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THE ECCU DEBT CARRYING CAPACITY:

AN EMPIRICAL INVESTIGATION OF ITS DEBT EVOLUTION AND DEBT LIMITS

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Abstract:

This paper has a twofold objective, first it seeks to explain debt accumulation in the ECCU and secondly it aims to assess debt to GDP ratio limits for ECCU member countries. A decomposition methodology building on the work of Burnside 2005 shows that in the ECCU the performance of the primary balances and GDP growth account for much of the changes in the debt ratio. Sizeable residuals were found suggesting other key contributing factors. The level of fiscal effort necessary to achieve the 60.0 per cent Monetary Council target by 2020 was shown to be high. Long run steady state equilibrium levels on an ECCU basis using fiscal response functions show a ratio of 30.3 per cent. The paper also highlights the need for increased consideration of liquidity benchmarks in assessing ECCU debt dynamics.

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1.0 Introduction

The Eastern Caribbean Currency Union (ECCU)[1] operates with a common monetary policy underpinned by a fixed exchange rate regime of US$1.00 to EC$2.70, and a legal minimum requirement that the currency be backed by 60.0 percent of external reserves. A monetary policy based on a fixed exchange rate regime must be supported by prudent fiscal, income and structural policies, which are aimed at maintaining the competitiveness of the economies and increasing reserves. In particular, each member government has a responsibility to conduct its fiscal policy in a manner that is consistent with the stability of the exchange rate.

The decline in economic activity in 2009, due in part to spill over effects associated with the global financial crisis led to increasing fiscal deficits and consequently rising public debt in the ECCU. The difficulties involved in servicing increasing debt burdens, in an environment of constrained revenue growth raised concerns about the sustainability of public finances and also highlighted the need for adjustment in the near to medium term. Consequently, member governments on 29 December 2009, signed the Eight Point Stabilisation and Growth Programme reinforcing earlier agreements to coordinate macroeconomic policies in the ECCU aimed at stability and promoting economic transformation. Under the Eight Point Stabilisation and Growth Programme, 2010 to 2012, was identified as the period of fiscal adjustment while 2013 through to 2020 would involve policies consistent with convergence to the 60.0 per cent of GDP benchmark.

During the ensuing discussions regarding targeting debt to GDP ratios of 60.0 per cent, several pertinent issues were raised. These included determining what explained the increase in debt in ECCU member countries and secondly accessing the appropriateness of the 60.0 per cent target. Intuitively, understanding the factors that lead to the evolution of debt would provide policy makers with an understanding of which variables may warrant policy

[1] The ECCU is comprised of Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines, which are members of the Eastern Caribbean Central Bank (ECCB).

intervention if possible to thereby arrest debt growth. The 60.0 per cent debt to GDP mandate has as its underpinnings the Maastricht treaty which was formulated during the formation of the European Union. The paper therefore contributes to the literature by assessing the applicability of this rule for the ECCU. This paper therefore attempts to decompose historical changes in the debt to GDP ratio and determine the suitability of a 60.0 per cent debt to GDP benchmark given the ECCU's historical fiscal performance. A debt decomposition framework espoused by Burnside 2005 will be utilized while debt limits will be calculated based on several applicable methodologies prevalent in the literature. Assessing the aforementioned is particularly relevant given the current work by the Debt Growth and Development Taskforce[2] and findings by some scholars that debt evolution can be explained largely by changes in primary balances and interest rates. Similarly pundits posit that debt thresholds as low as 40.0 per cent should serve as indicative targets for developing economies. Are any of these findings applicable to the ECCU? Using a unique sample this paper builds on the methodologies underlying the aforementioned and attempts to find out.

The paper is organized as follows chapter two presents a survey of the applicable literature while chapter three outlines the methodologies to be employed. Chapter four presents the findings of the paper while chapter five concludes with policy recommendations and paper limitations.

2.0 Literature Review

Seminal works relating to debt dynamics in the ECCU have been undertaken by authors such as Sahay (2006), Samuel (2008) and the World Economic Outlook[3] (2003). Studies on debt issues in the wider Caribbean have also been undertaken by ECLAC (2008)[4]. These studies often have focused on debt sustainability, the effects of growth on debt and the applicability of

[2] A joint ECCB/ World Bank and IMF initiative to study and provide recommendations re debt dynamics in the ECCU.

[3] Chapter 3: Public Debt in Emerging Markets Is It Too High?

[4] Public Debt Sustainability in the Caribbean 2008

fiscal rules. Studying debt dynamics particularly in small open economies like those of the ECCU are important as too large a debt can adversely affect productivity and economic growth as identified by Kumar and Woo (2010). Samuel (2008) sought to determine the degree to which structural rules would be applicable in the Caribbean context and to determine causes of ECCU debt increases.

Sahay (2006) in a review of debt and fiscal policy in the Caribbean noted that countries in the region are characterized by high debt due to deteriorating fiscal balances brought on by increasing expenditure. Debt increases were particularly strong in the 1998 to 2003 period. It was noted that in most islands that insufficient primary surpluses were being generated to reduce debt to GDP ratios and as such this contributes to debt increases. A deeper decomposition of debt evolution showed that debt grew on average by 8.5 per cent a year of which 4.5 per cent was due to the fiscal deterioration alluded and 3.3 per cent due to interest cost and output growth.

Similar to Sahay (2006) this paper attempts to decompose debt growth over the recent historical past The debt decomposition literatures (see Burnside 2005) modifies the intertemporal budget constraint and posit that changes in debt as a percentage of GDP is a function of changes in interest payments, the primary balance, seigniorage, inflation and economic growth. These effects in turn can either mitigate or fuel debt growth. Economic growth *cetrius paribus* increases GDP and therefore results in a lowering of the debt ratio while a deterioration of the primary balance results in a need to fund any ensuing financial gaps. Similarly inflation, especially where debt is assumed to be issued in local currency has the effect of reducing the debt to GDP ratio by reducing the "*real cost of servicing its local currency debt"*. Seigniorage is often identified in the literature as having a reducing effect on growth in the debt to GDP ratio but is not applicable to the ECCU context. Non empirical analysis by CAPRI 2008 in Jamaica showed that debt accumulation was largely due to governments borrowing to service debt and absorption of debt from other entities.

Similar to the CAPRI 2008 study Dodhia 2008 focused on studying the underlying causes for the increases in indebtedness in small island states and also sought to propose a framework for addressing this indebtedness. The author noted that the peculiar position small middle income yet highly indebted countries have received little international attention unlike that of the HIPIC states. Primary deficits and increases in real interest rates were the most significant causes of debt accumulation only in the case of Jamaica were exchange rate contributions significant.

There are several schools of thought regarding the determination of optimal or sustainable debt levels for a country. Examples include the retrospective and prospective school's where the former relies on the extrapolation of future behavior from past and the later considers the effect of policy changes on debt dynamics. The literature notes that there is often no one "optimal debt" limit for a country, given that each methodology to derive such limits have particular strengths and weaknesses. The three most commonly used methodologies identified in the literature include maximum sustainable debt calculations consistent with work done by Abiad and Ostry (2005), crisis debt levels using the methodology employed by Mendoza and Oviedo (2006) and debt sustainability analysis using fiscal response functions in line with Ostry et al 2010.

Abiad and Ostry 2005 define the maximum sustainable debt of a country as the present value of future primary surpluses. The resulting debt level can then be compared to current debt in order to gauge sustainability and 'over borrowing' levels. Drakes (2008) applied this methodology to the Caribbean context and calculated maximum sustainable debt figures for Barbados under three scenarios: best, median and worst case.

Mendoza and Oviedo (2006) attempts to provide policy makers with a level of debt with can be serviced under the assumption of a 'fiscal crisis'. This crisis in turned is defined as a period of depressed revenues and the "tolerable minimum" of expenditure outlays. The methodology is similar to that of Abiad and Ostry 2005 in that an interest rate differential is

used to discount an 'above the line' fiscal balance. However this model only sets an upper limit on debt and does not as with the previous model require debt to stay at this level. The methodology is particularly apt for the Caribbean region as this debt limit is directly influenced by the volatility of a country's revenue flows and its ability to affect expenditure outlays. Intuitively the more volatile a country's revenue[5], the lower their revenue intake in a 'crisis' period. The regions revenues are highly volatile due to its reliance on tourism which in turn is influenced by economic performance of industrialized nations. A model therefore that factors volatility of revenues is appealing to the region.

A third method of assessing "debt limits" is the use of fiscal response functions as articulated by Ostry et al 2010. Such models seek to empirically study and plot the primary balance and its relation with debt while controlling for other influencing factors on the primary balance such as the presence of IMF programs and inflation. Panel estimates using country specific fixed effects and or generalized method of moment's estimators are often used. In addition to assessing how the primary balance responds to changing debt the coefficients of the regression facilitate plotting the ensuing primary balance against debt to GDP. An interest rate differential line defined as the interest rate less growth by GDP is often used to provide indicative limits of the country's long run stable debt ratio and its limit given the historical performance of the primary balance.

3.0 Methodology

This paper has a twofold objective of accessing debt evolution in the region and determining the possible debt limits for the ECCU. In the debt sustainability literature three key methods of assessing a country's debt dynamics are often articulated, these include; maximum sustainable debt limits, crisis debt limits and debt limits drawing from fiscal response functions. For the purposes of this paper ECCU debt limits will be calculated using all three methods. The analysis and policy implications of debt dynamics in the ECCU however stem

[5] As measured by the standard deviation

from the results gleaned by using maximum sustainable debt calculations. This metric represents our primary tool for analysis given the intuitive nature of the results under this methodology and the ability to compare the resulting figures directly with existing debt to GDP ratios. Additionally this methodology is widely used in the literature.

3.1 Debt Decomposition

To achieve the first objective a debt decomposition methodology espoused by Burnside (2005) will be used. This method defines changes in the debt to GDP ratio as;

$$b_t - b_{t-1} = i_t - x_t - \sigma_t - \frac{\pi_t}{1+\pi_t} b_{t-1} - \frac{g_t}{1+z_t} b_{t-1}$$

where b_t is the debt to GDP ratio, i_t real interest payments, x_t is real primary balances, σ_t seigniorage revenues, π_t the inflation rate, g_t real growth and $z_t = (1+\pi)(1+g)$. The requisite variables will be sourced over the period 1989 to 2010[6] sourced from the ECCB Ameros database. The evolution in turn will be studied over three year average intervals to enable a more succinct analysis of the evolution over specific periods. These in turn will be linked to underlying economic factors to better explain causes of debt growth or decline in particular periods. Economic growth and inflation are expected to have reducing effects on the debt to GDP ratio whiles the primary balance and interest payments debt increasing effects.

3.2 Method One: Maximum Sustainable Debt

The theoretical underpinnings of this technique are outlined by Abiad and Ostry 2005 and have been utilized in several countries see IMF 2003. In its simplest form the method is defined as;

$$\frac{F_t}{(r-g)}$$

[6] Annually

Where P_t refers to the average primary surplus obtained as a percentage of GDP, r real interest rates and g real output growth. To mitigate the impact of outliers this paper utilizes the median average primary surpluses as a percentage of GDP over the period 2000 to 2010. Real interest rates are derived from subtracting consumer price index rates from the weighted average commercial lending rates while output growth was obtained using changes in the rebased real GDP series.

3.3 Method Two: Crisis Debt Level

Mendoza and Oviedo (2006) define the fiscal crisis debt limit as;

$$\frac{R^{min} - G^{min}}{(r - g)}$$

Where r^{min} refers to current revenues less two standard deviations and g^{min} current non interest expenditures less two[7] standard deviations as a percentage of GDP. As with the previous method r-g gives the differential between interest rates and real growth.

3.4 Method Three: Fiscal Response Functions

Fiscal response functions are models of the primary balance based on historical information. In the literature these are often shown graphically illustrated with interest rate differential plots (which proxy for the effective interest payments) superimposed. This in turn allows for a comparison between payments on debt (as shown by the interest rate differential) and ability to service (as shown by the primary balance). These response functions also provide long run steady state debt equilibriums and debt limits[8]. In addition to graphical illustrations empirical models of fiscal response functions exist. The intent of the empirical model is to show whether there is a positive relation between the primary balance and debt (see Bohn 2008).

[7] Fiscal crisis is defined as operating two standard deviations below the period average

[8] The process is explained by Ostry et al 2010 pages 4-12. The resulting calculations for select countries are shown in the appendices.

Proving that a positive relation exists between debt and the primary balance could suggest evidence of "long run solvency" as increasing debt can be mitigated by commensurate future increases in the primary surplus, thereby ensuring debt sustainability see IMF 2003 and Ostry et al 2010.

Table 1: Fiscal Response Variables

Variable	Description	A Priori
Dependent		
Primary Balance	Primary Balance/Spliced GDP	-
Independent		
Lagged Debt	(Nominal Debt/GDP)(t-1)	Positive
Lagged Debt Squared	(Nominal Debt/GDP)(t-1)^2	Positive
Lagged Debt Cubed	(Nominal Debt/GDP)(t-1)^3	Positive
Output Gap	HP Filiter of GDP	None will proxy whether counter or procyclical policy
Inflation	CPI Rate (All Items)	None
Hurricanes	Dummy: EM-DAT Database 1 for significant storm 0 otherwise	Negative
IMF Assistance	Dummy : 1 for receipt of IMF funds 0 otherwise	Positive

In this paper a generalized methods of moments estimator with robust standard errors, in line with Blundell and Bond (1998) is used. The time period studied in the full sample is from 1986 to 2010 and covers all ECCU member countries with the exception of Montserrat. This full sample incorporates spliced GDP data given that the rebased series is only up to 2000. Samples of varying intervals will be used to assess the evolution, if any, in the relationship between the primary balance and debt. Table one identifies the control variables used and the authors a priori expectations. The primary balance and debt values are expressed as a percentage of GDP while squared and cubed values of lagged debt are intended to capture the nonlinear relationship associated with debt and the primary balance. As a robustness test, fiscal response functions will also be assessed using fixed effects panel techniques.

4.0 Results

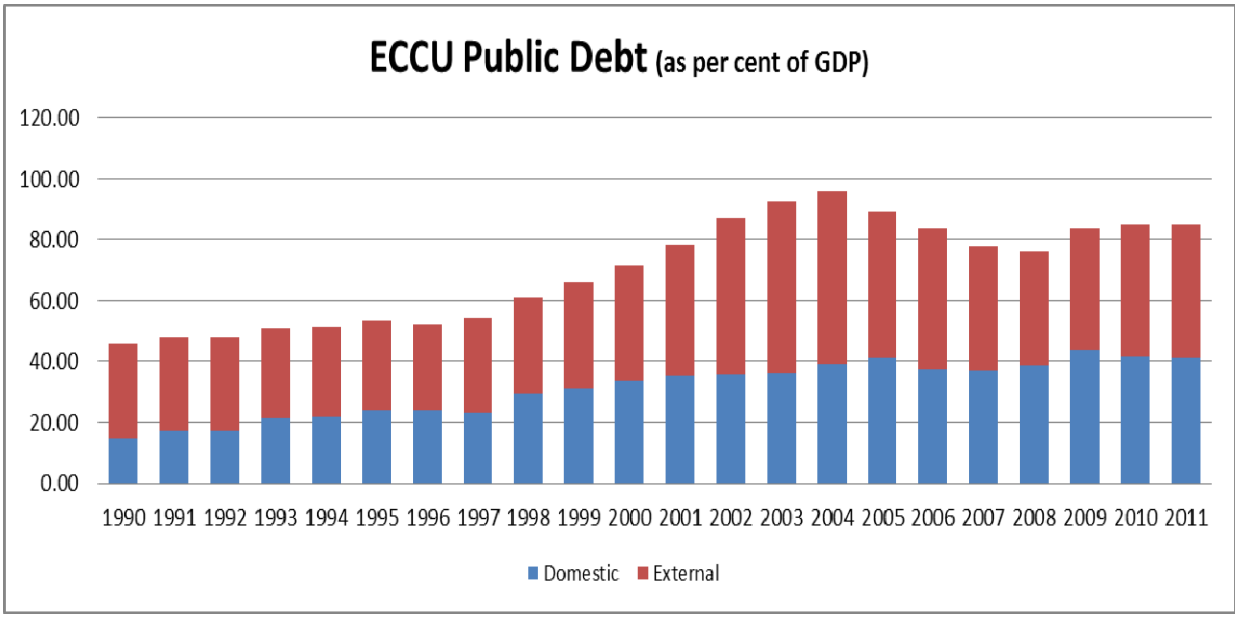
Sub section one reviews the evolution of debt while sub section two reviews the debt limit. However before the evolution of debt is discussed, stylized facts regarding the ECCU will be presented. This in turn will provide the context within which the debt evolution can be

subsequently examined. The underlying factors of debt dynamics can then shed some light re: the debt limits which will be discussed for the ECCU.

4.1 ECCU Debt Stylized Facts

At the end of 2010, the average debt to GDP ratio for the ECCU [9] was estimated at 83.7 per cent. The variation in the public debt-to-GDP ratios however among the independent territories[10] of the Eastern Caribbean is significant – ranging from 61.5 per cent for St Vincent and the Grenadines to 157.9 per cent in St Kitts and Nevis, all above the debt to GDP target of 60.0 per cent as recommended by the M.

Figure 1: ECCU Public Debt as a Percentage of GDP



[9] All ECCB territories [Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, Saint Lucia, and St Vincent and the Grenadines] are included in the calculation of this ratio.

[10] The British Overseas Territories of Anguilla and Montserrat are members of the ECCB and are members of the Organization of Eastern Caribbean States. They have strict guidelines on their ability to contract public debt.

Figure one illustrates that there are several phases of debt growth in the ECCU. These are 1990 to 1997 when debt growth was fairly stable, the 1997 to 2004 period where growth in the ECCU debt to GDP ratio accelerated and peaked and the subsequent decline through to 2008 followed by an uptick in the ratio post 2008.

The ECCU public debt is characterized by the following stylized facts:

1. In 2011 44.1 per cent of the total public debt was held externally, of which multilateral creditors account for an estimated 43.0 per cent, followed by commercial creditors with 38.0 per cent and bilateral 19.0 per cent Trinidad based commercial institutions accounted for 13.2 per cent of the total external debt held in the ECCU.
2. Of the domestic debt roughly 51.7 per cent comprised of high interest and non-concessional debt held with Commercial Banks.
3. In addition 9.1 per cent of the ECCU total public debt was issued on the Regional Government Securities Market (RGSM) as at end-2011. In terms of total domestic debt, the RGSM accounted for 19.0 per cent.
4. On a positive note 51.9 per cent of the public debt has a maturity of five years or more, with short to medium term maturity estimated at 48.1 per cent.
5. The ECCU debt service ratio to current revenue is estimated at 31.6 per cent for 2011 with an interest service ratio of 12.2 per cent. Hence, for every EC dollar of revenue earned in the Currency Union, 32 cents went to debt servicing, of which 12 cents was for payment of interest
6. ECCU member countries over the period 1994 to 2011 experience repeated economic shocks such as hurricanes and other natural disasters, which resulted in increases in their public sector borrowing to rebuild public infrastructure. The increases in public sector borrowing were a contributing factor to the prolonged period of primary deficits.

To provide some insights into the apparent *t* distinct periods of debt changes (1990-1997, 1998-2004, 2005-2008 and 2009-2011) stylized facts on the sub composition of the debt and the performance of the real and financial sector during the same time will prove instructive.

The thinking behind this viewpoint is to determine whether changes in the type of instruments held by the region or in the performance of the tourism industry mirror in any way changes in debt growth.

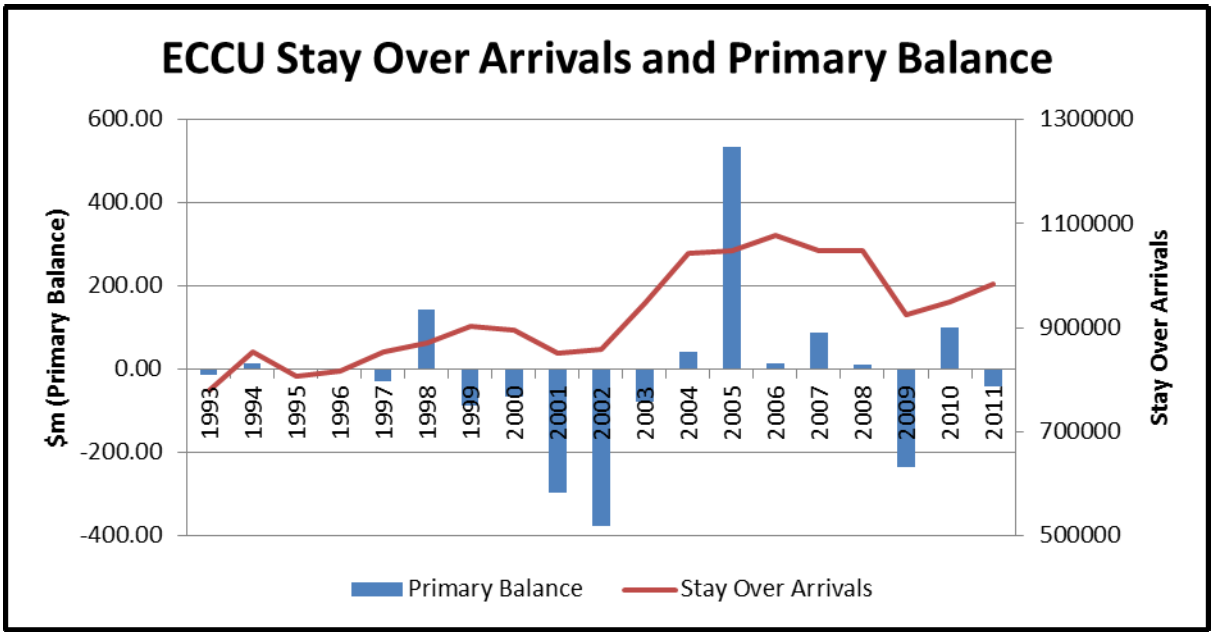
Table 2: Stylized ECCU Debt Facts: Debt Composition

items / 3 year averages	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2007	2008-2011
Domestic Creditors (% of total Domestic Creditors)							
ECCB	16.87	9.58	7.75	4.64	3.94	2.00	2.61
Commercial Banks	42.37	36.20	47.77	45.36	44.73	49.37	50.62
NIS/SSS	11.47	21.50	20.77	16.92	15.72	14.12	15.26
Other	29.29	32.72	33.42	32.21	35.62	34.50	31.51
External Creditors (% of total External Creditors)							
Multilateral	36.16	38.66	35.98	31.14	30.06	36.49	44.84
Bilateral	33.80	34.96	47.67	52.51	35.75	24.11	21.54
Commercial	1.33	1.39	2.33	12.40	24.95	30.95	23.01
Other	28.71	24.99	14.02	3.95	9.24	8.45	10.62

Table 2 shows that commercial banks share of domestic debt increased significantly post 1996 rising from an average of 36.2 per cent to 50.6 per cent by the end of the period. This increase corresponds with the reduction in preferential forms of funding by some ECCU member states such as St Kitts and Nevis, leaving many governments to source funds from the local market. Within the region, commercial financing attracts the highest cost and relatively short maturity periods leading to higher debt service cost and possibly the need to incur further debt to finance repayments. One the external front bilateral share of debt also saw a marked increase through to 2001 where it subsequently declined. This decline coincides with the rise of external commercial financing which rose from an average of 2.3 per cent at the end of 1998 to 23.0 per cent by the end of the review period. Intuitively these commercial sources of financing would be more costly and have less concessional terms or repayment grace periods with the expected implications.

Tourism is the major driver of economic activity in the ECCU. Analyzing developments in this industry can be instructive in contextualizing debt evolution.

Figure 2: ECCU Stay Over Arrivals and the Primary Balance



Interestingly, several distinct periods of performance can be highlighted. During 1990 to 1995 arrivals increased by 43.0 per cent representing the fastest rate of increase, however during the 1996 to 2000 period growth in visitor arrivals slowed to 33.0 per cent and declined further to 13.0 per cent in the 2000 to 2005 period. This time period of an apparent slowing of the tourism overlaps the increase in ECCU debt observed during the 1997 to 2004 period. This overlap raises the possibility that the debt may have been a response to stimulate the economy in light of weakness in the main economic driver.

In figure two we also see that during the 1993 to 1998 period the primary balance was fairly stable averaging a deficit of $150.0m which corresponds to the time when debt was fairly stable at 45.0 to 55.0 per cent of GDP. The primary balance deteriorated significantly from 1999 through to 2002 which correspondence to when debt to GDP grew from 63.0 to 84.0 per cent. The balance improved over the 2003 to 2007 period which is where the debt to GDP peaked and then declined.

