

FISCAL SUSTAINABILITY IN THE GHANAIAN ECONOMY

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ABSTRACT

Fiscal sustainability has remained a major challenge in Ghana in the last three decades. The paper constructed an ex-post fiscal profile of the economy and conducted a simulation on the likely effects of the anticipated oil revenue earnings for the attainment of fiscal sustainability. The theoretical framework is based on the inter-temporal government budget constraint used in mainstream fiscal sustainability analysis. Simulation and sensitivity analyses were conducted on the profile. A GDP growth rate below 4% and an interest rate of above 11% will lead to unsustainability in the Ghanaian economy. Also, an exchange rate appreciation of beyond 43% rendered the fiscal stance unsustainable. These findings would guide policy makers in the management of the macroeconomy in the presence of oil revenue.

Keywords: Fiscal Sustainability, Fiscal Profile, Ghana, Sensitivity Analysis, Gross Domestic Product (GDP)

INTRODUCTION

Sustainability of fiscal policy emerged as a major economic issue in Ghana following the high levels of debt experienced in the 1980s. Suffice it to say that Ghana is ranked among the most Heavily Indebted Poor Countries (HIPC) in the world. The country's high public debt and debt servicing impair the capacity of the economy to achieve desired growth and development. A major threat to the national government's fiscal position is the large stock of government national debt and the associated costs of servicing the debt. The growth of public debt has been high, averaging 126.2% of Gross Domestic Product (GDP) between 1993 and 2003, and this improved tremendously to 42.4% of GDP in 2006 and has since been on the ascendancy. The national government's total outstanding debt stood at 14,405.6 Ghana cedis representing 66.2 % of GDP in 2009.

It is however, important to note that large revenue generated from oil leads paradoxically to economic stagnation. These countries have underperformed their mineral poor counterparts owing to a variety of economic and political indicators. It has been well established that the more intense a country relied on mineral exports (measured as a percentage of GDP) during the period 1960 - 1990, the more slowly its economy grew (Auty and Gelb, 2001, Sachs and Warner, 2005). From 1960 to 1990, GDP per capita in mineral-rich countries increased by 1.7% as compared to 2.5% to 3.5% in mineral-poor countries. Similarly, from 1970-1993, mineral-rich countries grew by only 0.8% as compared to 2.1% to 3.7% in mineral-poor countries.

Writing about the public debt problem faced by France in the 1920s, Keynes (1923) highlighted the need for the French government to conduct a sustainable fiscal policy in order to satisfy its budget constraint. He stated further that the absence of sustainability would be evident when the State's contractual liabilities have reached an excessive proportion of the national income. The first among the theories that examined the fiscal behaviour of governments by the way they work or function is Lerner's (1943) theory of Functional Finance. Domar-Tobin Formula, according to Breuss (1998) is one strand of literature that provides justification for the fiscal criteria. He notes that Domar (1944) was one of the first to deal with the burden of the debt and the national income. The framework was used to answer concerns about how continuous government borrowing results in an ever rising public debt, the servicing of which will require higher taxes. He noted that the latter will eventually destroy the economy or result in outright repudiation of the debt. In conformity with the above, Cronin and McCoy (2000) also stated that the predominant analytical framework used to assess fiscal sustainability is based on the intertemporal budget dynamics introduced by Domar in the 1940s. Operationalising fiscal policy sustainability, Talvi and Vegh (1998) derived an indicator of fiscal policy sustainability. To render the definition operational, they defined the concept of permanent primary deficit as that deficit, constant over time, whose present discounted value is equal to the planned trajectory of the primary deficit. Work closely related to ours include Rutayasire (1990) and Ariyo (1993) and build upon Talvi and Vegh (1998). The data used for the study consists of annual observations obtained from the Bank of Ghana.

The paper is organised as follows. Section 2 provides the concept and some definitions of fiscal sustainability. Trends of fiscal and macro indicators are presented in section 3. The theoretical framework and methodology is presented in section 4. Section 5 is made up the the results and conclusion of the study.

CONCEPT AND DEFINITIONS OF FISCAL SUSTAINABILITY

Fiscal sustainability is a multi-dimensional concept that incorporates an assessment of solvency, stable economic growth, stable taxes, and intergenerational fairness. It has not only financial implications but also social and political ones related to both present and future generations (OECD, 2009). Fiscal sustainability, according to Alvarado et al. (2004) is often used without a clear definition¹. Drawing on an analogy with household behaviour, a country's policies are defined as fiscally sustainable if they lead to a situation in which the country can satisfy its budget constraint. However, Mendoza and Oviedo (2003) suggests that this is an imprecise definition. They point out that the true budget constraint is an accounting identity that, by definition is always satisfied.

