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Does Public Domestic Debt ‘Crowd-Out’ Private Sector Investment? Evidence from the Eastern Caribbean Currency Union



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14 August 2012

Abstract

The paper examines empirically the relationship between disbursed outstanding public domestic debt and private investment focusing on whether domestic debt leads to crowding-out of private investments. The findings of the paper are consistent with the “crowding-in” theory suggesting that there is a positive relationship between disbursed outstanding domestic debt and private investments in the period under review, i.e., public domestic debt in the ECCU does not crowd-out private investment at certain levels. However, accumulating unmanageable levels of debt can have a significantly negative impact on private investments. The results are robust across different estimation methodologies. The paper stresses the importance of maintaining cautious domestic debt ratios and that borrowed funds should as far as possible be used for growth enhancing investment.

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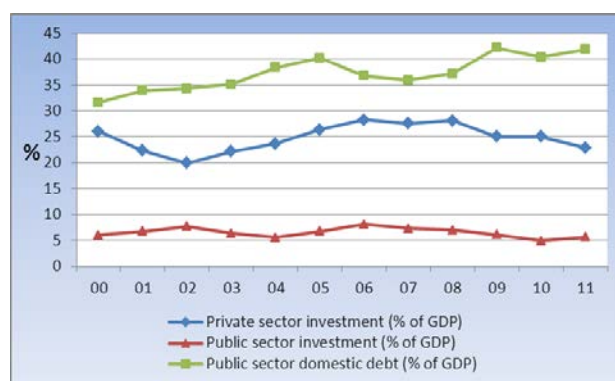
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1.0 Introduction

Investment fuelled by the private sector is recognized as a catalyst for attaining the twin goals of broad based sustainable economic development and poverty alleviation as investment allows for entrepreneurship and employment creation opportunities that increase incomes for the poor and rich alike (Olweny et al. 2012).

The fiscal position of several member countries of the ECCU¹ has deteriorated over the years causing public debt to increase sharply. The persistence of high fiscal deficits and increasing debt service payments are considered as major constraints for productive capital formation. However, for the period 1993 to 2011, the private sector played a significant role in the investment process, with private investment astronomically exceeding public investment (Figure 1). This is not unusual and is consistent with trends elsewhere. Despite the increased flow of private investment, the member countries are however still characterized by low and falling GDP growth rates.

Figure 1: Trends in domestic debt and investment, ECCU (2000-2011)

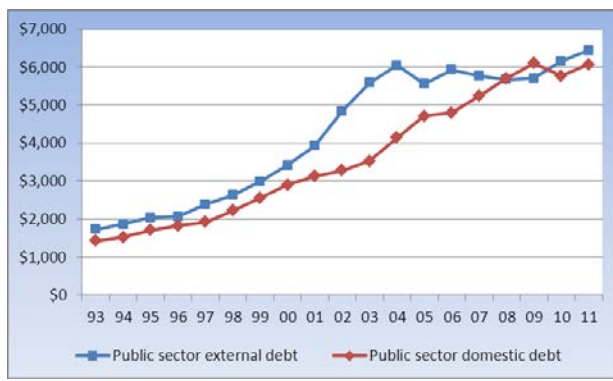


Public debt remains one of the major economic policy issues confronting the ECCU countries. The observed financial resource needs and the consequent debt build up are results of sensitivity to shocks from fluctuations in the external economic environment, frequency of

¹ The ECCU is a monetary Union consisting of six independent countries, Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines, and two British overseas territories Anguilla and Montserrat.

natural disasters, and other factors, all of which contribute to the fiscal challenges that confront the ECCU. Additionally, the recent 2008-2009 global crisis has put significant strains on revenues in the ECCU and, like other developing countries, forces government to resort to debt accumulation to increase resources available for investment and foster growth (Figure 2).

**Figure 2: Trends in public sector debt in EC \$ millions
ECCU (1993-2011)**



Crowding-out, broadly defined, involves the phenomenon of partial loss of capital formation, due to the increase in the interest rates arising from the preemption of real and financial resources by the government through bond financing of fiscal deficit (Chakraborty 2007). Although studies have provided valuable insights into this issue, it still remains highly controversial. What the crowding out of private sector entails is that government would have to cut back to facilitate the private sector. This is an important and unsettled policy issue which motivates this empirical examination. The external debt burden has historically received a lot of attention, however, domestic debt has not received as much attention. There have been claims that the rising public domestic debt crowds out private investment for the ECCU but no empirical examination to prove this claim.

This paper provides an empirical examination on the relationship between public domestic debt and private investment, focusing on whether public domestic debt leads to crowding out of private investments. The paper also provides policy makers with recommendations on the way forward. A cross-country dataset is used for the eight (8) ECCU member countries spanning

nineteen (19) years and the results indicate that the relationship between private investment and public domestic debt is positive. This means that public domestic debt has crowded-out private investments but it also confirms that there is actually a crowding-in effect.

The rest of the paper is organized as follows: Section 2 provides theoretical framework and review of selected literature. Section 3 describes the variables followed by the methodology and model specification presented in Section 4. Section 5 outlines the empirical findings and results. Section 6 concludes the paper and provides policy recommendations.

2.0 Theoretical Framework and Literature Review

The two main views dominating the theory of the effect of public domestic debt on private investment are that public domestic debt tends to displace private investments whereas the other view has it that public domestic debt complements private sector investments.

The literature is mainly focused on the relationship between public investments and private investments rather than domestic debt and private investment.

Very few empirical studies on ECCU debt exist and those that are available provide no analysis of public domestic debt and private sector investments. While these theories may provide some explanation of crowding-out or crowding-in for industrialised countries, it probably does not perform as well for developing countries. These theories assume that private sector investment is based domestically as well as that financial resources are limited, however, private investments in the ECCU are largely financed from external sources and financial resources are not limited.

2.1 Classical Theory on Private Sector Investment

The classical view suggests that government borrowings lead to an accumulation of resources for its own use leaving the private sector with the lesser part (of the domestically available financial resources). This phenomenon is termed as the crowding-out of private investment (Majumder 2007). This view holds that firms compete with government for the limited

quantity of funds and hence, when the government borrows domestically, they use up domestic private savings that is assumed would otherwise have been available for private sector lending. The smaller pool of loanable funds in the market raises the cost of capital for private borrowers, reducing private investment demand and hence capital accumulation and growth (Diamond, 1965).

2.2 Keynesian Theory on Private Sector Investment

The Keynesian view, on the other hand, assumes that if there is unemployment in the economy and interest rate sensitivity is low, the expansionary fiscal policy will lead to little or no rise in the interest rate and will increase output or income. In addition, it assumes that government spending stimulates private investment due to the positive effect of government spending on the expectations of the investors. Therefore, there is crowding-in rather than crowding-out. Keynesians agree with the crowding-out hypothesis only when the economy is operating at the full-employment level.

2.3 Summary of Past Studies on Private Sector Investment

Fayed (2012) applied the vector error correction model (VECM) to estimate the magnitude of the crowding-out effect of government borrowing on private credit in Egypt spanning from 1998 to 2010. The central conclusion of the empirical analysis is that there is a statistically significant negative effect of government borrowing on private credit which indicates that government borrowing does crowd-out private credit in Egypt. Fayed also argued that private investment in developing countries critically depends on the availability of bank credit.

The crowding-out hypothesis is also supported by Greene et al (1991), for 23 developing countries, 1975 to 1985, that finds a negative relationship with private investment and lagged debt service ratio as well as with lagged debt stock.

Also Snyder (2010) employs a VECM to determine the predictive power of shocks to government spending and deficits on investment for the United States of America. The results

suggest that the national debt has little impact on investment and output and government spending appears to create a crowding-in affect.

Were (2001), indicated that current debt flows stimulate private investment in Kenya for the period 1970 – 1995 while past debt flows deter investment.

Mitra (2006) using a structural vector autoregression (VAR) model for India found empirical evidence that short-run crowding-out is supported by the initial depression of private investment, following a one standard deviation structural shock to government investment. Gradually, the impulse response function of private investment rises just above zero reflecting that crowding-out is not present in the medium to long term.

Khan and Gill (2009) for Pakistan, for 34 years (fiscal year of 1971-72 to 2005-06), tested the crowding-out hypothesis using a VECM, for an investment function including three independent variables: public borrowing, gross domestic product and lending rate. The main findings of the study confirmed with statistical significance that there is no crowding-out effects in Pakistan, rather, the crowding-in effect is evident. The study concluded that this can be attributed to factors such as excess liquidity in the banking system, relatively sustainable public debt scenario and significant development expenditure for producing those goods and services which has the potential to discharge positive externalities.

More recently, IMF (2011) declared that the ECCU countries are among the world's most highly indebted and those high debt levels have been a major drag on growth. The IMF argues that the public sector financing model in those countries that rely heavily on financing from the banking system should be changed and that the banking sector regulatory framework should reduce the incentives for banks to favour lending to government over lending to the private sector. However, no empirical work has been done to support this.

The studies outlined above have resulted in different outcomes. The variations in results could be attributed to several factors including the different economic structures and level of

development of the countries, the different time period included in the analysis by researchers or econometric techniques used.

3.0 Data Description

In the ECCU financial resources are not limited and therefore there is no need for the government to compete with the private sector for funds in the domestic system. Also, the private sector acquires their funding largely from external sources. To explore the relationship between public domestic debt and private sector investment in the ECCU, panel data is used for nineteen years (1993 - 2011)² and the model utilizes 6 variables: private investment as a ratio of GDP, public investment as a ratio of GDP, public domestic debt as a ratio of GDP, total deposits as a ratio of GDP, one lagged period of public investment as a ratio of GDP, polynomial variable for debt as a ratio of GDP and interest rates. All data are from the Eastern Caribbean Central Bank Aremos database (Table A.1, appendix).

3.1 Summary Statistics and Stylized Facts

The member countries of the ECCU face many development challenges attributed to its small size, sensitivity to shocks from fluctuations in the external economic environment, frequency of natural disasters, and other factors. The fiscal position has deteriorated over the years (Figure 3) causing public debt to increase with the overall deficit rising from an annual average of 1.8 per cent of GDP during the period 1993 to 2000 to 3.4 per cent of GDP during 2001 to 2011. Domestic debt to GDP increased from 23.1 per cent in 1993 to 41.9 per cent in 2011 recording its highest level of 42.1 per cent in 2009 and in which it exceeded external debt. Average domestic debt to GDP for the period 1993 to 2011 is 27.5 per cent.

² Domestic debt data prior to 1993 for the ECCU member countries were not available.