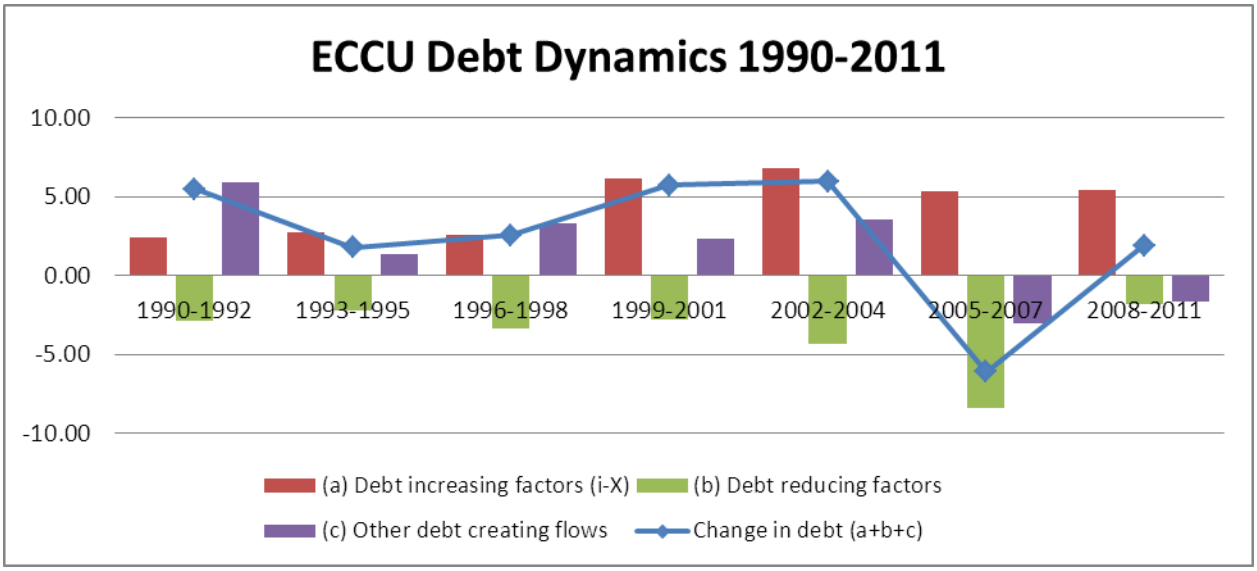
The preceding stylized facts show that the distinct phases of debt growth appear to be mirrored by changes in the real economy as proxied by stay over arrivals and the composition of debt and performance of the primary balance.

4.2 ECCU Debt Evolution

The analytical framework used to derive the ECCU debt dynamics is based on the *government lifetime budget constraint identity*. It is assumed that in the long run the ECCU member governments must finance their debt by running primary surpluses in the future, observing the public sector inter-temporal budget constrain. Based on this analytical framework, debt dynamics in the ECCU can be explained through several components such as changes in interest payments, the primary balance, inflation rate, GDP growth and other debt creating flows. Whereas increases in interest payments and primary deficits are debt increasing factors, increases in the inflation rate and GDP growth on the other hand, are debt reducing factors.

Table 3: Debt Decomposition for the ECCU

ECCU							
items / 3 yr averages	**1990-1992**	**1993-1995**	**1996-1998**	**1999-2001**	**2002-2004**	**2005-2007**	**2008-2011**
Change in debt (a+b+c)	**5.48**	**1.77**	**2.54**	**5.70**	**5.96**	**-6.13**	**1.88**
(a) Debt increasing factors (i-X)	**2.44**	**2.69**	**2.61**	**6.15**	**6.79**	**5.35**	**5.40**
Interest Payment (i)	1.81	1.44	1.64	2.62	3.56	3.03	2.95
Primary Balance (X)	-0.63	-1.25	-0.96	-3.53	-3.22	-2.33	-2.46
(b) Debt reducing factors	**-2.84**	**-2.24**	**-3.37**	**-2.80**	**-4.37**	**-8.44**	**-1.84**
Inflation Effect (π)	-1.48	-1.16	-1.29	-1.31	-1.69	-3.91	-2.58
Growth Effect (g)	-1.37	-1.08	-2.08	-1.49	-2.68	-4.53	0.74
(c) Other debt creating flows	**5.88**	**1.32**	**3.31**	**2.36**	**3.55**	**-3.04**	**-1.68**
Memo Item							
Standard Budget Deficit	2.44	2.69	2.61	6.15	6.79	5.35	5.40
inflation rate (percent)	3.81	2.38	2.48	2.01	1.95	4.59	3.29
real growth rate (percent)	3.74	2.28	4.16	2.55	3.23	5.57	-0.83



A decomposition of ECCU public debt yields the following:

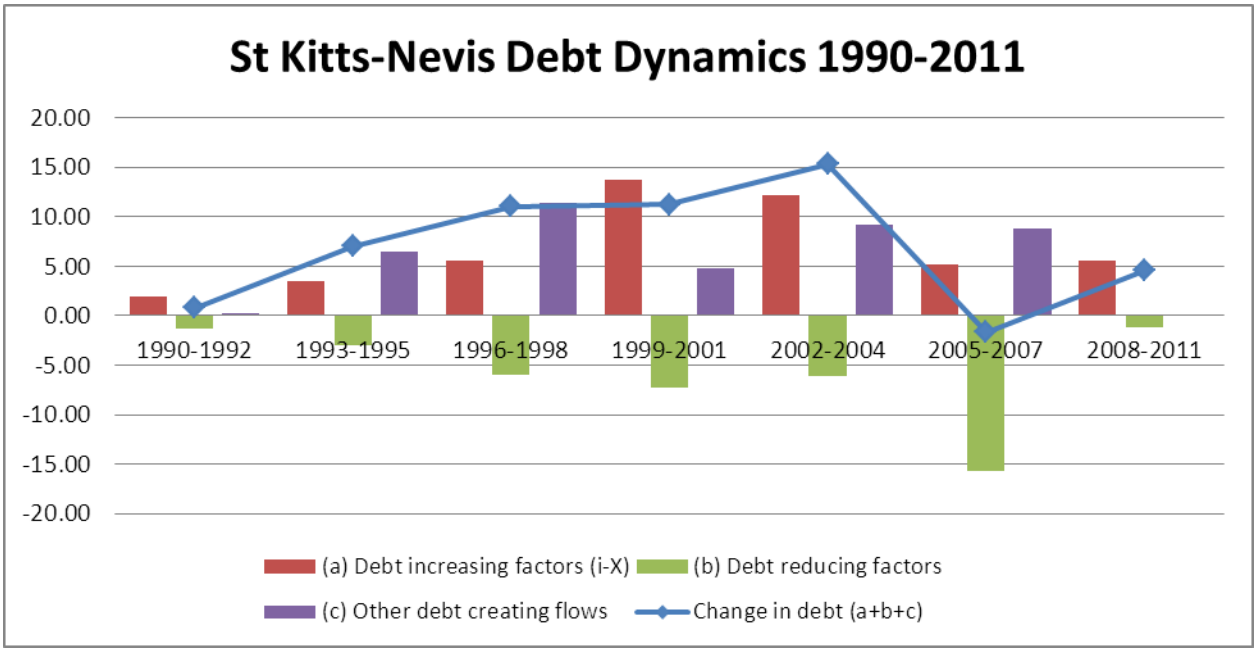
1. Consecutive primary deficits throughout the review period contributed in a large part to debt accumulation except for the period 2005 to 2007 when increases in real GDP growth offset the impact of primary deficit and interest payments on the debt to GDP ratio.
2. Debt declined in only one period over the full sample i.e. 2005 to 2007. This period also recorded the largest growth and inflation debt reducing contributions. Intuitively both observations can be attributed to spillover effects associated with the hosting of Cricket World Cup in 2007. Additionally inflation effect averaged 1.4 per cent but was particularly high in 2005 to 2007. Indicative of the effects of expansionary fiscal policy and construction taking place which would have fueled inflation.
3. Average debt growth peaked in the 2002 to 2004 at an average of 6.0 per cent. In the last period (2008 to 2011) which corresponds with the global financial crisis, debt increased on average by 2.0 per cent. The declining growth contribution led to increases in the debt to GDP ratio but was mitigated by the reducing effects of inflation.
4. The contribution of interest payments to an increasing debt burden grew over the period. Moving from 1.4 per cent at the end of 1995 to an average of 3.0 per cent by the end of the review period.

5. The residual or other debt creating flows was large in the early parts of the sample but became smaller in the later part and contributed to reducing debt growth.

Debt evolution analysis for select ECCU member countries is presented below. St Kitts and Nevis has the highest nominal and debt to GDP ratio in the ECCU and it would therefore be instructive to assess its debt evolution.

Table 4: St Kitts and Nevis Debt Evolution

St Kitts-Nevis							
items / 3 yr averages	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2007	2008-2011
Change in debt (a+b+c)	0.79	7.00	11.03	11.24	15.35	-1.68	4.56
(a) Debt increasing factors (i-X)	1.92	3.53	5.52	13.71	12.22	5.22	5.62
Interest Payment (i)	2.81	2.31	2.96	4.78	7.41	8.25	6.48
Primary Balance (X)	0.89	-1.22	-2.57	-8.93	-4.81	3.03	0.86
(b) Debt reducing factors	-1.34	-3.04	-5.92	-7.26	-6.10	-15.66	-1.12
Inflation Effect (π)	-1.59	-1.04	-3.66	-2.98	-3.38	-9.29	-3.61
Growth Effect (g)	-1.38	-2.64	-3.20	-4.31	-3.22	-6.71	2.42
Revaluation Effect (ξ)	1.63	0.64	0.94	0.02	0.51	0.34	0.07
(c) Other debt creating flows	0.22	6.51	11.43	4.79	9.23	8.75	0.06
Memo Item							
Standard Budget Deficit	1.92	3.53	5.52	13.71	12.22	5.22	5.62
inflation rate (percent)	3.25	1.76	5.12	2.63	2.15	5.34	2.86
real growth rate (percent)	2.82	4.76	4.75	4.03	1.93	4.01	-1.56



A decomposition of St Kitts debt yielded the following:

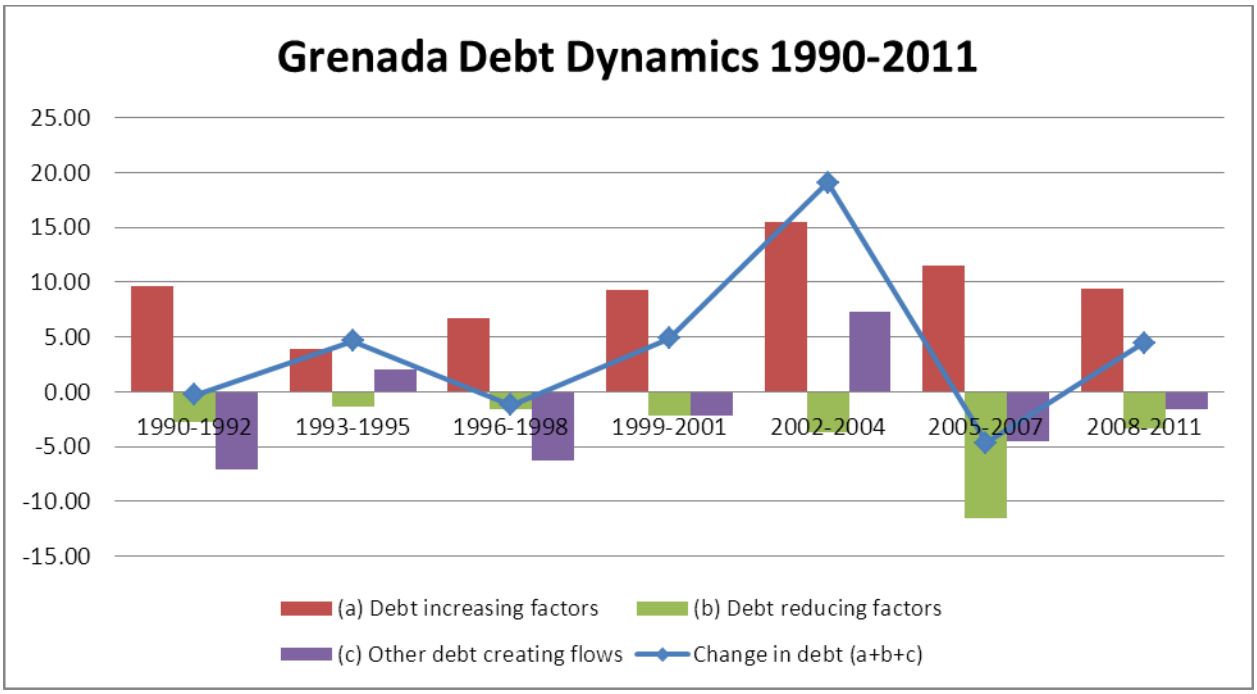
1. Considerable increases in debt were observed during the 1993 to 2004 period. Debt growth peaked at 15.3 per cent in the 2002 to 2004 period. Debt to GDP growth contracted in only one sub period which was 2005 to 2007. It is important to note that St Kitts and Nevis suffered the effects of Hurricanes in 1995, 1998 and 1999. In the table above the corresponding time period recorded the largest residual factor of 11.4 per cent. St Kitts and Nevis graduated from IDA funding in 1994.
2. The 1993 to 2004 period saw a deterioration of the primary balance and therefore its increased contribution to debt. The primary balances positive contribution to debt growth moderated following the 2001 sub period. Since 2005 the primary balance has reduced debt growth reflecting a policy decision by the government. The addition, of grant funding increased in 2005 from an average of $4-$6m to $25 to $30m also led to improved primary balances. The 2011 Budget address notes targets of 5 to 8 per cent of GDP going forward. As the level of debt increased the positive effect of interest payments also rose steadily with the highest contribution observed in the last sub period.

3. With the exception of 2008 to 2011 there was positive real economic growth which therefore mitigated the growth of debt particularly in the 2005 to 2007 period. As expected the link between inflation and growth also exist. High growth is known to fuels inflation which in turn also mitigates debt to GDP growth by eroding the real value of debt.
4. With most of the debt being domestic revaluation effects have been minimal.
5. "Other debt creating flows" which measures the residual effects (and some measurement error) in the case of St Kitts and Nevis are high and positive (with the exception of 2008 to 2011 period). In the case of 1996 to 1998 we can posit that these were attributed to the effects of the hurricanes.

Assessing debt evolution in Grenada which suffered the effects of Hurricane Ivan will also provide instructive in appreciating ECCU debt growth.

Table 5: Grenada Debt Evolution

Grenada							
items / 3 yr averages	**1990-1992**	**1993-1995**	**1996-1998**	**1999-2001**	**2002-2004**	**2005-2007**	**2008-2011**
Change in debt (a+b+c)	-0.25	4.62	-1.22	4.88	19.08	-4.65	4.48
(a) Debt increasing factors	9.62	3.95	6.72	9.27	15.53	11.47	9.38
i-X							
Interest Payment (i)	3.27	2.90	2.40	2.75	6.03	2.35	3.07
Primary Balance (X)	-6.35	-1.05	-4.32	-6.51	-9.50	-9.12	-6.30
(b) Debt reducing factors	-2.75	-1.41	-1.62	-2.17	-3.75	-11.55	-3.30
Inflation Effect (π)	-1.86	-1.71	-1.27	-1.54	-1.40	-6.54	-4.09
Growth Effect (g)	-1.97	-1.40	-3.53	-3.32	-0.85	-5.37	2.30
Revaluation Effect (ξ)	1.08	1.69	3.18	2.70	-1.50	0.35	-1.51
(c) Other debt creating flows	-7.12	2.09	-6.31	-2.22	7.31	-4.57	-1.60
Memo Item							
Standard Budget Deficit	9.62	3.95	6.72	9.27	15.53	11.47	9.38
inflation rate (percent)	3.10	2.49	1.76	2.34	1.06	5.08	3.17
real growth rate (percent)	3.32	1.73	5.07	5.84	1.01	4.54	-1.72



Grenada's debt decomposition analysis yielded the following:

1. Average increases in Grenada debt to GDP ratio have been below 5.0 per cent throughout the period with the exception of the 2002 to 2004 period. In contrast to St Kitts and Nevis Grenada's debt growth has not been steady. Hurricane Ivan affected the island in 2004 and significantly affected the island economy and ability to service its debt. In the 2002-2004 period other debt creating flows is significantly high at 12.9 per cent.
2. Interest payments remained relatively stable in terms of its contribution to GDP just below 3 per cent. In the 2002 to 2004 period however this increased considerable reflecting the increased.

4.3 Optimal Debt

This section highlights the results from our preferred debt dynamic indicator namely the maximum sustainable debt methodology. First a baseline scenario which assumes historical average performances for key macro-economic variables are presented. The use of historical rates is in keeping with a baseline no change scenario. In section 4.3.1.3 forward looking

growth and interest rate averages will be used and thereby will present a forward looking assessment of debt dynamics in the region. An alternative scenario, whereby 'shocks[11]' to the macro-economic inputs are done is also presented. A comparison of these scenarios and resulting policy implications wrap up this section. **On an additional note the interest rates used in the paper are domestic commercial rates which have been adjusted for inflation.** These rates are a best a proxy for weighted average lending rates faced by countries. **However several islands lending rates may be lower than these on account of large external concessional debt. In section 4.3.1.3 average weighted interest rates on debt which was available only for 2012 was used and as such the analysis differs slightly to that of section 4.3.1.** Notwithstanding the adjusted lending rates remains the best proxy given the absence of historical weighted debt interest rates.

4.3.1 Maximum Sustainable Debt

Using the methodology espoused in section three maximum sustainable debt for the ECCU member countries were calculated and are presented in table 6. These are then compared to actual debt ratios as at end 2011 to illustrate the degree of over or under borrowing which exist. The first set of tables below represents the baseline ratios for ECCU member countries. This baseline assumes that the historical performance of growth, primary surpluses and interest rates[12] are the best predictor of future medium term macro-economic performance. Consequently deviations from this historical trend due to increased fiscal consolidation efforts or growth shock are not taken into account.

[11] +/- half a standard deviation

[12] The interest rates used in the paper are domestically commercial rates which have been adjusted for inflation. These rates are a best a proxy for weighted lending rates faced by countries.

Table 6: Maximum Sustainable Debt

Baseline	Median Primary Balance	Average Real Lending	Average Growth Rate	Interest Rate Differential
		%		
Anguilla	1.83	6.06	4.31	1.75
Antigua and Barbuda	1.33	8.41	1.89	6.51
Dominica	1.42	7.29	2.51	4.78
Grenada	2.42	6.72	2.37	4.35
St. Kitts and Nevis	4.90	5.98	2.48	3.49
Saint Lucia	2.40	8.00	2.36	5.64
St. Vincent and the Grenadines	1.00	6.69	2.81	3.88

Baseline	Benchmark Debt to GDP	Actual Debt to GDP 2011	Overborrowing
		%	
Anguilla	104.44	29.60	0.28
Antigua and Barbuda	20.42	93.60	4.58
Dominica	29.72	71.40	2.40
Grenada	55.61	90.40	1.63
St. Kitts and Nevis	140.25	145.70	1.04
Saint Lucia	42.56	73.50	1.73
St. Vincent and the Grenadines	25.79	67.30	2.61

The findings above suggest that with the exception of Anguilla and St Kitts and Nevis that the benchmark debt levels are actually below the ECCB's prudential limit of 60 per cent. These findings are similar to those of Abiad and Ostry 2005 on their sample of Latin American countries. In that paper, benchmark debt levels ranged from 50.0 to 80.0[13] per cent and four out of the six countries studied had over borrowing ratio's greater than one. The findings of Reinhart et al 2003 are also pertinent here as that study noted that debt thresholds can be as low as 15 per cent of GDP. Referring to table 6 above Antigua and Barbuda had the lowest debt benchmark of 20.4 per cent and the highest over borrowing ratio. It is worthy to point out that Antigua and Barbuda had the lowest average primary surplus and one of the highest spreads in the ECCU. Grenada's benchmark level was the third highest following St Kitts and Nevis and Anguilla in large part due to its high average primary surplus generation capacity of 2.4 per cent. These results however are based on the historical performance of countries and do not reflect the possibility of policy or structural shifts which may serve to improve or worsen the economic outlook. In the case of Anguilla for instance despite having the lowest

[13] For a sample of Latin American countries

"over borrowing" ratio the island is in breach of UK fiscal guidelines and is unable to contract additional debt. Anguilla's high benchmark debt limit is driven by its historically volatile yet high growth rates. Expectations of previous phenomenal growth (as high as 25.0 per cent of GDP) may not reoccur given tepid economic prospects and a policy stance of reducing volatile swings in growth. In the case of St Kitts and Nevis a benchmark debt of 140.3 per cent of GDP was calculated which is relatively close to the current 145.0 per cent ratio. Notwithstanding the Federal government still had to under-go a debt restructuring given the high level of 'bunching' of its debt in 2012. This raising an interesting caveat to the aforementioned limits in that the bunching and composition of the debt plays an important role similar to the actual debt stock.

4.3.1.1 Maximum Sustainable Debt with a ½ negative SD Shock

Economic prospects for the ECCU remain dim on account of tepid economic growth prospects in the economies of the region's major trading partners and weak domestic consumer spending and construction activity. Cognizant of this outlook this sub section models a negative shock[14] to the macroeconomic variables discussed above. This shock will serve as a proxy for the tepid near term prospects.

Table 7: Negative Shock Maximum Sustainable Debt

Shock - 1/2 SD	Shocked Primary Balance	Average Real Lending	Shocked Growth Rate	Interest Rate Differential
			%	
Anguilla	1.27	4.14	-1.14	5.28
Antigua and Barbuda	0.89	7.43	-1.98	9.40
Dominica	0.71	6.18	0.85	5.32
Grenada	1.39	4.97	-0.63	5.60
St. Kitts and Nevis	4.14	4.54	0.22	4.32
Saint Lucia	1.37	5.96	0.18	5.78
St. Vincent and the Grenadines	0.68	4.83	1.03	3.81

[14] Growth, the primary balance and interest rates are reduced by half a standard deviation.

Shock - 1/2 SD	Benchmark Debt to GDP	Actual Debt to GDP 2011	Overborrowing
		%	
Anguilla	23.98	29.60	1.23
Antigua and Barbuda	9.50	93.60	9.85
Dominica	13.42	71.40	5.32
Grenada	24.78	90.40	3.65
St. Kitts and Nevis	95.92	145.70	1.52
Saint Lucia	23.71	73.50	3.10
St. Vincent and the Grenadines	17.96	67.30	3.75

The volatility in the underlying parameters varied widely across the countries and as a result led to significant changes to the benchmark debt calculations. Reducing historical growth rates in most countries lead to projections of economic contractions while the reduced primary balance averaged 1.5 per cent across the islands. The most striking change between the baseline projections and this scenario would be Anguilla. Benchmark debt under this alternative scenario for Anguilla fell to 24.0 per cent from 104.4 per cent of GDP. This outturn was largely a result of the aforementioned volatile historical growth. The new benchmark for Antigua and Barbuda also declined to as low as 9.5 per cent. The desirability and realism involved in trying to obtain such a low debt burden is questionable particularly given the current debt ratio and the financial sector issues there. The result in Antigua and Barbuda also raises an interesting point concerning the feasibility and second round effects inherent in reducing a nation's debt stock. Additionally with the exception of St Kitts and Nevis all debt benchmarks given are below the 60.0 per cent 2020 target set by the Monetary Council.

4.3.1.2 Maximum Sustainable Debt with a ½ positive SD Shock

The possibility of improved macro-economic fundamentals relative to the historical outlook was also modeled in the form of a positive half a standard deviation addition to growth, the primary balance and interest rates. This outturn could occur if recent performances in the tourism industry continue leading to positive spillover effects in other sectors.

Table 8: Positive Shock Maximum Sustainable Debt

Shock + 1/2 SD	Shocked Primary Balance	Average Real Lending	Shocked Growth Rate	Interest Rate Differential
		%		
Anguilla	2.39	7.98	9.75	-1.78
Antigua and Barbuda	1.77	9.52	5.76	3.76
Dominica	2.13	8.40	4.17	4.23
Grenada	3.45	8.46	5.37	3.10
St. Kitts and Nevis	5.66	7.42	4.75	2.67
Saint Lucia	3.43	10.05	4.55	5.50
St. Vincent and the Grenadines	1.32	8.54	4.59	3.95

Shock + 1/2 SD	Benchmark Debt to GDP	Actual Debt to GDP 2011	Overborrowing
		%	
Anguilla	N/A	N/A	N/A
Antigua and Barbuda	47.02	93.60	1.99
Dominica	50.21	71.40	1.42
Grenada	111.37	90.40	0.81
St. Kitts and Nevis	212.08	145.70	0.69
Saint Lucia	62.37	73.50	1.18
St. Vincent and the Grenadines	33.33	67.30	2.02

The figures above represent an optimistic assessment of debt benchmarks. Ratio's in this scenario hover between 40.0 to 60.0 per cent of GDP with the exception of St Kitts and Nevis and Grenada. The desirability of benchmarks higher than that of 60.0 per cent in these two countries is questionable. Growth rates under this scenario are close to the Monetary Council's target of 6.0 per cent growth and show primary balances averaging approximately 3.0 per cent. Notwithstanding these strong performances most member countries debt dynamics are still unsustainable.