With respect to the above, Buiter (1985) notes that fiscal sustainability is primarily concerned with identifying a fiscal profile that ensures the attainment of a desired state for the nation and her citizens. It is therefore aimed at ensuring the solvency (long-term financial survival) of the country as a necessary condition for meeting the collective wishes and aspirations of the people. In view of this concern, it is now recognized that feasible fiscal policies must be considered in a framework in which the government is subjected to an inter-temporal budget constraint in one form or another. This feasibility test requires that the level of a country's fiscal deficit be sustainable.

Further, Zee (1988) noted that a necessary condition for stability is that the growth rate of the economy be greater than the interest rate. With a constant positive per capita debt, the level of public debt allows the economy to converge to a steady state; such that the level of government expenditure maximises the steady-state utility level of a representative leading to fiscal sustainability. This view of steady state equilibrium or convergence of the economy to a steady state conforms to Diamond's (1965) growth model. It states that steady-state stability requires that at the minimum, the cost of debt service be equated with the rate of growth of the economy. It is also consistent with Blinder-Solow's aggregate demand model, which requires the marginal increase in government budget deficit, due to additional debt obligation to be equal to the marginal increase in output and, consequently, increase in tax revenue (Blinder and Solow, 1974).

Moreover, a distinction is sometimes made between strong and weak condition of sustainability according to Quintos (1995). The strong condition corresponds to stationarity of the debt process. On the other hand, the weak condition requires that the growth rate of debt to be lower than the growth rate of the economy. As mentioned earlier, the contemporary literature defines sustainability in terms of necessary and sufficient conditions. The necessary condition is akin to the Domar stability condition explained above. The sufficient condition explains that the debt/GDP ratio stability may not serve as an appropriate indicator of sustainability. If rate of interest exceeds growth rate of the economy, even with primary balance the interest burden on the existing debt might be translated into a perpetual enlargement in debt/GDP ratio. In such an instance adequate primary surplus is required to offset the gap between rate of interest and rate of growth of the economy and to stabilise debt/GDP ratio

¹ While the intuition is clear; a sustainable policy must avoid bankruptcy, the analytical and operational definition of sustainability is not straight forward. The theory has proposed different conditions for sustainability. See respectively Domar (1944) and Blanchard (1990).

In addition, an important tool for fiscal sustainability practice is a fiscal rule. Fiscal rules² are statutory or constitutional restrictions that set specific limits on fiscal indicators such as budgetary balance, debt, government spending, or taxation (Kennedy and Robbins, 2001). Primarily, fiscal rules seek to disengage fiscal policy from government influence much like the separation of monetary policy embodied in inflation-targeting frameworks. They also impose greater accountability on government finances, drive expectations and enhance transparency of the overall budgetary framework. A fiscal rule can be useful for ensuring the credibility of government policy over time. Stated differently, a major advantage of rule based fiscal policies over discretionary approach is time consistency³.

Again as noted by Brunila (2002), such rules help tackle a country's predisposition to budget deficits⁴ by pre-empting possible spending overruns and thereby help to address the political and institutional tendencies to raise expenditures during economic booms. According to Kopits and Symansky (1998), much of the recent interest in fiscal rules has been prompted by the need to achieve or maintain long-run fiscal sustainability. Among the numerous fiscal rules that have been implemented, there are probably two distinct broad classes that may serve as potential models; deficit-and-debt-based rules, and expenditure rules⁵. Deficit-and-debt-based rules generally operate through numerical limits on the amount of the annual deficit – either a limit denominated in terms of currency, such as zero, or a limit set as a percentage of the GDP. Examples of this type of fiscal rule include the European Union's Stability and Growth Pact⁶, and the United States Gramm-Rudman-Hollings⁷ system.

TREND AND STYLISED FACTS OF FISCAL AND MACROECONOMIC INDICATORS IN GHANA

² According to Buchanan and Wagner (1977), the balanced budget rule is necessary to restrain the politically rational behaviour of policy makers-reflected in the deficit bias in response to the electorate's failure to understand the intertemporal budget constraint.

³ As shown in Kydland and Prescott (1977) in a dynamic two period context, rule based policies are time consistent and lead to a higher level of welfare than discretionary policies, given the likely reaction of private agents with rational expectations to the incentive of governments to deviate from previously announced policies under discretion.

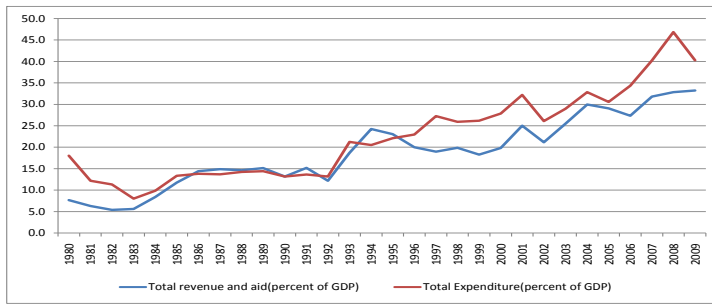
⁴ According to Buchanan and Wagner (1977), the balanced budget rule is necessary to restrain the politically rational behaviour of policy makers-reflected in the deficit bias in response to the electorate's failure to understand the intertemporal budget constraint.

