



ESTIMATING A SUSTAINABLE PUBLIC DEBT LEVEL FOR BARBADOS

by

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Abstract

Keeping debt at a sustainable level is a key concern for Barbados and the majority of developing nations. However, few studies have identified a country-specific level of debt sustainability. This paper estimates what the sustainable levels of public debt are for Barbados, under number of scenarios that could exist in the future. This is done using forecasts of the primary surplus and a number of key macroeconomic variables, with the projections based on ARIMA models for annual data that spans 1970 - 2007. Given the actual level of debt and the median-case scenario, it is concluded that Barbados' public debt is approaching an unsustainable level.

Key Words: public debt, debt sustainability, primary surplus

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1. Introduction

High debt levels have plagued the developing world for several years and limited its economic progress. The burden has been heaviest on the poorer countries, particularly sub-Saharan Africa, where the detrimental effects of large debt stocks are quite evident. In the Caribbean, much focus has been placed on Guyana and Jamaica, but attention must be paid to other countries in the region, including Barbados, whose debt stocks and ratios have been rising significantly in recent times. The main concern regarding large amounts of public debt is the possibility of Government being unable to service it without significantly altering its policy framework, that is, that debt becomes unsustainable.

Debt sustainability is fairly well researched area. However, none of the approaches usually used to address debt and fiscal sustainability reveal what level of debt is sustainable. The most commonly used procedures only show the primary balance needed to stabilise the debt ratio and do not indicate whether this level is or unsustainable, that is, difficult or impossible to service in the future. The main objective of this paper is to estimate what is currently the maximum sustainable level of public debt for Barbados, under a number of scenarios, given projections of the primary surplus and key macroeconomic variables. This is a very valuable piece of information, as it can guide policy after it is compared with the actual level of public debt.

The remainder of the paper is structured as follows. The next section takes a brief look at recent fiscal policy and behaviour of Barbados' public debt, while a short survey of the relevant literature is given in the third section. Section 4 describes the methodology and data used for forecasting the primary surplus and the macroeconomic variables and for determining the maximum sustainable level of public debt; the results are presented in Section 5. The final section provides some conclusions and policy implications, along with the limitations of the study and areas for future research.

2. Recent Fiscal Policy and Behaviour of Public Debt in Barbados

Barbados' fiscal policy stance has been expansionary in recent times. Expenditure policy has been geared towards development and improvements in infrastructure. Government projects included airport expansion, education, road rehabilitation and, more recently, highway expansion. Moreover, a number of mostly downward revisions have been made to tax rates. Still, the primary balances¹ Government has generated, which give some indication of the sustainability of public debt, have generally been positive over the last few years (see Figure 1A).

Fiscal policy was particularly expansionary in the early 2000s when Government responded to the economic downturn that resulted from the events of September 11th, 2001 with primarily fiscal measures, mainly increased capital expenditure. This, along with wages increases for civil servants, caused a widening of the fiscal deficit in 2001 (\$180.3 M) as well as in 2002 (\$315.1 M), see Figure 2A, and increased public debt² and debt to GDP³, as shown in Figure 1 below. The economy began to recover in 2003 and the fiscal position improved. By 2004, the fiscal deficit had fallen to \$124.1 million. However, it deteriorated by 2005 to \$257.1 million, on account of increased capital expenditure incurred as the island prepared to host CWC 2007. This was reflected in the sharp increase in debt and debt-to-GDP ratio, which reached a high of approximately 97.0%. In 2006, improvements were seen in the fiscal deficit (\$128.0 M). This was the result of higher collections of corporate and value-added taxes in particular; plus, major public-sector projects, such as the highway and the new prison, fell under off-budget expenditure as there were funded through public-private partnerships.

The expansionary stance described above was reflected in the growth in public debt. Barbados' debt rose at a decreasing rate up until the end of 1999, where it stood at approximately BDS \$3178.6 million. Thereafter, however, it rose rapidly, just about doubling to reach \$6303.3