Figure 3: Overall fiscal balance, ECCU (1993-2011)

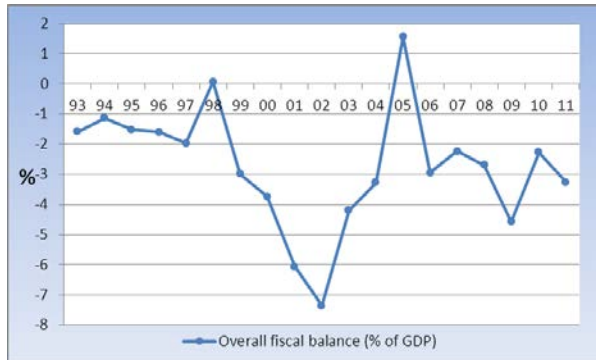
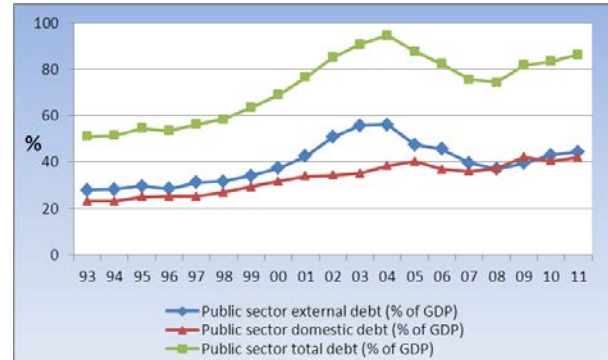
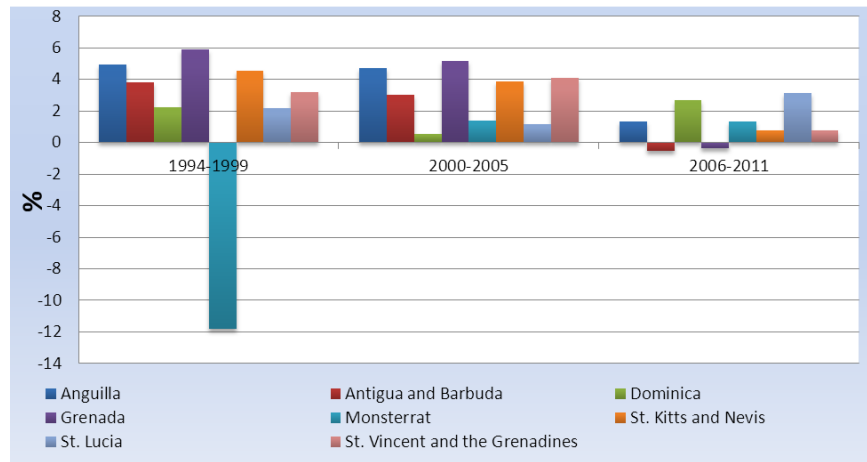


Figure 4: Public sector outstanding debt, ECCU (1993-2011)



On an individual country basis, domestic debt to GDP for the period 1993 to 2011 was highest in St Kitts and Nevis and Antigua and Barbuda, 69 and 46 per cent respectively and lowest in Anguilla and Montserrat, 7.2 and 3.4 per cent respectively. The persistence of high fiscal deficits and increasing debt service payments are considered as major constraints to productive capital formation. However, in spite of these challenges, the region has achieved growth in investment. Private investment averaged 23 per cent of GDP while public investment averaged 8 per cent of GDP for the period 1993 to 2011. The member countries have attracted significant private investment, especially in Antigua and Barbuda and St Kitts and Nevis and it is important to highlight that investments in the region have been associated with moderate, but declining, GDP growth rates (Figure 5). The average real GDP growth rate has declined from 3.17 per cent for the period 1994 to 1999, to 3.06 per cent for the period 2000 to 2005, to 0.89 per cent for the period 2006 to 2011.

Figure 5: Real GDP growth, ECCU (1993-2011)



With regards to interest rates, the weighted average lending rate averaged 10.8 per cent and has been fairly stable for the period (Figure A.1, appendix). Total deposits have been steadily increasing with an average of 104.8 per cent of GDP for the period 1993 to 2011 (Figure A.2, appendix).

3.2 Correlations

The relationship between the variables used in the study is first assessed using spearman’s rank correlation analysis. The correlation matrix provides some insights about the direction of the relationship between the variables used (Table A.2, appendix). The results indicate that private investment as a ratio of GDP has a positive significant correlation with public domestic debt as a ratio of GDP and interest rates as well as a negative significant correlation with public investment as a ratio of GDP. The correlation matrix however does not provide information on the relationship between private investment and deposits as a ratio of GDP as the correlation is insignificant.

4.0 Methodology

4.1 Model Specification

The analysis is conducted with a view to determine whether there is crowding-out of private sector investments within the ECCU region. A panel regression framework is employed and

the model is estimated for Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines. The regression model used in the panel data is different from that attained only from time series or cross sectional data. Combining these two dimensions offer more consistent estimates in the results. Panel data allow for variability of individual countries while still preserving the dynamic adjustment within countries.

In keeping with the literature, the variables used represent some of the conventional factors behind the crowding out hypothesis. The following model is therefore estimated:

$$Ipri_{it} = \beta_0 + \beta_1 Ipub_{it} + \beta_2 Ipub_{it-1} + \beta_3 debt_{it} + \beta_4 debt_{it}^2 + \beta_5 depo_{it} + \beta_6 ir_{it} + \varepsilon_{it} \quad (1)$$

Where $Ipri_{it}$ is private investment as a ratio of GDP and $Ipub_{it}$ is public investment as a ratio of GDP. Private investment was calculated as the residual from subtracting capital expenditure (which is used as a proxy for public investments) from total gross fixed capital formation. The variable $debt_{it}$ denotes outstanding domestic debt incurred by the public sector as a ratio of GDP; $depo_{it}$ represents total deposits as a ratio of GDP and is used to quantify the availability of funds that the private sector can access for investment. $Ipub_{it-1}$ and $debt_{it}^2$ represents one lagged period of public investment and a polynomial variable for domestic debt respectively. Finally, ir_{it} is used to capture variation in the weighted average lending rate charged by banks on loans and ε_{it} is usual white noise error term which includes the effects of omitted factors. The subscript (it) refers to country and time period respectively.

The domestic debt variable is included in the model as the main variable of interest, since the coefficient on this variable will indicate whether there is crowding-out. If the coefficient is significant and negative then this will support the crowding-out hypothesis. However if there is no crowding-out then the model should have a significant positive coefficient for the public domestic debt variable.

The quadratic specification of debt as a ratio of GDP, $debt_{it}^2$, allows one to test the assumption that at low levels domestic debt has a positive influence on private investment, however, after a certain point, the stress of excessive domestic debt begins to take a toll on private investment and therefore having a harmful impact on growth. If this is the case then the coefficient on the domestic debt polynomial variable should be negative. This suggests that there exists a maximum level of domestic debt beyond which accumulated public domestic debt begins to be a drag on private investment.

Public investment may facilitate and stimulate private investment through the provision of infrastructural support and therefore crowd-in private investment. On the other hand the public sector may produce investment goods that directly compete with the private sector. It appears that economic theory provides no a priori argument for or against the effect of public investment on private investment. The model also assumes that public investments in previous years act as an important factor in determining private investments in subsequent years.

One might think of the interest rate and total deposits as important variables for a precise examination of the contribution of domestic debt to private investments as these variables account for the cost of capital and availability of loanable funds respectively. Economic theory predicts that there will be a negative relationship between private investment and the interest rates as well as a positive relationship between total deposits and private investment.

In this model the possibility of endogeneity bias exists due to simultaneity between the explanatory variables and dependent variable. An examination of the cross correlations of the variables shows that simultaneity bias is weak as evidenced by the low correlation statistics (Table A.2, appendix).

4.2 Estimation Techniques

The Granger-causality test is used as a preliminary estimation technique. Three main estimation methods are considered to ensure robustness of the results across different

estimation techniques: pooled ordinary least squares, fixed effects and random effects panel estimation.

4.2.1 Granger - Causality

A preliminary method that is chosen to assess whether past changes in public domestic debt affect the contemporaneous level of private investments is a Granger-causality test, i.e., the causal link between private investment and public domestic debt is considered. A lag length of 4 was selected.

By estimating an equation in which private investment as a ratio of GDP is regressed on lagged values of itself and lagged values of public domestic debt as a ratio of GDP, the null hypothesis that public domestic debt does not granger-cause private investment can be evaluated. If one or more of the lagged values of public domestic debt is significant, we are able to reject the null hypothesis that public domestic debt does not granger cause private investment. In more straightforward terms, it is concluded that public domestic debt causes private investment. Though imperfect, it is, nevertheless a useful preliminary step for evaluating the causal relationship between the two variables.

4.2.2 Pooled Ordinary Least Squares

The first main estimation procedure consists of using ordinary least squares (OLS) with the pooled data. The drawback of the pooled OLS estimator is that it is likely to generate highly biased coefficients by ignoring both country specific effects and possible endogeneity of the independent variables. The estimation procedure is adopted with the selection of cross-section seemingly unrelated regression. Also residual diagnostics are performed to test the robustness of the standard errors.

4.2.3 Fixed Effects and Random Effects

The second and third estimation method consists of applying fixed effects and random effects estimations techniques to model (1). These two techniques can handle systematic tendency of individual specific components to be higher for some units than for others (individual effects) and possible higher in some time periods than others (time effects). Another advantage of

these two techniques is that they adjust for heteroskedasticity. The random effects model assumes that the individual specific effects are uncorrelated with the independent variables. The fixed effects model assumes on the other hand that the individual specific effect is correlated with the independent variables. If the random effects assumption holds, the random effects model is more efficient than the fixed effects model. However, if this assumption does not hold, the random effects model is not consistent.

Hausman statistical test is used for discriminating between the fixed effects and random effects estimators. The test is based on comparing the difference between the two estimators of the coefficient vectors, where the random effects estimator is efficient and consistent under the null hypothesis and inconsistent under the alternative hypothesis. The fixed effects estimator is consistent under both the null and the alternative hypothesis. If the null is true then the difference between the estimators should be close to zero.

5.0 Presentation of Results

5.1 Granger-Causality Results

An assessment of causation was done using the pairwise Granger causality test (Table A.3). The null hypothesis that public domestic debt does not granger-cause private sector investment cannot be rejected which means that there is not enough evidence from the granger-causality test to prove that public domestic debt causes private sector investment. However, the null hypothesis that private sector investment does not granger cause public domestic debt is rejected at the 1 per cent level of significance.

5.2 Estimation Results

Equation (1) was estimated for the eight (8) ECCU member countries, however the impact of interest rates and deposits were very small and the variables were insignificant in the random and fixed effects model.³ Therefore, the model was re-estimated without these two variables

³ The coefficients of interest rate and deposits as a ratio of GDP in the pooled OLS model were 0.011 and 0.111 respectively.

and the results are reported in Table (1). Even after removing the weighted average interest rate and total deposits as a ratio of GDP from the model, the coefficient estimates for the other variables were barely altered and the r-squared remained the same.

The pooled OLS, fixed effects and random effects estimation results for the ECCU show that private sector investment is explained by public sector investment and public domestic debt.