4.3.1.3 Policy Responses /Implications and DSA's

The size of the variances between the baseline and 'shocked' scenario's presented in the previous section presents a nuance and inconclusive picture of suitable limits of ECCU member countries. Given continued economic contraction across the region's economies there is recognition of the need for fiscal consolidation and sustainable debt dynamics. Efforts to therefore strengthen country debt units and prioritize the PSIP program are being discussed.

This section aims to identify the level of fiscal effort necessary by each country in order to comply with the 60.0 per cent 2020 and or 2025 debt limit. The required primary balance will be compared to most recent and historical trend to determine the feasibility of such primary balances from a retrospective context. The benefits derived from new initiatives and most recent publications will also be contrasted to see if the ECCU member governments are on the right path. **Economic growth and real interest rate assumptions[15] will be based on recently concluded debt sustainability analysis (DSA's) for each island. Consequently the assumptions in this section differ from the baseline case presented above.**

The required primary surpluses and path to the 60.0 per cent target and benchmark limit will be drawn from the IMF DSA framework where a discount factor is defined as;

$$\beta_t = \left(\frac{1+r_t}{1+g_t}\right)$$

And a required primary surplus is defined as

$$ps^* = \frac{(\beta - 1)(\gamma^* - \beta^n)}{(1 - \beta^n)} d_t$$

Figure four below shows an example of Antigua and Barbuda path to the 60.0 per cent while table nine shows the resulting metrics for the all member countries.

Figure 3: Debt Path to 60.0% by 2020

2011 Actual debt =	**93.6%**
Target Debt* =	**60.0%**
γ* =	**0.6**

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ajustment in 10 years		**B[3]** =	1.001							
Forecasted Debt	93.6%	89.4%	85.2%	**81.0%**	**76.8%**	**72.6%**	**68.4%**	**64.2%**	**60.0%**	**55.8%**
Discount Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Historical Real Growth	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Estimated Real Interest	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Required Primary Balance	0.0%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%

[15] Forward looking averages calculated over the 2012 to 2017 period.

Table 9: Level of Effort Needed to Achieve 2020 Target[16]

Country (60.0%)	Required Primary Balance from 2013	2011 Primary Balance	Historical 10 Yr Avg PB	Adjustment Needed (Variance)	
				2011	Historical
Anguilla	-3.76%	3.90%	0.26%	-7.7%	-4.0%
Antigua and Barbuda	4.21%	-2.80%	-0.68%	7.0%	4.9%
Dominica	1.48%	-6.90%	-0.63%	8.4%	2.1%
Grenada	4.20%	-0.67%	-1.82%	4.9%	6.0%
St. Kitts and Nevis	6.63%	8.60%	2.76%	-2.0%	3.9%
Saint Lucia	3.17%	-2.00%	0.41%	5.2%	2.8%
St. Vincent and the Grenadines	0.97%	-0.20%	0.22%	1.2%	0.7%

The level of fiscal effort as evidenced by historical primary balances which the ECCU member governments have been able to achieve has been low. Primary balances across the Currency Union averaged -0.4 per cent while sections 4 above show that they highest average primary surplus generated in countries between 1.0 and 2.5 per cent with the exception of St Kitts and Nevis at above 4.0 per cent. Table 9 shows that contrasting this historical effort to the primary balances required to achieve the 60.0 per cent target (assuming no additional debt growth) is significant. On the basis of comparing the most recent 2011 primary balance to the required show that most countries require adjustment in excess of 5.0 percentage points of GDP with Dominica and Antigua and Barbuda having the highest. Comparing required adjustments to the historical performance (which is the preferred metric) the data indicates that Antigua and Barbuda, Grenada and St Kitts and Nevis would need the largest adjustments. In the case of St Kitts and Nevis as referenced in the footnote below and Appendix A1 on-going restructuring efforts should reduce the debt level making this required adjustment smaller than it currently is. Antigua and Barbuda and Grenada both have had restructuring exercises done

[16] St Kitts and Nevis recently undertook a debt restructuring exercise in two phases one being a debt for land swap and another being a debt exchange offer. Consequently the IMF (http://www.imf.org/external/pubs/ft/scr/2012/cr12284.pdf) posits that by end 2012 that the debt to GDP ratio for St Kitts will be 100% of GDP. Assuming this new figure the required primary balance is lowered relative to assuming debt at the higher un-restructured level. See Appendix A1 which highlights the Federations restructuring.

but still have high debt stocks. Outside of the obvious case of Anguilla, St Vincent and the Grenadines had the lowest required adjustment.

The ability of countries to achieve these levels of adjustment is a concern. The Debt Management Advisory Services Unit (DMAS) have conducted Debt Sustainability Analysis (DSA's) for the ECCU member countries and this analysis represents forward looking indicators over the 2012 to 2032 time frame[17]. Table 11 presents a summary of the findings for the ECCU. Over the 2012 to 2017 period on average positive real growth is expected in each of the countries where DSA's have been done. The highest level of growth is expected in Saint Lucia (2.7 per cent) representing the long term potential of that economy. Primary surpluses are also expected in 6 out of the 8 countries with Antigua and Barbuda and St Kitts and Nevis recording the highest average rates of 3.2 and 4.3 per cent respectively. A comparison[18] of these fiscal projections to the level of adjustment needed, show that the level of effort implied by the DSA's is still not sufficient to achieve the debt to GDP target of 60.0 per cent by 2020.

Table 10: DSA Macro Economic Projections 2011-2017 Averages[19]

Country	DSA Primary Balance	Interest Rates		Expected Real Growth	Revenues % of GDP	Non Interest Expenditures as a % of GDP
		Domestic	Foreign			
Anguilla	2.90%	3.80%	3.80%	2.10%	24.9%	21.7%
Antigua and Barbuda	3.20%	4.80%	3.80%	2.60%	22.4%	19.2%
Dominica	2.00%	4.40%	2.20%	2.40%	29.9%	27.9%
Grenada	1.30%	6.40%	3.80%	1.40%	18.1%	21.7%
St. Kitts and Nevis	4.30%	7.00%	4.60%	3.00%	27.9%	23.2%
Saint Lucia	-4.00%	7.80%	4.20%	2.00%	26.7%	30.7%
St. Vincent and the Grenadines	-2.10%	5.30%	4.00%	2.50%	25.8%	27.9%

[17] Except in the case of Anguilla and St Kitts and Nevis who are middle income countries

[18] See Table 12

[19] As at November 2012

Table 11: Summary of Required and Historical Adjustments

	Benchmark Debt Required Primary Balance	60% Target Required Primary Balance	2011 Actual Primary Balance	10 Year Actual PB Average	DSA Projected Primary Balances
Anguilla	-9.3%	-3.8%	3.9%	0.26%	3.2%
Antigua and Barbuda	9.2%	4.2%	-2.8%	-0.68%	3.2%
Dominica	5.3%	1.5%	-6.9%	-0.63%	-3.1%
Grenada	4.7%	4.2%	-0.7%	-1.82%	-2.3%
St. Kitts and Nevis	-2.7%	6.6%	8.6%	2.76%	4.3%
Saint Lucia	5.2%	3.2%	-2.0%	0.41%	-4.0%
St. Vincent and the Grenadines	5.2%	1.0%	-0.2%	0.22%	0.0%

This sub section has shown that significant fiscal effort is required to obtain the baseline debt limit identified by the paper and the 60.0 per cent target set by the Monetary Council. A comparison to DSA projections suggests that in the near term (2012-2016) most countries will not generate the necessary fiscal performance to meet either.

5.0 Conclusion and Recommendations

The debt literature suggest that the primary balance, interest payments (two variables policy makers can influence) and economic growth play significant roles in determining the evolution of public debt. This paper has shown that on an ECCU wide basis interest payments, primary deficits and other debt creating flows (a residual) were the largest contributing factors to regional debt growth. Further research work on the factors which contributed to the high positive residual observed form grounds for further research. Attempts were made in this paper to link these residuals to specific economic events. The importance of growth to fostering sustainable debt dynamics was also evident in the papers findings as the debt ratio fell only over the 2005 to 2007 period where growth was at its historic highest. A finding of the paper therefore is that it is imperative that efforts to reduce serving cost and improve the primary balance should be undertaken in addition to spurring economic growth. This is particularly poignant since another finding of the paper is that the primary balance does not appear to respond positively with debt growth in most countries. It was shown however that

in St Kitts and Nevis a positive relationship between the primary balance and debt growth has been achieved in recent times.

A baseline with upper and lower bounds was also presented in the paper and highlights the sensitivity of the underlying metric used to slight changes in the underlying parameters. The broadness of these bounds raises questions about the desirability and ability to adjust to these limits. The lower bound of these projections suggest limits ranging for the low 20's of most islands in keeping with the findings of Reinhart et al 2003 while the upper limit estimates limits ranging between 30.0 to 50.0 per cent in some countries. The degree of adjustment necessary for countries to converge to either the baseline or 60.0 per cent target was particularly striking as shown in the summary table below.

The level of fiscal adjustment of the primary balance necessary to achieve either the benchmark or the 60.0 per cent debt to GDP targets when compared to the most recent (2011) and historical fiscal efforts (10 year average) suggest that such targets may not be feasible. This point is particularly poignant given expectations of subdued economic activity and increasing calls on governments to stimulate economic activity. The benchmark ratios calculated also appear onerous but are consistent with previous studies in the area. The results of the paper therefore calls for serious discussions on whether the region wishes to converge to limits lower than a 60.0 per cent target or maintain the intention of a 60.0 per cent target.

Consideration was also given to a possible extension of attaining the 60.0 per cent target by 2025 as opposed to 2020. The resulting analysis shown in Table 13 suggests that the required fiscal adjust will be lower than that of the 2020 targets but still relatively onerous when compared to historical precedent. Policy makers should also consider that extending the target date also lengthens the possibility of exogenous shocks disrupting the fiscal situation of member governments and therefore diminish the applicability of said fiscal adjustments.

Table 12: Fiscal Adjustments re 2025 vs. 2020 Target Dates

Country (60.0%)	Required Primary Balance from 2013 (2025 Target)	Required Primary Balance from 2013 (2020 Target)	Variance
Anguilla	-2.30%	-3.76%	1.46%
Antigua and Barbuda	2.59%	4.21%	-1.62%
Dominica	0.93%	1.48%	-0.55%
Grenada	2.74%	4.20%	-1.46%
St. Kitts and Nevis	4.70%	6.63%	-1.94%
Saint Lucia	2.51%	3.17%	-0.65%
St. Vincent and the Grenadines	0.62%	0.97%	-0.35%

In either case policy makers will need to weigh the cost associated with adjusting primary balances to the required average levels. The data presented in this paper suggest that such adjustment may not be feasible. If this is the case then several policy issues are raised which include whether more emphasis should be placed on growth, or should the stock of debt be addressed via debt restructuring. While economic growth is a desirable outcome and can allow the region to 'grow' out its debt issue, expectations of economic activity are subdued and the level of growth needed to achieve the aforementioned will be difficult in an environment of low foreign direct investment flows. This leaves the prospects of debt restructuring on a regional scale. Knock on effects on the financial sector however will need to be considered. Neither of the above policy discussion is particularly appetizing and raises another concern about the use of the debt to GDP metric itself.

The debt to GDP ratio is largely a solvency measure and shows therefore the long run ability of the country to sustain a given level of debt. This measure does not focus on the composition of the debt nor its maturity structure. Emphasis solely on the debt to GDP ratio which gives a sense as to the quantum of the debt and not a wider look at the bunching or interest rate composition has given rise to instances where countries have defaulted at debt stocks below 60.0 per cent. St Kitts and Nevis historical have been able to carry a debt stock in excess of 100.0 per cent of GDP but were forced to restructure when several large debts simultaneously became due in the 2011/2012 period. Such developments raise the need to manage debt prudently with risk analysis done on possible bunching of debt. Liquidity

indicators such as debt service to current revenue and perhaps an upper bound on the amount of debt falling due in any one year are recommended. This would require governments to strengthen debt units to facilitate the aforementioned. Recognizing that fiscal policies and institutions can change over time the paper sought to incorporate information from the DSA's to present forward looking indicators of macro-economic variables. Even with these forward looking indicators countries will require significant fiscal adjustments. It should be stressed that the baseline sustainable debt ratios were based on historical averages while the level of effort indicators were based on forward looking changes in key policy variables. The findings therefore suggest that should policy not change countries will surpass sustainable debt limits and therefore face the negative spillover effects of unstable debt dynamics. Three of the six member countries with high debt to GDP ratios in excess of their benchmark have already undertaken debt restructuring and IMF support programs. Charting the fiscal policy response functions of ECCU countries showed that the primary balance as a percentage of GDP does not respond in a commensurate fashion to increases in the debt ratio. This has implications which policy makers must address at it implies the continued growth of debt on an explosive path. Also from an internal point of view the need for the DMAS unit to construct and backdate a historical series of weighted average interest rates per country was evident give the difficulties surrounding the use of a suitable proxy for real lending rates.

However, among the ECCU member countries there are important differences in the debt limit, structure and key factors in the accumulation of debt over the historical period. Consequently, the optimal primary surplus to stabilize and place the debt-GDP ratio on a downward path would require country-specific recommendations.

The following policy options are available to reduce the public debt in ECCU member countries:

- Countries in breach of their maximum sustainable debt benchmark will need to undertake fiscal adjustments to depart from the historical fiscal performance, in terms of broadening/strengthening the tax base and more effective public expenditure

controls. Dominica has demonstrated the political willingness to do, although this was subsequent to debt restructuring in 2004. Since 2004 St Kitts and Nevis has also shown a willingness to improve the fiscal performance of government.

- Debt reprofiling and/or restructuring as an initial step coupled with stronger fiscal and structural policy reform can effectively place the debt on a downward path. Dominica presents a good case study for member countries. They undertook a debt restructuring exercise in 2004 which provided the government with debt service relief and lengthened the maturities on their outstanding debt. Dominica also received multilateral support in the form of grants and/or concessional loans to meet their debt payments and liquidity needs. The Caribbean Development Bank (CDB) and International Monetary Fund (IMF) provided low interest long maturity concessional loans. Dominica also undertook some degree of structural reform as one of the conditions for multilateral-support and Technical Assistance. The debt exchange yielded reductions in the net present value (NPV) of the debt stock ranging between 28.0 – 41.0 per cent.
- Fiscal discipline by member countries can establish the credibility needed to generate primary balances, in terms of adhering to the agreed fiscal targets/benchmarks through downturns and upturns.
- More active debt management by member governments to reduce the exposure to changes in exchange rates and interest rates and to inform on medium term debt strategies to minimize the debt servicing costs for governments.
- Establishing a regional approach to debt restructuring within the existing legal framework to undertake orderly and minimal cost interventions when negotiating with common creditors.
- Efforts to have the ECCU member countries target primary balances consistent with reducing debt to GDP ratios is welcomed and should be continued. It should be noted that historically in the ECCU it has proven difficult to reduce the debt to GDP ratios without robust economic growth. Structural reforms that are broad based and complementary to the fiscal adjustment efforts (including a possible debt restructuring) can contribute to the making more funds available for targeted investments into the

country's growth sectors and generate the level of economic growth that is debt reducing.

A limitation of the study is that the framework used is based on a static model whereby historical and future expectations of key macroeconomic variables are used to gauge debt sustainability. This model however does not factor in feedback and joint effects of possible shocks to macro-economic variables on debt dynamics. The methods used in this paper therefore reflect the "retrospective assessment" on debt sustainability. It fails therefore to "emphasize uncertainty" as espoused by Tanner and Samake 2006 where uncertainty refers to possible shocks for instance to either the primary balance or interest rates. A shock to either would change the level of sustainability and may not be reflected in the results of our paper which assume consistency in the projections of macroeconomic variables. This point can however be mitigated by doing scenario analysis whereby varying levels of key variables may be done. This however fails to recognize that quite often variables may change simultaneously and not in isolation as shown by Celasun et al 2006. Consequently further research of ECCU debt evolution using a dynamic VAR system (to take into account joint endogenity and uncertainty) should prove beneficial to better understanding the issue of debt in the region.

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Appendix

A.1 St Kitts and Nevis Debt Restructuring

In 2011 St Kitts and Nevis began debt restructuring negotiations with its creditors. A commercial debt exchange which covered $368.1m was completed in April 2012 and resulted in the Federation receiving debt forgiveness on just under $120.0m negotiations are also in an advanced stage with regard to a debt for land swap with domestic creditors. This debt for land swap covers $905.0m of debt and is expected to be finalized by end December 2012. As a result of these developments the IMF expected that the debt to GDP ratio by end 2012 will be approximately 100.0 per cent of GDP. Consequently the level of effort necessary for the Federation to achieve the 60.0 per cent debt to GDP ratio has been impacted. Table 1A below shows this new fiscal effort.

Table 1A: St Kitts and Nevis Level of Effort following Debt Restructuring

2012 Actual debt **=**	**100.0%**									
Target Debt* =	**60.0%**	St. Kitts and Nevis								
γ* =	**0.6**									
Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Ajustment in 10 years		**B^{3} =**	1.123							
Forecasted Debt	100.0%	95.2%	90.4%	**85.5%**	**80.6%**	**75.5%**	**70.4%**	**65.3%**	**60.0%**	**54.7%**
Discount Factor	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015
DSA Projected Growth	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Estimated Real Interest	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Required Primary Balance	1.5%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%

A.2 Crisis Debt Level

As articulated in section three this determines the maximum debt limit a country should target given depressed revenues.

Table 2A: "Crisis" Debt Levels Calculations

	Average Revenue	2 Standard Deviations	Minimum Revenue	Average Expenditure	2 Standard Deviation	Minimum Expenditure
				in % of GDP		
Anguilla	20.7	4.5	**16.2**	19.2	5.5	**13.8**
Antigua and Barbuda	18.7	2.4	**16.3**	19.0	3.7	**15.4**
Dominica	25.2	5.1	**20.1**	21.4	3.4	**18.1**
Grenada	19.9	1.4	**18.6**	15.9	2.6	**13.3**
St. Kitts and Nevis	28.3	5.3	**23.0**	23.2	7.5	**15.7**
St. Lucia	24.4	1.8	**22.6**	15.4	5.3	**10.2**
St. Vincent and the Grenadines	24.1	1.8	**22.3**	20.5	5.1	**15.4**

St Kitts and Nevis had the highest average revenue intake which was also proved to be the most volatile, notwithstanding it had the highest minimum revenue level which suggest a relatively robust revenue collection mechanism. An analysis of St Kitts and Nevis expenditure however shows that it was the least volatile indicating stickiness in curtailing non interest outlays. Antigua and Barbuda had the lowest level of average revenues which were relatively volatile resulting therefore in Antigua and Barbuda having the lowest crisis level of revenues. The minimum level of expenditures in Antigua and Barbuda was midway. Similarities in average revenues and volatility in St Vincent and Saint Lucia resulted in minimum revenue levels of 24.0 per cent in each. St Vincent's average expenditure outlays however proved higher and more volatile. In most islands with the exception of Anguilla and St Vincent and the Grenadines the volatility of revenues were higher than that of non interest expenditure outlays. On the basis of the aforementioned and using equation three in section three 'crisis' debt limits were found for each ECCU territory as shown below.

Table 3A: "Crisis" Debt Levels

	'Crisis' Debt Limit
	% of GDP
Anguilla	88.87
Antigua and Barbuda	13.10
Dominica	34.35
Grenada	98.44
St. Kitts and Nevis	175.56
Saint Lucia	201.71
St. Vincent and the Grenadines	134.14

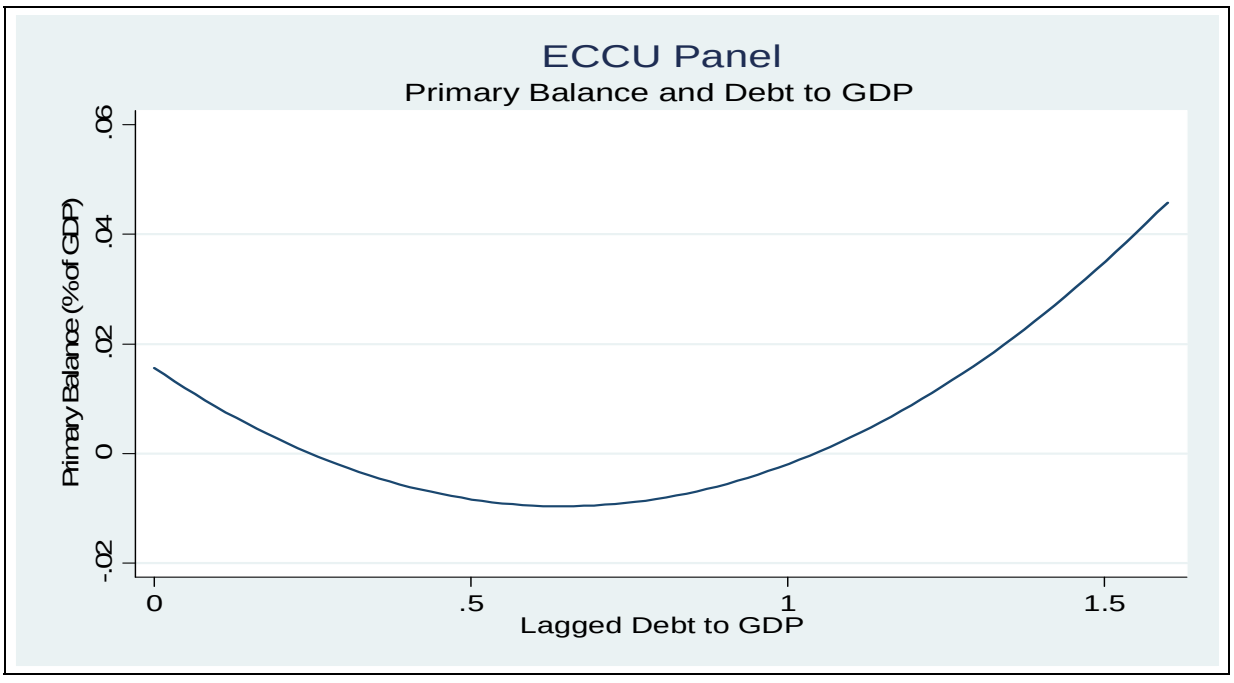
The figures above represent the highest level of debt that can be serviced given a 'crisis' defined as a period of low revenues and constraining expenditures to the lowest "acceptable" limit. Saint Lucia and St Vincent and the Grenadines stand out as having the highest crisis debt limit. This finding is due in part to the relatively large differentials observed between minimum revenues and expenditures in those countries. From an analysis of table 2A above, it can be shown that Saint Lucia and St Vincent had differentials of 12.5 and 7.0 per cent respectively compared with rates of 2.0 and 5.0 per cent in the other islands. In the case of Antigua and Barbuda minimum expenditure levels exceeded revenue which resulted in a negative crisis debt limit. This suggest that the situation in Antigua in a 'crisis' period would be untenable. It is noteworthy to highlight that Antigua and Barbuda currently are in a stand by arrangement with the IMF to facilitate their fiscal consolidation efforts. Dominica had the lowest positive crisis limit of 20.8 per cent of GDP. This result is due to two factors, one being that Dominica had the lowest[20] spread between revenues and expenditures and that it had the third largest interest rate differential. This result also highlights the importance of high revenue volatility and low average growth which were both observed in Dominica. Dominica has however following an IMF program in the 1990's has consistently aimed at generating primary balance surpluses. However within a crisis situation particularly following a revenue shock the data suggest a low debt ceiling. In the case of St Kitts and Nevis a crisis limit of

[20] Owing to its high revenue volatility

roughly 175.6 per cent of GDP is observed. St Kitts and Nevis's current debt to GDP ratio stands at 157.0 per cent of GDP but following a proposed restructuring program supported by the IMF efforts are being made to reduce this ratio to 60.0 per cent of GDP by 2020, consistent with the ECCB's proposed target. Grenada's crisis limit at 98.4 per cent is largely due to the fact that its lowest minimum non interest expenditure outlays were among the lowest in the ECCU. This was despite having relatively average expenditure volatility of 2.6 per cent. Anguilla was the only country where both models[21] yield similar results of 85.0 to 90.0 per cent. It is unlikely given Anguilla's historical record and arrangements with the British would yield to debt approaching these limits. It is also noteworthy to point out that Anguilla's high GDP growth contributes to its relatively high debt "limits".