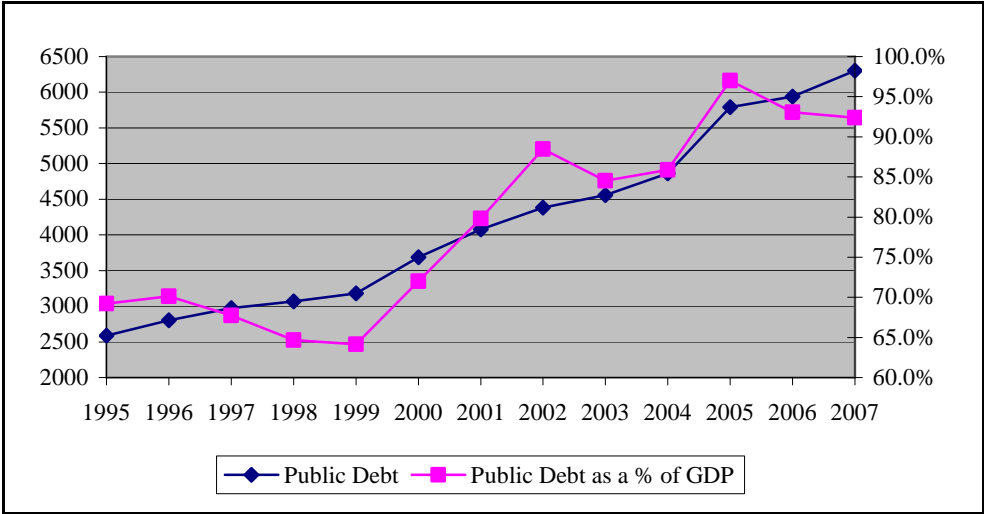
¹ The primary balance is the difference between government revenue and non-interest government expenditure. If this balance is positive and on average increasing over a long period of time then, after making other purchases, it is highly likely that Government has enough resources to pay off its debt; this implies that debt is sustainable.

² Public debt in this section refers to the domestic and external debt of the central government, as well as that which has been guaranteed by government.

³ We consider the debt-to-GDP ratio because GDP is a measure of the country's generation of income, inclusive of export revenue, needed to repay debt.

million in 2007, with a debt-to-GDP ratio of 92.4%. The significant accumulation in public debt in the recent past is mostly attributed to the increase in domestic debt. As shown by Figure 3A, from 2001, there has been a gradual increase in the percentage share of domestic debt in total public debt, while external debt's share has generally been falling. The increase in public debt over the 2001-2007 period was \$2166.7 million, with domestic debt accounting for \$1749.4 million (80.7%) of this increase and external debt accounting for \$417.3 million (19.3%). Domestic debt averaged two-thirds of total public debt over the last seven years and, at the end of 2007, it represented approximately 68.9% of total public debt, while external debt accounted for 31.1%.

Figure 1: Barbados Public Debt and the Debt-to-GDP Ratio



The average maturity of domestic debt has lengthened in recent times, as central government's domestic debt has tended to be more and more long-term since 2004. At the end of 2007, 18.3% of central government's domestic debt was short-term, while 81.7 % of it was long-term (see Figure 4A). The long-term domestic debt instruments used by the Barbados Government are debentures and savings bonds, with treasury bills as the main short-term instrument. The National Insurance Scheme, which invests mainly in debentures, is the creditor holding the most government debt. Budget deficits have also been largely funded by the domestic banking system, especially since commercial banks are required to hold a certain amount of government

securities. The implicit interest rate⁴ on domestic debt was approximately 4.8% for 2007 and about 9% of government revenue was used for 2007 domestic interest payments.

The stock of external debt has increased only slightly recently (see Figures 5A and 6A) and, with the exception of 2006, its share in total debt has been falling since 2001. Moreover, the external debt to export ratio has been generally declining, possibly indicating an increase in the ease of repayment of foreign debt⁵. Just as with domestic debt, the composition of external debt is critical, or perhaps it is more critical because it brings new issues such as exchange rate risk. The main instruments the Barbados Government uses for external borrowing include bonds and loans mostly from multilateral creditors such as the Inter-American Development Bank (IADB) and the Caribbean Development Bank (CDB), in addition to loans from foreign governments such as the U.S.A. In terms of the breakdown of external debt by currency, over the 1999-2006 period, an average of 90.1% of foreign debt was is denominated in U.S. dollars, with 8.8% in pounds sterling. The implicit interest rate, an approximation of the average interest rate⁶, on outstanding external debt was at 8.2% at the end of 2007; approximately 5% of 2007 government revenue was used for external interest payments.

3. Literature Review

Accumulation of public debt is often necessary and acceptable, particularly when it is done to accomplish some growth or developmental objective. A government may choose to borrow to finance a project that will increase educational opportunities, improve health care for citizens or enhance the country's physical infrastructure. The completion of such tasks can be quite costly and, rather than raising taxes and risk losing the favour of the electorate, governments more often than not prefer to source funds from domestic or external creditors. However, large debt stocks

⁴ This can be calculated by dividing interest payments due one period ahead by the current stock of domestic debt.

⁵ Repayment of external debt is more crucial, when compared to domestic debt, because Government usually has the option of rolling over domestic debt; external debt, on the other hand, has to be repaid, with foreign exchange and on time to avoid a loss of creditworthiness, which could make future borrowing more expensive, lead to capital flight and so on.

