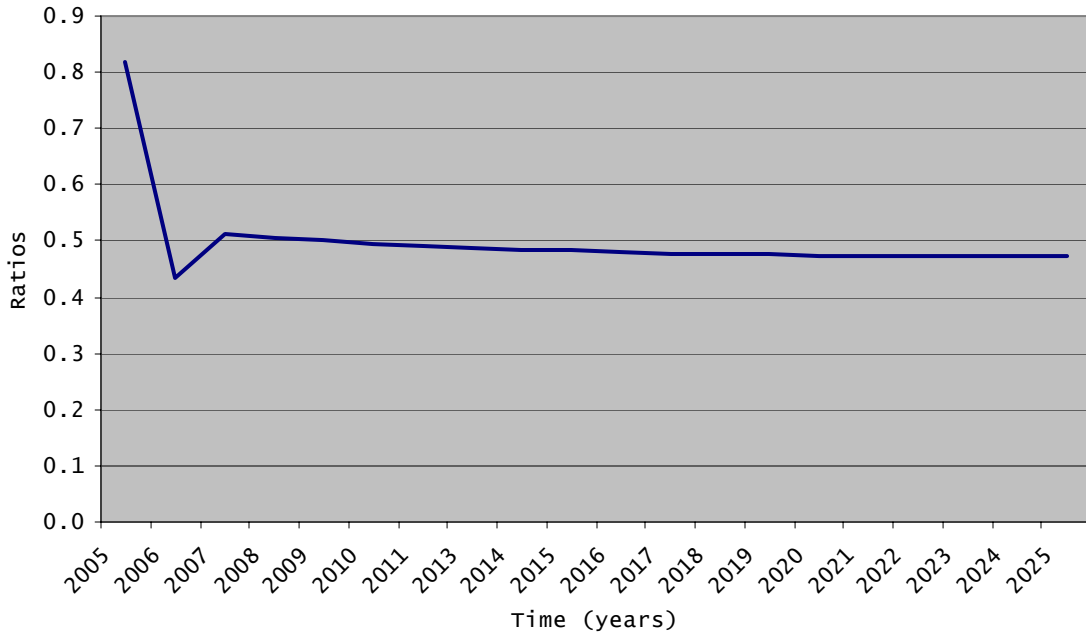


Chart 3: Categories of Debt-to-GDP ratio

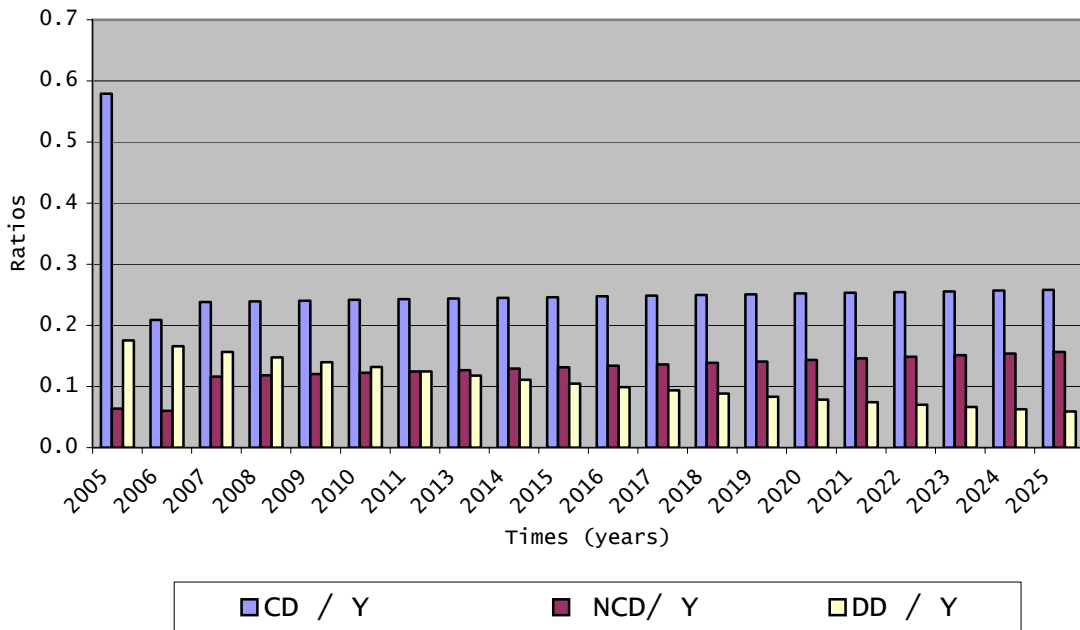


Table 1: Evolution of Ghana's debt-to-GDP ratio under scenario3

Time (t)	(Pb / Y)t	CD / Y	NCD/ Y	DD / Y	total debt /Y
2005	4.15	0.579	0.064	0.176	0.818
2006	4.73	0.209	0.060	0.166	0.435
2007	3.39	0.238	0.116	0.157	0.511
2008	3.14	0.239	0.118	0.148	0.506
2009	3.03	0.241	0.120	0.140	0.501
2010	2.94	0.242	0.123	0.132	0.496
2011	2.85	0.243	0.125	0.124	0.492
2013	2.76	0.244	0.127	0.118	0.488
2014	2.65	0.245	0.129	0.111	0.485
2015	2.53	0.246	0.131	0.105	0.483
2016	2.41	0.247	0.134	0.099	0.480
2017	2.29	0.249	0.136	0.093	0.478
2018	2.16	0.250	0.139	0.088	0.477
2019	2.04	0.251	0.141	0.083	0.475
2020	1.92	0.252	0.144	0.079	0.474
2021	1.81	0.253	0.146	0.074	0.474
2022	1.70	0.255	0.149	0.070	0.473
2023	1.60	0.256	0.151	0.066	0.473
2024	1.51	0.257	0.154	0.063	0.474
2025	1.42	0.258	0.157	0.059	0.474

Scenario 4: In 2007 when Ghana assess funds from the International Capital Market-US\$1 billion

Under this scenario and by the assumptions, Ghana intends to assess an amount of US\$1 billion from the ICM in 2007. We then try to find out whether the government's future fiscal policy is consistent with debt sustainability in the post HIPC (MDRI) era. The analysis under this case brought fore the following results:

- By end-2007, government will be expected to run primary balance surplus of 3.4 per cent of GDP, about 1.34 percentage points lower than in 2006. Total debt-to-GDP ratio is expected to stumble 55.6 per cent from a lower level of 43.5 per cent in 2006. This is partly as a result of non-concessional debt-to-GDP ratio tripping up to 16.1 per cent from 6.0 per cent in 2006 and on the assumption that concessional debt-to-GDP will grow through time.
- From 2008 - 2009, government on the average is expected to run primary balance surplus of 3.06 per cent of GDP with total debt-to-GDP ratio of 55.0 per cent. Although both ratios fell marginally during the period, non-concessional debt-to-GDP ratio on the average however, increased marginally to 16.6 per cent, 0.5 percentage points lower than in 2007.
- During the period of 2010 - 2014, government anticipates to achieve Fiscal sustainability. On the average government is expected to run primary balance surplus of 2.77 per cent of GDP, with a corresponding total debt-to-GDP ratio of 54 per cent, which is expected to be stable during the period.
- During the period of 2015 - 2025, government on the average is expected to run primary balance surplus of 1.91 per cent of GDP, with a corresponding total debt-to-GDP ratio of 53.0 per cent. The government is expected to achieve fiscal sustainability as total debt-to-GDP ratio is expected to be relatively stable and consistent with a sustainable primary balance-to-GDP ratio during the period.