⁵ The key characteristic of the expenditure or spending rule is that it aims to limit policy-induced increases in spending and reductions in taxes rather than to focus directly on the deficit.

⁶ The Stability and Growth pact sets a maximum deficit of 3 percent of GDP.

⁷ The U.S. system was based on statutory dollar deficit limits, gradually falling to zero.

Figure 1: Total Revenue and Expenditure trend in Ghana

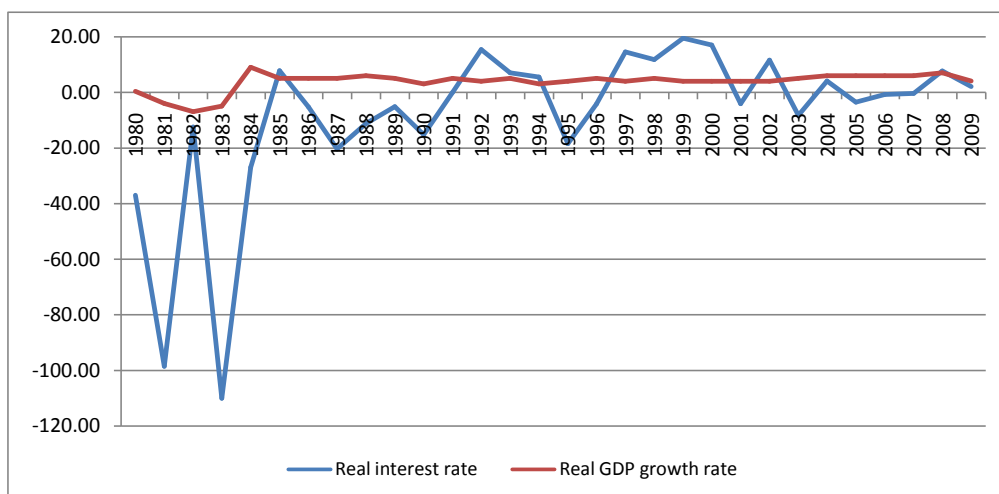


Source: Constructed from

Ghana Statistical Service, Bank of Ghana Annual Reports

In this perspective, Ghana, like other developing countries has experienced inadequate revenue vis-a-vis rising expenditure trend. Observably, the level of government spending has been on the ascendency. This expenditure trend for most part is greater than government domestic revenue. The higher spending relative to revenue stems from the fact that various governments desire to increase output and also to enhance the socio-economic wellbeing of her people. Total government expenditure peaked to a high of GH¢ 8,009.8 million representing 46.8% of GDP in 2008. However, there was a reduction in expenditure by 6.5% of GDP in 2009. This increased expenditure resulted from the hotly contested presidential elections in 2008. This is shown in figure 1. The resulting fiscal deficits have been resolved by both domestic and external financing. The domestic financing of the deficits have usually come from banking and non banking sectors.

