The Debt and Fiscal Nexus in Barbados

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Overview

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Introduction & Motivation

- The growing body of research on the debt position in Barbados has found, in general, that the island's debt path is sustainable.

- Nevertheless, recent downgrades by leading ratings agencies have raised questions about Barbados' ability to meet its obligations. This has particular implications for the cost of future debt and Barbados' ability to access international financial markets.

- These developments suggest that Barbados' debt position and its fiscal approach to debt warrant further and more detailed investigation.

- This paper therefore investigates how Barbados' fiscal policy has responded to changes in the level of debt, inclusive of guaranteed debt, since 1975.

Literature Review – Select Studies on Barbados' Debt and Fiscal Dynamics

| Author(s)	Methodology	Conclusions
Craigwell et al. (1988)	Ordinary Least Squares used to identify the determinants of External Central Government Debt	Losses in output, external imbalances and unusually large government expenditure were significant determinants of changes in the level of Barbados' external public debt
Archibald & Greenidge (2002)	Accounting Approach to the Primary Gap Indicator, Co-Integration Analysis of Central Government Debt	Debt is sustainable given the excess of the primary balance over that required to stabilise the debt ratio. This was confirmed by the observed co-integrating relationship between government expenditure and revenue.
Drakes (2008)	Dynamic Ordinary Least Squares, ARIMA Forecasting used to forecast a sustainable level of Central Government Debt	Current debt was below the calculated sustainable threshold of 80%, indicating a sustainable position (albeit close to the limit).
Greenidge et al. (2009)	Dynamic Ordinary Least Squares used to identify the determinants of External Central Government Debt	A Barro-type approach was used to examine the determinants of external debt. Pooled results indicate that both the income and expenditure gaps are critical in determining the level of external debt
Worrell et al. (2011)	Non-Stochastic Model Of The Impact Of Seinorage Financing On Reserves	Given the level of reserves, import reserve cover was sufficient under a range of debt scenarios, pointing to sustainability in terms of the impact of domestic financing on reserves. The authors conclude that since 1993 fiscal deficits have been sustainable despite considerable rises in debt ratio to over 90%.

Definitions and Stylised Facts

What is the Central Government Primary Balance and what is its relevance?

$$Primary\ Balance = Total\ Revenues - Noninterest\ Expenditure$$

- Interest expenditure represents that portion of government spending which is related to the level of debt, but over which government has no control.

- Therefore, by excluding these payments, we are able to extract a policy variable, primary balance, to which government can make adjustments in the long-run to address changes in the level of indebtedness.

- We can therefore examine this variable to see how government policy has been changed in response to fluctuations in the level of debt.