The analysis above again has shown that government even with a mix borrowing of concessional and an additional increase in non-concessional loans, will expect to run its fiscal policies on a sustainable paths which will be stable

and consistent with total debt-to-GDP ratios not exceeding 60 percent in the long run. Although, primary balance-to-GDP ratios on the average will be tumbling gradually down to 1.91 per cent by 2025 from relatively high of 3.4 per cent.

Chart 1: Dynamic Path of "Sustainable" Primary Balance-to-GDP

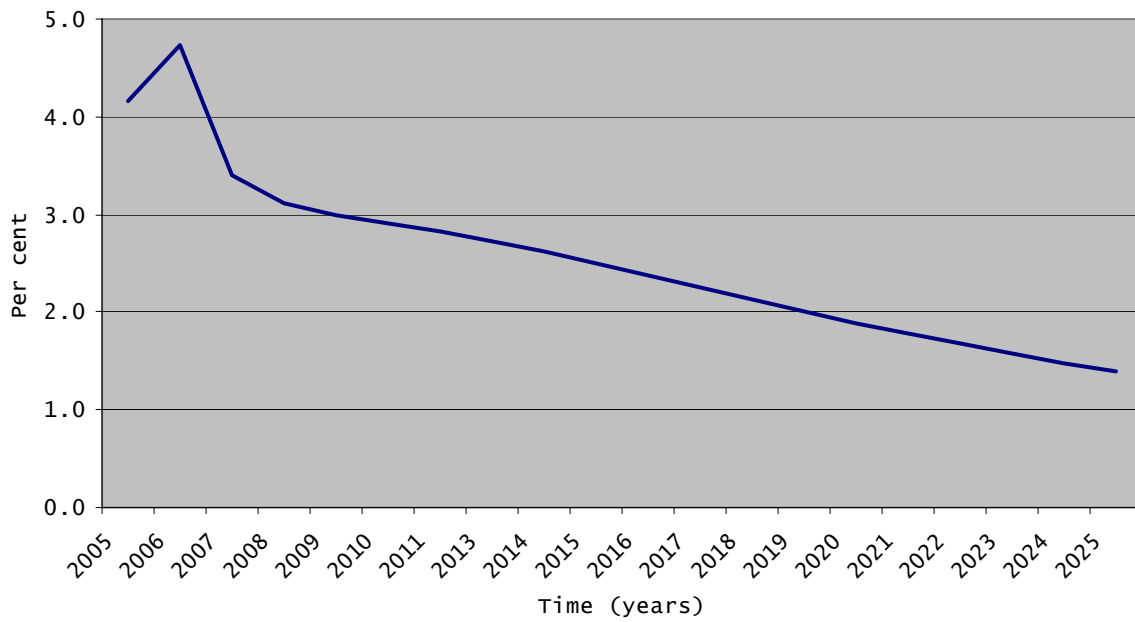


Chart 2: Total Central Government Debt-to-GDP ratios

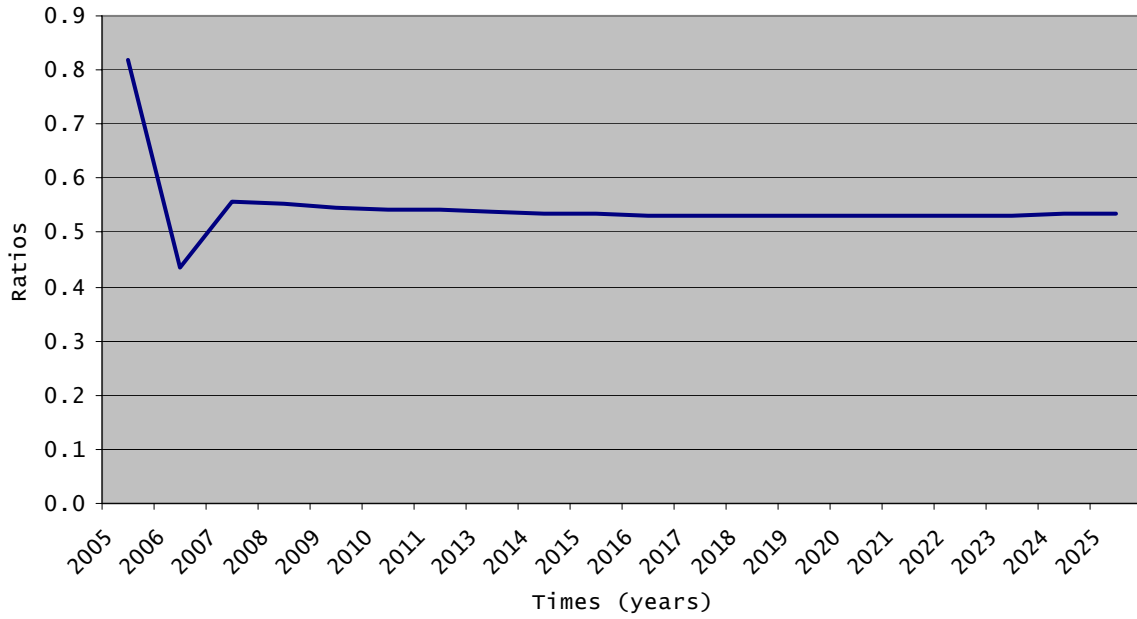


Chart 3: Categories of Debt-to-GDP ratio

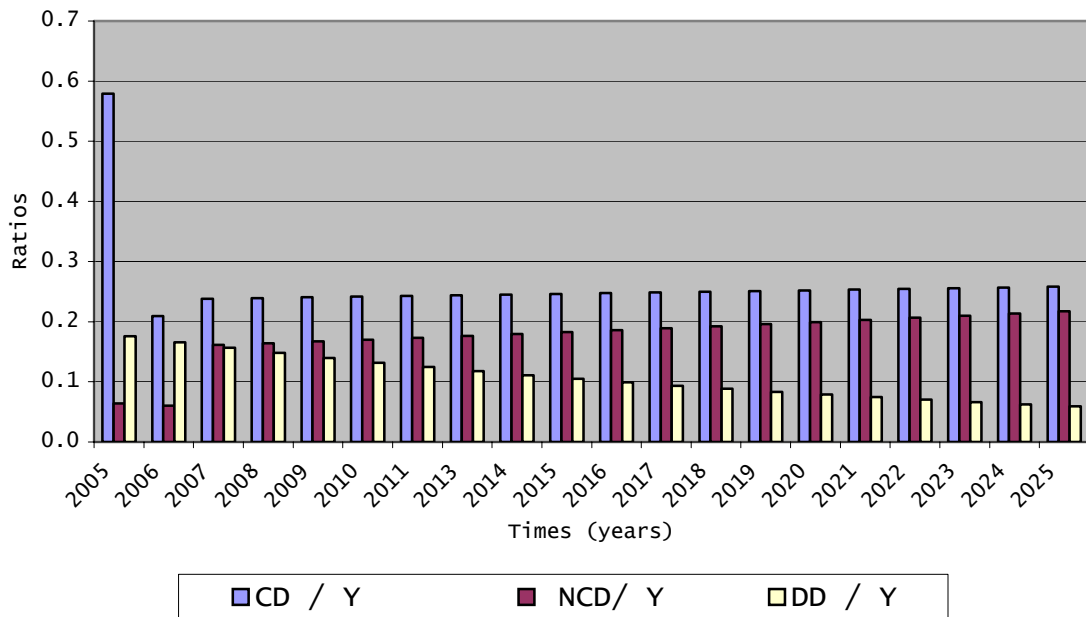


Table 1: Evolution of Ghana's debt-to-GDP ratio under scenario 4

Time (t)	(Pb / Y)t	CD / Y	NCD/ Y	DD / Y	total debt /Y
2005	4.15	0.579	0.064	0.176	0.818
2006	4.73	0.209	0.060	0.166	0.435
2007	3.39	0.238	0.161	0.157	0.556
2008	3.11	0.239	0.164	0.148	0.552
2009	3.00	0.241	0.167	0.140	0.547
2010	2.91	0.242	0.170	0.132	0.544
2011	2.82	0.243	0.173	0.124	0.540
2013	2.72	0.244	0.176	0.118	0.538
2014	2.62	0.245	0.179	0.111	0.535
2015	2.50	0.246	0.183	0.105	0.534
2016	2.38	0.247	0.186	0.099	0.532
2017	2.26	0.249	0.189	0.093	0.531
2018	2.13	0.250	0.192	0.088	0.530
2019	2.01	0.251	0.196	0.083	0.530
2020	1.89	0.252	0.199	0.079	0.530
2021	1.78	0.253	0.203	0.074	0.530
2022	1.67	0.255	0.206	0.070	0.531
2023	1.57	0.256	0.210	0.066	0.532
2024	1.48	0.257	0.214	0.063	0.533
2025	1.39	0.258	0.218	0.059	0.535

Conclusions