A4 Fiscal Response Functions

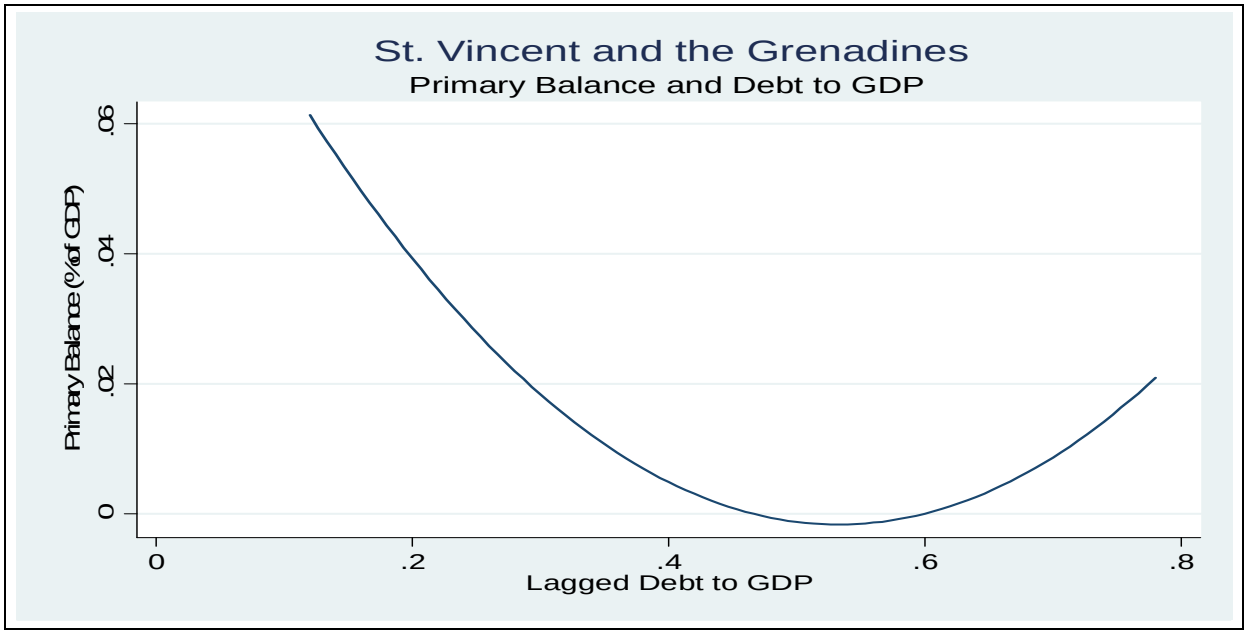
Figure 1A: Simple Quadratic Plot of Primary Balance and Debt



[21] Sustainable and crisis

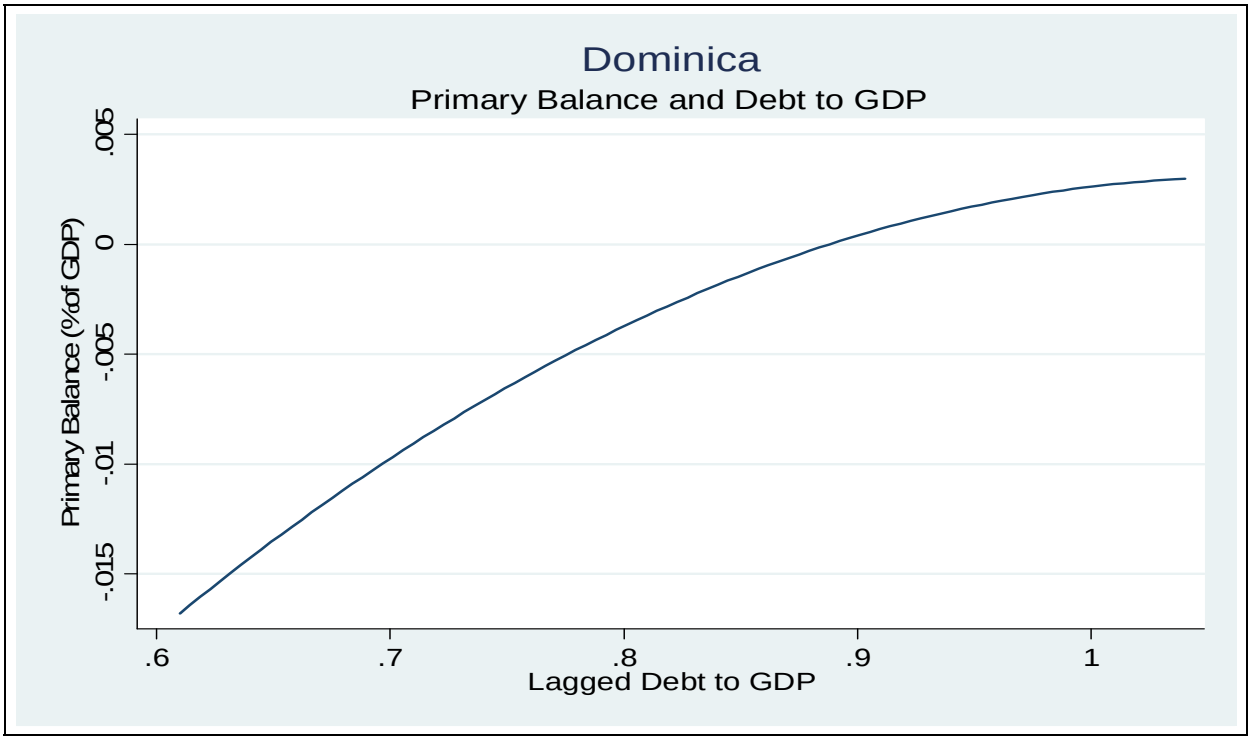
Figure 1A suggests that increases in the debt burden, when 'low', coincide with deterioration of the primary balance and vice versa. This finding further suggests that policy makers become cognizant of a need to reign in debt growth once it has past some perceived threshold. Such a finding is encouraging since it indicates the awareness of debt dynamics. The follow up issue is whether these increases in the primary balance are large enough to stabilize or reduce the debt burden. The case of individual countries is outlined below.

Figure 2A: Simple Quadratic Plot of Primary Balance and GDP (SVG)



The case of St Vincent and the Grenadines is typical of most ECCU members' whiles that of Dominica is unique. The range at which countries primary balances move into surpluses ranges from 15.0 per cent in the case of Anguilla to 90.0 per cent in St Kitts and Nevis.

Figure 3A: Simple Plot of Primary Balance and GDP (Dominica)



Dominica has historically been under IMF programs which have sought to generate surpluses over the recent past this in turn could explain the continued upward movement of the primary balance.

Using full and sample time periods we seek to empirically assess the relationship between the primary balance and debt in the following section. The critical *a priori* relation which would ensure long run solvency of the debt would be that there was a positive relation between the primary balance and debt.

Table 4A: Fiscal Reaction Function using Blundell and Bond 1998 GMM

Sample	1986-2010		1986-1998		1998-2010	
Specification	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Lagged Primary Balance	0.228	0.224	0.293	0.309	0.091	0.087
	3.14	*3.53*	*1.85*	*2.36*	*1.41*	*1.45*
Lagged Debt	-0.112	-0.0085	-0.145	-0.322	-0.1644	-0.0258
	-4.89	*-0.18*	*-5.22*	*-2.53*	*-4.33*	*-0.32*
Lagged Debt Squared	0.082	-0.078	0.127	0.684	0.1406	-0.045
	5.66	*-1.12*	*6.41*	*1.98*	*4.49*	*-0.41*
Lagged Debt Cubed	-	0.067	-	-0.458	-	0.0711
	-	*2.27*	-	*-1.62*	-	*1.35*
Output Gap	-2E-05	-2.14E-05	-0.0001	-0.0001	0.0002	0.00001
	-1	*-0.96*	*-1.46*	*-1.63*	*0.88*	*0.72*
Inflation	0.225	0.223	0.125	0.112	0.264	0.2726
	3.12	*3.25*	*0.86*	*0.85*	*2.61*	*2.61*
IMF	0.007	0.0106	#	#	0.014	0.154
	1.63	*2.32*	#	#	*3.21*	*4.46*
Hurricane	0.012	0.0123	0.0003	0.0022	0.023	0.022
	2.08	*2.07*	*0.08*	*0.38*	*3.01*	*3.1*
Constant	0.016	0.0001	0.027	0.0385	0.007	-0.0193
	2.05	*0.02*	*3.01*	*2.79*	*0.34*	*-0.71*
Observations	160	160	70	70	83	83
Countries	7	7	7	7	7	7
Arellano Bond AR Test	0.783	0.759	0.194	0.215	0.607	0.446
# Dropped						

Dependent variable is the primary balance to GDP in percent. Robust standard errors are used, z statistics shown in italics. ***, **, * indicate significance at the 1, 5 and 10 % levels.

The key observations from table 4A above are that:

- The coefficients on lagged debt are negative and are therefore inconsistent with the long run sustainability of the debt.
- Lagged debt squared is negative in all samples for Ostry et al but mixed in this paper suggesting that primary balances may not go through the three phases they have identified.

- Output gap is insignificant suggesting that changes in the primary balance were independent of business cycle fluctuations.
- Inflation is positive and significant consistent with findings in the literature.
- The hurricane dummy is significant in keeping with our *a priori*.
- The cubic specification (Model 2) sought to capture the increasing but slowing response of the primary balance to debt. This specification however proved most appropriate for the 1986-1998 where debt growth was low.
- The presence of an IMF program did have a positive effect on the primary balance.

Another panel estimation technique[22] was also used (for robustness) which:

- Confirmed the negative relation between debt and the primary balance.
- Confirmed that the output gap is insignificant.
- Showed that inflation is positive but insignificant.
- Confirmed that the presence of the IMF has a positive effect on the primary balance.

As articulated above fiscal response functions were plotted for the individual ECCU member countries. These were constructed via plotting the primary balance as a percentage of GDP against the debt to GDP ratio. The fiscal response function was a fitted line drawn using a 3 lag polynomial structure. The interest rate differential[23] was also plotted against the primary balance fiscal response function. Two differentials using average real growth and lending rates over a 10 year and a 5 year period were used. In all cases one point of tangency was observed. This tangency point indicates the long run debt ratio that the economy will converge to if debt is within sustainable thresholds. For the purposes of this paper the authors originally wanted to compute both the long run equilibrium and the "debt limit" i.e. the debt ratio after which debt dynamics become unsustainable. However none of the functions lent themselves towards two tangency points.

[22] Fixed effects with an AR disturbance

[23] See appendix for differentials used.

In the case of St Kitts and Nevis the primary balance improves after debt to GDP ratio surpasses 100 per cent. This improvement reflects the authorities' recent commitment to reign is debt growth. In the case of St Kitts and Nevis the 10 year average interest rate differential was 3.6 per cent whiles the five year average was 3.2. The interest rate differential slope proxy or show the effective interest payments a country must make. As debt increases these payments rise and as either growth or lending rates change then the slope of the curve changes. Fig 4A shows that the resulting long run debt ratio for St Kitts and Nevis was 38.3 per cent.

Figure 4A: St Kitts and Nevis Fiscal Response Function

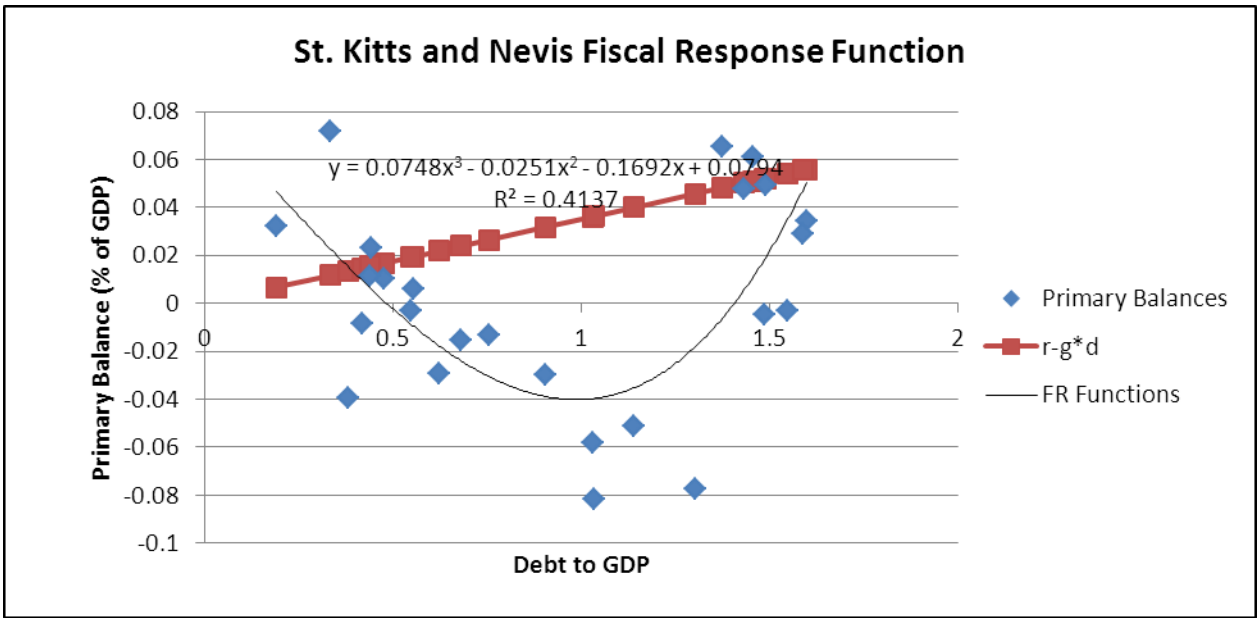


Figure 4A above shows that based on the historical performance of St Kitts and Nevis that a steady state rate of 38.2. Using the 5 year average doesn't change the analysis much. The chart shows that there may be a possibility of a second tangential point would have set a debt limit of 150.0 per cent of GDP. This would mean that if interest rate payments at that point are 6.0 per cent and the government can generate 6.0 per cent or more primary balances then it would be able to sustain this debt. Currently the authorities are looking to restructure debt and maintain primary balances of above 5.0 per cent of GDP.

Figure 5A: St Vincent Fiscal Response Function

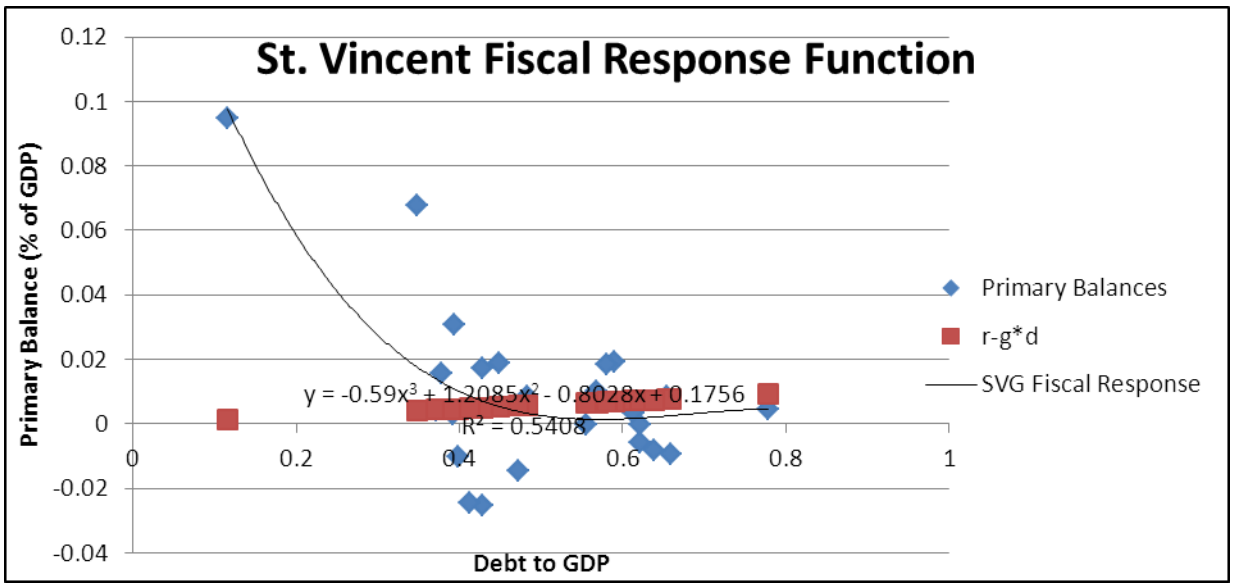


Figure A5 shows a fiscal response function largely above zero indicating that the authorities over the period have been able to achieve a fair amount of periods of primary surpluses. The primary balance also appears to remain fairly stable even as debt increases from 50 to almost 80 per cent of GDP. Using the 5 year average an interest rate differential of 1.1 per cent was found which was among the lowest in the region lending rates averaged 3.2 per cent whiles growth of 2.1 per cent. This relatively low differential led to a relatively flat differential slope and an intersection point corresponding to debt to GDP of 44.8 per cent. This is below the ECCB 2020 target of 60.0 per cent of GDP.

IS THERE REALLY A LINK BETWEEN DEBT AND GROWTH IN THE ECCU?

Mr Allister Hodge

June 2013

Abstract

This paper investigates the average impact of government debt on per-capita GDP growth in six ECCU countries over a period of 20 years, starting in 1989 to 2009. The main findings of the paper is that the debt stock negatively impacts growth, with the turning point occurring when the ratio is about 90 per cent of GDP below that there is an insignificant relationship. Unlike other research done in this area we did not find any evidence of a non-linear impact of debt on growth, as the squared value of the debt to GDP ratio turned out to be insignificant in all estimations. It was also found that domestic debt had a negative impact on per capita income growth while there was an insignificant relationship between growth and external debt. The channels through which debt (level or change) is found to have an impact on the economic growth rate, is through its negative impact of total factor productivity which may be impacting on through capital accumulation or human capital accumulation the latter two channels was not investigated. From a policy perspective, the results provide additional arguments for prudent fiscal and debt management so as to public finances remains on a sustainable path in order to support longer-term economic growth prospects.

Keywords: Public debt, economic growth, fiscal policy
JEL Classification: F21, F34, F43, H63, O40, E62, E43

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I. Introduction

Growing public debt has become a worldwide phenomenon. It has now become a common feature of the fiscal sectors of most economies globally following the global economic and financial crisis. Contemporary economic wisdom does not consider public debt a major problem per se; rather the problem is the mismanagement and unsustainability of the public debt. The modern theory of public debt sustainability discerns a fundamental relationship between economic stability and debt sustainability in a country. Inadequate debt management and an unlimited growth in the debt to GDP ratio may result in some negative macroeconomic consequences including: crowding out of investment; financial system instability; inflationary pressures; and exchange rate instability- especially for those countries with fixed or managed regimes. There are also certain social and political implications of an unsustainable debt burden. Persistent and high public debt calls for a large proportion of budgetary resources being used for debt servicing. Consequently, the government is forced to cut allocations for other public services and may face serious difficulties in executing its electoral manifesto. Still, more serious implications of high and unsustainable public debt are possibilities of widespread bankruptcies like in Mexico and Latin American countries during 1980s and more recently some countries of the Euro Area such Greece.

The global recession has had a negative impact on economic activity in the Eastern Caribbean Currency Union ECCU region through the decline in tourism related activity and FDI-financed construction, the two pillars of economic growth in recent years. Growth has contracted for at least three consecutive years at the currency union level. At the same time the overall fiscal deficit has widened largely as a result of a plummet in revenues attributable to the contraction in economic activity. Public spending has decreased given the stickiness and the political economy issues associated with cutting Government expenditure in particular current expenditure. At the same time capital spending has fallen in most member states as they sought to maintain their current level of expenditure. The countries of the ECCU face a unique problem in that they are highly indebted countries with a narrow tax base alongside a

narrow economic base. In fact three (3) of the eight (8) ECCU countries are regarded as being in the top most indebted countries as a per cent of GDP in world. They are small open vulnerable economies; they are at the whims and fancies of the global economic environment and are prone to natural disasters in the form of hurricanes which has occasionally destroyed a large part of the capital stock. These structural features make economic management quite formidable in these countries. However they have development agenda to which the Government has to provide the necessary infrastructure for the countries to develop and most times the Governments have had had to act as employer of last resort. This has led to Government expenditure to be very high in these countries while revenues have not been able to match expenditure which has led to build up of public debt.

While public debt is not necessarily a problem there is no escaping the fact that current level of debt for these countries is simply too high. Faced with budgetary pressures and political constraints the room to manure is very narrow and limited and cuts to public investment have been seen as the easy way out.

II. Objective

The main aim of the article is to examine the relationships between public debt and economic growth in the ECCU in the period 1989–2009. The article consists of two parts. The first part deals with theoretical analysis of the relationships between public debt and economic growth, including reasons and factors determining these relationships. In the next part of article, there are examined the relationships between public debt and gross domestic product in the ECCU.

III. Model of Budget Deficit, Public Debt and Economic Growth

A budget deficit is typically defined as the difference between government expenditure (including interest on debt) and government revenue. However, in accordance with the more complex definition, a budget deficit is the difference between the size of public debt at the end of the year and the size of public debt at the end of the previous year. These two definitions

are equivalent if the public debt is defined as the value of issued bonds. A budget deficit in a country implies that public debt increases since it has to be financed by borrowing, whether domestically or internationally (externally), or by incurring arrears to the domestic and external private sector. Each method of borrowing (domestic versus external) has its own implications for various aspects of the economy.

Public debt is accumulated over time if a deficit in the budget persists for a long period of time. A number of questions often arise about the debt stock: Does it make any difference whether the government pays for its expenditures by raising taxes or by issuing debts? What are the implications if debt is issued to central bank, domestic commercial banks, domestic non-banks or external sector? Is debt really a burden and under what conditions it becomes unmanageable and unsustainable? Different groups of economists have different views on these issues.

The normative case for government borrowing ultimately rests on the need for consumption smoothing in response to shocks that affect economic activity. The public authorities can borrow to smooth public consumption directly, or to smooth public consumption indirectly by financing public sector capital formation. If some (but not all) private agents face binding liquidity constraints at some point in their life cycle; the public authorities can also borrow to smooth private consumption indirectly. By using public debt issuance and retirement together with taxation and transfer payments, to smooth private consumption across the lifetime of one or more generations or to redistribute resources (and thus consumption) across generations. Public sector deficits and surpluses can be used to smooth the excess burden of distortionary taxes over time, thus minimizing the aggregate social welfare loss inevitably associated with the need to use distortionary taxes.

The debt to GDP ratio is one of the common metrics used in the analysis of the sustainability public debt. As GDP increases, the ratio of government debt to GDP may change or remain stable. This depends on whether the growth rate of the national debt is greater or less than the GDP growth rate. Systematically increasing the ratio of public debt to GDP can pose a threat

for a country, the public debt can enter into an unsustainable growth path, leading to the insolvency of the country. Some economist and politicians stress the fact that countries can grow their way out of debt so there it is not necessary to worry about the level of public debt. However while this argument holds merit it is perilous and gives fiscal authorities confidence that there is no need to worry about the debt, so long as the GDP growth is faster than that of the debt. The peril in this argument is that assumes that institutions in the country are sufficiently robust enough to capitalise on the growth in GDP. Secondly it omits political economy arguments such as; pressure on the government to spend the increase in revenue on more social spending rather than using it to pay down the debt. Even if the ratio of public debt to GDP does not increase rapidly, high debt–to–GDP ratio is serious and unfavorable consequences for the country associated the growing cost of public debt service. Therefore, it is important to understand the causes of the increase the ratio of public debt to GDP and to find the sustainable level of debt ratio for a country given its institutional features and resource profile.

IV. Literature Review

The ***theoretical literature*** on the relationship between public debt and economic growth is inconclusive on the subject. However, most models tend to point to a negative relationship between dent and economic growth. Debt can potentially help foster higher economic growth, provided that it is used to help finance productive investment. In light of the diminishing returns to capital, however, the net benefits of additional investment could decline as debt increases. In addition, high levels of debt may hamper growth through the effects of "*debt overhang*". When there is a *debt overhang*, a country's debt exceeds its expected ability to repay, and expected debt service is likely to be an increasing function of the country's output level. Growth models augmented with public agents issuing debt to finance consumption or capital goods, tend to exhibit a negative relationship between public debt and economic growth, particularly in a neoclassical setting. The channels through which public debt can potentially affect economic growth are diverse. High public debt levels chews up a large part of public expenditure through interest and principal repayments when this occurs it affects the

level of investment can undertake. The reduction in investment expenditure can potentially lower future potential growth.

Some of the early work on the subject of debt and its effects on economic variables can be traced back to such economist as early as David Ricardo. However, time and space doesn't allow us to do a full exposition of the topic; some of the seminal work on the subject matter is Modigliani (1961), Buchanan (1958) and Meade (1958), and Diamond (1965). Most of the early works while varying on their methodology came to similar conclusion regarding the effect of rising public debt on the economy.

According to the Keynesian school opinions, budget deficit and the public debt have a positive impact on economic activity in a country, in particular through the mechanism of public expenditure multiplier. Moreover, they provide arguments indicating the prevalence of crowd–in effect in public expenditure as a result of deficits and debt induced by expansionary fiscal policy. They also argue that budget deficit and government debt increase national production, what makes that private investors perceive the future economic situation more optimistic and increase their investments.

The economic literature has investigated many channels through which a growing public debt might hamper long-run growth prospects in developing countries, particularly focusing on foreign borrowing. First, a large public debt might create debt overhang, a situation in which investment are reduced or postponed since the private sector anticipates that the returns from their investment will serve to pay back creditors (Krugman, 1988; Sachs, 1989). A second crucial consequence of a high level of public debt is that it can have an adverse consequence on macroeconomic stability (Singh, 2006), discouraging capital inflows while favoring capital flight (Alesina and Tabellini, 1989; Cerra, Rishi and Saxena, 2008), and increasing the incumbent politicians' incentive to "gamble for redemption", leading to higher policy volatility (Malone, 2010).