Table 1: Estimation Results (Dependent variable: *Ipri*)

Variable	Pooled OLS	Fixed Effects	Random Effects
<i>constant</i>	0.1621 *** (0.0071)	0.1452 *** (0.0118)	0.1304 *** (0.0470)
<i>Ipub</i>	-0.6650 *** (0.0767)	-0.6628 *** (0.0790)	-0.6587 ** (0.2827)
<i>Ipub(-1)</i>	0.3744 *** (0.0820)	0.3166 *** (0.0841)	0.3665 (0.3260)
<i>debt</i>	0.4832 *** (0.0377)	0.6536 *** (0.0487)	0.7073 *** (0.1583)
<i>debt</i> ²	-0.3376 *** (0.0388)	-0.5486 *** (0.0391)	-0.5815 *** (0.0468)
r-squared	0.73	0.86	0.21
adjusted r-squared	0.72	0.85	
NO. of observations	144	144	144

*, **, *** - Statistically significant at the 10, 5 and 1 per cent level respectively.
Standard errors in parentheses

The results are somewhat similar across all three models; except that for the random effects model, the coefficient for lagged public sector investment as a ratio of GDP is now insignificant.

Pooled OLS, fixed and random effects estimation of the model suggested that public investment as a ratio of GDP had a negative contemporaneous effect on private investment as a ratio of GDP. However, the lagged effect of public investment as a ratio of GDP had a positive effect. This result may reflect the fact that during current periods, government

expenditure because of competition for human and financial resources initially crowds out private investment. Over time, however, public investment complements private investment.

With regards to the main variable of interest, the results indicated that public domestic debt had a positive and significant effect on private sector investment in all three estimation models and hence found evidence that public domestic debt has not crowded-out private investments in the ECCU and the crowding-in effect is evident. The coefficient of domestic debt term gives acceptance to the view that accumulating manageable levels of domestic debt can have a positive influence on private sector investments and suggests that domestic debt actually facilitates crowding-in of private investments.

The linear relationship is probably not adequate enough to identify the overall impact of domestic debt on private investment and the relationship could be non-linear. Hence, the model also incorporated the non-linear relationship. A Wald test of the joint significance of the polynomial term for each estimation technique rejects the null hypothesis that the variable, $debt_{it}^2$ has a zero coefficient at the 1 per cent significant level. The negative sign of the debt squared variable across all models suggests that accumulating unmanageable levels of domestic debt can have a significantly negative impact on private sector investment. This supports the concept that there may be an optimal size for public domestic debt in the ECCU.

The results of the Hausman test conclude that the fixed effect model is more appropriate and reliable than the random effects model. The likelihood ratio to test for redundant fixed effects is used to test for the presence of fixed effects. The results show that fixed effects are statistically significant.⁴ The F-statistic confirms the statistical significance of the model and further signifies that the model is statistically different from zero and thus will be useful for economic analysis and decision making. As a result, the analysis will now focus on the results of the fixed effects specification.

⁴ Null hypothesis is judged at the one per cent significance level.

The paper also addresses the issue of threshold effects between public domestic debt and private sector investment. Specifically, at what levels of domestic debt does the impact on private investments switch from positive to negative? Following the methodology of Boamah and Moore (2009), the marginal impact of public domestic debt on private investments is estimated by partially differentiating equation (1) to arrive at the following expression:

$$\varepsilon_p = \beta_3 + 2\beta_4 \text{debt} \quad (2)$$

where ε_p represents the partial derivative of the private investment equation with respect to public domestic debt. Using the sample mean for public domestic debt as a ratio of GDP for the period, one can derive the point where a 1 per cent increase in domestic debt begins to have a negative impact on private investment. The coefficients in the fixed effects model were relied on. The value at which domestic debt begins to inhibit private investment is estimated to be 30 per cent of GDP for the ECCU based on the specification of the model.

5.3 Robustness

To validate the main findings of the paper, a robustness exercise is undertaken. The change in total stay-over arrivals is included in the model to capture real sector development (Table A.4, Appendix). The coefficients of the variables have been altered slightly and reassuringly, the significance of no crowding-out remains unchanged throughout all the specifications.

The diagnostic tests for normality revealed that the model is an adequate specification of the data. Using the levin, lin and chu, phillips-perron and augmented dickey fuller unit root stationary tests, it is observed that the residuals are stationary at the 1 per cent level of significance.

6.0 Conclusion and Recommendations

The main purpose of this investigation was to provide some empirical evidence to policy makers regarding whether increasing public domestic debt crowds-out private sector investments in the ECCU.

The study confirmed with statistical significance that there is no evidence that public domestic debt crowded-out private sector investment in the ECCU during the period 1993 to 2011, rather, the crowding-in effect is evident. The presence of crowding-in instead of the crowding-out effect can be attributed to such factors as excess liquidity in the system and private investments being largely foreign financed. However, the results suggest that there is a turning point in the relationship between public domestic debt and private investment, and supports the concept that optimal public domestic debt may exist. After a certain threshold, persistent high levels of domestic debt can have negative effects on private investment and this threshold is estimated at 30 per cent of GDP, which is an average for the ECCU area. A benchmark is therefore provided which the ECCU should try to maintain (see Table A.5 for individual countries public domestic debt to GDP ratios). There are no internationally agreed benchmarks for assessing the sustainability of domestic debt, still, the estimations here provide a starting point for examining this even further.

The results also produced other conclusions. The positive effect of public investments lagged one period alludes to the positive role which careful government policy could have on private investment behavior. As a result, in pursuing stabilization policies, it would be useful if measures are implemented to increase the efficiency and effectiveness of government activities and effort is made that borrowed funds, as far as possible, be used for growth enhancing investment. The initial negative impact on private investment reveals the necessity for careful actions and timing of projects to limit the initial adverse effect of public investment on private investment.

A limitation of the paper is that the dependent variable, private investment, is calculated as a residual and may capture other effects. Therefore, it would be useful if the relevant authorities upgrade data collection on private investment so that appropriate and accurate policy prescriptions can be made. Another limitation observed is the duration of the study period which was restricted to 1993 to 2011 due to the non-availability of data for a longer period. This affected the specification of the model, limiting it to the variables used.

Other factors such as private sector wealth are likely to be major contributors to private investments, however, due to the non-availability of data, this variable is omitted from the analysis. Despite these limitations the results of the study are quite instructive.

The paper could be extended in several ways. Private investment could be broken down and the distinction could be made between domestic and foreign investment to identify whether the domestic debt crowds out each type of investment to the ECCU.

Another possible extension is to repeat the test and examine the hypothesis using a more comprehensive and rich model that contains more explanatory variables. Further work should also be done to determine the threshold level for domestic debt as a ratio of GDP.

Like many developing countries, one of the main macroeconomic objectives in the ECCU is to have high sustainable economic growth. However, to achieve this it is imperative that policy makers fully appreciate the repercussions of the rising overall public debt in general and domestic debt in particular.

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Appendices

Table A.1: Summary and descriptive statistics of variables (1993-2011)

Variable	Description	Mean	Maximum	Minimum	Standard deviation	Observations
<i>Ipri</i>	Private sector investment as a ratio of GDP.	0.229	0.807	0.008	0.127	152
<i>Ipub</i>	Public sector investment as a ratio of GDP.	0.075	0.355	0.004	0.057	152
<i>debt</i>	Total outstanding public domestic debt as a ratio of GDP.	0.275	1.066	0.001	0.225	152
<i>depo</i>	Total deposits as a ratio of GDP.	1.048	1.874	0.571	0.323	152
<i>ir</i>	Weighted average lending rate charged by banks on loans to customers.	10.81	15.291	8.449	1.262	152

Table A.2: Correlation matrix

	<i>Ipri</i>	<i>Ipub</i>	<i>debt</i>	<i>depo</i>	<i>ir</i>
<i>Ipri</i>	1.000				
<i>Ipub</i>	-0.403 ***	1.000			
<i>debt</i>	0.390 ***	-0.296 ***	1.000		
<i>depo</i>	-0.057	0.093 ***	-0.177 **	1.000	
<i>ir</i>	0.144	-0.117	-0.198 **	-0.404 ***	1.000

*, **, *** - Statistically significant at the 10, 5 and 1 percent level respectively.

Table A.3: Granger-causality test results

	Null hypothesis	p-value of the F-test	Conclusion at the 5% level
[1]	Public domestic debt does not granger cause private sector investment	0.3243	<i>Do not reject H₀</i> . There is not enough evidence to reject the null hypothesis.
[2]	Private sector investment does not granger cause public domestic debt	0.0011	<i>Reject H₀</i> . That is, private sector investment granger-causes public domestic debt.

Table A.4: Robustness estimation results (including change in total stay-over arrivals)

Variable	Pooled OLS	Fixed Effects	Random Effects
<i>constant</i>	0.1638 *** (0.0069)	0.1457 *** (0.0118)	0.1320 ** (0.0549)
<i>Ipub</i>	-0.7122 *** (0.0771)	-0.6668 *** (0.0787)	-0.6570 ** (0.2602)
<i>Ipub(-1)</i>	0.4210 *** (0.0814)	0.3289 *** (0.0839)	0.3679 (0.2501)
<i>debt</i>	0.4764 *** (0.0360)	0.6492 *** (0.0487)	0.6980 *** (0.1867)
<i>debt²</i>	-0.3313 *** (0.0380)	-0.5450 *** (0.0391)	-0.5738 *** (0.1540)
Δ <i>arrivals</i>	6.05E-07 *** (1.89E-07)	-2.21E-07 (1.66E-07)	1.20E-07 (6.33E-07)
r-squared	0.75	0.86	0.21
adjusted r-squared	0.74	0.85	
NO. of observations	144	144	144

*, **, *** - Statistically significant at the 10, 5 and 1 per cent level respectively. Standard errors in parentheses

Table A.5: Average public domestic debt for individual countries (1993-2011)

Country	Average public domestic debt (% of GDP) 1993-2011
Anguilla	7.2
Antigua and Barbuda	46
Dominica	31
Grenada	24
Montserrat	3.4
St. Kitts and Nevis	69
Saint Lucia	21
St. Vincent and the Grenadines	19

Figure A.1: Weighted average lending rate for the ECCU (1993 – 2011)