Figure 2: Real interest rate and real GDP growth rate

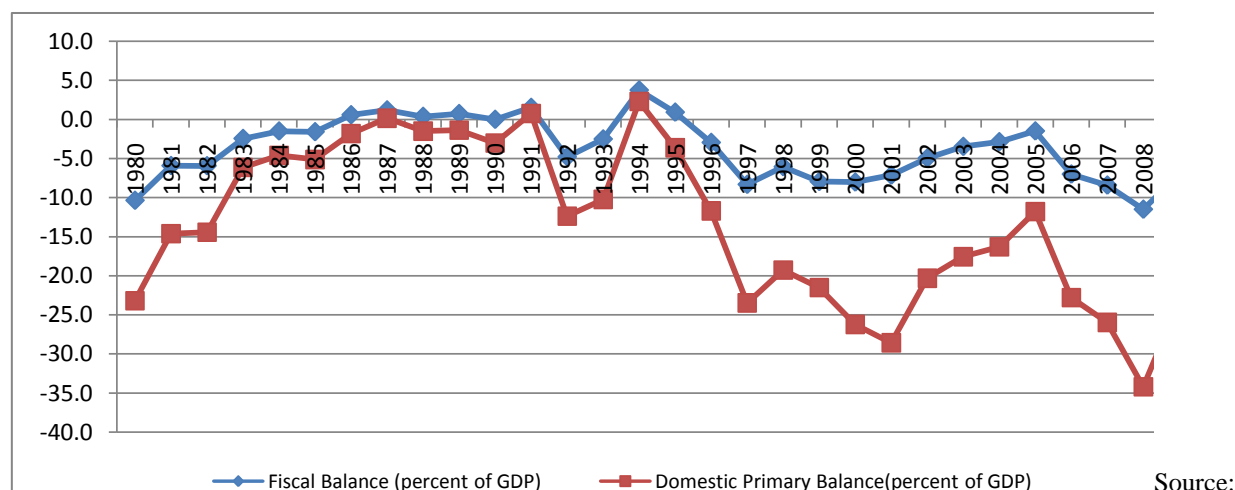


Source: Constructed from Ghana Statistical Service, Bank of Ghana Annual Reports

Moreover, the economy of Ghana registered negative real GDP growth rate between 1981 and 1983 as shown in figure 2. Real GDP growth rate has been positive since, but continuously below the real interest rate from 1997 to 2001. Notably, real interest rate dipped to a negative 110% in 1983 due to an abysmally high inflation rate. Real interest rate peaked in 1999 declined ay down to 2009. Interest rate trends moved in the same direction as inflation trends. The interest rate on

91-day Treasury Bills rose from 18.22 percent in 2008 to 23.82 percent in 2009 while the demand deposits rate fell marginally from 4.63 percent in 2008 to 3.55 percent in 2009. Interest rate declined way down to 2007, almost closing in to the growth rate of real GDP but has maintained a high of 20% and 2009.

Figure 3: Fiscal balance and Domestic Primary Balance



Constructed from Ghana Statistical Service, Bank of Ghana Annual Reports

The overall fiscal balance has recorded deficits up to the year 1986. It remained fairly stable until 1991 beyond which a deficit of approximately 5% was recorded in 1999. There was a record surplus of 3.7% of GDP in 1994. From then onwards, deficits have been recorded. In the year 2000, the deficit was 8.5% of GDP. This steadily improved to a deficit of approximately 2% of GDP by the end of 2005. The political business cycles remain, but with decreasing amplitude – the overall fiscal deficit of 8.5% of GDP for 2000 is much higher than the deficit of 3.2% recorded for 2004. The deficit situation improved from 13.8% of GDP to 7% of GDP as shown in figure 3. Increasingly, government is relying less on domestic sources to finance the deficits. The reliance on domestic sources for financing the deficits has been particularly low over the last three years of the sample, culminating in a net repayment of approximately 1.6% of GDP in 2005.

Similarly, chronic deficits marked the Ghanaian fiscal position since the early years of its development. From 1980 to 1985, fiscal deficit averaged 4.6% of GDP. There was a brief respite thereafter when the government’s fiscal position improved to register a surplus of less than 1% for the period 1986 to 1991. Thereafter, the fiscal balance has been in the negative plane and plummeted to 13.8% of GDP in 2000, the deficit stood at 13.7% of GDP in 2009. With the inclusion of divestiture receipts, the fiscal balance improved to 11.5% of GDP. This is shown in figure 3. The deterioration of the fiscal balance as evidenced by widening fiscal deficits is mostly due to increases in government expenditure. The incidence of electoral cycles⁸ is marked by severe deficits in 1992, 1996, 2000 and 2008 as portrayed in panel B of Figure 2.1. These unsurpassed deficits are usually recorded in the election years preceding change of government.

THEORETICAL FRAMEWORK AND METHODOLOGY

From the theoretical and empirical literature, the analytical framework for fiscal sustainability is the current period budget constraint. The current period budget constraint is an expression that equates the flows of government revenues

⁸ A surge in government spending usually accompanied by widening fiscal imbalances immediately prior to elections has been a prominent macroeconomic shock in Ghana over the last 16 years.

and expenditures with changes in stock of public debt and the monetary base. Algebraically, the budget constraint is expressed as:

$$D = G - T = \Delta B + \Delta M \quad (1)$$

Where D is the government deficit, G is government expenditure, B is government debt, T is tax receipts and M is the money supply. It says that budget deficit can be financed by issuing money or by government debt through the issue of bonds. This formulation finds support from many others among which are Cronin and McCoy (2000), Alvarado et al. (2004), Chalk and Hemming (2000) and Burnside (2004). Following Burnside (2004), the government's budget constraint can be expressed as:

net issuance of debt = interest payments – primary balance – seignorage

The net issuance of debt is gross receipts from issuing new debt minus any amortization payments made in the period. The identity can be written as

$$B_t - B_{t-1} = I_t - X_t - (M_t - M_{t-1}) \quad (2)$$

The subscript t indexes time, measured in years, B_t is the stock of public debt at the end of period t, I_t is interest payments, X_t is the primary balance (revenue minus non interest expenditure) and M_t is the monetary base at the end of period t. This is modified as

$$I_t = (1 + i_t^d)B_{t-1} + E_t(1 + i_t^f)B_t^* \quad (3)$$

where i_t^d is domestic interest rate, i_t^f is foreign interest rate. The primary balance can be expressed as

$$X_t = G_t - T_t \quad (4)$$

where G_t is government expenditure and T_t is revenue. The government budget constraint can be expressed as:

$$G_t - T_t + I_t = (D_{t+1} - D_t) + (M_{t+1} - M_t) \quad (5)$$

Where $G_t - T_t + I_t = PD$, is the primary balance.