Uncertainty regarding future government actions to meet burdensome debt obligations might push investors to prefer short-term and low-risk investment to long-term and risky projects (Fosu, 1996; Serven, 1997). The private sector could also face more binding financing constraints since, particularly in countries with a significant share of domestic debt and underdeveloped financial markets; credit rationing can be the result of reduced savings, of increasing interest rates and of the banks' preference for risk-free government securities (Christensen, 2005; Hanson, 2007; Harrabi, Bousrih and Salisu, 2007).

Outside of the debt stock, are the associated payment flows which can potentially impinge on growth and investment: debt service in several countries soaks up a significant amount of (scant) government revenues, reducing the available resources to fund (much needed) public investment in infrastructure (Cohen, 1993). The crowding out effect, while not always applicable to external debt to poor countries, given the high degree of loan concessionality and the low repayment rates, is much more likely to work when considering total public debt, given a larger interest bill on domestic debt (Arnone and Presbitero, 2010).

Patillo, Poirson, and Ricci (2004) concluded that the low levels of public debt positively affect economic growth but high public debt negatively affects the growth rate of GDP. Furthermore, the results of empirical studies carried out by Kumar and Woo (2010) investigated the impact of high public debt on long-run economic growth. Their analysis was based on a panel of advanced and emerging economies over almost four decades; their model took into account a broad range of determinants of growth as well as various estimation issues including reverse causality and endogeneity. In addition, threshold effects, nonlinearities, and differences between advanced and emerging market economies were examined. The empirical results suggest an inverse relationship between initial debt and subsequent growth, controlling for other determinants of growth: on average, a 10 percentage point increase in the initial debt-to-GDP ratio is associated with a slowdown in annual real per capita GDP growth of around 0.2 percentage points per year, with the impact being somewhat smaller in advanced economies. Analysis of the components of growth suggests that the adverse effect largely

reflects a slowdown in labor productivity growth mainly due to reduced investment and slower growth of capital stock which is highly consistent with early theoretical work in this area.

Schclarek (2005) analyzing 59 developing countries and 24 developed economies stated that in the case of developing countries it is always negative and substantial relationship between the total indebtedness of the country and economic growth. On the other hand, in relation to developed countries Schclarek (2004) did not find a significant relationship between the public debt and economic growth. Ferreira (2009) analyzed the relationship between economic growth and public debt using vector autoregression model and Granger causality test confirmed the existence of the relationship between economic growth per capita and the ratio of public debt to GDP in OECD member countries over the period 1988 to 2001. Furthermore, he confirmed that this relationship is always bidirectional. Similar findings are presented by Caner, Grennes and Koehler- Geib (2010): averaging data for a large sample of industrialized and developing countries over the period 1980-2008, Caner, Grennes and Koehler-Geib estimate a public debt threshold at 77 per cent of GDP; the non-linearity in debt effect on growth means that for moderate debt levels an increase in the public debt-to-GDP ratio helps expanding investment and translates in faster growth, while above the threshold additional debt reduces output growth.

Simultaneously, it should be emphasized that many empirical studies conducted over the past several years suggests a non–linear relationship between the public debt and economic growth (Moore, Chrystol 2008). Namely, the results of these studies indicate that public debt positively affect economic growth, but only to a certain level of the debt in relation to GDP. To similar conclusions came Elbadawi, Ndulu, and Ndung'u (1997) analyzing the relationship between public debt and GDP in 26 sub–Saharan African countries in the period 1980–1994. They have demonstrated that public debt positively affected economic growth in these countries, but only up to 97 per cent of GDP. Similarly, Pattillo, Poirson, Ricci (2002) examined 93 developing countries in the period 1972–1998 and they found positive impact of public debt on GDP growth rate, but only up to 35–40 per cent of GDP. Currie (2005)

Cordella,T et al (2005) looked at how the debt growth relationship varies with indebtedness levels and other country characteristics in a panel of developing countries. Their findings suggest that there is a negative marginal relationship between debt and growth at intermediate levels of debt, but not at very low debt levels, below the "debt overhang" threshold, or at very high levels, above the "debt irrelevance" threshold. Countries with good policies and institutions face overhang when debt rises above 15-30 percent of GDP, but the marginal effect of debt on growth becomes irrelevant above 70-80 percent. In countries with bad policies and institutions, overhang and irrelevance thresholds seem to be lower, however the author could rule out the possibility that debt does not matter at all. Similarly Reinhart and Rogoff and Reinhart (2010) also found that debt affects economic growth up to 90.0 per cent and beyond below that the relationship between growth and debt is not clear. Second, emerging markets face lower thresholds for external debt (public and private)—which is usually denominated in a foreign currency. When external debt reaches 60 percent of GDP, annual growth declines by about two percent; for higher levels, growth rates are roughly cut in half.

The key message coming out of this extensive literature review is that while it is acknowledged that public debt is dangerous it is also helpful especially if it used for productive purposes to boost the growth potential of the economy. It also highlights the role in which effective institution play in the management of the public debt.

V. Data and Methodology

The empirical exercise is carried out merging macroeconomic data from several different sources for a sample of six ECCU countries[24], listed in Table 1, over the period 1989- 2009. **Table 1 appendix** reports the definition, sources and summary statistics of all the variables.

[24] For the debt data domestic debt data is taken from the monetary data. Total Loans and advances are taken from the Banking system as an indicator of domestic debt although we believe domestic debt may have been higher. However we believe that this is a fair approximation.

The equation to be estimated is a basic growth model including the main variables suggested by the Solow (1956) model, plus some other standard controls and augmented with the measure of public indebtedness.

$$y_{it} = \alpha X_{i,t} + \gamma D_{i,t} + n_i + \varphi_t + \epsilon_{i,t} \text{.....1}$$

where $y_{i,t}$ is the dependent variable, $X_{i,t}$ represents the set of explanatory variables, $D_{i,t}$ is the debt variable, $n_{i,t}$ is an unobserved country-specific effect, $\varphi_{i,t}$ is an unobserved time-specific effect, $\epsilon_{i,t}$ is the error term, and the subscripts i and t represent country and time period, respectively.

When estimating equation (1), two different dependent variables are used, namely the growth rate of GDP per capita and the TFP growth rate. The reason for estimating equation (1) for each of these two dependent variables is that we not only want to study the relationship between debt and growth, but also the relation of debt and the determinants of growth.

Regarding the vector$X_{i,t}$, several explanatory variables are utilised which include initial income per capita, educational attainment, tourism expenditure, government size - as measured by government expenditure less interest expenditure divided by nominal GDP. Additionally the growth rate of government expenditure, the level of financial intermediary development private sector domestic credit as percentage of GDP , plus population growth and the level of investment as measured by Gross Fixed capital formation. Regressions were also run with openness to trade, terms of trade growth and fiscal balance. In running the regression with private sector credit, government spending and balance and terms of trade these variables turned out to be insignificant therefore in interest of parsimony of the model there were dropped.

Evidently, equation (1) is linear in nature. However, is there a nonlinear relationship between debt and economic growth? Specifically, does an inverted-U shape relationship exist between debt and growth, i.e. low levels of debt are associated with a positive relationship with

growth, and high levels of debt are associated with negative growth rates. Therefore, in order to allow for nonlinear effects of debt, a linear spline function was included in equation (1).

In this case, equation (1) becomes

$$y_{it} = \alpha X_{it} + \gamma D_{it} + \delta d_{it}(D_{it} - D^*) + n_i + \varphi_t + \epsilon_{it} \ldots\ldots 2$$

Where d_{it} is a dummy variable which equals 1 if the value of the debt variable is above a certain threshold value D^* and 0 otherwise. If δ is significantly different from zero, we can conclude that there is a nonlinear relationship. I n this case, the impact of debt will be different above and below the threshold D^*, i.e. there will be a structural break. However, in order for there to be an inverted-U shape relationship, γ should be positive and δ should be negative. Further, δ should be larger than γ in absolute terms. The specific threshold values for D^* will depend on the specific debt indicator that is used.

Additionally, a test for the different impact of the debt categorized by composition is conducted, that is external and domestic debt. While most studies have looked at the role of external debt on growth, a comprehensive analysis of the impact of both external and domestic public debt is necessary. High levels of total public debt, including its domestic component, may have substantial effects on the economy, raising domestic interest rates, crowding out public investment within the budget and private investment in general, and raising the degree of macroeconomic uncertainty. The domestic debt component is particularly important in countries like the ECCU, where its proportion in the total public debt stock is large.

Given the strong potential for endogeneity of the debt variable, especially reverse causation low or negative growth rates of per-capita GDP are likely to induce higher debt burdens, instrumental variable estimation technique is used to control for the endogenity. As stated in Hiebert et al. (2002), in a panel context, most studies on growth regressions have made use of the instrumental variable (IV) approach to deal with the issue of simultaneity bias. The estimators used in our paper is 2-SLS (two-stage least square).

One of the common problems often associated with the use of IV technique is the problem of weak instruments. Standard treatments of instrumental variables (IV) regression stress that for instruments to be valid they must be exogenous. It is also important, however, that the second condition for a valid instrument, instrument relevance, holds, for if the instruments are only marginally relevant, or "weak," then first-order asymptotics can be a poor guide to the actual sampling distributions of conventional IV regression statistics. At a formal level, the strength of the instruments matters because the natural measure of this strength the so-called concentration parameter plays a role formally akin to the sample size in IV regression statistics The instrument cannot be correlated with the error term in the explanatory equation, that is, the instrument cannot suffer from the same problem as the original predicting variable. The strength of the instruments can be directly assessed because both the endogenous covariates and the instruments are observable (Stock, Wright, and Yogo 2002). A common rule of thumb for models with one endogenous regressor with the null that the excluded instruments are irrelevant in the first-stage is that the F-statistic regression should be larger than 10. Weak instruments can produce biased IV estimators and hypothesis tests with large size distortions. But what precisely are weak instruments, and how does one detect them in practice? When there are multiple endogenous regressors, the Cragg-Donald (1993) statistic is to test whether the given instruments are weak.

The assumption that the instruments are not correlated with the error term in the equation of interest is not testable in exactly identified models. If the model is over-identified, there is information available which may be used to test this assumption. The most common test of these over identifying restrictions, called the Sargan test, is based on the observation that the residuals should be uncorrelated with the set of exogenous variables if the instruments are truly exogenous. The Sargan test statistic can be calculated as TR^2 (the number of observations multiplied by the coefficient of determination) from the OLS regression of the residuals onto the set of exogenous variables. This statistic will be asymptotically chi-squared with m − k degrees of freedom under the null that the error term is uncorrelated with the instruments.

While many authors usually utilize the GMM procedure in this case for the data set it is not useful since we have small N and large T. While the two-step GMM presents some efficiency gains over the traditional IV/2-SLS estimator derived from the use of the optimal weighting matrix, the over identifying restrictions of the model, and the relaxation of the independent and identical distribution (i.i.d.) assumption.

We instrument the debt variable for each country through either its time lags (up to the 4^{th} lag) or through the average of the debt levels of the other countries in the sample. While using lagged terms of regressors as instruments is relatively common practice with macroeconomic data, for the debt-to-GDP ratio, this may be more problematic given the high persistency of the debt stock variable.

VI. Results

The evolution of total debt as a percentage of GDP is shown in **Figure 1 Appendix**. From the figure there are asymmetries in the degree of indebtedness by country. From Figure 1 we can also see that debt accumulation that started in the late 1990s as governments accelerated borrowing, often from external commercial sources but from some countries the trend is more pronounced for domestic debt, to finance public-sector investment. The current quagmire that the Governments now find themselves can be attributed to a combination of poor fiscal discipline and unproductive investment that failed to significantly raise potential growth rates as is shown in Table 1 where the growth rate of real GDP and growth rate of debt accumulation is compared. In turn, low and declining long-term growth – a result of diminishing competitiveness and eroding returns to the region's tourism-oriented growth model – has led to debt breaching the sustainability threshold in a number of countries.

In the sample period Antigua and Barbuda, Dominica, Grenada and St Kitts and Nevis all carried debt to GDP ratios in excess of GDP. While Saint Lucia and St Vincent and the Grenadines carried debt levels in the range of 70.0 per cent of GDP. However what accounts for these divergent debt to GDP ratios, is it superior quality of institutions? Whatever they are

this paper does not attempt to deal with these issues. An examination of the data reveals that external debt represents a significant portion of total debt with the exception of St Kitts Nevis and Antigua and Barbuda where domestic debt overtook external debt as a major component of total debt towards the end of the sample period shown in **Figure 2**.

In **Figure 2** in the case of St Kitts and Nevis domestic debt went from 29.0 per cent in 1989 to 100.0 per cent of GDP by the end of 2009, in the case of Saint Lucia domestic debt went from 9.0 per cent of GDP to approximately 20.0 per cent of GDP. ***Table 1*** the growth rate of real GDP versus the growth rate of debt is shown. From the table the growth rate of debt has on average exceeded the growth rate of real GDP. The fact the pace of debt accumulation has been much more rapid than GDP growth brings into question the sustainability of the debt but this is a separate issue which won't be treated with in this paper. The argument regarding that the level of debt should not be an issue once the economy is growing is revisited here. Clearly in the case of the ECCU countries this argument does not hold water since in many cases the countries will have to grow their economies by substantial factors to catch up with the growth of debt accumulation. While it is possible for the countries to have growth rates in the order of 8 to 10 per cent per annum this would be a monumental undertaking for a sustained period of time ad is fraught with downside risks.

Turning now to the key results of the paper, which is whether there is a relationship between debt and economic performance for the six ECCU countries in review. Three different models were estimated: one for total debt; one for external debt; and one for domestic debt. While many researchers have found a statistically significant relationship for a debt laffer curve, in our case the squared value of debt was found to be insignificant in all regression models and therefore dropped as an explanatory variable for model parsimony. **Table (3)** reports the results from the different estimated model it was found that debt negatively impacts per capita income.

The key variable of interest which is the debt to GDP ratio suggests that an increase in debt to GDP contemporaneously negatively affect per capita income growth. The results are shown in **Table 4**, the coefficient for the Debt to GDP ratio shows that for every percentage point increase in the debt to GDP ratio the growth rate of per capita income fall by 0.03 per cent. Further imposing the spline function, it was found that debt to GDP ratio above 90.0 per cent negatively impacts debt below this threshold there is insignificant relationship between the two variables the results of this are shown in **Table 5 of the appendix**. When the spline is put in the impact of debt to GDP actually becomes more pronounced and still negative and significant.

Next we examined whether there is an asymmetric relationship between domestic and external debt on GDP the results are reported in **Tables (6 & 7)**. There is an insignificant relationship between external debt and income growth, however, domestic debt was found to impact on income growth. Domestic debt was found to reduce income growth by approximately 0.05 per cent.

In **Table (8)** the results from regressing total factor productivity on the various explanatory variable we found that an increasing debt to GDP ratio impacts productivity negatively. Debt was found to reduce total factor productivity by 0.03 per cent. This may be suggestive that rising debt may have been used efficiently leading to possibly lower growth rate. However given the fact that government expenditure shows up as being positively linked to GDP it raises the question what is the counterfactual would growth been higher in the absence of government borrowing to finance its expenditure.

In concluding the discussions of the impact of debt on economic growth, it was found that debt does have an impact on growth but not nearly as pronounced as what the literature has ascribed. Secondly when debt is broken down by domestic and external debt it was found that external debt has no impact on growth and that domestic debt has a negative impact on growth. This may be attributed to the fact that domestic debt may be used inefficiently and for most times budget support to finance current rather than capital expenditure.

VII. Conclusion

Based on the results from the various models it was found that that debt does in fact impact negatively on income growth in the ECCU and that the effect is different at high and low levels of debt and additionally by the type of debt i.e. domestic versus external. The paper finds that debt levels above 90.0 per cent of GDP negatively affects income, below 90.0 per cent there isn't any statistical relationship. However, the robustness of these results requires additional future work. These estimates should be considered as indicative. The difficulty in identifying the relationship between debt and growth at low debt levels may, in part, be due to the small number of low debt observations in the sample.

In terms of the channels through which debt affects growth, the negative impact of high debt on growth appears to operate through a strong negative effect on TFP growth but given the definition of this variable we won't ascribe much to this. We do believe that the primary channel which debt affects growth is that it limits the government ability to increase physical-capital accumulation or rather capital expenditure. Secondly as the debt becomes larger and larger interest payments increase which questions fiscal and debt sustainability. So basically the government is forced to either cut expenditure or increase revenues. high debt reduces the incentive to invest and to undertake good policies, since the return on such actions can be expected to accrue partly to lenders rather than to citizens and politicians of a highly indebted country.

In terms of policy implications, the findings suggest that for the average country in the sample, reducing debt levels would contribute to growth by boosting productivity growth. But reducing debt may not have the desired effect on capital or productivity growth (and therefore output growth) if other macroeconomic and structural distortions or political constraints bind.

From a policy perspective, the results discussed in the paper can help shaping borrowing and debt relief policies. Specifically, the presence of a negative effect of total public debt on economic growth has to be taken into consideration and requires a shift from a paradigm based almost exclusively on debt for growth. Given the high debt levels in these countries it becomes

imperative to do some sort of debt reduction and careful debt management. Additionally governments which find themselves in the position of being unable to gain debt relief on their stock of debt they may want to reschedule their debt for longer maturities. Replacing high cost debt with low cost debt is another option that governments can take which would provide some liquidity for the governments to pursue other critical activities of government. In **Table 1** we also highlighted the growth rate of debt and economic growth this points to the all important question of debt sustainability. The rate of growth of debt has consistently been well above the rate of economic growth for the debt to become sustainable two things have to happen here either the rate of growth of debt declines or rate of economic growth surpasses the rate of growth of debt. Hence policies geared toward fiscal consolidation and management becomes imperative along with policies toward raising the rate of economic growth in these countries for most countries this would mean getting up to a growth rate of about 5 to 6 per cent annually.

The paper's findings suggest a number of further questions. For example, does high debt constrain capital accumulation through reducing public investment, private investment, or foreign direct investment? What are the mechanisms through which high debt levels lower total factor productivity growth? Does the negative impact of high debt on growth and its sources vary across countries, depending, for example, on the overall quality of policies? In that case, which types of policies are most important in supporting growth even when a country is highly indebted? Does the flow (and not only the stock) of debt matter? In other words, would a high past debt stock with no new borrowing have different implications for growth than a low past debt with high new borrowing? We leave these interesting issues for further research.

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Appendix

Table1: Growth Rate of Debt versus Real GDP Growth 1989-2009

Sample: 1989 2009												
	ANU_D	ANU_G	DOM_D	DOM_G	GRE_D	GRE_G	SKN_D	SKN_G	SLU_D	SLU_G	SVG_D	SVG_G
Mean	4.07	3.53	6.33	1.52	9.96	3.09	13.71	3.24	10.48	2.43	8.58	3.34
Median	7.17	4.93	4.87	2.15	6.10	3.33	14.70	3.94	9.64	1.87	7.23	3.04
Maximum	14.55	12.88	44.96	6.34	61.17	13.19	29.72	7.33	31.12	9.21	47.34	8.28
Minimum	-30.98	-8.89	-8.80	-5.08	-6.17	-7.65	-1.11	-9.59	-6.73	-4.12	-7.89	-2.91
Std. Dev.	10.53	4.37	12.11	2.72	14.23	5.12	8.78	3.75	8.91	3.41	10.27	3.21
Observations	21	21	21	21	21	21	21	21	21	21	21	21

**_D represents Debt Growth and _G represents real GDP growth , * ANU- Antigua and Barbuda, Dom- Dominica, GRE- Grenada, SKN- St Kitts Nevis, SLU- Saint Lucia, SVG – St Vincent and the Grenadines*

Table 2: Descriptive Statistics Debt

	DEBT
Mean	94.22688
Median	86.92377
Maximum	185.7179
Minimum	30.2701
Std. Dev.	41.39646
Skewness	0.623269
Kurtosis	2.468696
Observations	126

Table 3: Correlation between Debt Ratios and Income Growth

Sample: 1989 2009				
Included observations: 126				
Correlation				
Probability	DEBT	DOMD	EXTD	YPC
DEBT	1			

DOMD	0.818793	1		
	0	-----		
EXTD	0.848007	0.400903	1	
	0	0	-----	
YPC	-0.18282	-0.12364	-0.17454	1
	0.0405	0.1678	0.0506	-----

Table 4: Dependent Variable Per Capita Income Growth Linear Model

Variable	Coefficient	t-Statistic	Prob.	
Log Income Per Capita Income (-1)	4.296033	1.508625	0.1344	
Most Advanced Economies Growth	1.297916	4.468934	0.0000	
Openness	-0.013016	-1.094982	0.2760	
Tourism	0.115744	3.017830	0.0032	
Investment	0.096764	4.124160	0.0001	
Debt to GDP	**-0.033525**	**-3.248379**	**0.0016**	
Human Capital	1.178903	3.252853	0.0015	
Labour	-0.749382	-2.958590	0.0038	
R-squared	0.499621	Mean dependent var		2.621455
Adjusted R-squared	0.438254	S.D. dependent var		4.669309
S.E. of regression	3.480921	Sum squared resid		1284.382
F-statistic	8.141495	Durbin-Watson stat		2.083533

Table 5: Dependent Variable Per Capita Income Growth
Instrumental Variable Model with debt dummy

Variable	Coefficient	t-Statistic	Prob.	
Log Income Per Capita Income (-1)	18.18293	1.489258	0.1400	
Most Advanced Economies Growth	1.821935	3.959548	0.0002	
Openness	0.014410	0.674471	0.5018	
Tourism	0.171991	2.422245	0.0175	
Investment	0.105316	5.143493	0.0000	
Human Capital	1.605826	2.664365	0.0092	
Labour	-1.124353	-2.570127	0.0118	
Debt to GDP	**-0.043444**	**-1.664452**	**0.0996**	
debt*Dum_90	**-0.018**	**-1.78**		
R-squared	0.413076	Mean dependent var	2.208121	
Adjusted R-squared	0.326372	S.D. dependent var	4.334818	
S.E. of regression	3.551298	Sum squared resid	1109.831	
F-statistic	7.739664	Durbin-Watson stat	2.048722	
Second-Stage SSR	882.2264	Instrument rank	17	

Table 6: Dependent Variable Per Capita Income Growth
Instrumental Variable Model External Debt

Variable	Coefficient	t-Statistic	Prob.	
Log Income Per capita(-1)	2.661842	0.733555	0.4652	
External Debt % GDP	**-0.021272**	**-1.102402**	**0.2733**	
Investment	0.111374	4.484186	0.0000	
Human Capital	1.759912	3.132866	0.0024	
Labour	-1.216715	-4.067150	0.0001	
Most Advanced Economies Growth	1.429049	4.302148	0.0000	
Tourism	0.126819	3.115916	0.0025	
Openess	-0.010109	-0.956773	0.3413	
R-squared	0.535647	Mean dependent var		2.193753
Adjusted R-squared	0.467050	S.D. dependent var		4.334060
S.E. of regression	3.158531	Sum squared resid		877.9159
F-statistic	7.693159	Durbin-Watson stat		2.197680
Prob(F-statistic)	0.000000	Second-Stage SSR		884.9204
Instrument rank	17			

Table 7: Dependent Variable Per Capita Income Growth

Instrumental Variable Model with Domestic Debt

Variable	Coefficient	t-Statistic	Prob.
Log Per Capita Income (-1)	10.74379	4.777556	0.0000
Domestic Debt % GDP	**-0.058878**	**-2.490971**	**0.0146**
Most Advanced Economies Growth	1.807555	4.863569	0.0000
Openess	-0.000895	-0.093525	0.9257
Tourism	0.135548	2.296225	0.0240
Investment	0.064613	0.529922	0.5975
Human Capital	1.543148	4.533426	0.0000
Labour	-1.184163	-3.016325	0.0033