Definitions and Stylised Facts

Central Government Primary Balance/GDP
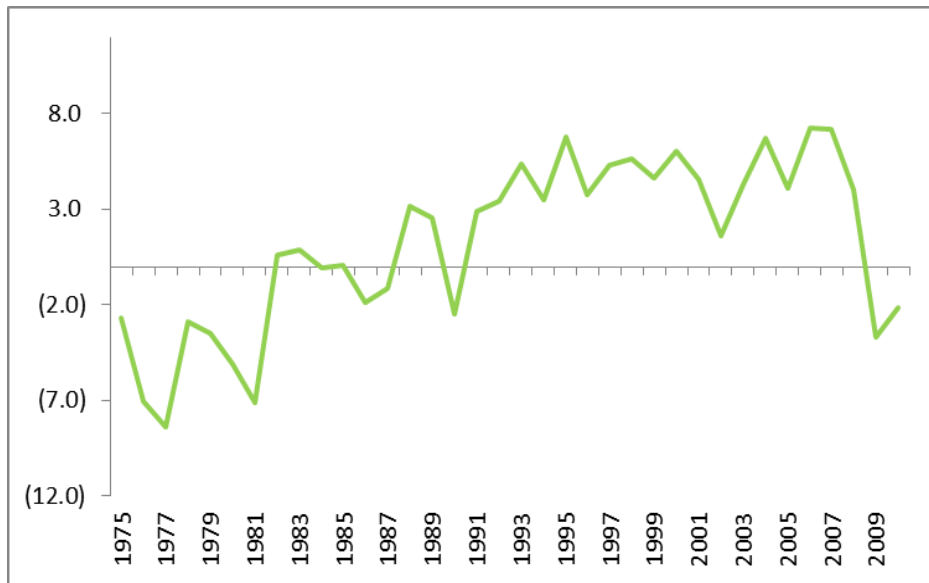
Overall Fiscal Balance/GDP
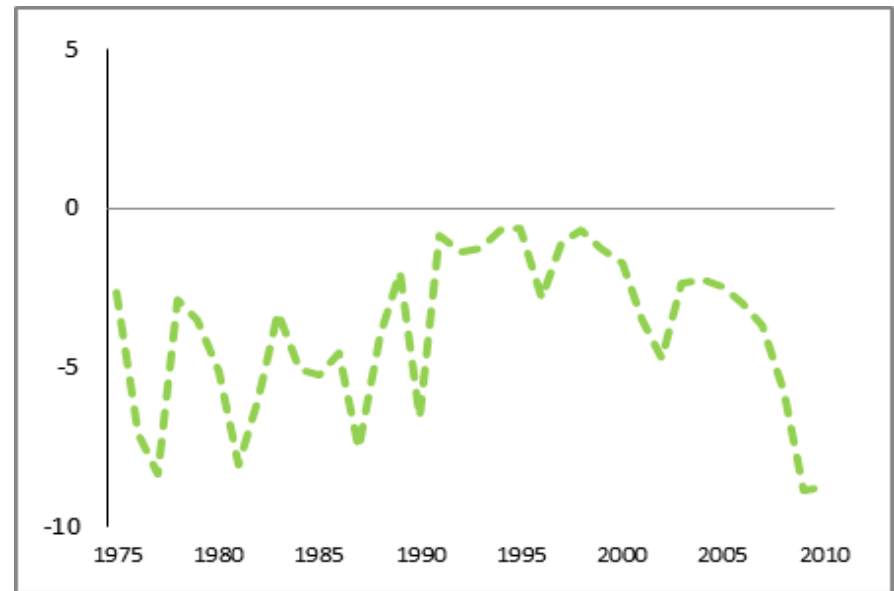
Definitions and Stylised Facts

What is the Government Guaranteed Debt and why include it in the analysis?

Put simply, Government guarantees represent contingent liabilities or claims which become payable by the Central Government in the event that some contractual condition has been met.

- Depending on the size and composition of these guarantees, the attendant risks can be substantial.

- Furthermore, the extent to which the debtor is likely to be able to meet the obligations is also a critical consideration since it has major implications for future fiscal stability via its impact on interest costs and amortization expenditure

Definitions and Stylised Facts

Between 2005 and 2010 alone, contingent liabilities transferred to government were the equivalent of 7.5% of estimated GDP. The trajectory of these contingent liabilities suggests that the risk posed by this type of off-budget financing should form an integral part of any analysis of fiscal sustainability and should be accounted for in prudent debt management strategy.

Methodology:
Theoretical Approach

- Much of the research on debt sustainability is based on the Present Value Constraint (PVC) which proposes that government debt is sustainable *iif.* the projected value of future surpluses is equivalent to the present value of current debt outstanding.

- In this vein, Barro (1979; 1986) and Bohn (1998) construct fiscal policy response functions which examine the responsiveness of primary balances to changes in debt levels.

- The authors argue that a positive response of the primary surplus to increases in the debt ratio conveys reliable information about fiscal sustainability in spite of how interest rates and growth rates compare (Agènor et al., 2000).

- Barro and Bohn also focus on the importance of controlling for cyclical fluctuations in spending and output in determining fiscal sustainability, making it feasible to make stronger inferences about the impact of change in debt on the primary surplus.