Building on the above, the study extends further the framework to differentiate domestic debt from foreign debt, the government budget constraint for period t in terms of domestic currency is

$$PD_t = (B_t^d - B_{t-1}^d) + E_t(B_t^* - B_{t-1}^*) + (M_t - M_{t-1}) \quad (6)$$

Interest payments on both domestic and external debt are separated to give the formulation a richer economic meaning as surmised by Rutayasire (1990) where PD is the government primary balance for period t, which is to be financed by seignorage, net domestic and external indebtedness. Interest payment, (I_t) on both domestic and foreign debt is

$$I_t = i_t^d B_t^d + E_t i_t^f B_t^* .$$

A further extension of the framework is the incorporation of aid. This modification is informed by the fact that aid has become a major component of the budget of Ghana especially after 2000 till 2009.

Following the formulation by Dinh (1999), aid as a component of foreign aid can be used to isolate concessionary debt to have an effect on change in debt levels. Taking into consideration the Domar (1944) framework⁹ and therefore substituting interest payments from equation (4.3), the government budget constraint for period t in domestic currency can be expressed as:

$$G_t - T_t + i_t^d B_t^d + E_t i_t^f (1 - A_t) B_t^* = \Delta B_t^d + E_t \Delta B_t^* (1 - A_t) + \Delta M_t \quad (7)$$

Where ΔB_t^d is the change in domestic debt, ΔB_t^* is change in external debt and ΔM_t is change in the monetary base. Aid is represented by A_t . All other variables are as explained before. Normalise equation (4.7) by dividing by nominal income, $P_t Y_t$. Where P is the price level and Y is real GDP and expressing it in real terms by dividing by P yields:

$$\frac{G_t}{P_t} - \frac{T_t}{P_t} + \frac{i_t^d B_t^d}{P_t} + \frac{E_t i_t^f (1 - A_t) B_t^*}{P_t} = \frac{\Delta B_t^d}{P_t} + \frac{E_t \Delta B_t^* (1 - A_t)}{P_t} + \frac{\Delta M_t}{P_t} \quad (8)$$

And simplifying,

$$g_t - \tau_t + i_t^d b_t^d + i_t^f (1 - A_t) b_t^f = (\Delta b_t^d + b_t^d \pi) + (1 - A_t) [\Delta b_t^f - b_t^f (\Delta e - \pi^f)] + (\Delta m_t + m\pi) \quad (9)$$

Where $\frac{B_t^d}{P_t} = b_t^d$ and $\frac{E B_t^*}{P_t} = \frac{B_t^f}{P_t} = b_t^f$ and $\frac{M_t}{P_t} = m_t$,

Then,

$$\frac{\Delta B_t^d}{P_t} = \Delta b_t^d + b_t^d \pi, \quad \frac{E_t \Delta B_t^*}{P_t} = \Delta b_t^f - b_t^f (\Delta e - \pi^f) \quad \text{and} \quad \frac{\Delta M_t}{P_t} = \Delta m_t + m\pi,$$

Where small case letters represent real values and π is the inflation rate.

Expanding equation (4.9) and group like terms yields:

$$g_t - \tau_t + i_t^d b_t^d - \pi^d b_t^d + i_t^f (1 - A_t) b_t^f + (1 - A_t) b_t^f (\pi^f - \Delta e) = \Delta b_t^d + (1 - A_t) \Delta b_t^f + (\Delta m_t + m\pi) \quad (4.10)$$

Simplifying further and reaaranging,

$$g_t - \tau_t + b_t^d (i_t^d - \pi^d) + (i_t^f - \pi^f + \Delta e) (1 - A_t) b_t^f = \Delta b_t^d + (1 - A_t) \Delta b_t^f + (\Delta m_t + m\pi) \quad (10)$$

⁹ This implies a simple rule for sustainability that the deficit to GDP ratio must equal the nominal growth rate of GDP times the debt to GDP ratio. Algebraically, $d = b.g$ as found in equation 3.14.