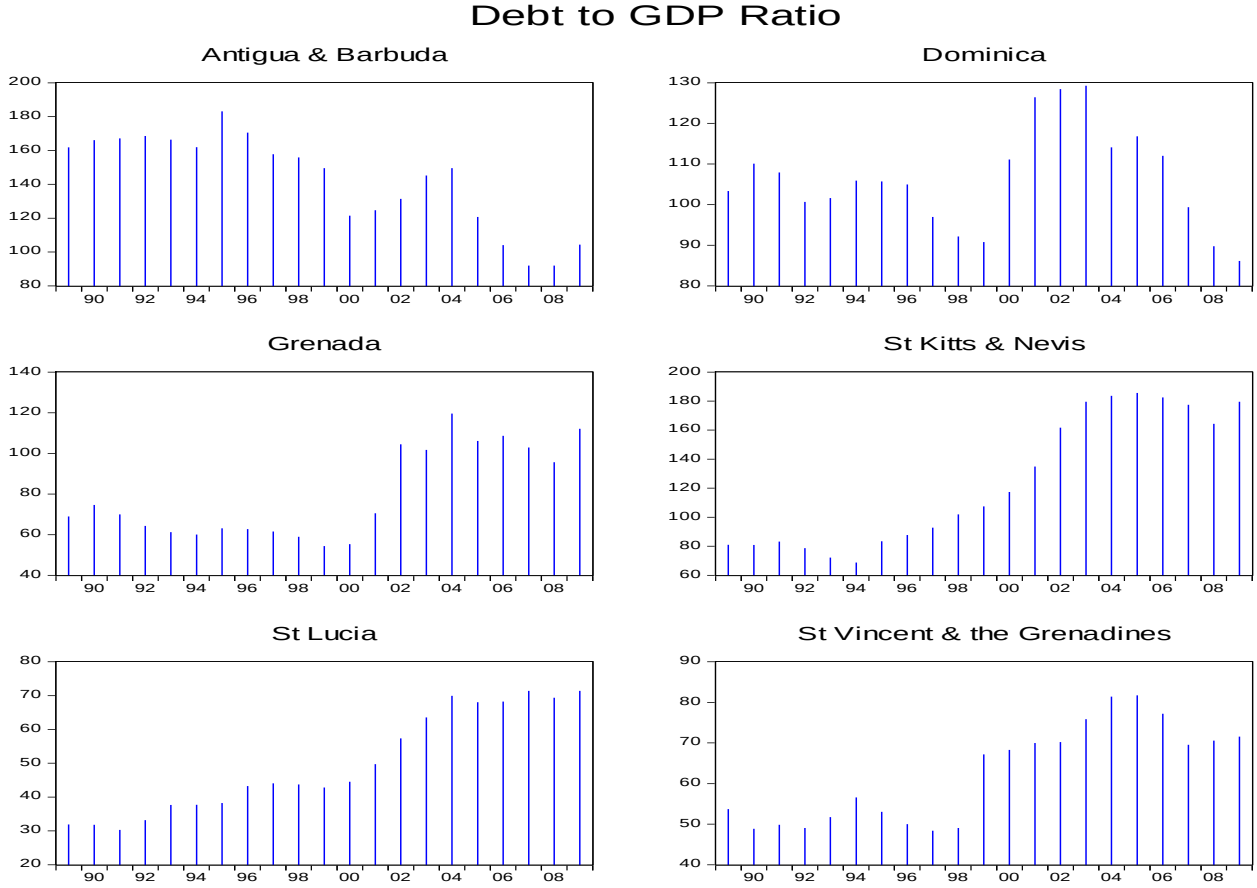
R-squared	0.494462	Mean dependent var	2.233906
Adjusted R-squared	0.419781	S.D. dependent var	4.401879
S.E. of regression	3.346189	Sum squared resid	985.3345
F-statistic	6.306681	Durbin-Watson stat	2.103595
Prob(F-statistic)	0.000000	Second-Stage SSR	1009.015
Instrument rank	17		

Table 8: Dependent Variable Total factor Productivity

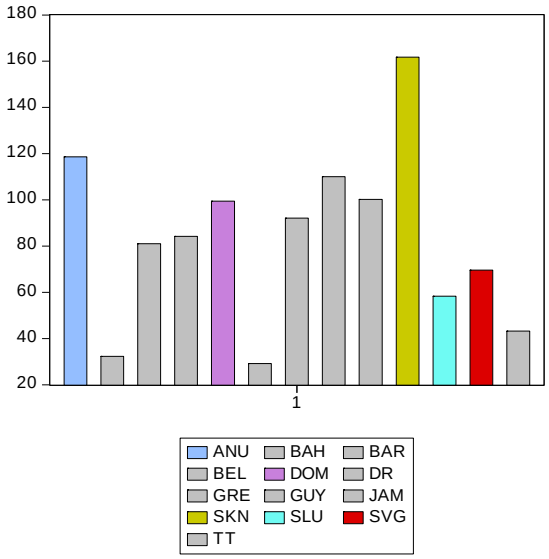
Instrumental Variable Model

Variable	Coefficient	t-Statistic	Prob.	
Log Income Per Capita (-1)	-8.138791	-4.416196	0.0000	
Tourism	0.103416	5.735976	0.0000	
Openness	-0.012463	-1.981052	0.0502	
Investment	0.055582	3.611349	0.0005	
Debt	**-0.033013**	**-4.345129**	**0.0000**	
Human Capital	0.462147	2.068472	0.0410	
R-squared	0.591751	Mean dependent var		0.261119
Adjusted R-squared	0.545966	S.D. dependent var		1.569159
S.E. of regression	1.034420	Sum squared resid		114.4927
F-statistic	12.92456	Durbin-Watson stat		1.942933
Prob(F-statistic)	0.000000			

Figure 1: 2009 Total Public Debt as a Percentage of GDP 1989 to 2009



Average Debt to GDP Ratio for Caribbean Countries



Debt to GDP Ratio 1998-2009 ECCU 6 Versus Caricom and Caribbean

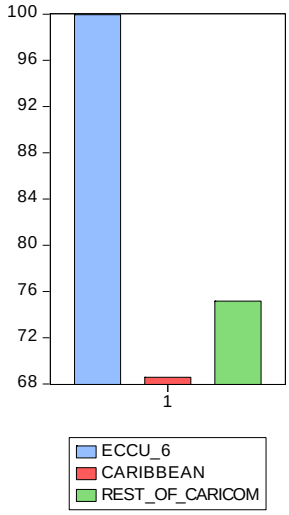


Figure 2: Domestic and external as a Percentage of GDP 1989-

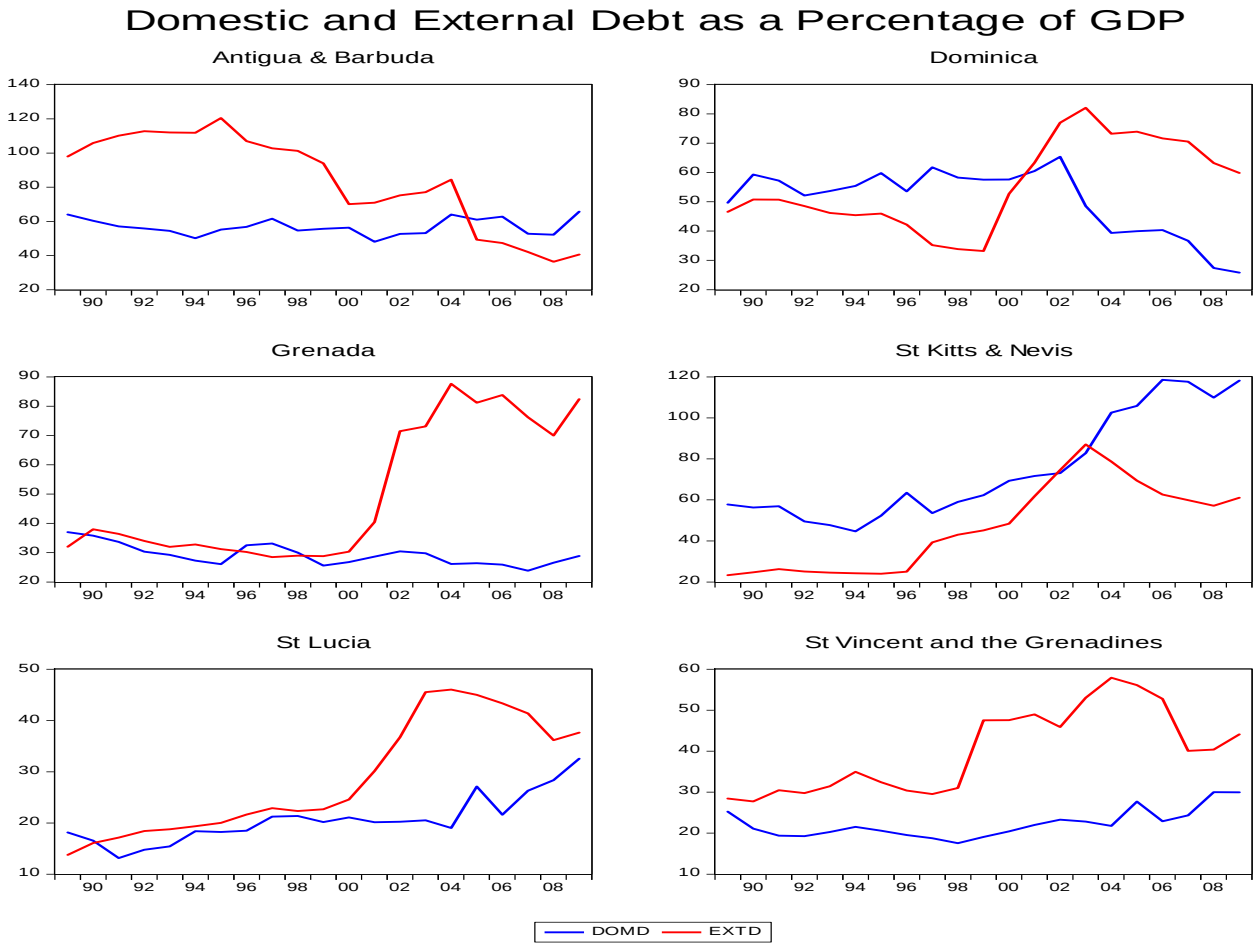
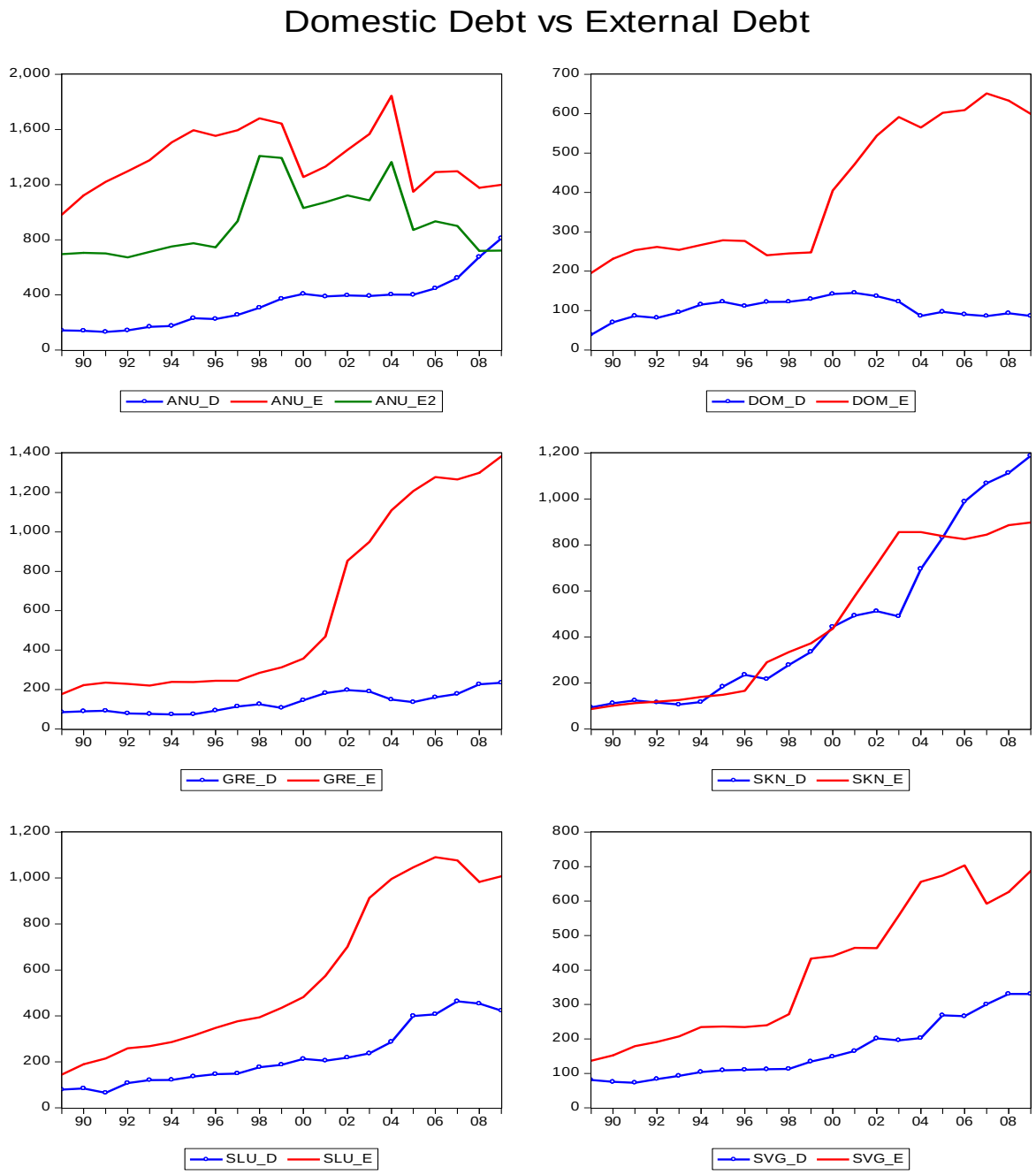
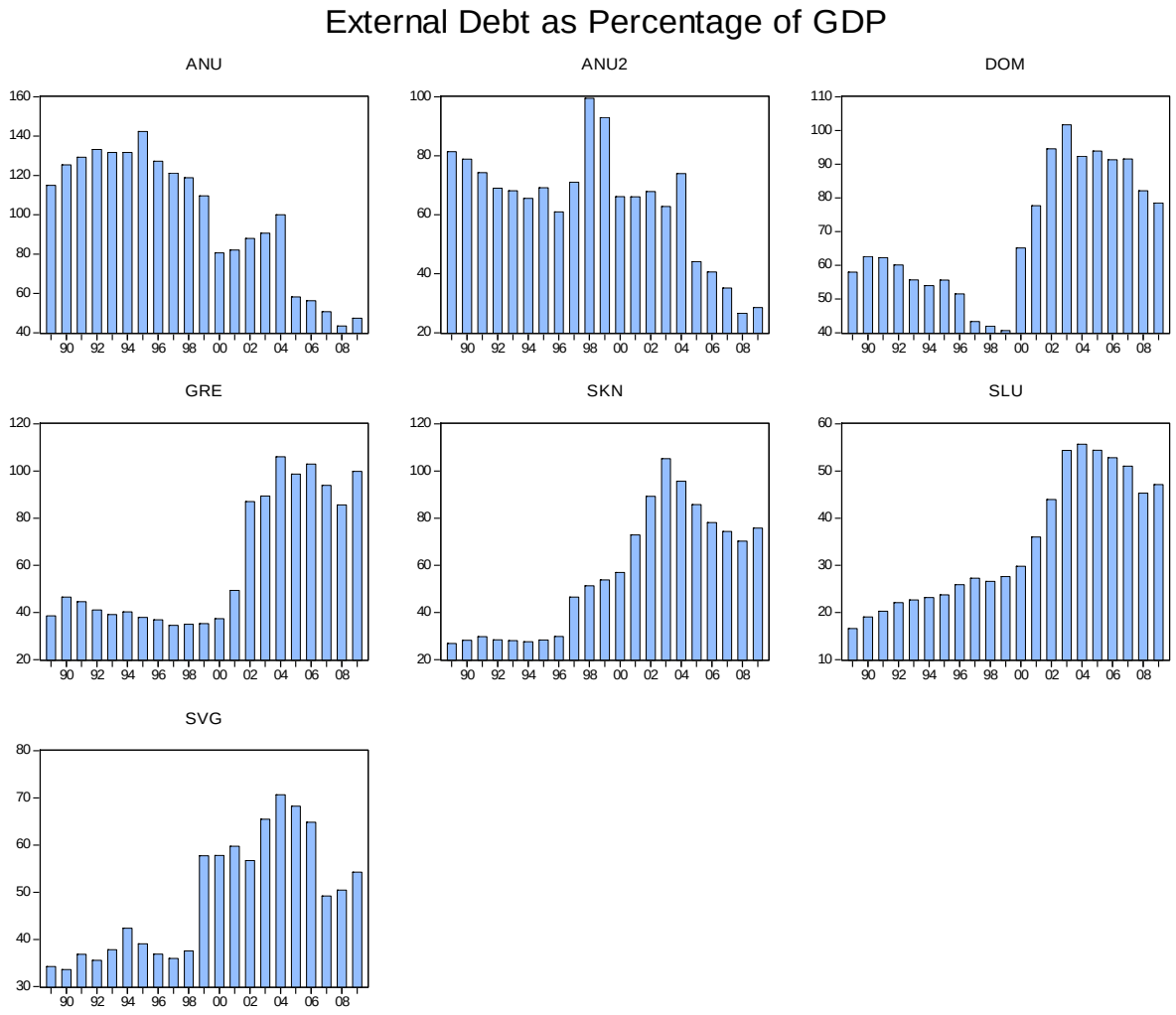


Figure 3: Debt Evolution both Domestic and External- ECCU Six 1989 to 2009



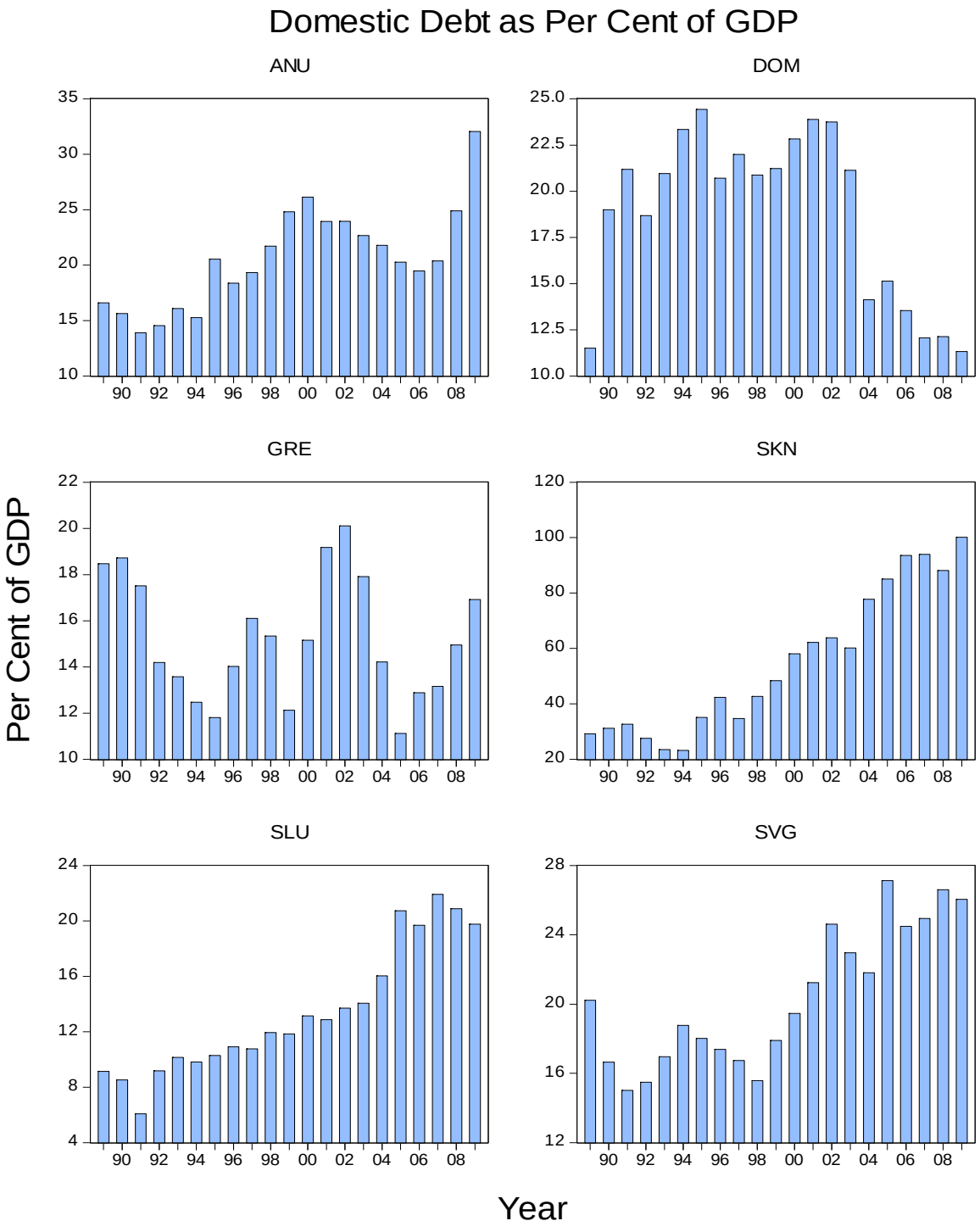
** ANU- Antigua and Barbuda, Dom- Dominica, GRE- Grenada, SKN- St Kitts Nevis, SLU- Saint Lucia, SVG – St Vincent and the Grenadines*

Figure 4: External as Percentage of GDP 1989 to 2009



** ANU- Antigua and Barbuda, Dom- Dominica, GRE- Grenada, SKN- St Kitts Nevis, SLU- Saint Lucia, SVG – St Vincent and the Grenadines*

Figure 5: Domestic Debt as Percentage of GDP 1989 to 2009



PUBLIC SECTOR DEBT IN THE ECCU:

PROFILE AND EVOLUTION

ECCU Task Force on Debt, Growth and Development

June 2013

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Public Sector Debt in the ECCU: Profile and Evolution

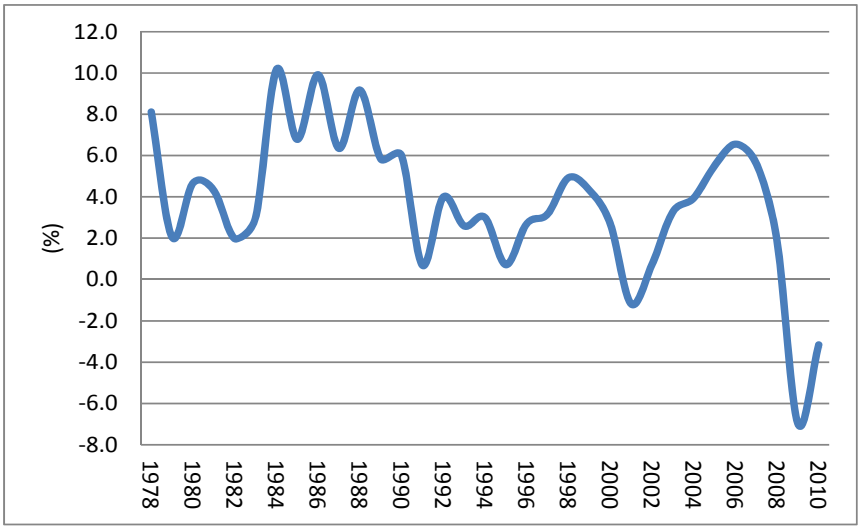
By ECCU Task Force on Debt Growth and Development

1.0 Introduction and Overview

The sustainability of public sector debt and the related impacts on growth and macroeconomic performance, have come into sharp focus in the aftermath of the global financial and economic crisis of 2007/2008. While historically, such concerns were typically confined to emerging and developing countries, they are now more commonplace in discussions about both the present state and future of developed countries. The global financial triggered a sharp increase in public debt levels, both in absolute terms and relative to Gross Domestic Product, as governments rescued financial systems and attempted to stimulate economic activity.

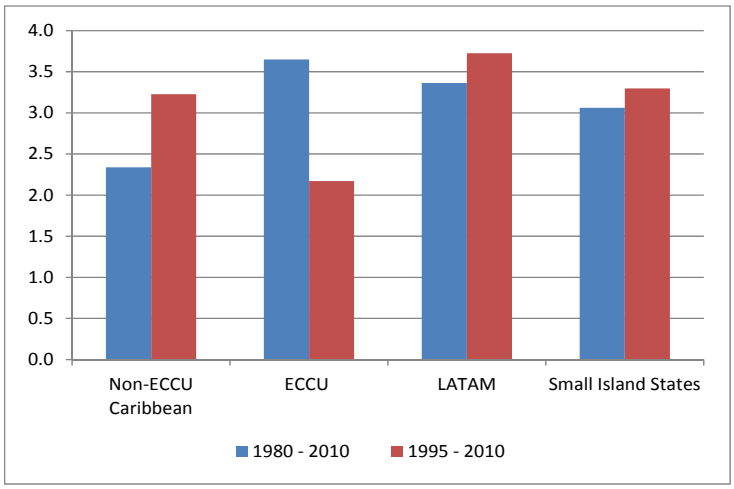
Economic growth in the ECCU averaged 3.7 per cent per annum over the 1977–2010 period, with an attendant improvement in social indicators. This however masks the underlying trend, which is a declining one. Decadal growth averaged 6.2 per cent in the 1980s; 2.9 per cent in the 1990s, and 1.6 per cent during the 2000s (Figure 1). GDP growth in the ECCU region compared favourably with other developing countries during 1980 to 2010. In fact, over the entire sample period, the ECCU region grew faster than its peers (Figure 2).