Methodology:
Test Equations

$$\Delta D_t = \alpha_0 + \alpha_1 D_{t-1} + \alpha_3 \overset{+}{YVAR} + a_4 \overset{+}{GVAR} + \varepsilon_t \qquad (1)$$

$$YVAR = \left(1 - \frac{y_t}{y_t^*}\right) * \left(\frac{g^*}{y_t}\right)$$

$$GVAR = \frac{(g_t - g_t^*)}{y_t}$$

Sustainability Requirement under Barro's proposition

$$\Rightarrow \ \alpha_1 < 0$$

Methodology:
Test Equations

$$PBAL_t = \alpha_0 + \alpha_1 D_{t-1} + \alpha_3 \overline{YVAR} + a_4 \overline{GVAR} + \varepsilon_t \quad (2)$$

$$YVAR = \left(1 - \frac{y_t}{y_t^*}\right) * \left(\frac{g^*}{y_t}\right)$$

$$GVAR = \frac{(g_t - g_t^*)}{y_t}$$

Sustainability Requirement under Bohn's proposition

$$\Rightarrow \quad \alpha_1 \quad > 0$$

Results: OLS Estimation

Equation 1:

- Coefficients on GVAR and YVAR are both significant, carry correct signs

- Coefficient on both Central Government Debt and Total Debt are positively signed, suggesting that the debt ratio is persistently increasing over time
  - Results consistent for higher order lag specifications

- Importantly, however, we know that persistent increases in the debt ratio (its failure to revert to a non-conditional mean) do not, in themselves, suggest un-sustainability.

- As Roubini (2001) notes, sustainability should be analysed by considering not just the changes in debt, but the extent to which the fiscal balance adjusts to these movements in the long-run.

More Appropriate Testing Framework

Given that we found evidence to suggest the debt variable was non-stationary, we take a more traditional approach to dealing with non-stationary variables.

- Unit Root tests suggest non-stationarity of the PBAL and NGGD variables
- Further tests indicate the variables are co-integrated.
- As such, we estimate the Bohn model in a DOLS framework of the form:

$$PBAL_t = a_t + x_t'\beta + \sum_{j=-k}^{k} \gamma_j' \Delta x_{t-j}^I + \mathcal{E}t \quad (3)$$

was estimated, where x^I denotes the sub-set of $I(1)$ variables of x, β is the vector of long-run coefficients, Δx_{t+j}^I accounts for the possible endogeneity and autocorrelation by introducing leads and lags.

Results: DOLS

Dependent Variable: P_BAL		
Long-Run		
TOT_DEB	0.120276	(0.010113)***
YVAR	1.028999	(0.117454)***
C	-0.04227	(0.005037)***
Short-Run		
D(TOT_DEB(-1))	-0.181906	(0.079953)**
D(TOT_DEB(-2))	-0.143333	(0.066973)**
D(P_BAL(-1))	-0.281996	(0.086837)***
D(P_BAL(-2))	-0.357427	(0.064461)***
YVAR	-0.696371	(0.302263)**
YVAR(-1)	1.548107	(0.403236)***
GVAR	-0.4615	(0.204809)**
GVAR(-1)	0.569405	(0.141953)***
Adjusted R-squared	0.591763	
S.E. of regression	0.014245	
Sum squared resid.	0.00487	
Log likelihood	98.72462	
Durbin-Watson stat	1.897516	

Notes: standard errors in parentheses are heteroskedasticity and serial autocorrelation consistent (HAC). *,**. and *** represents statistical significance at 10, 5 and 1% levels, respectively. Automatic leads and lags specification (lead=2 and lag=1 based on AIC criterion, max=3).

Results: State Space Model
(Confidence Intervals in Red)