It is useful to express the above in percentage of GDP¹⁰, divide through by Y_t in order to obtain expressions for Δb_t^d and Δb_t^f such that

$$\frac{pd_t}{Y_t} + \frac{r_t^d b_t^d}{Y_t} + \frac{(r_t^f + \Delta e)b_t^f (1 - A_t)}{Y_t} = \frac{\Delta b_t^d}{Y_t} + \frac{\Delta b_t^f}{Y_t} (1 - A_t) + \frac{\Delta m_t}{Y_t} + \frac{m\pi}{Y_t} \quad (11)$$

Rearranging the above and simplifying ,

$$g_t - \tau_t = \Delta \beta_t^d + \beta_t^d (g - r_t^d) + \beta^f (g - r_t^d - \Delta e)(1 - A_t) + \Delta \beta_t^f (1 - A_t) + \Delta m_t + m_t (g + \pi) \quad (12)$$

With a bit of rearrangement, the above becomes a dynamic fiscal profile for Ghana. In this regard, the Fiscal Profile, FP, for the economy is expressed as:

$$FP = \tau_t - \{g + [\beta_t^d (r_t^d - g) + \beta^f (r_t^f + \Delta e - g)(1 - A_t)]\} - [\Delta \beta_t^d + \Delta \beta_t^f (1 - A_t)] - [\Delta m_t + m_t (g + \pi)] \quad (13)$$

The above framework separates the different factors that determine the fiscal profile of the country. It indicates that the fiscal position is influenced by government revenue, government expenditure, interest payments on public debt, revenue from seignorage. The remaining are the level of aid, real stocks of both domestic and external debt and automatic debt dynamics, which includes factors such as real domestic interest rate, and external interest rate. The rest are exchange rate changes, growth rate of GDP and seignorage revenue. The term $(r_t^d - g)$ is the growth adjusted real interest rate. The cost of servicing external debt $(r_t^f + \Delta e - g)$ captures the effects of international real interest rates. Monetary seignorage is defined as Δm_t and $m_t (g + \pi)$ is the growth adjusted inflation tax and equals the real value of the nominal increase in base money, where π equals the rate of inflation.

Modeling the effect of oil revenue allocation to the budget on the fiscal stance

As a small open economy, oil revenue is likely to have a sustained impact on the fiscal stance of the economy. Assuming the case where the exchange rate is pegged or heavily managed. Increased public spending falls partly on traded goods, whose prices are given, and partly on non-traded goods, whose prices consequently tend to rise. The pressure of public spending can therefore cause the real exchange rate to become over-valued. The relative price change switches the excess demand associated with oil revenue toward foreign goods. This will lead an appreciation of the exchange rate. Eastwood and Venables (1982) modelled the macroeconomic effect of a resource discovery in an open economy. This was considered as a foreign exchange increment to the national wealth. They defined oil revenue as the infinite term annuity of the increment whose impact would in turn affect demand. Following this idea, the allocation of oil revenue into the

¹⁰ The budget constraint equation is usually normalised by some measure of the government's ability to service and repay its debt (Ley, 2003, p. 2) or the government's capacity to tax (Kremers, 1989). Scaling by gross domestic product is a common research standard.

budget and a nominal exchange rate shock in tandem, would capture the effect of oil revenue on the fiscal stance of the economy.

Identifying nominal effective exchange rate appreciation episodes

It is thus imperative to identify episodes of exchange rate appreciation as shocks to the economy. Following Kappler et al. (2011), the identification of episodes of nominal effective exchange rate appreciation is performed with modifications to suit. An appreciation of nominal effective exchange rate is defined as an event if the nominal effective exchange rate is revalued relative to the preceding level. The one horizon allows the capture of only one-time step revaluations. An appreciation event is defined when the nominal effective exchange rate appreciates.¹¹ Algebraically, this is expressed as:

$$\log e_t - \log e_{t-1} > \log e_{t-1} - \log e_{t-2}$$

Where, e is the nominal effective exchange rate.