⁶ We would also like to consider the maturity structure of external debt; it would also be useful to calculate short-term external debt to reserves, in order to assess Barbados' vulnerability to external shocks. However, unavailability of data does not allow such analysis

can have several adverse effects on the economy. A high government demand for domestic funds raises interest rates and thereby crowds out private investment and, by extension, constrains economic growth. With greater debt servicing costs, the probability of default or of the monetization of debt increases. Monetization leads to higher inflation, while default, which occurs when debt is unsustainable, makes future borrowing more difficult and costly. Moreover, either option could result in capital flight, which can in turn lead to a financial crisis. Indeed, it is possible that investors could begin to move their funds out of the country if they merely anticipate that either of the above will occur (Makin, 2005). Generally, the main concern about large debt stocks is that they are unsustainable.

Public debt is sustainable when Government is able to service it, without having to forego meeting its developmental objectives, or having to resort to rescheduling or the accumulation of arrears. IMF (2003) describes public debt sustainability as a situation where the government can satisfy its budget constraint (in present value terms), without having to generate unrealistically large primary balances in the future. As espoused by Kufa et al. (2003), what is required is for primary balances now and in the future to be sufficient to allow government to service current and future debt; this is the definition of debt sustainability used for the purposes of the paper, that is, government is solvent⁷.

A closely related concept to that of debt sustainability is fiscal sustainability, which is said to exist when the debt ratio is constant or declining over time. It is assumed that when fiscal policy is sustainable, the debt position is also sustainable⁸. Thus, the methodologies that determine fiscal sustainability are also used to determine debt sustainability. However, as noted by Chalk and Hemming (2000), there is no general agreement on how debt or fiscal sustainability is determined. A review of the literature reveals several approaches: accounting methods, econometric techniques and the human development approach. The accounting and econometric

⁷ However, it should be noted that in the view of persons such as Paunovic (2005), the measure of solvency is of little practical use since primary balances of the future are unknown. Moreover, government may not necessarily keep its commitment to run primary surpluses in the future.

⁸ According to writers, such as Kufa et al. (2003), stabilising a debt ratio does not necessarily imply that debt is sustainable. Instead, the debt position is sustainable when the future primary balances are sufficient to cover public debt; this is the approach taken in this paper.

approaches are the most popular; however, the length of data series in developing countries often prevents accurate application of the latter, as observed by Chalk and Hemming (2000).

Among the debt or fiscal sustainability studies conducted for the Caribbean are those by Archibald and Greenidge (2003) and Scott-Joseph (2006). The main approach used by the former to assess the sustainability of Barbados' fiscal position was the econometric approach, which is essentially a test for cointegration of the present value budget constraint⁹. The results of this study suggested that fiscal policy had been sustainable over the 1974-2001 period. In addition to providing very comprehensive review of the methods for determining debt sustainability, the work by Scott-Joseph (2006) concluded that the debt positions of Dominica, Guyana, Jamaica and St. Kitts and Nevis were all unsustainable. This deduction came from the application of the two most common approaches to debt sustainability: the gap analysis and the econometric approach. However, as Scott-Joseph (2006) pointed out, none of the procedures for assessing debt or fiscal sustainability allows for the determination of what level of debt is sustainable. A method of establishing this level is provided by Kufa et al. (2003), who also found that several countries in the Eastern Caribbean Currency Union (ECCU) had unsustainable public debt and fiscal deficits. This conclusion was reached by using the government budget constraint to estimate the highest debt-to-GDP ratio that can be maintained, given the predicted paths of the primary balance, growth rate of the economy and interest rate payable on debt. Similarly, Abiad and Ostry (2005) forecasted the primary surpluses of 31 emerging market economies and used these projections to specify a sustainable level of public debt, which was then compared to the actual level of debt. The majority of countries investigated were facing debt unsustainability, as their actual debt levels exceeded what was estimated to be sustainable.

Benchmarks exist for the debt-to-GDP ratio. However, there is no absolute or general maximum ratio that can be applied to all countries, as characteristics peculiar to some countries may allow them to survive with a high debt ratio. For a small or low-income country, the debt-to-GDP may be considered unsustainable by the standards of a larger or high-income country. Evidence shows that while there have been several defaults in the developing world, they have been practically nonexistent in developed countries. Thus it can be concluded that the level of debt that developed

⁹ This is equivalent to testing for cointegration between government revenue and government expenditure.

countries can sustain is higher than that which developing ones can maintain; this is because the latter tend to have to greater intrinsic volatility, institutions of a poorer quality and more inferior credit history (Reinhart et al., 2003 and IMF, 2003). A lower sustainable level of public debt can be attributed to low revenue-to-GDP ratios that exist in emerging market economies and stem from inefficient tax administration, substantial tax exemptions and sizeable informal sectors. In addition, government revenues tend to be more unpredictable in developing countries as consumption and income patterns, as well as terms of trade, tend to be more volatile (IMF, 2003).

The primary balance is a central concept in determining what level of debt is sustainable. According to Makin (2005), it indicates how fast additional debt is accumulated or how soon previous debt can be retired. Since the primary balance ignores interest payments, which are incurred from previous deficits, Scott-Joseph (2006) suggests that observing this calculation allows for a clearer view of current fiscal behaviour. The primary balance can be used as a measure of fiscal performance, some determinants of which are outlined in the following section.