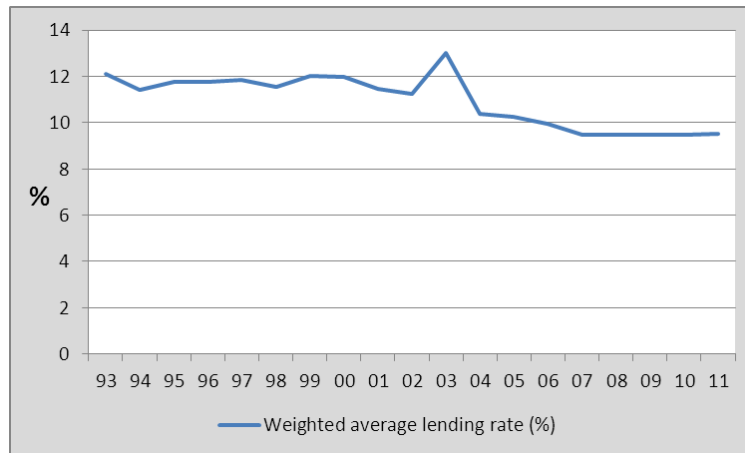
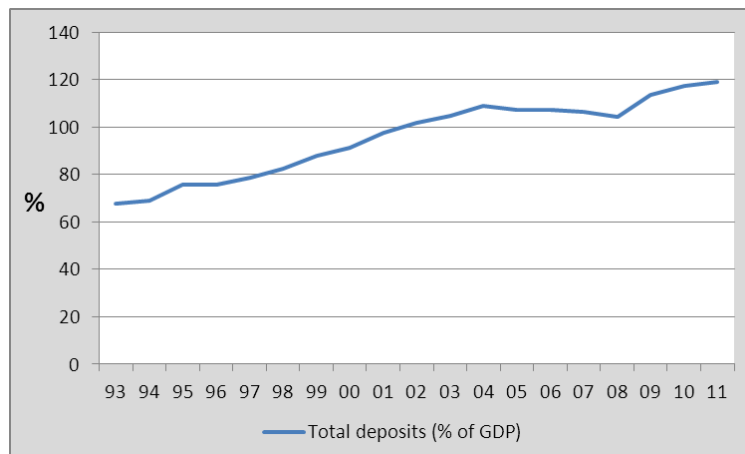


Figure A.2: Total deposits (% of GDP) for the ECCU (1993 – 2011)



Stimulating Growth: Leveraging the EPA to Enhance Growth of the Knowledge Based Creative Industries in the ECCU



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23 August 2012

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Executive Summary

In light of declining growth rates, persistent trade deficits and the removal of preferential trade treatment, new growth strategies are needed for the ECCU countries. The service sector, in particular the knowledge based creative sub-sector within which they have a relative comparative advantage, could prove to be a viable option for renewing the growth thrust in the region. The EPA with its increased market access, a mandate to develop CARIFORUM's capability to compete more competitively and technical assistance for the development and implementation of cultural industries and policies, provides the strategic framework through which these new growth strategies can be executed.

While the ECCU members are cognisant of the opportunities presented by the EPA for their creative sector, most of them have yet to fully sensitise the public on the opportunities available or establish facilitating infrastructure. Some of the recommendations to leverage the EPA as a tool for growth are to take advantage of coproduction opportunities, use technical assistance to enjoy technological transfer and establish a regional accreditation body.

1. Context and Importance of Problem

1.1 Introduction

In this era of globalisation, the World Trade Organisation (WTO) is seeking to establish a global trading space with little or no protectionism. This has contributed to the Caribbean's gravitation away from agreements allowing non-reciprocity and discrimination. More specifically, the WTO's mandate has been instrumental in the move to the Economic Partnership Agreement (EPA), emerging from the Cotonou agreement, signed between the CARIFORUM⁶ members and the EU.

⁶ Members of CARIFORUM are: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, the Dominican Republic, Grenada, Guyana, Jamaica, Haiti, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago.

This EPA assumes much importance for the ECCU in light of declining growth rates, persistent trade deficits and the removal of preferential trade treatment. Growth rates in the ECCU have been declining since the 1990s. In fact, it has fallen from an average of 6.0 per cent in the 1980s to just above an average of 2.0 per cent from 2000 to 2008. In addition, there has been negative growth in the member countries over the three year period 2009-2011, reflecting mainly the impact of the global financial crisis of 2008 (IMF, 2011). As small open economies, the ECCU member countries tend to be inherently prone to relatively large and persistent trade deficits. They have recorded on an average a trade deficit to GDP ratio of 9.6 per cent for the period 1990 to 1999 and 19.0 per cent for 2000 to 2001. These deficits may be associated with reliance on a few goods and services for export earnings while at the same time, being heavily dependent on imported capital and intermediate goods for domestic production, as well as final consumption goods. The narrow and stagnating export base, has served to stunt economic growth and development. Removal of preferential treatment is evidenced by the revision of the Lome convention which had allowed the African, Caribbean and Pacific (ACP) countries free access for exports to the 15 nation EU markets. Other non-reciprocal arrangements included the commodity export compensation protocol where the countries were guaranteed compensation for reduction in commodity prices and financial aid.

The removal of these benefits combined with a stagnating export sector calls for new strategies in order to develop export capacities and stimulate economic growth in the ECCU. The feasibility of the services sector as a vehicle for facilitating the execution of these strategies is evidenced by the gradual absolution of preferential trade treatment for traditional exports. In addition, the region is said to have a relative competitive advantage in the provision of these knowledge based creative services.

The EPA is therefore a viable tool that could be used by the ECCU member countries to generate new sources of export growth, create new businesses and improve the standard of living of their citizenry. Furthermore, exploiting the knowledge based creative industry should allow the countries to move up the value added ladder of export.

1.2 Overview of the EPA and the knowledge based creative industries in the ECCU

The EPA was signed on the 15 October 2008 between the CARIFORUM and the EU. It is a regional trade agreement which establishes a reciprocal, WTO-compatible free trade area for goods and services (Thorburn et al. 2010). One of the primary objective of the EPA is to open and enhance trade between the EU and CARIFORUM by removing trade barriers amongst themselves and improve the latter's capacity to trade competitively. To aid in its implementation, a \$165.0m fund has been established for the period 2008 to 2013. The fund is also expected to be used to build business development programmes and to assist in the reform of the taxation system of the CARIFORUM countries.

The EPA agreement provides for four modes of service supply. *Mode 1*, the cross-border supply of services, is defined as the supply of services from one territory of the EPA to another. The supply of service in a territory to a service consumer from another territory is called cross-border consumption, *mode 2*. Commercial presence represents *mode 3* and the temporary presence of natural persons for business purpose, *mode 4*. Granting market access for Caribbean professionals in 29 sectors as well as 11 other sectors for the temporary entry of independent professionals or the self-employed, mode 4 is the most liberalised⁷.

One of the prominent creative services in the ECCU is cultural services. These services represent a sub-sector of the knowledge based creative industry and are intangibles representing people's way of life. Some of the activities classified as cultural services in the EPA agreement are publications, audio-visuals and performing arts. The Cotonou agreement, the precursor to the EPA, treated culture in the traditional sense which is simply as cooperation between nations. There was no consideration for the market access of cultural products and services. This was remedied in the EPA which addresses cultural industries, and specifically the entertainment sector. There are two mechanisms through which this is facilitated:

⁷ Source: Review of CARIFORUM - EU EPA in development cooperation and WTO compatibility, ECLAC 2008

- (i) Market access commitments by 26 European states for entertainment services from CARIFORUM states that are governed by the rules of the Services and Investment chapter and the general provisions of the EPA; and

- (ii) A special Protocol on Cultural Cooperation. The protocol was established to guide the cooperation for the exchange of cultural goods and services and improve the conditions governing the exchange. It is also intended to “provide ample room for collaboration to allow access for Caribbean audio-visual material through special mechanisms...” according to the Caribbean Regional Negotiating Machinery (CRNM). The mechanisms allows co-produced audio visual products and services between the EU and CARIFORUM into the EU, collaboration between cultural practitioners to allow training and technical assistance via measures like the transfer of knowledge, expertise and technological know-how.

Historically, the EU has not permitted market access commitments in the audio visual sector and the EPA is no different. What the EPA has granted, is a legal right to market access involving commercial presence in the entertainment sector, except for the audio-visual, (Leonard 2008). In addition to allowing Caribbean firms to invest in entertainment activities in Europe, the European Union (EU) and its Member States granted legally binding and significant market access for the supply of entertainment services through the temporary entry of natural persons for up to six months.

Creative industries comprise the creation, production and distribution of goods and services whose primary inputs are intellectual property and creativity, UNCTAD (2010). The structural characteristics of creative industries are described by a number of models which include the UK Department of Culture Media and Sports (UK DCMS), Symbolic Texts, Concentric Circles and the WIPO copyright models. All of these models intimate that the creative industry involves the generation and exploitation of intellectual property.

The UK DCMS defined the creative industries as those whose activities originate from individual creativity, talent and skill and have the potential for job creation via the exploitation of intellectual property. The model emphasised Creative Industries' move from the fringe to being an important facet of economic activity (DCMS 1997). **The Symbolic Texts** model focuses on cultural activities which it deems to be the authority for social and political discourse. Cultural industries are defined as those involving production and circulation of symbolic texts. Particular attention is paid to the processes by which culture is formed and it identifies Core, Peripheral and Borderline Cultural Industries. **The Concentric Circles** model attributes the origin of creative ideas to core creative arts. The ideas are said to diffuse outwards in "concentric circles", with the proportion of cultural to creative content progressively falling. The industries included in this model are core creative arts like music and literature, other core industries like film, wider cultural industries such as publishing and Related Industries such as advertising. **The WIPO Copyright** model focuses on intellectual property as the measure of creativity in activities and it distinguishes between industries producing intellectual property and those delivering goods and services to consumers. Core, interdependent and partial copyright industries are included in the model.

The last 10 years of evolution in creative industries have indicated that economic and cultural developments are not mutually exclusive. In fact, together they can constitute a larger part of sustainable development. The creative sector has been expanding because of technological change, the rise of the service economy and expanding international trade, among other things. An 8.7 per cent annual average growth rate was enjoyed by the creative industry over the period 2000 to 2005, in the global economy. This emerging industry would utilise the rich cultural resources in the ECCU countries, allowing them to sell their unique stories to the world, create employment and facilitate economic growth. Simultaneously, the industry is able to promote social inclusion, cultural diversity and human development (UNCTAD, 2010). Another significant element of the creative industries for the ECCU is its potential for sustainable development. The industry is able to preserve local culture and is deemed environmentally friendly since its primary input is services.

The viability of the creative sector has been proven in the wake of the current global crisis according to UNCTAD's (2010) report on creative industries. It notes that there was a 14.4 per cent annual growth in the world trade of creative goods for the period 2002 to 2008. Over the same period, creative services grew by 17.1 per cent, which exceeded the growth of total services export over the same period (13.5 per cent). It is noteworthy that the creative industry was one of the few sectors that maintained growth despite the crisis. This fact is especially important for the small economies of the ECCU which are vulnerable to exogenous shocks and could benefit substantially from diversified economies as well as more sources with which to stimulate economic growth.

The cultural sector of the ECCU can be subdivided into two popular sub-sectors of music and festivals. The Caribbean festivals have been able to enhance the tourism sector by boosting airlifts and improving hotel occupancy levels. It also attracts more "local-culture knowledgeable" tourists who spend more on local products, are good word of mouth spokespersons and stay longer as well as help to develop the export capabilities of the entertainment sector. The Caribbean enjoys a competitive capability in musical production which is reflected in the expanding global demand for reggae, meringue, salsa, calypso, soca and dancehall music. The Caribbean's music industry is deemed underdeveloped but the available data shows that the industry does make a significant economic contribution via the exportation of merchandise and services and visitor expenditure. For instance, the industry accounts for over US\$20.0m in the Eastern Caribbean with the St Lucian Jazz Festival contributing US\$14.0m in visitor expenditure while the Dominica Creole Music Festival and the St Kitts Music Festival add to destination appeal with their strong media value (Nurse, 2001).