Figure 1: ECCU Real GDP Growth (1978 to 2010)



Source: ECCB Database

Figure 2: Real GDP Growth by Region: 1980 to 2010



Source: IMF World Economic Outlook Database

Growth outcomes in the ECCU have thus under-performed developing country peers from the mid-1990s. Coincidentally, this period also marks the beginning of the acceleration in total public sector debt, to the point where public sector debt in the Eastern Caribbean Currency Union is ranked among the highest in the world (Figure 3). Why should this be a worry? The perennial concern of economic analysts and policy-makers alike is that excessive debt

accumulation has a deleterious impact on economic growth. The theoretical literature has not explored or modeled the relationship between total public debt and growth in a tight manner[25]. However, some plausible implications can be teased out using standard theoretically motivated arguments. The most well-known approach is related to debt overhang theories and its variants (Krugman 1988; Sachs 1989; Cohen 1993). According to these theories, a large external debt burden reduces investment, as the private sector anticipates that the returns from investment will be used for debt servicing. Thus, debt overhang depresses investment and growth by increasing uncertainty. Debt overhang theories are quite elastic, and the concept has been interpreted more broadly to include dis-incentive effects on human capital formation, adoption of new technologies, and an unwillingness to enact fiscal reforms (Presbitero 2008). Despite its many formulations, the basic premise of debt overhang theory is that high external debt reduces growth through negative effects on investment, productivity and efficiency. The literature is extensive, and will not be reviewed in its entirety (Presbitero (2010) provides an effective empirical summary). The most robust result is the existence of threshold effects in the relationship between debt and economic growth, where debt accumulation is positively correlated with growth outcomes below a certain point, but negatively related thereafter. There are a wide range of estimates, with the threshold for developed countries typically higher than low income economies.

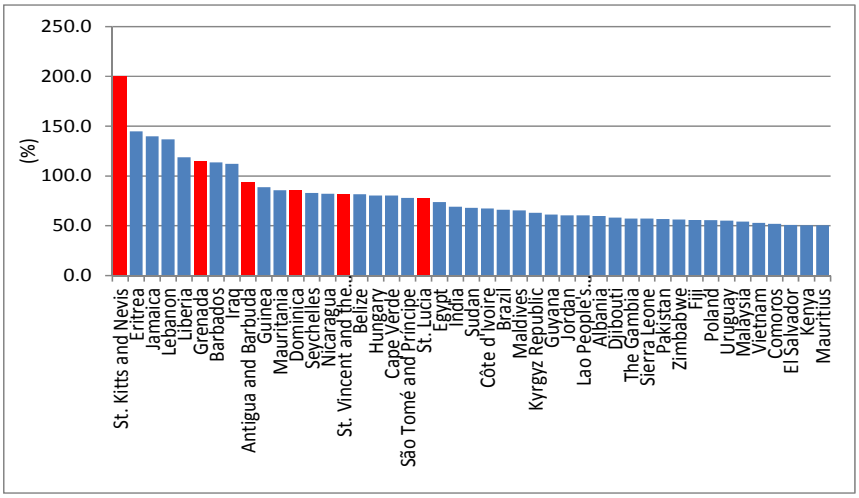
Fiscal and debt sustainability has been a major policy issue in the ECCU for some time. The rapid accumulation of debt over the past two decades, and the potential implications for future growth and development, as well as macroeconomic stability, garnered much attention in the period leading up to the crisis. These concerns intensified during the crisis as it became evident that the existing debt burden was a critical factor limiting the response of fiscal policy to the sharp decline in economic activity. According to the IMF[26], all six (6) independent members of the ECCU were in the top twenty (20) most indebted countries in the world, while

[25] The theoretical and empirical literature largely focuses on the adverse effects of external debt accumulation on economic growth. Notable exceptions include Presbitero (2010) and Reinhart and Rogoff (2010).

[26] World Economic Outlook

three (3) were in the top ten (10). Further, the acceleration in debt in the ECCU, coincided with a persistent decline in average real growth rates, bringing that particular nexus into sharper focus.

Figure 3: Public Sector Debt (% of GDP) 2010



Source: IMF World Economic Outlook Database

A major concern for studies of this nature is the issue of causality. Growth may be low as a result of high debt. But it is equally plausible that debt may be high because of low growth. Moreover, it is possible that there may be some heterogeneity in the relationship between debt and growth among countries and thus countries may have different debt tolerance limits. In a finding widely quoted by academics and policy-makers, Reinhart and Rogoff (2010) argue that government debt and economic growth is uncorrelated at debt to GDP ratios less than 90.0 per cent, while debt accumulation beyond this threshold point materially reduces growth. The authors argue that at high levels of debt, causality between external debt and growth is essentially bi-directional. To account for heterogeneity, several studies include proxies for institutional quality and macroeconomic policy (Presbitero 2008; Cordella, Ricci and Ruiz-Arranz, 2010). The main result is that quality of institutions and the policy framework are empirically relevant.

Against this backdrop, this chapter examines the composition, evolution, and plausible contributors to public debt in the ECCU. Public debt can increase for a number of reasons, including an increase in primary deficits reflecting expansionary fiscal policy, debt guarantees for state owned enterprises and other entities (contingent liabilities), interest rates increases, and contractions in output. This list is not exhaustive. However, all these factors have contributed in varying degrees to the buildup of debt in the region. Given its geographic location, the region has been buffeted by several natural disasters (flooding, landslides, tropical storms, hurricanes, earthquakes, volcanic eruptions) over the years. These disasters have generally caused extensive damage to public infrastructure and major disruptions to economic and social life, which governments have had to attend to. On the economic front, the high dependence on advanced countries, for tourism and foreign direct investment, have made the region vulnerable to business cycles in source countries. The paper therefore seeks to examine the stylized facts about the evolution and composition of debt in the 6 independent ECCU countries.

The chapter is organized as follows: section 2 looks at the structure and composition of public sector debt in the ECCU; section 3 examines the evolution over time (1990 to 2010); section 4 uses debt accounting to examine some of the factors that contributed to the buildup in debt; while section 5 provides some takeaways on what could help to reverse the rising trend in debt levels in the region.

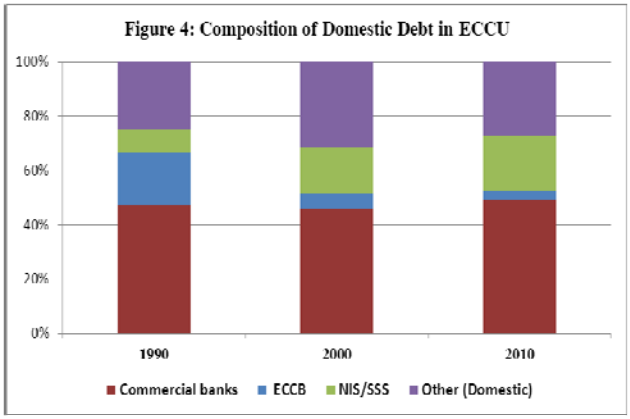
2.0 Structure and Composition of ECCU Debt

As at December 2010, total public sector debt in the ECCU amounted to EC$11.9 billion, with about 47.4 per cent of the debt being externally held and 42.8 per cent held domestically. Of the domestic debt, high interest and non-concessional debt accounted for approximately 48.9 per cent, which was held with commercial banks (Figure 4), while just about 15 per cent was issued on the Regional Government Securities Market.

The share of domestic and external debt is currently about equal on average for the region, but the pattern is uneven across individual countries. In Antigua and Barbuda and St Kitts and Nevis, the share of domestic debt has increased from a quarter to about two-thirds. The evolution is particularly notable for Antigua where the share of domestic debt has almost doubled from about 25.0 percent in 1990 to 47.0 percent in 2010. In St Kitts and Nevis, the share of domestic debt has increased much more moderately, from under 60.0 percent in 1991 to about 66.0 percent in 2010. On the other hand, Grenada, which also has a high debt ratio, has a much higher concentration in external debt.

The domestic component of public debt in the ECCU increased at a faster pace than the foreign component. During the 1990's, domestic debt increased by approximately 15.0 per cent compared to 8.1 per cent for external debt. During that decade, domestic debt accounted for approximately 40.5 per cent of total public sector debt, which subsequently increased to an average of 44 per cent in the next decade. This gain in domestic debt has largely reflected increases in commercial bank borrowing (Figure 4) as well as the development of the Regional Government Securities Market (RGSM). In addition to commercial banks which are the largest providers of domestic debt, Social Security Schemes hold a substantial portion of the public debt in some countries, accounting for approximately 14.6 per cent of the domestic debt in the last five years.

Figure 4: Composition of Domestic Debt in ECCU



Commercial banks are the largest providers of domestic debt (Figure 4). The bulk of the domestic debt in Antigua and Barbuda and St Kitts and Nevis is owed to domestic commercial banks. In St Vincent and the Grenadines, the only indigenous bank had an exposure of almost one-third of its assets. However, the government paid off a significant amount of this debt prior to privatization of the bank in November, 2010. National Insurance Schemes also have high exposure to public debt in some countries, both directly in terms of holding government paper and indirectly through deposits at commercial banks which provide the needed liquidity to banks who then on-lend to the government. The regional securities market is also an important source of financing, for example for Saint Lucia, although most of the borrowing in this market is short-term in nature.

However, much of the advance in domestically-issued debt has been in the form of short-term debt. As at the end of 2010, just over a quarter of governments' debt was due for redemption within one year (see Figure 5). Short-term debt however may pose substantial rollover risks to governments, particularly during the prevailing

Figure 5: ECCU Redemption Profile

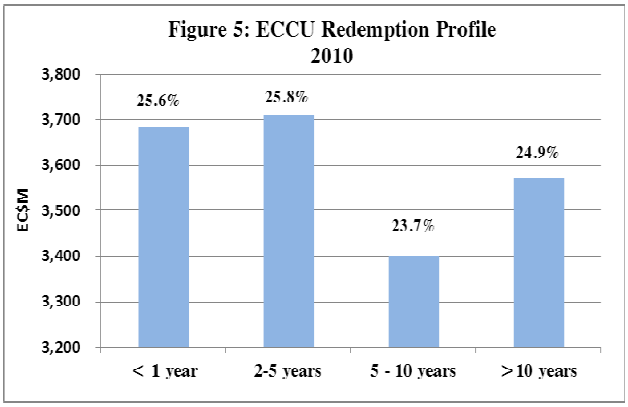
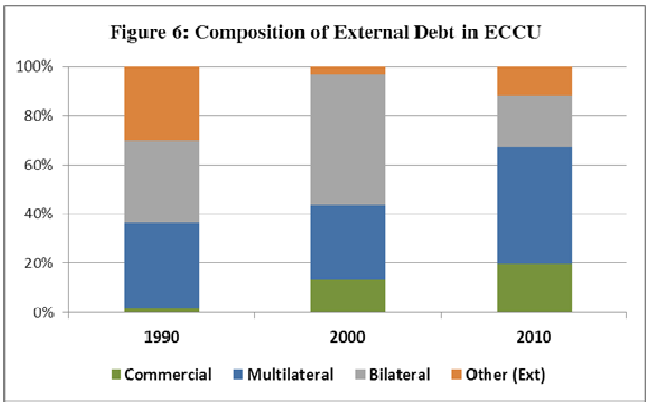
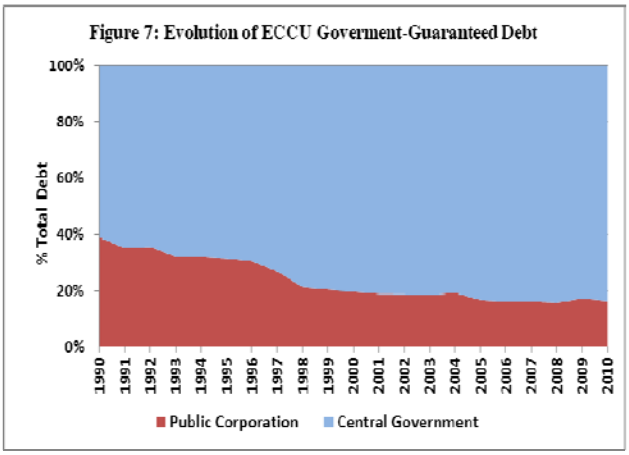


Figure 6: Composition of External



In respect of external debt, multilateral organisations are currently the largest creditors (figure 6), with the CDB being the single largest creditor. The proportion of multilateral debt increased in the latter period as governments sought assistance in responding to the global financial crisis. In particular, there were new borrowings from the IMF, IBRD and CDB. There has been a renewed surge in the share of debt from the IMF as three member states (Antigua and Barbuda, Grenada and St Kitts and Nevis) recently implemented IMF-funded adjustment programs, and most have also accessed IMF emergency financing. The share of multilateral debt is the highest in Dominica, at 46 percent.

Figure 7: Evolution of ECCU Government-Guaranteed Debt



There has been a gradual decline in the proportion of government-guaranteed debt over the years (see Figure 7). As a proportion of total debt, governments' contingent liabilities[27] averaged 16.0 per cent in the last five years ending 2010, a two percentage point decline from the previous five years. By the end of 2010, the direct impact of government-guarantees on public sector debt for the ECCU as a whole was 17.0 per cent of GDP, an increase from 14.0 per cent in 2008.

3.0 Evolution of Public Sector Debt in the ECCU: 1990 to 2010

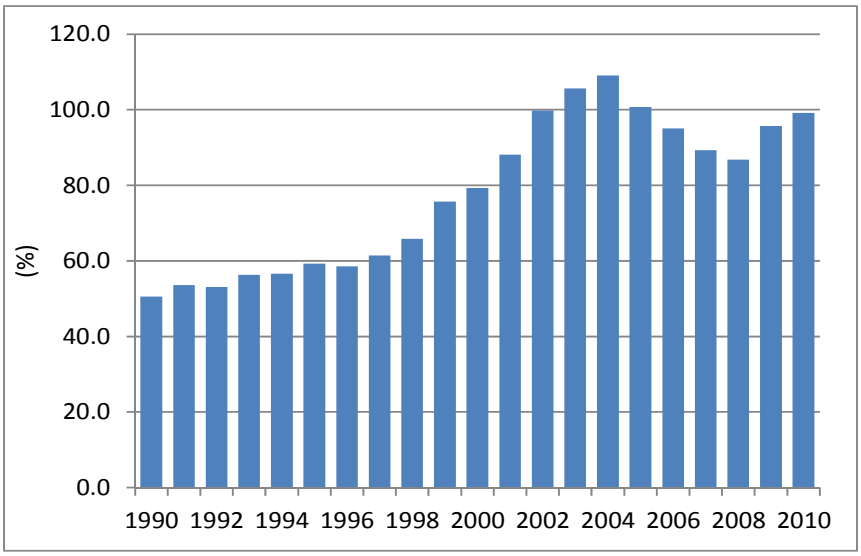
3.1 General Evolution

The time path of public sector debt changed in the mid-1990s. Public sector debt (as a percentage of GDP) rose from 59.0 per cent in 1995 to 79.0 per cent by the end of the decade (Figure 8). The chart suggests a natural sub-division of the debt record into three epochs: 1990 – 1995; 1996 – 2004; and 2005 – 2010. For the first sub-period, public sector debt barely increased, moving from 51.0 per cent of GDP to 59.0 per cent of GDP at the end of the

[27] This only includes contingent liabilities from public corporations, and do not include implicit liabilities

period. During the second sub-period however, debt accelerated, moving from 58.5 per cent of GDP in 1996, to 109.1 per cent in 2004.

Figure 8: Public Sector Debt (% of GDP) ECCU Aggregate: 1990 to 2010



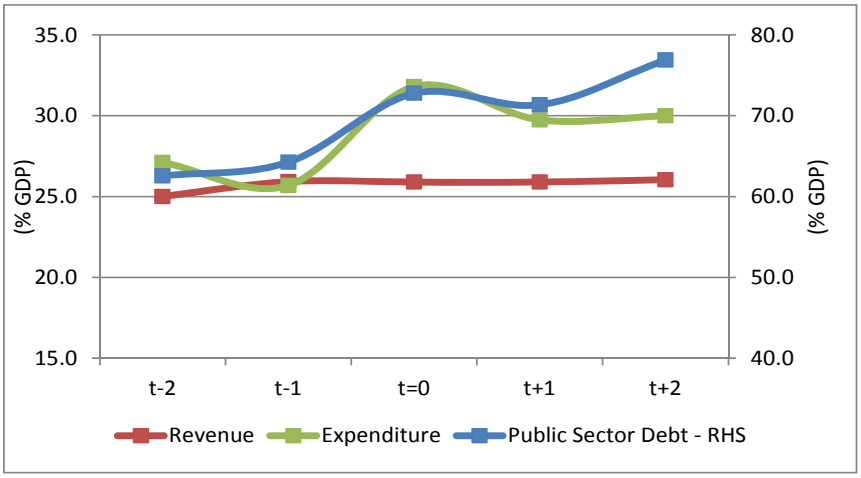
However, there is a wide disparity in these ratios among the ECCU countries. St Kitts and Nevis tops the list with the debt-to-GDP ratio more than tripling from 51.0 per cent in 1993 to approximately 142.5 per cent at end-2010. Antigua and Barbuda started the 1990s from a debt-to-GDP ratio at 95.0 per cent, reflecting large public sector investment projects undertaken in the 1980s when the country was building its tourism industry. The debt ratio declined moderately in some years until 1997, but started to rise in 1998 reaching a peak at 124.0 percent in 2002, in part reflecting the slowdown in tourism following the 9/11 attacks in 2001. At end-2009, the ratio stood at just under 100 percent, including substantial arrears and creditors agreed to restructure their debt. Grenada also started the 1990s with a reported debt ratio in the range of 40-50 percent. However, in 2002, the resolution of some accounting matters and a restatement of the debt resulted in a jump in the debt ratio by almost 30 percentage points. The debt-to-GDP ratio jumped again in 2004 reflecting borrowing for

rehabilitation and reconstruction, following the passage of Hurricane Ivan. Although Dominica, Saint Lucia and St Vincent and the Grenadines, with the end-2010 debt ratio between 65-70 percent, appear to be at the lower end of the spectrum, the debt-to-GDP ratio has tripled for Saint Lucia since the 1990s and for all three countries remains significantly above the average for countries with similar per capita incomes.

It is difficult to quantify the contribution of exogenous shocks, partly as a result of issues with identification, as well as the myriad indirect effects. Fluctuations in oil, food and other commodity prices can induce a decline in the terms of trade, lowering government revenues and the growth performance. In addition, an increase in global interest rates or the country risk premium can lead to unexpected increases in interest payments or refinancing costs, adversely affecting debt sustainability. Compounding these vulnerabilities, the ECCU countries are highly prone to natural disasters which can decimate capital stocks and domestic economies.

By virtue of location within the tropical belt, ECCU member states are highly vulnerable to natural disasters, particularly hurricanes, storms and volcanic eruptions. The cost of recovery and rehabilitation can be substantial, leading to increases in primary fiscal expenditure and/or increases in public sector debt. Hurricanes can also destroy infrastructure and decimate the domestic capital stock. To analyse the fiscal impact of disaster events, data on natural disasters and hurricanes were sourced from the EM-DAT database compiled by the Centre for Research on the Epidemiology of Disasters (CRED). In the EM-DAT database, disasters are sorted by the number of persons affected, the number of deaths, and the economic damage costs. In addition to these direct measures, the disruption of economic activity may lead to macroeconomic spillover effects, as the fiscal and external accounts tend to worsen in the aftermath of disaster events.

Figure 9: ECCU Fiscal Data Post Impact Events



Source: EM-DAT and ECCB Databases

The fiscal impact, as estimated from this exercise, is captured in Figure 9. The analysis supports the view that natural disasters presage a deterioration in fiscal performance and debt. This is reflected in the finding that upon impact, the debt to GDP ratio increases on average by 8.5 percentage points, while primary expenditures rise by 6.1 percentage points. Primary revenues do not display any discernible variation associated with these events. These are *average* responses, aggregated over the 1980 – 2010 period, of recorded disaster events. As such, there are several caveats. Firstly, the analysis does not consider other influences on the outcomes, ascribing all variations to the disaster event. Thus there is an identification problem, as other macro-economic and political events could confound the estimates. Second, there were no controls for country or disaster specific characteristics in the exercise.

A decomposition of the sources of debt accumulation shows that primary deficits and high interest bills have been the leading cause of the worsening in debt ratios (Figure 4).[28] The

[28] For the methodology, see Sahay (2006). The analysis is conducted for the following four sub-periods to highlight the difference in the debt trajectories and the changes in underlying macro conditions: period of relatively stable debt ratios (1991–97), followed by years of sharp increase (1998–2004), subsequent declines (2005–08), and the recent rise in light of the global financial crisis (2009).

central government primary deficit (excluding grants) contributed significantly to the rise in debt ratios in ECCU countries, accounting for over half of the total increase during most years. In most cases the deterioration in the primary deficit reflects a more rapid increase in expenditures. Fiscal consolidation by some governments, Dominica and Grenada, has helped as the primary deficit as an explanation of debt has declined in the last two years. In most countries positive growth rates until the recent slowdown helped to offset, the impact of rising debt levels on the debt to GDP ratio. However, the decline in growth in 2009-2010 has added to the deterioration in the debt-to-GDP ratio. The contribution of "other factors", which include non-government public sector operations and contingent liabilities, has also been significant in some countries, most notably in St Kitts and Nevis.

3.2 Macroeconomic, Social and Political Context

The accumulation of public debt did not take place in a vacuum. It is important to understand the wider social and political context, as well as the prevailing macroeconomic environment. While remaining cognizant of the deleterious effects of high levels of debt, debt accumulation can contribute positively to economic growth. In small open economies, foreign capital can be used to augment domestic savings, increase capital per worker, and thus stimulate productivity and economic growth.

After a relatively prosperous period in the 1980s and the early 1990s, the macroeconomic performance of the ECCU countries moderated. GDP growth deteriorated sharply**,** while the gradual elimination of trade preferences for major agricultural and manufactured products decimated primary industries. The major policy response to reduced growth outcomes was a debt-financed expansion of the fiscal the as member governments invested in infrastructure and fashioned social safety net systems. This was further compounded by exogenous shocks, such as natural disasters and terms of trade shocks, to which the rise in fiscal expenditures was partly related.

Increased social spending has been a feature of the deterioration in fiscal balances. This investment has been in the areas of low income housing, health and education, as well as direct employment and pension payments. In some instances, this can be attributed to attempts at correcting some of the deficiencies in the legacy of the colonial past, when investment in social infrastructure was inadequate. Such investments have paid some dividends as the ECCU countries have made great strides in the area of human development with most ECCU countries have achieved middle-income status, as per the United Nations' Human Development Index. An important corollary is that ECCU economies have ceased to qualify for concessional loans at regional and international development agencies. The pressures for continued social spending resulted in commercial borrowing at high interest rates. Without compensating adjustments elsewhere in the budget, the immediate consequence was acceleration in public sector debt.

4.0 Public Debt at the Country Level

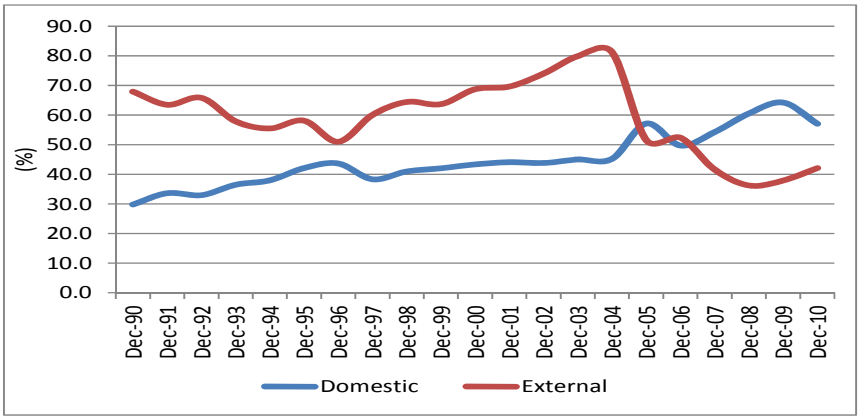
The primary endogenous reason for acceleration in public sector debt is deterioration in primary balances. Countries run primary deficits for a variety of reasons, including efforts at counter-cyclical policy, high levels of non-discretionary obligations, large public sector investment programs, and inefficient tax/revenue collection systems. Notwithstanding, ECCU member states display large variations in debt performance, related to differences in the structure of the debt (domestic or external), the relative contributions of statutory corporations and central government, main creditors, and the term-structure of the debt (short or long-term). In this section, a slightly more detailed elaboration of the debt developments at the country level is presented.

Antigua and Barbuda

Total public sector debt as a percentage of GDP rose from 96.0 per cent in 1990, to 148.2 per cent in 2005, before falling to 91.0 per cent two years later (2007). By the end of 2010, debt to GDP ratio had risen to 98.0 per cent, partly attributed to the disruption induced by the financial crisis (Figure 10). Over the 1995 to 2004 period, external debt rose from 55.4 per cent of GDP to 81.2 per cent, a much faster rate than domestic debt. This largely reflected

increased borrowing by the central government, as the external debt stock of statutory corporations fell during this period.