4. Methodology & Data

The methodology used in this paper was based on the approach used by Kufa et al. (2003) and Abiad and Ostry (2005). As with this study, these authors considered the sustainable level of debt to be that which allows for intertemporal solvency, rather than liquidity at particular points in time. As noted by persons, such as Horne (1991) and Paunovic (2005), theory suggests that fiscal policy permits the solvency of government when, on a net present value basis, the primary surpluses generated in the future are equivalent to the public debt. Thus, if future primary balances are known, the debt the country is able to service can be determined.

The first step in the procedure is therefore to project the future primary balances; these forecasts can be based on historical data or on model for the determination of future surplus-generating ability. Using either, or a combination, of these methods, in conjunction with some degree of judgment, the projected path of the primary balance could be found and used, after it is

discounted, to estimate what level of debt is sustainable for Barbados. This estimate can then be compared with the actual debt level in order to determine by how much government has overborrowed, that is, by how much the current debt level has surpassed the approximate sustainable debt.

The forecasts of the primary balances are based on the model below:

$$P_t = \alpha + \beta_1 D_{t-1} + \beta_2 Ycap_t + \beta_3 I_t + \beta_4 FQ_{t-1} + \beta_5 O_t + \text{dummy} + \varepsilon_t \quad (1)$$

In Equation 1, P refers to the primary balance as a percentage of GDP. D_{t-1} is the one-period lagged public debt-to-GDP ratio and, as explained by Bohn (1998), this variable should have a positive coefficient; in order to satisfy the intertemporal budget constraint, a rise in the public debt should be followed with an increase in the primary surplus to avoid debt exploding. The public debt used in the estimation of Equation 1 comprised only that of central government, adjusted to account for lending to public enterprises; the measure of debt used did not include government guaranteed debt. $Ycap$ is real GDP per capita. A priori expectations are for this variable to be positively related to the dependent variable; that is, the higher the GDP per capita, the larger the tax bases and the more revenue government can collect. I represents inflation; the effect it has on the primary balance is ambiguous. A rise in inflation could reduce the balance if it decreases aggregate demand and, by extension, government revenue. It could also reduce government demand and hence government expenditure, thereby have a positive effect on the primary balance.

Abiad and Ostry (2005) also recommend the inclusion of a proxy for the quality of fiscal institutions, which influences the capacity of the fiscal authorities to generate primary surpluses. It is observed that developed countries, which tend to have better fiscal performances than developing countries, also tend to have a higher revenue-to-GDP ratio than the less advanced countries. Therefore this ratio is used as a proxy for the quality of the country's fiscal institutions. Since revenue is linked to the primary balance through an accounting identity, the lagged value of the ratio (FQ_{t-1}) is used. O_t , a measure of openness, calculated as a ratio of imports and exports to GDP, is also included. The coefficient of this variable could be either

positive or negative; openness could result in an increase in productivity and therefore more economic output that allows for higher government revenue or, openness could mean greater vulnerability to adverse external shocks that reduce government revenue. Finally, a dummy variable is included in the equation to account for the election years in Barbados, points in time when the government would've likely spent more and reduced the primary balance.

To find the long-run relationship between the primary balance and its explanatory variables, Equation 1 is estimated by dynamic ordinary least squares (DOLS) in the econometric software, Eviews. Using annual data that spans 1970 to 2007 and that can be obtained from the Central Bank of Barbados, estimation of the long-run relation is based on the regression below:

$$P_t = \alpha X_t + \sum_{j=-K}^K \beta_j \Delta I_{t+j} - j + \varepsilon$$

X represents all the independent variables identified in Equation 1, while I refers to those independent variables that are integrated of order one; including ΔI_{t+j} takes care of any endogeneity of X that may exist. After estimating the equation with $K=1$, the model is reduced to a more parsimonious one, using the general-to-specific procedure, where only significant variables are retained. Based on the regression, the results of which are presented in Table 1A of the Appendices, forecasts of the primary balance are made for 2008 to 2012. This is done by forecasting each significant variable, using ARIMA modelling. When considering debt sustainability, uncertainty must be taken into account; it is possible for debt to be below the sustainable level estimated but some shock to the economy in the future could impose liquidity constraints at a certain point in time and thus difficulty with debt repayment. Therefore, no one estimate of the future primary balance is given; instead, best-, median- and worst-case scenarios are provided, where the former and the latter are based on upper and lower limits of the 95% confidence intervals of the point estimate, which serves as the median-case scenario.