2. Implications of the EPA for creative sector in the ECCU

The ECCU economies were primarily agrarian pre 1990s and thereafter, tourism based with a weak agricultural sector. In the context of increased global competition and the changes in contemporary trade observed by Krugman (1987), the ECCU must utilise the opportunities afforded by the EPA to enhance their revenue earning capacity, reduce their trade deficits and

produce income-elastic exports. The changes observed by Krugman manifested themselves in contemporary trade reflecting arbitrary or temporary advantage such as those resulting from economies of scale or technological advancement, in contrast to traditional trade driven by comparative advantage in factor endowments.

2.1 Benefits of the EPA

The EPA infers a number of benefits on the creative sector which includes

- i. Creative goods and services now enjoy an unprecedented degree of market access. The most significant liberalisation is in mode 4 of supply which is the temporary movement of natural persons. Under mode 4, the EPA provides quota free access for temporary entry up to 6 months in a calendar year by contractual service suppliers and independent professionals. As noted by Nurse (2001), this arrangement offers some degree of preferential treatment because only a few EU countries have historically made commitments for the temporary movement of persons in entertainment services.
- ii. As set out in the protocol on cultural cooperation, technical assistance will be provided to the CARIFORUM countries to aid the development of their cultural industries and policies as well as to promote the production and exchange of cultural goods and services. This will facilitate the transfer of technological know-how which will enhance the competitiveness of the sector as well as have spill-over developmental benefits for the economies.
- iii. The UK comprises a large Caribbean diaspora which remains relatively untapped by Caribbean services providers. This can provide a viable and sustainable market for the creative service providers.

2.2 Challenges presented by the EPA

Some of the challenges of the EPA for the creative sector are:

- i. The EU is comprised of countries with much larger economies than those in the ECCU. Therefore, if the EU were to take advantage of the increased access to the

ECCU's markets, the ECCU creative markets may become inundated with entrants who force existing producers out of business.

- ii. A lack of adequate research and development may cause the ECCU's businesses to be unable to effectively serve the EU markets, which has different cultural systems and business environment than that which is present in the ECCU.
- iii. Many of the creative service providers in the ECCU face a vast technological gap relative to the European providers, face diseconomies of scale and lack the venture capital to invest in their operations.
- iv. The lack of international accreditation can serve to make the EU creative providers relatively more competitive and dominate the markets of the ECCU's creative service providers.

As proposed by the models discussing the structural characteristics of the creative sector, the EPA presents a number of opportunities. As identified by the UK DCMS model, the EPA presents the opportunity for job creation via its increased market access in the creative sector. One of the process through which cultural changes are manifested for the creative sector, highlighted by the symbolic text model, may be via technological transfer from the EU which will boost the infrastructural capacity of the sector. The text of the EPA's protocol on cultural cooperation recognises the economic and social value of creative activities, much as the UK DCMS model does. This presents the possibility that infrastructural development will be undertaken in the sector, with the aid of development banks and funds of the EPA. This will contribute to the ECCU's ability to develop the sector as a future sustainable revenue source. It, however, also presents the relevant authority with the challenge of putting the necessary mechanisms in place so that they can have a legal right to the mechanisms to be used for the technological transfer (such as the CART Fund and technical training). The WIPO copyright model emphasises the need for the protection of intellectual property, something which is not regularly practiced in the ECCU. For instance, the Caribbean region is said to have a piracy

rate in their music industry between 50 and 80 per cent.⁸ Since this can be a disincentive to the creative service providers, the authorities can utilise the EPA's provision of best practices in intellectual property protection to overcome this challenge.

3. Critique of the OECS's Current Use of EPA Arrangements to Stimulate Their Creative Sector

The ECCU countries are cognisant that the creative industry has a significant economic earning capacity and represents a viable tool for adding to the competitive arsenal of their economies and firms. However, although the EPA came into effect in 2008 most of the countries are still in the process of trying to understand the arrangement, sensitizing the public on its provisions and establishing formal structures like EPA implementation units as well as collaborative organisations to facilitate the operationalization of the relevant goals.

Two observations can be made from this. The first is that given the current socio-economic challenges such as high debt levels and limited fiscal space, the countries are mainly focused on the short to medium term stabilisation of their economies and so have been lax in capitalising on this viable industry. The second is that given the global financial and economic crisis and other factors which have delayed the leveraging of the EPA, one is unable to assess whether this has been done efficiently or not. Whenever the ECCU countries start this leveraging of the EPA, they need to be strategic in their exploration of the creative sector because, as noted by the CRNM, it is capable of compensating firms in the traditional sectors for their export revenue lost from changes in the global economy.

Slow implementation of the EPA aside, there are a number of factors which will deprive the ECCU of the opportunity to adequately leverage the EPA. These factors include the absence of operational ecosystems such as accreditation bodies and functional Coalition of Service Industry (CSI) Units, failure to attain global quality standards for creative services and inadequate productive capacity in the sector. Additionally, the industry's stakeholders tend to

⁸ Wayne Sinclair, 2007

operate individualistically and along fragmented lines instead of in unified clusters. This negates their ability to develop an institutional framework which assimilates demand in the creative sector with the requirements of industrial, trade and intellectual property policy.

In the absence of the functional CSI, the creative industry may not, for instance, be attributed its due share of recognition in the national policies of the ECCU member country. As such, the financing and legislative infrastructure it needs to protect intellectual property may be lacking. With unchecked piracy, what incentives do the cultural practitioners have to develop their businesses? While this piracy in local markets may encourage the providers to focus on the foreign markets, like that of the more accessible EU, it may also cause them to abandon the market altogether. This will slow the pace of development in the creative industry. Granted that the EPA provides greater market access, this by no means signifies that the local creative services will be readily accepted in the EU market. The “cultural divide” between the EU and the ECCU may very well prove to be a barrier to establishing a sustainable market base in the EU. For instance, Jamaica’s reggae music is widely accepted in international markets but this does not guarantee that calypso music, chronicling the social issues in the Caribbean, will enjoy the same success. It may also be the case that inadequate quality standard causes the creative service providers to be unable to appeal to the international consumers. The inherent small nature of the ECCU markets may serve to limit their individual capacity to deliver to large markets and may be compounded by inability to access economies of scale, undercapitalisation and a digital divide between the ECCU and the EU. In the case of the digital divide, the developed nations in the EU have had companies being set up to make their business out of online sales for music, while the ECCU merely gives way to online piracy.

The “implementation problem” explained by Thorburn et al., (2012) whereby there is an absence of necessary mechanisms; a large risk averse and fragmented private sector unable to capitalise on opportunities; may be able to explain why the ECCU governments have failed to capitalise on the opportunities offered by the EPA to enhance their economic growth and development.

3.1 Status of The EPA's Usage as a Tool

The ECCU countries are all at various stages in their use of the EPA as a tool in their creative sector. Anguilla and Montserrat have not signed on to the EPA.

In Antigua and Barbuda, the EPA unit is in the preparatory stage of capitalising on available opportunities. They have started a ratification of the UNESCO convention intended for the protection and promotion of the diversity of cultural expression as well as to access technical and financial assistance. They have also started the development of a cultural policy and action plan, preliminary steps to gather information for a registration system of cultural practitioners, to seek assistance and collaboration with OECS countries to embark on an exploratory trade mission to the French Caribbean Outermost Region.

In Dominica the EPA unit has been in consultation with the private sector about their concerns with the EPA. A coalition of service industries has been established and the development of cultural industries is expected to form part of the implementation of the national export strategy. Efforts have also been made to sensitise the public on EPA opportunities available and to make services “export ready”.

In Grenada the EPA unit has already started sensitizing the public on the opportunities available and efforts are being made to capitalise on said opportunities. For instance, the terms of reference for using the CART Fund, which is financed by the UK to assist CARIFORUM countries in boosting growth and reducing poverty through trade and regional integration, was recently drafted. Grenada has also established a coalition of service industry unit which is now in the process of scrutinizing how the EPA can be used to benefit the creative industries. The authorities noted that they are currently in the process of developing infrastructure for the creative industry such as formally defining the sector, soliciting support from the local EPA unit and CARICOM, and developing industry associations where none are available. A recent meeting with Grenada and CARICOM officials is likely to inform Grenada's “road map ahead” for their creative sector. There are, however, some challenges to capitalizing on the EPA opportunities in Grenada for the creative sector. Firstly, there are

no accreditation or certification bodies in place to “validate” entertainers so that they will be accepted in the EU market. Secondly, when information about opportunities for cultural providers is disseminated from the EU it is usually at a period close to the deadline and as such does not give the producers ample time to take advantage of the opportunity.

In St Kitts and Nevis the EPA unit has not been officially established but the Ministry of International Trade, Industry and Commerce Consumer Affairs has already started “ground works” aimed at sensitizing the public on the opportunities available via the EPA for the creative sector. The groundwork of the Ministry has revealed that the sector is not well structured, there are accreditation issues and there tends to be a gap between global and local standards in the creative services providers. The plans in place to capitalise on the EPA for the creative sector include getting the “grandfathering clause” into being and to access the training available from the EU for their cultural practitioners. The grandfathering clause is a system where individuals who, through experience, have acquired skills equivalent to that of an accreditation program are accepted as accredited. The Ministry also liaises with organisations like the National Entrepreneurial Development Unit which is tasked with the development of the service industries and moulding its revenue earning capacity.

St Lucia’s EPA implementation unit has not yet been established so there are no plans in place yet for capitalizing on its opportunities for the creative sector. According to Dr Thomas Samuel the creative sector has been identified as one with potential to be stimulated from the EPA but there is as yet no empirical evidence to support this.

The EPA unit in St Vincent and the Grenadines was established in October 2011 and have commenced the implementation of the regulations. They are in the process of sensitising the public, particularly the entertainers, of the opportunities available to them via the EPA for creative activities. This is because there are plans afoot to focus heavily on stimulating the creative sector by taking advantage of the EPA opportunities. The Head of the Unit, Ocola Patrick, observed that entertainers have been going to the EU but not via the EPA arrangements, because they are unaware of the opportunities which it presents to them.

4. Recommendations for Capitalising on the EPA to Facilitate Growth in the Creative Industry

Since the cultural activities are a prominent creative activity, the ECCU can start by leveraging the EPA in this sector. There are a number of measures which the ECCU countries can adopt to leverage the EPA in order to stimulate growth in the sector and their overall economies. They include:

1. In support of the development of the relevant ecosystems, they can establish a regional accreditation body so that the EU consumers will be able to easily assess the quality of the cultural service being provided. This would mean, for example, that an entertainer from the ECCU is able to carry a cadre of performers to a show in the EU and are all easily accepted as qualified professionals.
2. Take advantage of the EPA's provision of temporary move of natural persons for research and development services. This will allow the creative service providers to better identify niche markets and appropriate strategies for satisfying their customers.
3. Since one of the mandates of the EPA is to develop the capacity of CARIFORUM to trade competitively, this should be taken advantage such that businesses are able to provide cultural services to the untapped Caribbean diaspora.
4. Take advantage of co-production opportunities so that firms will be exposed to international standards and become better able to compete in the global trading space as well as acquire access to the protected and viable audio-visual sector.
5. Take advantage of training opportunities, technical assistance and transferred technological know-how to enhance the productive capacity of the sector. This will enhance the attractiveness of the sector to foreign investors who will inject the needed capital.