Filtered State SV1 Estimate
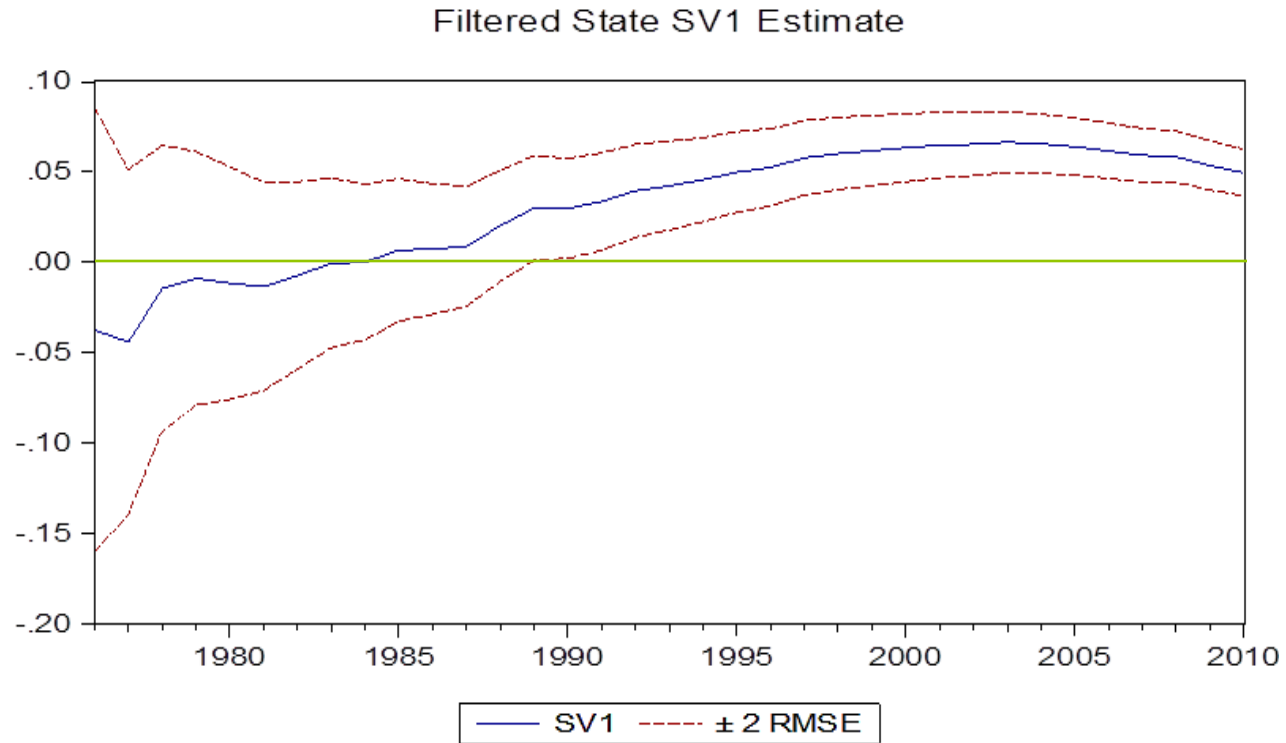
Conclusions and Policy Implications

- This study examined the growth of Barbados' debt over the period 1975 -2010.

- By including government guaranteed debt, we are able to obtain a more meaningful measure of sustainability

- The results are instructive. While Government's primary balance appears to be systematically responding to higher levels of total debt in the long run, the persistent growth in the level of debt cannot be ignored, both in terms of its impacts on growth and on investor sentiment.

- Furthermore, the response has become weaker, pointing to an urgent need for government to make further adjustments on the fiscal side to reduce debt levels and debt service costs.

- The implications of these findings are twofold:

  - The increasing importance of guaranteed debt in government's portfolio suggests that greater emphasis should be placed on monitoring this type of debt to minimise its attendant risks

  - Interest payments appear to be a significant driver of debt, given that debt is persistently growing despite the policy response consistent with sustainability

Conclusions and Policy Implications Recommendations

- One possible suggestion to address this mismatch is for government to gradually reduce the non-amortising debt in its portfolio. Principal payments would reduce the interest costs of debt over the long-run and allow government to systematically reduce its rising debt

- Government should also consider a greater focus on concessional financing. Currently, there remain millions of dollars in committed, undisbursed loans, negotiated at rates lower than those in the market, which government has been tardy in accessing due to administrative failures. By securing these concessional funds, interest costs could be reduced and, by extension, the financing requirement could be narrowed.

- The fiscal response has to be intensified with respect to increasing the size of the primary surplus. The targets set out in the MTFS document, (which highlights the general policies Government will adopt to reach a balanced budget within 4 years) need to be closely monitored.

The End