Once the projected path of the primary balance is obtained, to attain an estimate of a sustainable debt ratio, one starts with the period budget constraint, which is given by:

$$dt = \left(\frac{1+rt}{1+gt} \right) .dt - 1 - Pt \tag{2}$$

where d_t represents the debt-to-GDP ratio, and r_t and g_t are the real interest and growth rates; P_t again refers to the primary balance as a ratio to GDP. An approximation of d_t , based on the above equation is as follows:

$$d_t \approx (1 + r_t - g_t) \cdot d_{t-1} - p_t \quad (3)$$

To estimate what level of debt is currently sustainable, given the future expected paths of the primary balance and the interest and growth rates, the formula below is used; Equation 4 is derived by forward substitution for d_{t+1}, d_{t+2}, \dots into Equation 3:

$$Dt = \sum_{i=1}^{\infty} \frac{P_{t+i}}{\prod_{j=1}^i \left(\frac{1+r_{t+j}}{1+g_{t+j}} \right)} \quad (4)$$

Equation 4 is used for this study since it is assumed that the right-hand side variables will follow a time-varying path¹⁰. r is estimated as the weighted average of the implicit interest rates on external and domestic debt, adjusted by Barbados and U.S. inflation rates and with the weights being the share of each type of debt in total public debt. The forecasts of r and g also based on ARIMA models; the median-case scenarios are again the point estimates, and the upper and lower limits of the 95% confidence intervals of these estimates represent the best- and worst-case scenarios. The projections of P , r and g are substituted into Equation 4 to give the sustainable public debt level for Barbados under the three scenarios. The results of the analysis are presented in the following section.

5. Results

The results of the estimation of Equation 1 are provided in Table 1A of Appendices; the significant variables are the one-period lagged debt-to-GDP ratio, inflation and openness. The one-period lagged debt-to-GDP ratio has a positive and significant coefficient. According to Bohn(1998), this implies that government is satisfying its intertemporal budget constraint. Inflation was found to be positively related to the primary balance; it is therefore likely that

¹⁰ If it is assumed that these variables will follow a constant path in the future, then Equation 4 will simplify to

$$d_t = \sum_{i=1}^{\infty} \frac{P}{\left(\frac{1+r}{1+g} \right)^i} = \frac{P}{r-g}.$$

rising inflation results in lower government demand and expenditure and hence a larger primary balance. In addition, the higher the degree of openness, the smaller the primary balance.

The forecasts of the primary balance, along with projections of the real interest and growth rates are presented in the table below, for each of the three scenarios. The best- and worst-case scenarios represent extreme possibilities; indeed, a range of intermediate scenarios could exist.

Table 1: Forecasts of Variables under Three Scenarios

	Scenario	Lagged Debt-to GDP (%)	Inflation (%)	Openness	Primary Balance to GDP (%)	Real Interest Rate (%)	Real Growth rate (%)
2008	Best	71.7	-4.6	13.4	3.2	5.4	7.2
	Median	80.1	1.0	16.7	1.6	6.7	2.3
	Worst	88.5	6.7	19.9	0.0	8.0	-2.6
2009	Best	71.7	-5.2	11.4	3.2	5.6	6.0
	Median	82.7	0.9	16.7	1.6	7.0	2.8
	Worst	93.7	7.1	22.1	0.0	8.3	-0.4
2010	Best	73.4	-6.6	11.6	3.7	5.5	5.1
	Median	86.0	-0.1	17.5	2.2	6.9	1.9
	Worst	98.5	6.4	23.4	0.7	8.3	-1.3
2011	Best	74.5	-6.7	10.8	4.0	5.3	6.2
	Median	88.0	-0.1	17.5	2.3	6.6	3.1
	Worst	101.5	6.6	24.3	0.6	8.0	0.0
2012	Best	75.5	-6.6	11.1	3.9	5.7	6.6
	Median	90.2	0.3	18.1	2.2	7.1	3.1
	Worst	104.9	7.2	25.2	0.5	8.5	-0.4

The projected values of the primary balance, real interest rate and real growth rate, under each scenario, gave the following estimates of the sustainable debt level for Barbados:

Table 2: Estimates of Sustainable Debt Level under Each Scenario

Best	Median	Worst
185.7%	80.2%	10.8%

The best- and worst-case scenarios are the two extreme cases and are therefore the least likely to occur. The best-case scenario implies that if Barbados, during the next five years, generates on average a primary surplus to GDP of 3.6%, real growth of 6.22% and has loans contracted at an

average of 5.5%, then central government debt of up to 185.7% of GDP can be serviced. Under the worst-case scenario, where over the next five years, there is an average primary surplus-to-GDP of 0.36%, real interest rate of 8.22% and a 0.94% contraction of output, the maximum sustainable level of public debt is 10.8%.