6. The agreement allows for the exchange of expertise and best practices for the protection of sites and historic monuments so this should be used to stimulate creative activities geared at promoting the ECCU's heritage as a sustainable business venture.
7. Endeavour to motivate the cultural service providers to take advantage of the increased market access while simultaneously maintaining a competitive quality output. This can be done via formal definition of the creative sector and subsequent targeted investment to provide sector specific resources.
8. Engage the EU in dialogue about good intellectual property protection practices, as allowed in the agreement. Subsequently, the appropriate infrastructure should be put in place with the aid of the development fund of the EPA.

In developed countries like the UK, Canada and Australia, they have been able to establish thriving creative industries and derive significant contributions to their economies. Why have they been so successful, where the ECCU countries have lagged? Their creative entrepreneurs have been able to liaise with other visionaries and technological pioneers, they have incorporated creative industries development into their national policies, they capitalised on the contemporary demand for creative services markets in the modern technological era. The Caribbean, on the other hand, are still attempting to build up infrastructure in the sector so lack the required operational ecosystems such as accreditation bodies, functional Coalition of Service Industry Units and adequate financing systems. Some best practices which could be employed in the sector are:

- There is a need for sector specific initiatives. These will provide specialised services to the creative sectors and its niche markets.
- Convergence centres. These would serve to bring entrepreneurs from the different creative sectors together with business development, technology and marketing activity in one complex. The intention is to stimulate new creative ideas and output.

- The use of special events and festivals to reinforce the image of creative industries centres. This refers to activities like “Nine mornings” in St Vincent, St Kitts Music Festival, St Lucia Jazz Festival; Dominica’s World Creole Music Festival, Antigua’s National Warri Festival.

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**Assessing the Responsiveness and
Stability of Tax Systems in the ECCU:
A Case Study of St Kitts and Nevis, Saint Lucia and
St Vincent and the Grenadines**



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23 August 2012

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Executive Summary

In the wake of the challenges confronted by the ECCU¹⁰ member territories as a result of the impacts associated with the 2008 global economic recession, the Monetary Council formulated the ECCU Eight Point Stabilization and Growth Programme to ensure continued stability, and sustained development. One of the central components of this programme was fiscal reform, which, through a number of initiatives, sought to develop the fiscal regimes in the region by improving the effectiveness of expenditure and revenue systems. In light of this, it is important to examine the ability of tax systems in the ECCU, to generate revenue efficiently, even in times of economic challenges. Such an examination can be instructive in guiding the focus of fiscal reform.

This study investigates the buoyancy and stability of tax systems in the ECCU as approximations of revenue generating ability. The analysis is conducted on the tax systems of three member territories – St Kitts and Nevis, Saint Lucia, and St Vincent and the Grenadines over the sample period 1990-2011. This country choice reflects difference in tax composition and GDP dynamics.

The findings of the study revealed a number of differences among the countries. In the case of St Kitts and Nevis, the tax system was found to be the most buoyant but the least stable. The study attributed this finding to frequent discretionary adjustments made over the review period to increase revenue productivity, unintentionally causing fluctuations in the revenue stream. It is advisable that policymakers in St Kitts and Nevis prudently study the likely implication of adjustments to the tax system before they are enacted. Going forward, the primary focus of tax policy should be revenue stabilization. The tax systems of St Vincent and the Grenadines and Saint Lucia were identified as buoyant only in the long-run. This implies tax administration and compliance challenges faced in the short run. Intuitively, administrative

¹⁰ 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).

reform should be the primary focus of tax policy in Saint Lucia and St Vincent and the Grenadines.

Given the importance of tax revenue for the provision of social services and government development projects, it is essential that persons be sensitized about the role of taxation. This would go a long way in dispelling the perception that taxation on a whole is merely a government sanctioned device to extract funds from the populace. Revenue collection agencies and public information organizations should collaborate to educate persons about the importance of paying taxes and the tangible benefits which can accrue to citizens when they do so. While this may be a huge task, it is necessary for tax reform to be meaningful and successful.

1. Context and Importance of the Problem

The member states of ECCU have faced numerous challenges over the past two decades, stemming from, inter alia, natural disasters, external economic shocks, and “crop-killing diseases”. As a consequence, anemic performance has been the macroeconomic experience of these states over this period. According to ECCB data, the rate of real economic growth in the ECCU declined from 3.0 per cent over the period 1990-1999 to 2.4 per cent over 2000 – 2009. This downward trajectory was further exacerbated by the spill-over effects associated with the 2008 global financial crisis which caused a deterioration in the fiscal sustainability of ECCU states. Cognizant of the need to, not only arrest these developments but also transform the entire region so that sustained development is engendered, member governments signed the ECCU Eight Point Stabilisation and Growth Programme on November 29, 2009. One of the key policy initiatives that emerged from this new policy thrust was the fiscal reform programmes.

The fiscal reform programmes endeavour to increase the efficiency and effectiveness of the revenue and expenditure systems in the ECCU. The work of the Commission on Tax and Tax Administration Reform and the ongoing Public Expenditure Review Commission are key

policy initiatives that support the Eight Point Stabilisation and Growth Programme in this regard. Among the recommendations proposed by the Commission on Tax and Tax Administration Reform were the following:

- ❖ Replacement of the rental value based property tax system with market value based.
- ❖ Introduction of the Value Added Tax (VAT) at a rate of 15 per cent.
- ❖ To facilitate the introduction of VAT, application of excise taxes on special goods such as alcohol, tobacco and cigarettes.
- ❖ Effective management in the granting of concessions
- ❖ Elimination of nuisance taxes such as the dog licence and entertainment tax.
- ❖ Improvement and upgrading of the tax administration information systems.
- ❖ Introduction of a single PIN to facilitate audit or identification trails.
- ❖ Establishment of a Revenue Authority to manage the assessment and collection of revenues.

With these developments in mind, a further assessment of the ability of revenue systems in the ECCU to generate revenue efficiently, even in the face of economic challenges, can be instructive in first, diagnosing their underlying weaknesses and second providing targeted policy prescriptions to correct these weaknesses. Targeted policy assumes major significance in light of weak macroeconomic fundamentals in the ECCU and the need to prioritize expenditures.

To assess the revenue generating ability of a tax system, most studies have sought to measure the responsiveness of tax revenues to economic activity. This concept refers to tax buoyancy. More specifically, tax buoyancy reflects the total response of tax revenue to changes in national income and discretionary changes in tax policy over time. A buoyancy measure of less than one suggests that tax revenues are unresponsiveness to changes in national output and the tax system is inefficient. Conversely, a value that is greater than one indicates high responsiveness and efficient revenue generating ability.

In the Caribbean, studies by Howard (1979), Mitchell and Andrews (1999) and the Commission on Tax and Tax Administration Reform (2004) have attempted to investigate the tax buoyancy for various islands. Howard (1979) estimated Barbados' tax buoyancy for the period 1947 to 1964 using the following simple linear regression model:

$$\log Tc_t = \log \alpha + \beta \log Y_t + \varepsilon_t$$

where Tc represents the tax category, β - the buoyancy coefficient, Y is a GDP measure and ε is the white noise error term. The result gave a buoyancy of 1.046, suggesting that total tax revenue was marginally responsive to economic growth. Howard concluded that the system can be rendered more buoyant by reducing the rigidity and progressivity of the personal income tax component.

In the case of the ECCU, Mitchell and Andrews (1999) and The Commission on Tax and Tax Administration Reform (2004) attempted to examine the buoyancy of tax revenues. Mitchell and Andrews (1999) studied changes in tax buoyancies of the member countries over the period 1980 to 1997. A Box-Cox transformation methodology which provides time varying tax buoyancies was utilized. The study concluded that, with the exception of St Kitts and Nevis, there was a general decline in buoyancy levels of each member state since they became independent. The main reasons advanced for the declining buoyancy in these countries were: problems in tax administration, frequent changes to tax rates and bands and the shifting emphasis from direct taxes to indirect taxes.

The Commission on Tax and Tax Administration Reform (2004), on the other hand, evaluated the tax buoyancy of the Consolidated ECCU over the period 1980 to 2000. The result indicated that the tax system was marginally buoyant as evidenced by an estimate of 1.04. On a disaggregated basis, the direct tax component was more buoyant, with a coefficient of 1.17, than the indirect element at a coefficient of 1.01. The result also revealed that the period of highest buoyancy was between 1992 and 2000. Notwithstanding the marginal overall buoyancy, the Commission concluded that the ECCU tax system suffered from administrative deficiencies, narrow tax bases, nuisance taxes, and ineffective management in the granting of tax concessions.

Although the aforementioned authors provide informative literature on the revenue generating ability of tax systems within the Caribbean, numerous developments and changes in the macroeconomic environment, especially in the ECCU member countries, have occurred over the past decade which motivates the need for a more recent analysis. Additionally, these studies did not examine the adjustment that takes place in a tax system between the short run and long run following external shocks. Such an assessment is pertinent to divulging whether the tax system is besieged by long run or short run weaknesses. More recent empirical studies on tax buoyancy have sought to explore this phenomenon.

Twerefou et al. (2008) examined the long run and short run responsiveness of Ghana's tax system for the period 1970 to 2007 using Engle Granger cointegration framework. The results revealed that the system was buoyant only in the long run. The authors attributed the low short run buoyancy to administrative difficulties in the collection of tax revenue and also an adjustment time for taxpayers to understand recent reforms and thereby comply with them.

It is important to highlight that, just as revenue buoyancy is important for judging a tax system performance, the stability of tax revenues over time is equally vital. Indeed, revenue stability is central for the continuity of government fiscal policy. If the tax intake tends to fluctuate over time, it creates an air of uncertainty that undesirably affects both public sector and private sector initiatives.

In respect to the public sector, when tax collection contracts, expenditure follow suit and in some instances more than proportionately. In the course of rationalizing public sector spending, development projects tend to be the first to suffer, as claims of recurrent expenses precede spending on these projects. As Jenkins et al. (2000) advance, the slowdown of development spending leads not only to lower economic growth rate over the medium and long term, but, over the short run, new development programs are poorly implemented, resulting in delays, escalation of costs, and, ultimately, in total abandonment of projects.

In the context of the private sector, Jenkins et al. (2000) point out that in order to offset the impact of an unstable tax system brought about by frequent changes in rates and in the rules of

taxation, the private sector tends to procrastinate over long-term investment decisions and plans. This in itself adversely affects the prospects of an economy and may further lead to structural instability.

Following the above discussion this study seeks to address the following questions:

1. What is the long run and short run responsiveness of tax systems in the ECCU relative to changes in economic activity?
2. What is the level of stability of these systems?