The basis, objectives and principles guiding the MDRI is that in the post-HIPC (MDRI) era, Ghana moves towards debt and macroeconomic sustainability underpinned by rapid economic growth, development and reduced poverty. The Fund and the Bank have argued that this will not be automatic and will require implementing some pragmatic and result-oriented reforms that will assist accelerated growth. The model in this paper shows that whether Ghana indeed achieves sustainability is likely to depend on other four (4) additional set of variables namely:

- Initial non-concessional debt stock
- Initial domestic debt stock
- The availability of concessional loans moving forward
- The rate of accumulation of both non-concessional debt and domestic debt.

The application of the model to the case of Ghana illustrates the challenges of the post-HIPC (MDRI) including the times beyond the cut-off date of 2015. Under a set of reasonable assumptions, regarding future GDP growth rate, rate of domestic inflation, interest rates and concessional loans, the required fiscal adjustment diminishes over time as the primary surplus declines consistently. It also does not address successive issues of non-concessional debt, which may change the profile of the primary balance significantly.

General Remarks

- The steady state primary balance can correspond either to a deficit or a surplus. If the rate of growth of nominal GDP is low relative to the interest rate (r^D) on domestic debt and interest rate (r) on non-concessional debt. It is likely that Ghana will need to run a primary surplus in the long run. Whether or not this is actually the case will depend on the importance of seigniorage.