While the best- and worst-case scenarios represent the standard error of the forecasts, the values for the median-case scenario are the actual forecasts. Given that the forecasts are based on historical data, the projections under the median-case scenario represent the situation that is likely to exist if the current fiscal behaviour continues into the future. Thus, if the current fiscal stance is maintained, so that over the next five years there is on average a primary surplus of 1.98% of GDP, a real interest rate of 6.86% and real growth rate of 2.64%, the level of central government debt that is estimated to be currently sustainable is 80.2% of GDP. As Barbados' central government debt-to-GDP ratio now stands at 78.0%, debt is very close to an unsustainable level, under the median-case scenario.

Not a great degree of fiscal adjustment is needed, according to the median-case scenario, which suggests that government is not yet overborrowing; however, since the level of debt is very close to what has been estimated to be sustainable, the overborrowing ratio¹¹ is almost unity, at 0.97. This suggests that steps should be taken to bring debt down to a more comfortable level. Generally, the lower the real cost of borrowing and the higher the real growth rate, the greater the level of debt that can be sustained. However, Government has little control over the average interest rate on borrowed funds and its policies can only indirectly control the growth rate. Thus the reduction of the debt level is largely dependent on the size of the primary balances government can generate. Boosting the capacity of Government to generate primary surpluses requires containing expenditure or increasing revenue through improvements in tax administration.

¹¹ This is the ratio of the actual debt level to the sustainable debt level.

6. Conclusion

A benchmark for the sustainable level of debt is very useful tool for policymakers; it provides them with a limit as to what debt they should incur, as opposed to other approaches to sustainability that just give the primary balance needed to stabilise the debt ratio. This study set out to establish such a benchmark. A model for the primary balance was estimated using DOLS. Based on the estimation, future primary balances were forecasted, under three scenarios, using ARIMA modelling. The real interest and growth rates were also forecasted based on ARIMA models, and used in conjunction with the projections for the primary balance, to estimate a sustainable debt level.

Under the median-case scenario, the sustainable level for central government debt is approximately 80.2% of GDP, leading to the conclusion that Barbados' debt position is very close to an unsustainable level, given the current ratio of 78.0%. This indicates a need for some fiscal consolidation to bring debt down to a more comfortable level.

One limitation of this study is that it only used one forecasting technique; however, the use of more than one would've allowed for comparison and hence the selection of the best technique. One area for future research is the development of the framework to taken better account of uncertainty. To account for shocks to economy that could occur in the future, a stochastic model could be used that incorporates probabilities of attaining certain levels of public debt at a particular point of time.