To answer these questions an analysis is carried out on the tax systems of three member territories in the ECCU – Saint Lucia, St Kitts and Nevis, and St Vincent and the Grenadines. This country choice reflects differences in tax composition and GDP dynamics.

3. Stylized Facts on the ECCU Tax System

Over the last 30 years, declining access to investment capital and concessionary finance has prompted the ECCU member governments to make numerous partial adjustments and reforms to their respective tax systems. These adjustments were largely consistent with the worldwide tax reform movement that began in the mid 1980's. As noted by Howard (2009), this movement was characterized by sharp reduction in the progressivity of the personal income and corporate income tax system with an increasing emphasis on indirect taxation. Howard attributes this shift to a growing consensus among researchers and policymakers, that notwithstanding the equity gains, direct taxation tended to have negative impacts on the desire to work, save and invest, and motivated capital flight from open economies. He further reported that indirect taxation became popular especially in developing countries because it broadened the tax base by capturing activities of the informal sector among areas that direct taxation has no jurisdiction.

The ECCU member states have also made some progress in synchronizing tax policy albeit from the broader level of CARICOM. These include the implementation of a Common

External Tariff (CET) to liberalize trade among CARICOM member countries and the coordination of tax laws to avoid double taxation.

Following the recommendations of the Commission on Tax and Tax Administration Reform notable changes have come on stream in the ECCU. Of which include the introduction of a Value Added Tax system, adoption of the market valuation based property tax, and rationalization of the granting of concessions.

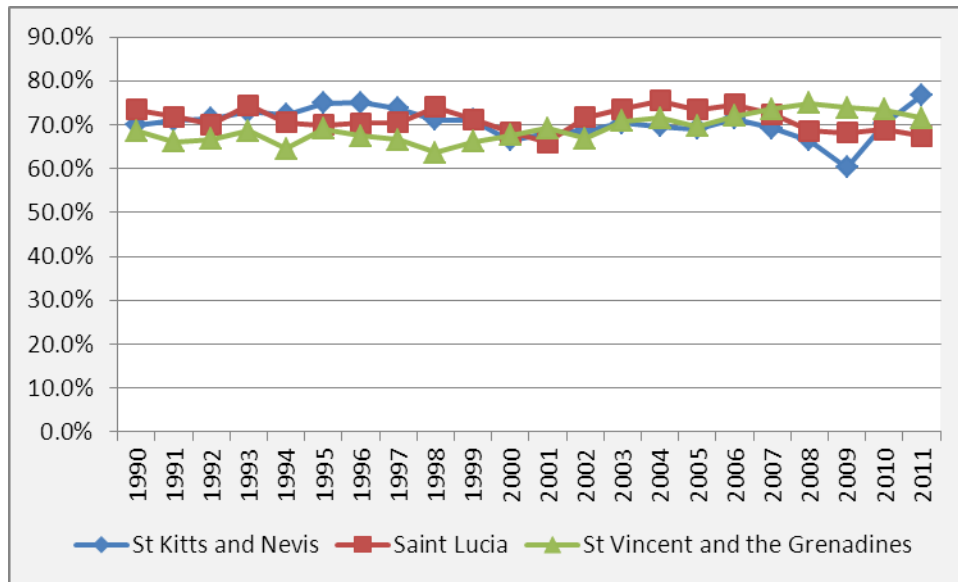
3.1 The Tax Structure of St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines

Table 1.1 Average Share of Total Tax Revenue 1990-2011

Country	Direct	Indirect
St Kitts and Nevis	29.6%	70.4%
Saint Lucia	28.8%	71.2%
St Vincent and the Grenadines	30.8%	69.2%

Table 1.1 shows the respective contribution of direct and indirect taxes to total tax revenue in the three countries under review. On average, there was a high degree of homogeneity in the tax share over the period 1990 to 2011. Overall indirect taxes accounted for 70 cents of every tax dollar collected in all three countries.

Figure 1.1: Indirect Share of Total Tax Revenue over 1990 – 2011



The more dynamic view presented in figure 1.1 illustrates that the contribution of indirect taxes to total tax revenue was fairly steady over the 1990 – 2011 period. It is worthy to note that, beginning 1997 St Kitts and Nevis indirect tax ratio fell off its growth trend due in part to the implementation of the CET which resulted in a reduction in the tariff rate from 30 per cent to 25 per cent and increasing revenue returns from the Social Service Levy. The upward trend was regained in 2010 owing to the introduction of the VAT System.

Table 1.2 Average Tax Yield 1990-2011

Country	Direct	Indirect	Total
St Kitts and Nevis	5.6%	13.3%	19.0%
Saint Lucia	6.3%	15.4%	21.7%
St Vincent and the Grenadines	6.4%	14.5%	20.9%

On a revenue productivity basis, the three countries recorded slightly different tax yields from GDP. Table 1.2 demonstrates that the tax system in Saint Lucia, with a yield of 21.7 per cent, was the most revenue productive, due to high returns from indirect taxes. St Vincent and the Grenadines, with a yield of 20.9 per cent, was second in this aspect and also yielded the most from the direct tax category (6.4 per cent). St Kitts and Nevis experienced the lowest yield from GDP (19.0 per cent) due to lower returns from both direct and indirect taxes.

Figure 1.2: Direct Tax Yield 1990 – 2011

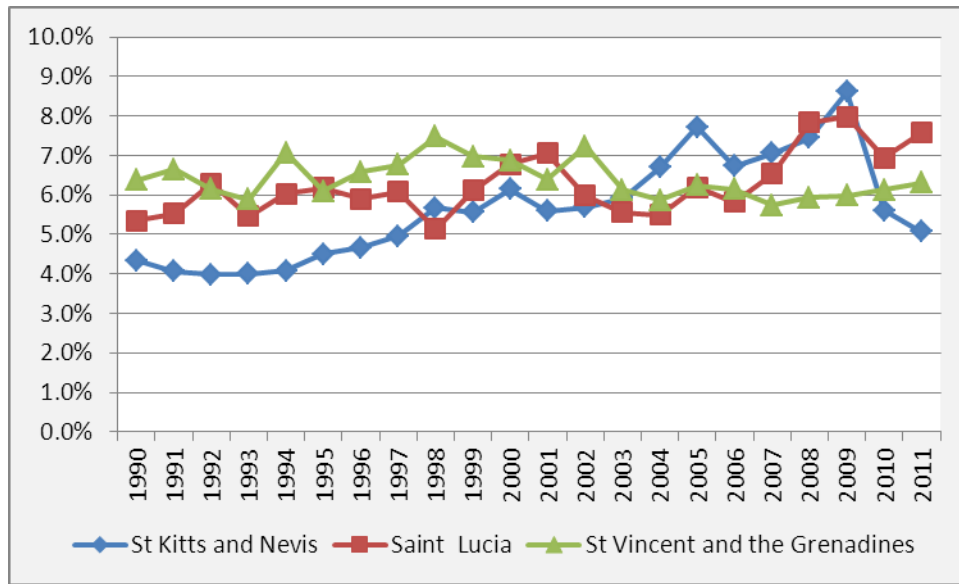
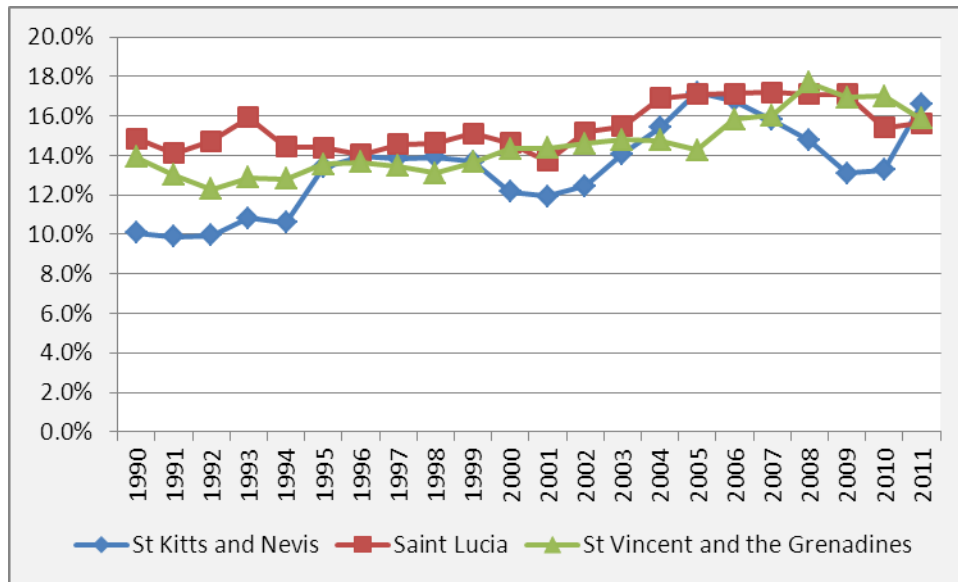


Figure 1.2 illustrates the productivity of direct taxes in the three countries over the period 1990 to 2011. The diagram shows that the trajectory of direct tax yield for Saint Lucia and St Vincent and Grenadines was flat while that in St Kitts and Nevis was upward trending.

The upward trend in St Kitts and Nevis' direct tax returns is partially due to upward adjustments made to the rate of the social services levy payable by employees and employers. The levy was increased several times in the sample period. In 1997 it was raised from 2.0 per cent to 3.0 per cent for employees as well as employers. In 2001 the employees' portion was increased to 8.0 per cent (salaries over \$6,500) and further to 10 per cent in 2006 (salaries over \$8,000). Also in 2006 the property tax system was modified from rental value based to market value as recommended by the Tax Reform Commission. It is noteworthy that a personal income tax does not exist in St Kitts and Nevis.

Saint Lucia and St Vincent and the Grenadines experienced flat and in some instances declining revenue yields from the direct tax component due to reductions in the tax rate on personal income as well as company profits. Over the sample period the top marginal rate on personal income tax was reduced from 55 per cent to 30 per cent.

Figure 1.3: Indirect Tax Yield 1990 – 2011



In relation to indirect tax returns, figure 1.3 demonstrates that the trend was generally upward for all three countries, with St Kitts and Nevis having the steepest slope.

The diagram shows that the indirect tax yield of St Kitts and Nevis fluctuated heavily throughout the period. In 1994, the yield rose sharply owing to a restructuring of taxes on imports as the stamp duty on imports was replaced by a customs service charge of 3 per cent. The trajectory was reversed in 2000 as a result of the implementation of the CET and a downturn in the external economic environment. To regain revenue productivity several tax rates were increased. These include the consumption tax payable on goods imported from 15.0 per cent to 20.0 per cent and the customs service charge from 3.0 per cent to 5.0 per cent. In 2003 the rates on the consumption tax and the customs service charge were further raised to 25.0 per cent and 6.0 per cent respectively. A 15.0 per cent excise duty on alcoholic and tobacco products was introduced and along with the TRIPS information system in 2006. These revisions led to an uptake in revenue returns. In 2008 the global financial crisis depressed the revenue efficacy of the indirect system and as a result the VAT system was introduced in 2010 at a rate of 17 per cent.