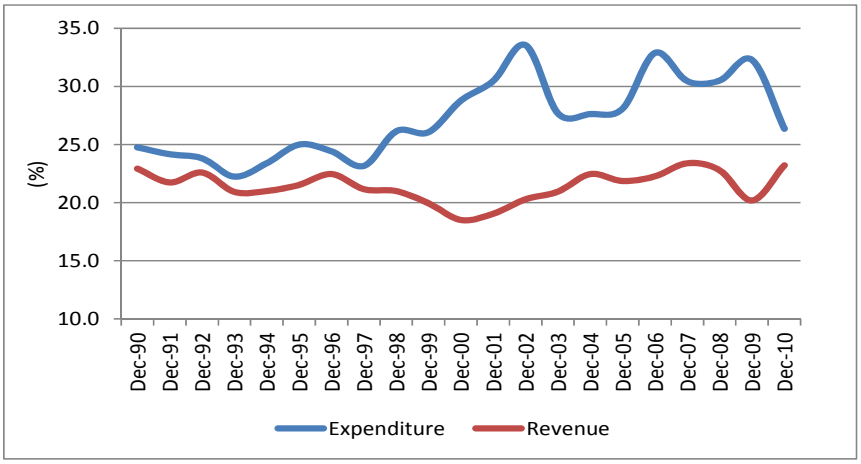
Figure 10: Antigua and Barbuda – Total Public Sector Debt (% of GDP)



Source: ECCB Databases

An increase in total expenditures, combined with a decline in revenues (Figure 11), contributed to the widening of fiscal imbalances and the contraction of debt. The passage of Hurricane Luis in September of 1994 induced additional fiscal pressures, and the government resorted to external borrowing (including official creditors) to fund reconstruction and public investment projects. The fiscal accounts were adversely affected by another hurricane – Hurricane Georges – in 1998. Two more hurricanes – Jose and Lenny – in 1999 also caused major infrastructural damage to tourism plant and the agricultural and fisheries sector, requiring further government-led, debt-financed interventions. However, successful restructurings of Japanese and Italian loans in 1997 and 1998, and with France in 1999, helped to relieve some of the upward pressure on external debt, particularly arrears.

Figure 11: Antigua and Barbuda – Total Revenues and Expenditures (% of GDP)

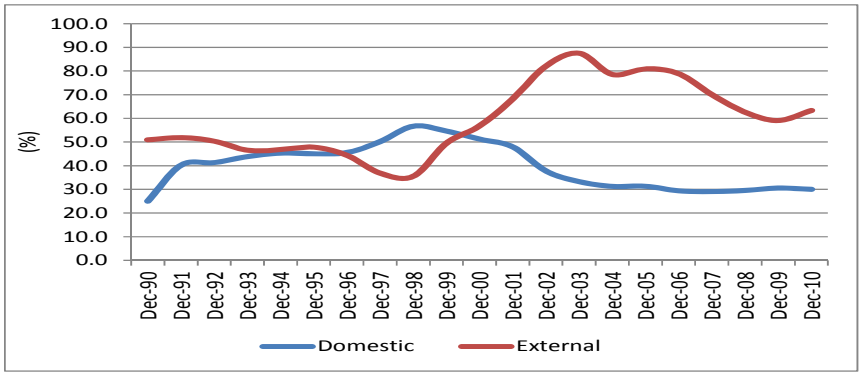


Source: ECCB Database

Dominica

For Dominica, public sector debt as a ratio to GDP averaged 81.5 per cent over the 1990 – 1998 period and rose to 120.0 per cent between 1999 and 2006. Higher spending on wages and interest payments and a sustained increase in capital expenditure (mainly land purchases), precipitated a doubling of the overall deficit. The fiscal deficit was financed in part by a regional bond issue, which pushed the government's total indebtedness to 109.1 per cent of GDP in 1999, from 82.0 per cent in the previous year. Increased government borrowing in 2001 was mainly reflected in external borrowing (Figure 12), largely at commercial rates from regional lenders. In addition to the deteriorating fiscal performance, Hurricane Lenny in 1999 contributed to a decrease in GDP, on account of a fall in banana production and exports. Real GDP contracted by 4.2 and 5.1 per cent in 2001 and 2002 respectively, sustaining the increase in the debt to GDP ratio.

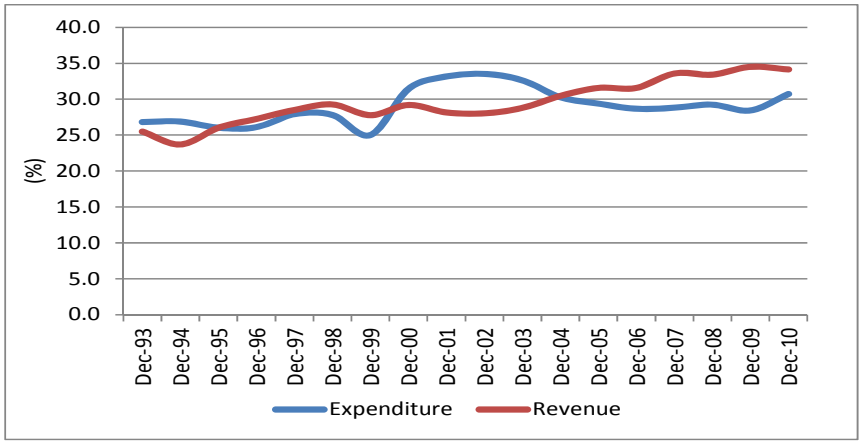
Figure 12: Dominica – Total Public Sector Debt (% of GDP



Source: ECCB Database

In an effort to stabilize fiscal imbalances and promote sustainable growth over the medium-term, the government of Dominica embarked on an IMF-supported stabilization programme in 2002. This had the immediate effect of reducing primary expenditures (Figure 13), which, combined with a return to positive growth in 2004 and 2005 and a restructuring of domestic debt, led to a 20.2 percentage point reduction in the debt to GDP ratio in 2006, from a peak of 131.9 per cent in 2002. Grant inflows (averaging 5.5 per cent of GDP over the 2004 – 2009 period), combined with robust control of primary expenditures, enabled a sharp reduction in the debt to GDP ratio. At the end 2010, the debt to GDP ratio stood at 90.5 per cent.

Figure 13: Dominica – Revenues and Expenditure (% of GDP)

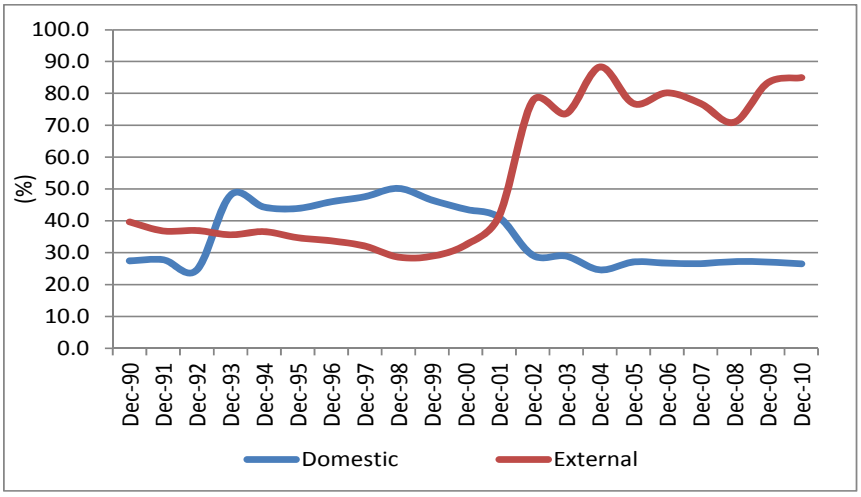


Source: ECCB Database

Grenada

Total public sector debt in Grenada averaged 59.0 percent of GDP from 1990 to 2001 (Figure 14). In 2001, external debt increased to 78.0 per cent of GDP, mainly to fund a marked increase in capital expenditure, including the purchase of the National Stadium and Ministerial Complex, which were previously financed under leasing arrangements, road rehabilitation and improvement projects, and a new general hospital.

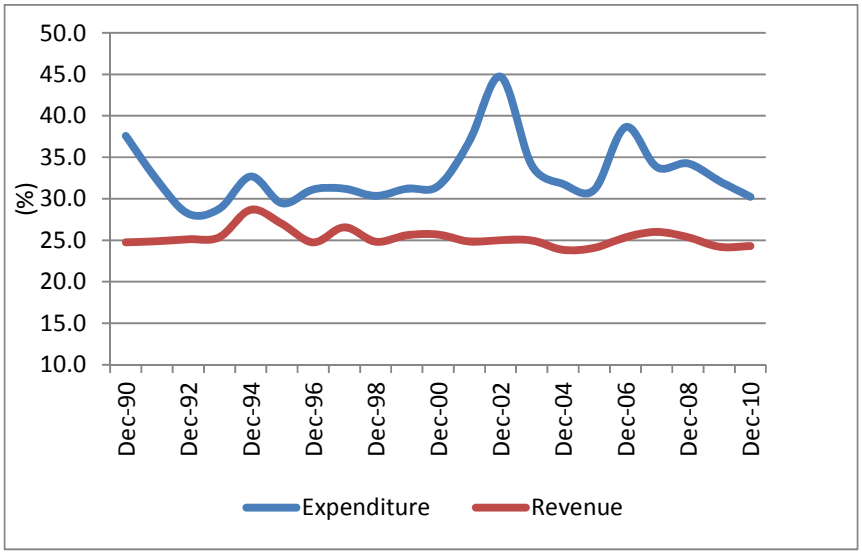
Figure 14: Grenada – Total Public Sector Debt (% of GDP)



Source: ECCB Database

In 2002, the government of Grenada issued a US$100.0m, 10-year, international bond at a coupon rate of 9.5 per cent. The proceeds were used to retire more expensive debt, clear arrears, and to fund priority public investment projects. The Grenadian economy contracted by 5.7 per cent in 2004, primarily as a result of Hurricane Ivan, which caused approximately 200.0 per cent of GDP in damage. An appreciable increase in grant inflows (9.0 per cent of GDP during 2004 to 2005) assisted in stabilizing the fiscal performance, averting a more pronounced deterioration (Figure 15). The refinancing of domestic debt in the post-Ivan period, contributed to a 13.5 percentage point reduction in the debt to GDP ratio. Subsequently, the debt to GDP ratio trended downwards to about 97.5 per cent in 2008, before increasing to 115.6 per cent of GDP by end 2010.

Figure 15: Grenada – Revenues and Expenditure (% of GDP)



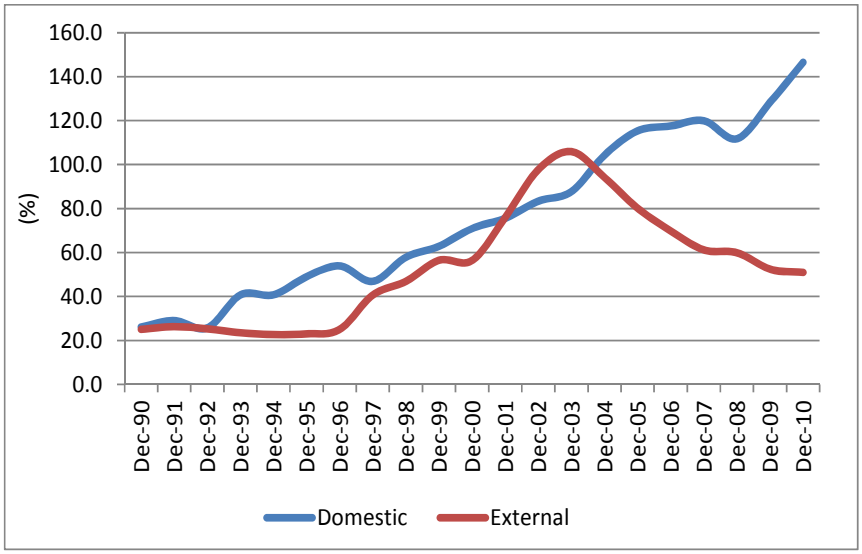
Source: ECCB Database

St Kitts and Nevis

The fiscal position of St Kitts and Nevis deteriorated from the mid-1990s, resulting in a progressive build-up in public sector debt from 51.2 per cent of GDP in 1990, to 198.5 per cent in 2004. In contrast to most ECCU countries, domestic claims account for the major share of total public sector debt (Figure 16). Over the 1995 to 2010 period, domestic debt represented around 60.0 per cent of total public sector debt. Most of the domestic debt is on short-term horizons – mainly Treasury bills – with relatively high interest rates; external debt tends to be of the medium-term variety. Over the entire review period, domestic interest payments averaged 3.6 per cent of GDP, compared to an average of 2.4 per cent of GDP for external debt.

Hurricanes Georges and Lenny in 1998 and 1999, and the depression that followed the events of September 11th, 2001, adversely affected economic growth and fiscal performance. By end 2002, the primary deficit had increased to 12.5 per cent of GDP from just about 5.0 per cent in 1997.

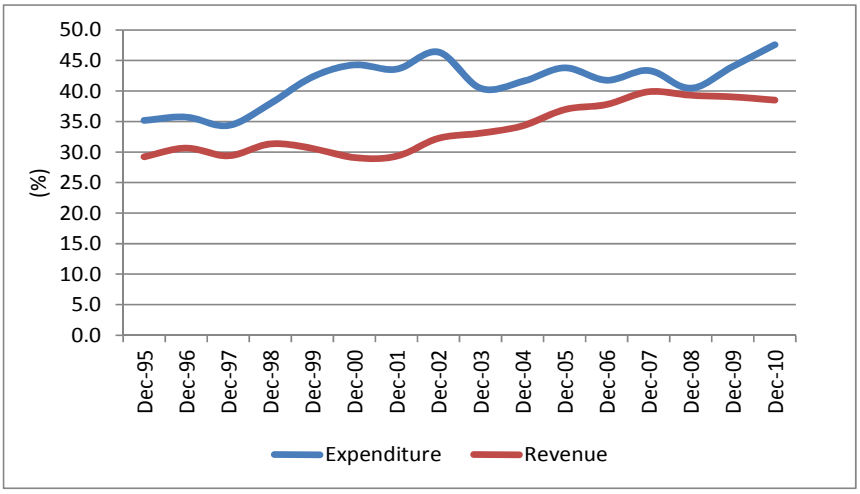
Figure 16: St Kitts and Nevis – Total Public Sector Debt (% of GDP)



Source: ECCB Database

A sustained increase in public expenditure was partly responsible for the deterioration in fiscal performance (Figure 18). Total expenditures rose from 25.3 per cent of GDP in 1990, to 47.6 per cent by the end of 2010. Personal emoluments and wages comprised the largest portion of total expenditures (averaging 14.7 per cent of GDP from 1995-2010), followed by spending on other goods and services (9.6 percent of GDP).

Figure 17: St Kitts and Nevis – Revenue and Expenditure (% of GDP)



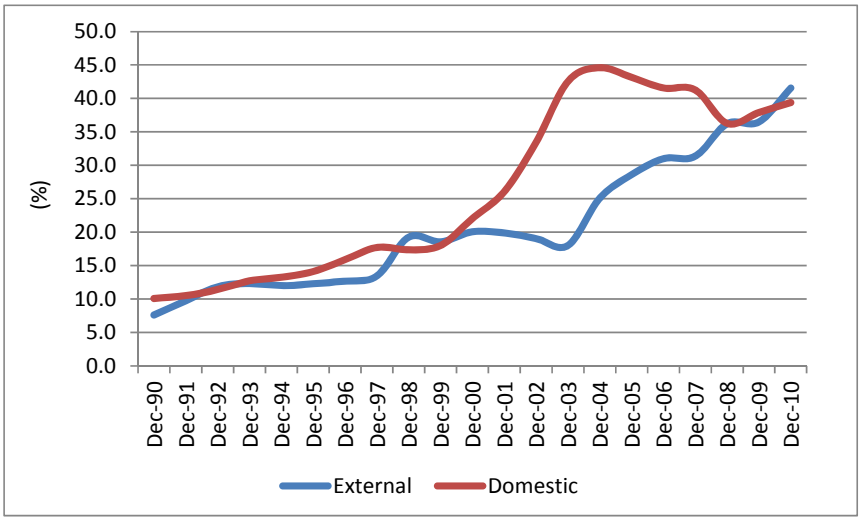
Source: ECCB Database

Capital expenditure increased during the late 1990s to replace infrastructure destroyed by Hurricanes Georges and Luis. Investment projects, consistent with the governments Medium-Term Economic Strategy Program, were also initiated, leading to an increase in debt accumulation. Improved real GDP growth from 2004 to 2008 led to a reduction in the public sector debt to GDP ratio. The onset of the global financial and economic crisis presaged a deterioration in fiscal balances and the growth performance, leading to a further increase in debt.

Saint Lucia

In the initial years of the sample period (1990 to 2001), total public sector debt in Saint Lucia averaged 30.0 per cent of GDP. Debt accelerated from 2002, mainly on account of an accumulation of external debt. In 2003, the Saint Lucian authorities undertook two large borrowing arrangements totaling EC$232.0m, half of which was used to refinance short and medium-term obligations. This reflected a wider trend: the additional borrowing was contracted mainly with external creditors at commercial rates. Domestic debt also increased, at a slower pace initially, but subsequently grew in importance (Figure 19).

Figure 18 Saint Lucia – Total Public Sector Debt (% of GDP)

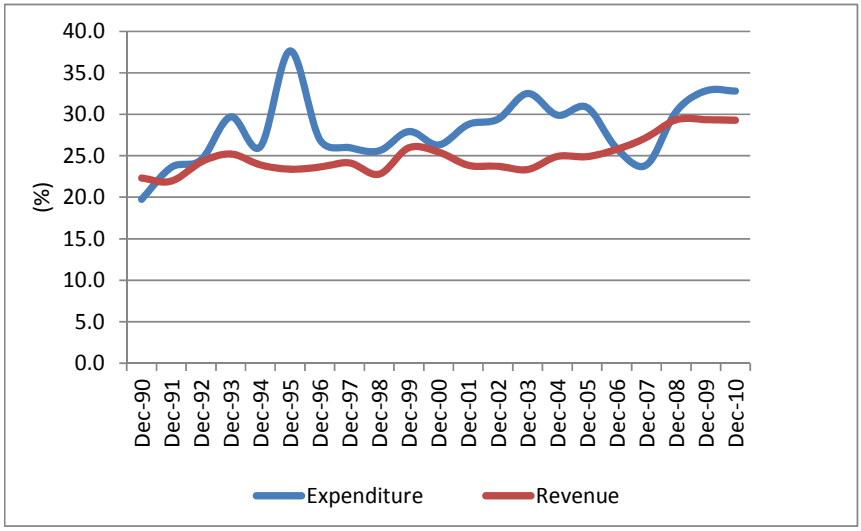


Source: ECCB Database

The government of Saint Lucia used the proceeds of external borrowing to finance its capital expenditure program. Between 2001 and 2008, capital expenditure as a percentage of GDP averaged 8.2 per cent. The advent of the Regional Government Securities Market (RGSM) in 2002 provided a venue for raising domestic financing. The Government of Saint Lucia borrowed to fund cricket stadia, disaster mitigation, and road rehabilitation and construction projects.

The fiscal imbalance during this period largely reflected the ambitious capital expenditure programme, as well as increases in current expenditures (Figure 20). The build-up for Cricket World Cup (CWC2007), and robust domestic demand imparted some buoyancy to tax revenues.

Figure 19: Saint Lucia – Revenue and Expenditure (% of GDP)

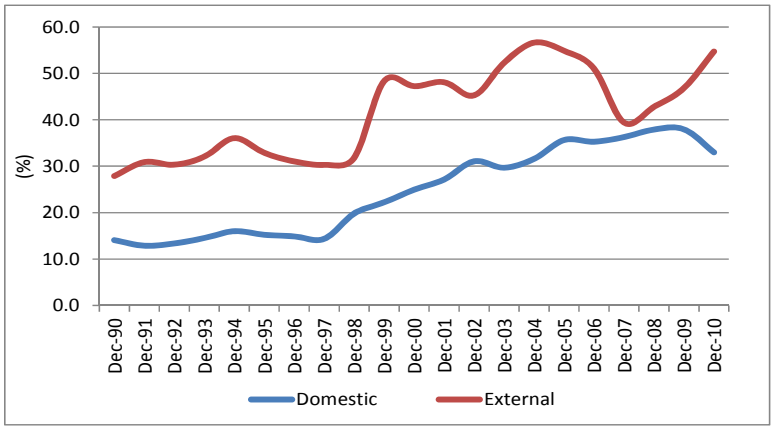


Source: ECCB Database

St Vincent and the Grenadines

The debt stock in St Vincent and the Grenadines grew marginally over the 1990 – 1997 period, before rising by 8.0 percentage points of Gross Domestic Product in 1998 (Figure 21).

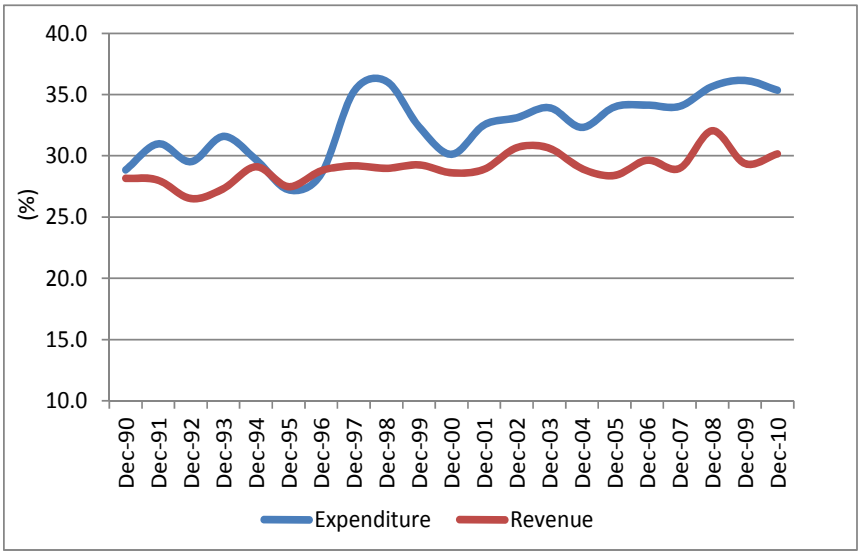
Figure 20: St Vincent and the Grenadines – Total Public Sector Debt (% of GDP)



Source: ECCB Database

The trajectory of both external and domestic debt changed, as the government accelerated its Public Sector Investment Program (PSIP). Extensive road upgrading, agricultural sector rehabilitation and social investment projects accounted for most of the increase in the capital program. The expansion in the PSIP was financed mainly by a 13.4 percent increase in external debt. For the remainder of the review period, the Government of St Vincent and the Grenadines engaged in borrowing (from both external and domestic sources) to improve the country's infrastructure. As such, loans were contracted for projects aimed at industrial development, improving utilities (electricity), air transport, sea port development, road construction and reconstruction. A deliberate policy decision was taken to upgrade both physical and social infrastructure, with the result that total public sector debt as a percentage of GDP rose from 44.7 percent of GDP in 1997 to a peak of 90.5 per cent at the end of 2005.

Figure 21: St Vincent and the Grenadines – Revenue and Expenditure (% of GDP)



Source: ECCB database

The external debt of the central government fell in 2007, on account of forgiveness on the Ottley Hall Shipyard project, a $167.0m private external debt for the construction of the yacht repair facility. The shipyard was operated by a joint venture company in which the government had a 49.0 per cent stake and a private company – the St Vincent Yachting and Shipping Company - owned 51.0 per cent. The government of St Vincent and the Grenadines

had guaranteed the debt, which was financed mainly by foreign commercial banks and insured by the Italian Export Guarantee Agency, SACE.

The government continued to borrow – increasingly from domestic sources – for capital projects. The financial and economic crisis adversely affected the economy, prompting an increase in fiscal expenditures (Figure 22), mainly social programs, to smooth domestic consumption. A substitution from domestic to external sources of debt took place during the crisis period, somewhat reversing the trend since 2005.

5. Conclusion

This chapter has explored the evolution of public sector debt in the ECCU over the past twenty-years, and has sought to provide explanations for the rapid accumulation of debt. The analysis suggests several points for consideration. First, one of the main reasons for the deterioration in fiscal balances and the concomitant increase in debt levels is an increase in primary deficits. Expenditures have increased, partly as a result of the rise in debt service payments, wage and salary increases, and capital expenditure. Pubic investment spending was deemed necessary to fund infrastructural and social projects, allied to economic development strategies. Second, the prevailing international environment exacerbated, or contributed to these underlying trends. Business cycles, terms of trade shocks and changes in the international trading system negatively impacted growth outcomes. Natural disasters – particularly tropical storms and hurricanes – are common occurrences, which can potentially destroy infrastructure and the capital stock. Thirdly, policy responses to the decline in growth and high conditionality official development assistance at concessional rates, led to an increase in low conditionality high interest rate private commercial debt. The difficulty in making adjustment elsewhere in the budget to accommodate debt servicing, and the resort to domestic borrowing may have affected private investment.

Notwithstanding, public investment can make positive contributions to economic growth. For the ECCU, the issue relates to enhancing the quality and efficiency of Public Sector Investment Programmes (PSIP), given the critical role that these programmes can play in

growth and development. Moreover, a requisite focus on Public Financial Management (PFM) and Debt Management will entrench transparency and predictability in debt contraction. Most ECCU economies have implemented these frameworks; a robust and single-minded focus on these issues is likely to result in increased efficiency and productivity, and pay handsome dividends in debt reduction strategies, and by extension, economic growth.