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Appendix

Figure 1A: Primary Balance and its Ratio to GDP

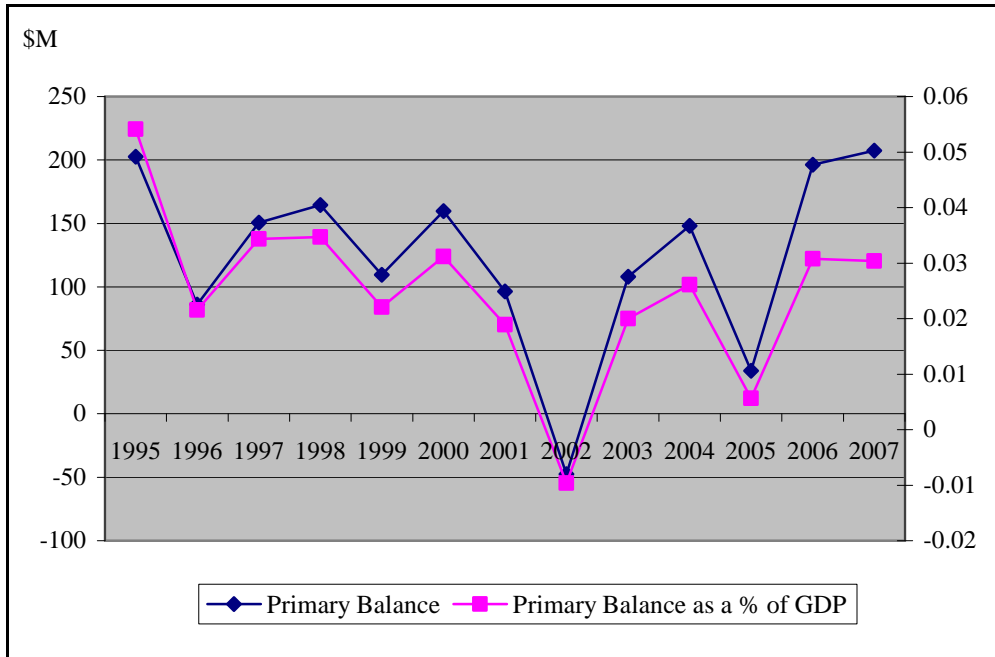


Figure 2A: Central Government's Fiscal Balance and its Ratio to GDP

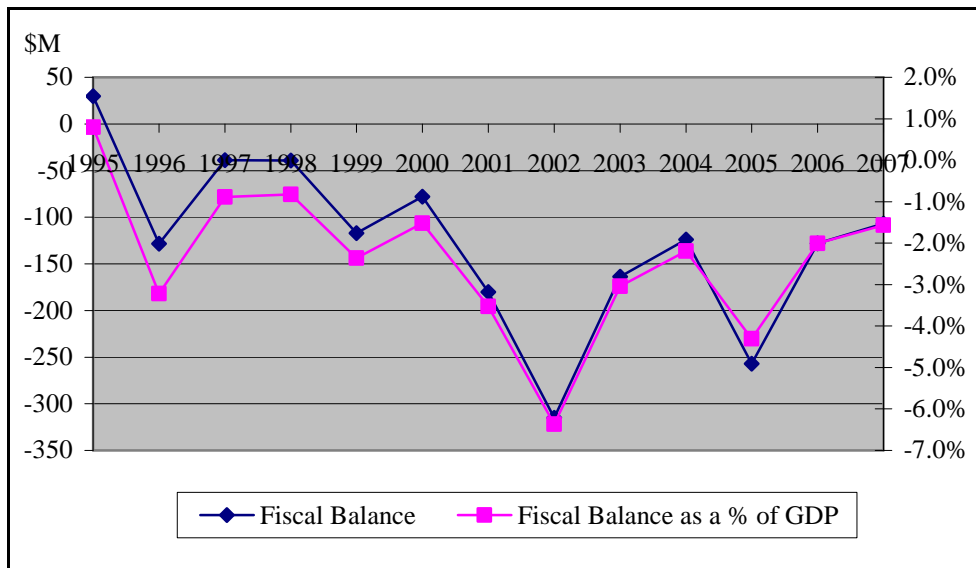


Figure 3A: Percentage Share of Domestic and External Debt in Total Public Debt

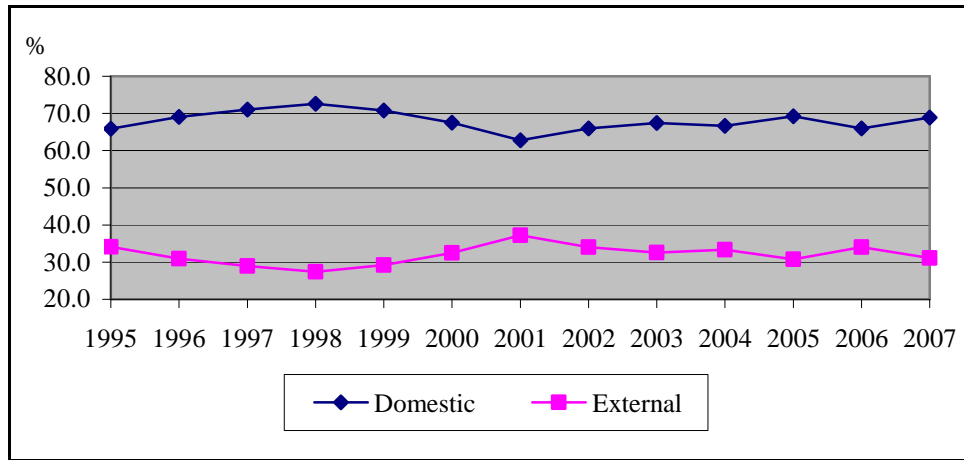


Figure 4A: Percentage Share of Short and Long Term Debt in Central Government Domestic Debt