THE EMPIRICAL FRAMEWORK AND RESULTS

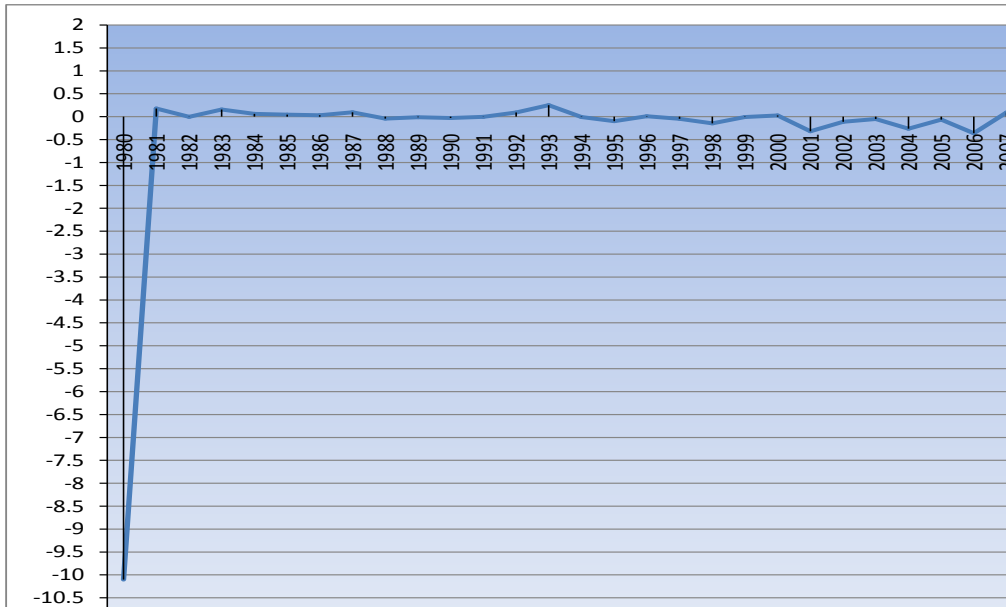
Data Issues and Assumptions

All fiscal and some macroeconomic variables are expressed as percentage of Gross Domestic Product since that is the standard practice for analysing fiscal sustainability. The normalised indicators are then used to calibrate the model. An exchange rate change of 51% was recorded between 1984 and 1985 in the period of study and this led to the highest exchange rate appreciation of 43% in the study period. This rate is used for the simulation to account for the likely effect of oil revenue on the fiscal stance. From an estimated expenditure equation, 50% and 70% increase in revenue will result in 10% and 15% increase in expenditure respectively. First, to capture the effects of spending oil revenue on the fiscal profile, a simultaneous increase in: government revenue by 50%, government expenditure by 15% and 43% appreciation of the nominal effective exchange rate captures the effect of oil revenue spending on fiscal stance. For the sensitivity analyses, minor increases and decreases to the 2009 baseline values represented the deviations.

¹¹ The nominal exchange rate appreciation must lead to sustained real appreciation as employed by Kappler et al. (2011)

Empirical Results

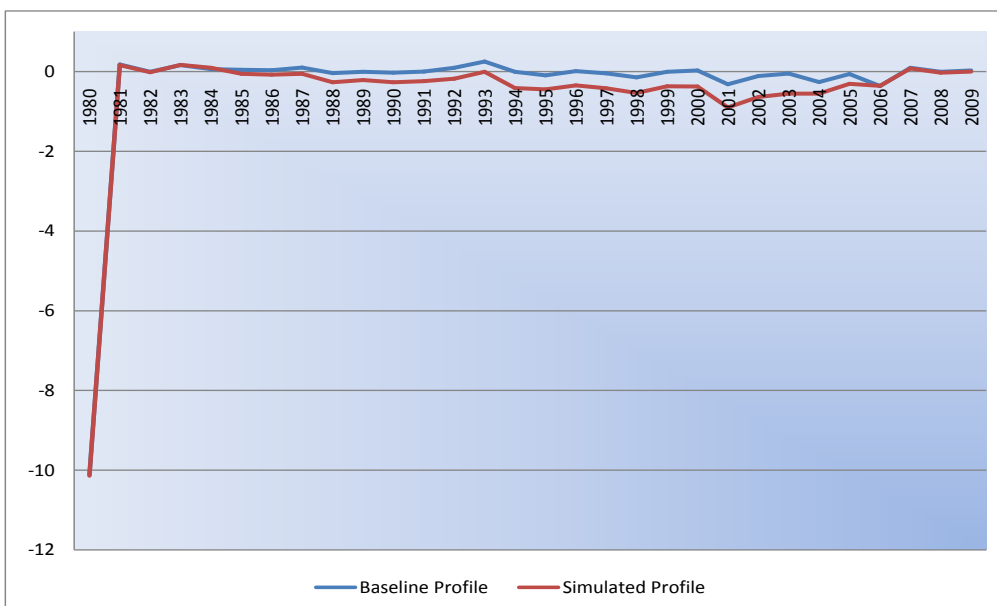
Figure 4: Baseline Fiscal Profile, 1980 - 2009



Source: Authors' construct

The results from the fiscal profile shown in figure 4 reveal that for the most part, fiscal stance was unsustainable. Ghana's fiscal profile has been unsustainable for 17 years in the study period. The points that lie below the zero line are unsustainable and vice versa. The period from 1983 to 1887 was sustainable due to policy reform shock of the Economic Reform Programme (ERP) that experienced heavy capital flows. However, this effect was not sustainable due to high and rising domestic and foreign debt levels. Also the period from 1997 to 2006 save 2000 and 2007 were unsustainable.