- Nominal GDP values beyond 2005 were projected using the equation $[P_N * (1 + r)^n * \text{GDP deflator}]$. The end-2005 figures for GDP deflator and GDP at constant price were used as initial values).

Recommendations

- The inclusions of future availability of grants and transfers need to be considered in the next study.
- The effect of real exchange rate on primary balance corresponding to a sustainable debt-to-GDP will be looked at in the next study as the above analysis assumed a steady exchange rate. This actually in a real sense is never the case.
- Other forward-looking approaches should be explored to complement this methodology applied. We suggest the utilization of the Debt Pro © software, which is currently being used by the Fund and the World Bank for debt sustainability analysis. This software has the capacity to forecast and quantify future debt burden. Comparably, this model only applies a technique using “rate of accumulation of debt” to capture the netflows-disbursement and debt service.

REFERENCES

Edwards Sebastian (2002), "Debt Relief, Exchange rates and the Current Account".

Cuddington, John, "Analyzing the Sustainability of Fiscal Deficit in Development Countries".

Milesi-Ferretti, Gian Maria and Assaf Razin (1996) "Sustainability of persistent Current Accounts Deficits".

Lachler Ulrich (2001), "Nicaragua: Fiscal Sustainability After HIPC"

World Bank and IMF (2001), "The Challenge of Maintaining Long Term External Sustainability".