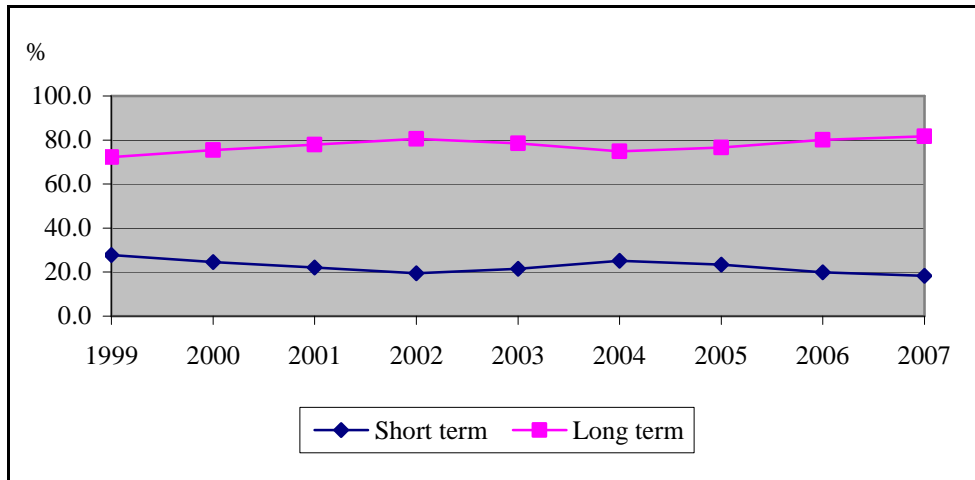


Figure 5A: Level of External Debt and its Ratio to GDP and to Exports

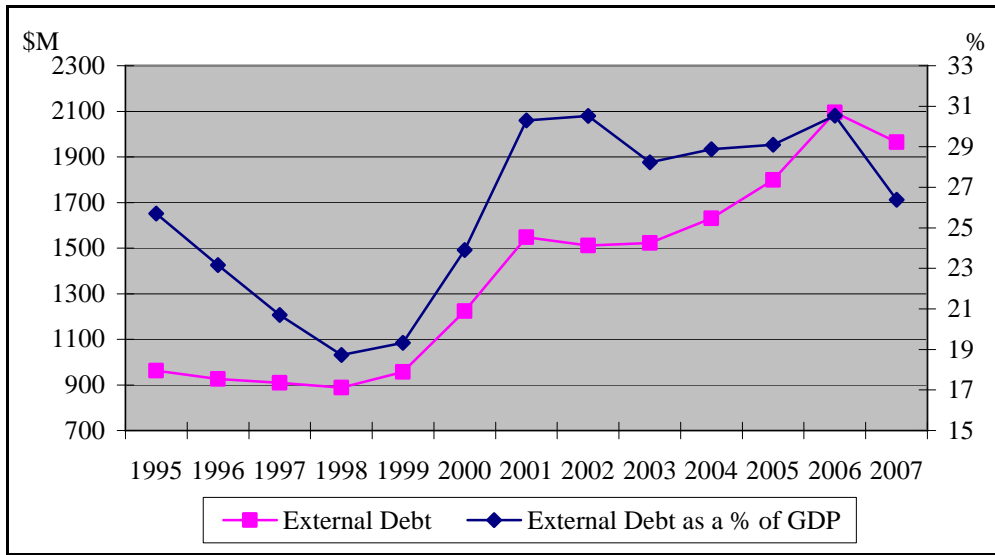


Figure 6A: Level of External Debt and its Ratio to Exports

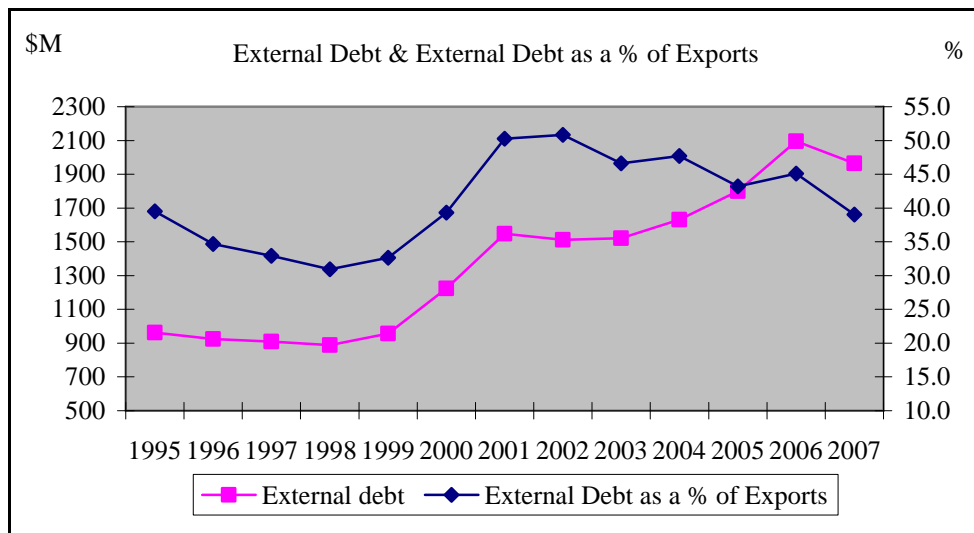


Table 1A: DOLS Estimation Results

Dependent Variable: P				
Method: Least Squares				
Date: 07/25/08 Time: 14:27				
Sample (adjusted): 1971 2006				
Included observations: 36 after adjustments				
	Coefficient	Std. Error	t-Statistic	Prob.
D _{t-1}	0.073909	0.016915	4.369431	0.0001
$\Delta(D_{t-1}(1))$	-0.281399	0.087463	-3.217358	0.0030
I	0.143446	0.082087	1.747487	0.0901
O	-0.206908	0.049248	-4.201376	0.0002
R-squared	0.684353			
Adjusted R-squared	0.654761			
Durbin-Watson stat	1.892496			
Diagnostic Checks				
Normality:	Jacque-Bera	2.091	(0.351)	
		2.266		
Serial Correlation:	F-statistic	(0.121)		
Heteroscedasticity		2.968		
(White):	F-statistic	(0.013)		
Stability (Ramsey RESET)	F-statistic	2.944	(0.096)	
Note: The probabilities are in parentheses.				