Figure 5: Simulation of effect of oil revenue on fiscal stance



Source: Author's construct from Fiscal Profile

The impact of oil revenue allocation to the budget on the fiscal stance of the Ghanaian economy is quite illuminating as shown by figure 5. The simulation has shown a remarkable deviation of the fiscal profile from the baseline scenario. An exchange rate appreciation of beyond 43% rendered the fiscal stance unsustainable. Only 3 years comprising 1981, 1983 and 1984 were sustainable in the period as compared with 12 years in the base case. Unsustainability took on a permanent stance from 1984 onwards to 2009. This therefore indicates that the fiscal stance would move toward an unsustainable path with allocation of oil revenue budget.

Table 1: Sensitivity analysis of fiscal profile

Panel A: Sensitivity of fiscal sustainability to real interest rate and real economic growth													
	real interest rate												
GDP Growth Rate	0.015	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13
0.07	S	S	S	S	S	S	S	S	S	S	S	S	S
0.06	S	S	S	S	S	S	S	S	S	S	S	S	S
0.05	S	S	S	S	S	S	S	S	S	S	S	S	S
0.04	S	S	S	S	S	S	S	S	S	S	U	U	U
0.03	S	S	S	S	S	S	S	U	U	U	U	U	U
0.02	S	S	S	S	U	U	U	U	U	U	U	U	U
S: Sustainable, U: Unsustainable													

Panel B: Sensitivity of fiscal sustainability to external debt and deficit								
	External debt							
		0.10	0.15	0.30	0.35	0.40	0.45	0.50
	-0.10	U	U	U	U	U	U	U
	-0.09	S	S	S	S	U	U	U
	-0.085	S	S	S	S	S	S	S
	-0.08	S	S	S	S	S	S	S
	-0.075	S	S	S	S	S	S	S
Deficit	-0.071	S	S	S	S	S	S	S
	-0.07	S	S	S	S	S	S	S
	-0.065	S	S	S	S	S	S	S
S: Sustainable, U: Unsustainable								

This provides a better understanding of the conditions that would turn the basic stance of fiscal policy into an unsustainable path. To perform this sensitivity analysis, the values used for four key parameters of the model; real interest rate, real GDP growth rate, deficit and external debt departed from the values as in the basic simulation. In the first exercise, both the real interest rate and real GDP growth rate were modified, keeping the other parameters of the model constant at their basic simulation values. In the second exercise, the deficit and external debt are changed, but now keeping constant all others at basic values.

From panel A of Table 1 it is observed that the basic simulation has ample room in three dimensions before becoming unsustainable. Thus, *ceteris paribus*, with an initial real interest rate of 10% of GDP, fiscal policy is still sustainable. With a reduction in the GDP growth rate to 3%, an increase in real interest rate to 7% keeps fiscal policy sustainable. A GDP growth rate below 4% and an interest rate of above 11% will undermine the attainment of fiscal sustainability in the Ghanaian economy. Higher non-inflationary real GDP growth rates should be matched with increasing real interest rates for sustainability. They should thus be managed simultaneously.

Similarly, as shown in panel B of Table1, an increase in the deficit to 9% of GDP allows for 35% external debt as a ratio of GDP for sustainability. However, the manoeuvre room is very tight when the deficit is considered. In this regard, a deficit of 10% of GDP would place fiscal policy in an unsustainable path. Also, increase in external debt should be matched by a reduction in deficit for sustainability. This result confirms the simulation in the previous section about the importance of government spending.

Conclusion

Fiscal developments in the study period in terms of movements in the key fiscal indicators reveal a grim fiscal situation. The distinct worsening of fiscal situation is reflected in large fiscal deficits and a sharp deterioration in the primary balance that has become endemic. This has contributed to the dissavings of the Government sector and led to increase in debt levels. Using ex-post indicators to track the past fiscal record shows that fiscal sustainability is a problem for the Ghanaian economy. On the domestic scene, there is pressure on government to increase wages and salaries. The Single Spine Salary Structure (SPSS) which dates back to January 1, 2010 and comes with related payment of arrears. The 2011 budget statement admits that implementing the Single Spine Salary Structure would result in inadequate resources for funding of social intervention programmes on a sustainable basis. The electoral spending cycles need to be considered as Ghana is going to the poles in 2012. A prudent use of oil revenue to finance budgetary expenditures is necessary following the pressure for increase in wages which eventually will cause a surge in government expenditure. Also, for the Ghanaian economy, an increase in external debt should be matched by a reduction in deficit for sustainability. Furthermore, higher non-inflationary real GDP growth rates should be matched with increasing real interest rates for sustainability.

Notwithstanding, there is the need for some caution since there exists a plethora of factors that connect closely to the issue of fiscal sustainability such as demographics and world economic conditions which are outside the control of small economies such as Ghana.

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