Indirect tax yield in Saint Lucia was relatively stable over the sample period. A general decline in the yield is noticeably between the period 1994 to 2003 due in part to a number of tax incentives granted by the authorities. A review of the tax adjustments made over the sample period informs that the tax authorities concentrated on promoting private savings and investments to catalyse growth and development and as a result, numerous incentives including rebates, allowances, deductions, and rate reductions were granted. To maintain a stable revenue stream, upward adjustments were made to the rate on travel taxes (increase in departure tax and airport service charge), driver's and vehicle license fee, and consumption taxes (tax on cigarettes and tobacco).

Revenue yield in St Vincent and Grenadines trended upwards on a steady path throughout the period. The revenue returns declined slightly in 1997 as a result of the implementation the (CET). A noticeable uptake in the yield was seen in 2006, largely attributable to the adoption of a number of the reforms recommended by the Tax Commission. The reforms adopted include the introduction of the value added tax system (at a standard rate of 15 per cent with the exception of 10 per cent for hotels and yachting), rationalization of the system for granting duty free concessions, the implementation of the SIGTAS ASYCUDA++ information system and the establishment of a single PIN (Personal Identification Number) system (to facilitate audit or identification trails).

4. Methodology

To assess the long run and short run responsiveness of tax revenues to changes in national income a cointegration framework is employed using the sample period 1990 - 2011. There are several cointegration approaches however, the autoregressive distributed lag (ARDL) bound testing procedure is often cited as the most efficient. Advantages of the ARDL approach include the non-requirement that all variables be of the same order of integration - it allows a mixture of stationary and non-stationary variables, the ability to produce suitable and unbiased results even when the sample size is short, and the capability to provide valid test

statistics even when some of the regressors are endogenous. For these reasons, this study adopts the ARDL approach.

The basis of the ARDL approach in the context of this study rests on the standard tax buoyancy model illustrated in equation 1.

$$\log T_t = \alpha + \beta \log Y_t + \varepsilon_t \quad (1)$$

Where T is tax revenue (total, direct, indirect), β is the buoyancy coefficient, Y is nominal GDP and ε is the white noise error term. An unrestricted error correction version of equation (1) is then estimated as demonstrated in equation (2).

$$\Delta \log T_t = \alpha_1 + \sum_{i=1}^M \alpha_2 \Delta \log T_{t-i} + \sum_{i=1}^M \alpha_3 \Delta \log Y_{t-i} + \sum_{i=1}^M \alpha_4 \log T_{t-i} + \sum_{i=1}^M \alpha_5 \log Y_{t-i} + \varepsilon_t \quad (2)$$

The existence of a stable long run relationship is then established by testing the hypothesis below:

$$H_0: \alpha_4 = \alpha_5 = 0$$

More formally, the hypothesis that the joint coefficients on the lagged level variables is zero is tested and compared against the upper and lower bounds of Pesaran et al (2001) critical values. The lower bound values assume that the variables are stationary¹¹ and the upper bound values assume that they are non-stationary. If the calculated statistic is greater than the respective upper critical values, then there is evidence of a long-run relationship (cointegration); if below the lower critical values, the null of no cointegration cannot be rejected; and finally, if it lies between the bounds, inference is inconclusive. Once cointegration is found, the long run and corresponding error correction model is estimated as illustrated by equation (3). In the absence of co-integration, the variables operate independently. More precisely, in the context of this study, national income does not explain the behavior of the particular tax revenue category (i.e there are other causal/underlying factors at work).

¹¹ A stationary time series is mean reverting as time passes. On the contrary, a non-stationary time series is a time series which does not revert to its mean as time passes.

$$\Delta \log T_t = \alpha_1 + \sum_{i=1}^M \alpha_2 \Delta \log T_{t-i} + \sum_{i=1}^M \alpha_3 \Delta \log Y_{t-i} + \sum_{i=1}^M \alpha_4 \log T_{t-i} + \sum_{i=1}^M \alpha_5 \log Y_{t-i} + \lambda EC_{t-1} + \varepsilon_t \quad (3)$$

The appropriate lag specification is critical in cointegration frameworks and so the study employs the AIC selection criteria.

A simple measure of volatility is used to evaluate the stability of the tax system. More precisely, the coefficient of variation defined as the standard deviation of tax revenue divided by its mean is estimated for each tax category in each country over the times series 1990 to 2011. Sharing an inverse relationship, higher values for the variation of coefficient represents lower revenue stability. It is important to highlight that measure is one of relativity as oppose to absoluteness. In other words, it is employed purely to compare level of tax revenue stability among the three countries.

5. Findings and Policy Implications

The results of the study indicate that a long run relationship exists between tax revenue and national output for all tax categories in all three countries, with the exception of the direct tax category in Saint Lucia and St Vincent and the Grenadines. Conventional tests for functional specification, autocorrelation, heteroscedasticity and normality suggest that the results from ARDL model are unbiased, efficient and consistent (see estimation results in Appendix A, Table 1.6).

Table 1.3 Total Tax Buoyancy, Speed of Adjustment, and Stability

Country	Long Run	Short Run	Speed of Adjustment	Time Taken to Return to Equilibrium	Stability
St Kitts and Nevis	1.30	1.37	-0.42	2 years 3 months	11.6%
Saint Lucia	1.22	0.90	-0.74	1 year 3 months	5.8%
St Vincent and the Grenadines	1.16	0.89	-0.77	1 year 3 months	7.8%

Table 1.3 displays that the tax systems in all three countries were buoyant in the long run, while in the short run only that of St Kitts and Nevis was buoyant. Consequently, it can be inferred that these systems are efficient in generating revenues in the long run, while in the

short run for Saint Lucia and St Vincent and the Grenadines it is inefficient. This short run inefficiency may be indicative of administrative difficulties. Indeed, Mitchell and Andrews (1999) and the Tax Commission (2004) highlighted that a major deficiency of tax systems in the ECCU is the lack of efficient administrative practices. The result may also be congruent with findings of Twerefou et al. (2008), which show that that short run unresponsiveness could be a result of an adjustment time for tax payers to comprehend tax policy changes and thus comply willingly to them.

The table also demonstrates that St Kitts and Nevis, with a long run estimate of 1.30, was the most buoyant system while St Vincent and the Grenadines, with a coefficient of 1.16, was the least responsive.

However, the analysis of stability gives a conflicting picture of performance. The variation coefficient column indicates that revenue collection in Saint Lucia and St Vincent and the Grenadines was almost twice times more stable than in St Kitts and Nevis. This finding may plausibly be an explanation as to why St Kitts and Nevis scored, on average, the lowest revenue return from GDP (19.0 per cent) over the period 1990 - 2011.

The conflicting performance displayed by St Kitts and Nevis' tax system suggest that the frequent discretionary changes made over the review period rendered the system more buoyant but at the expense of stability. It is therefore important that the policymakers carefully assess the likely implications of tax adjustments before they are enacted.

Table 1.4 Direct Tax Buoyancy, Speed of Adjustment, and Stability

Country	Long Run	Short Run	Speed of Adjustment	Time taken to return to equilibrium	Stability
St Kitts and Nevis	1.40	0.89	-0.53	1 year 6 months	16.2%
Saint Lucia	No Long Run Relationship				8.0%
St Vincent and the Grenadines	No Long Run Relationship				8.1%

In relation to direct taxation, the results of the model indicate that only in St Kitts and Nevis was there a long run relationship between revenue and national output. This result is not surprising given the fact that over sample period the authorities in St Kitts and Nevis made

several upward adjustment to the social service levy which increased progressivity of the system while in Saint Lucia and St Vincent and the Grenadines reductions in the personal income and company income taxes reduced the revenue productivity of the direct tax component. The results also illustrates that the direct tax system in St Kitts and Nevis was buoyant only in the long run, suggestive of problems in the administration of these taxes.

The variation coefficients presented in Table 1.4 however reveals that direct tax revenue in St Kitts and Nevis was highly unstable when compared to its counterparts. This may reasonably be a consequence of changes made to the social service levy to boost revenue performance unintentionally causing fluctuations in the revenue stream.

Table 1.5 Indirect Tax Buoyancy, Speed of Adjustment, and Stability

Country	Long Run	Short Run	Speed of Adjustment	Time taken to return to equilibrium	Stability
St Kitts and Nevis	1.27	1.49	-0.44	2 years 1 month	12.1 %
Saint Lucia	1.16	1.12	-0.46	2 years 1 month	6.0 %
St Vincent and the Grenadines	1.28	1.00	-0.79	1 year 2 months	9.0 %

With regards to indirect taxes, the findings identified the systems in all three countries as being buoyant in the long run as well as the short run. This result is not surprising given the increasing emphasis of indirect taxes in the ECCU and from a broader perspective developing economies.

St Vincent and the Grenadines recorded the highest long run buoyancy (1.28) and took at least one year less than its counterparts to return to equilibrium. This relatively high responsiveness is partly due to the sweeping reforms adopted in 2006 and 2007. Of which include the implementation of the value added tax system, rationalization of concessions, and introduction of the PIN system. It would therefore be instrumental for the other territories to study these policy options to determine the likely impacts on their revenue performance.

6. Conclusions and Policy Recommendations

The study investigated the buoyancy and stability of the tax system in St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines over the sample period 1990 to 2011. The ARDL approach and the coefficient of variation were employed respectively to measure buoyancy and stability.

The results showed a mixed picture for St Kitts and Nevis' tax system. The country scored the highest buoyancy but was ranked lowest in terms of stability. It is therefore important that the authorities carefully study the likely impact of particular tax adjustments, as it may be fruitful in the short term in terms of buoyancy but costly in the medium to long term in the context of stability. In light of the relative low level of revenue stability the main focus of tax policy should therefore be to stabilize the system. A possible solution may be to partially position the system on transactions that exhibit inelastic demand. However, while such a policy may achieve some level of stability it may also render the system more regressive and thereby distort the distribution of real income. Nonetheless, the recent implementation of the VAT system is expected to partly address the low level of revenue stability experienced.

Of the three countries, Saint Lucia was seen as the hybrid system. The country maintained a trade-off between buoyancy and stability which can account for its relatively high revenue returns from GDP. However, the overall system was found to be unresponsive to economic development in the short run, indicative of administrative and compliance issues. The country also displayed the lowest buoyancy in the indirect tax category which implies that there is fiscal space for discretionary modifications. One possible recommendation may be to study the sweeping reforms made in St Vincent and the Grenadines in 2006 and 2007. Of which, include the introduction of the value added tax system and the rationalization of the granting of concessions. The authorities have considered the policy option to implement the VAT system and plan to make it actionable on the 1 October 2012.

In the case of St Vincent and the Grenadines, the results showed that the system was the least buoyant of the three on an overall basis and was unresponsive to national output in the short run. This implies that the authorities faced administrative and compliance difficulties. The main policy focus should therefore be reforming the administrative capabilities of the tax authority.

In light of the administrative difficulties faced by each territory, it is also advisable that the respective authorities consider establishing a National Revenue Authority to manage the assessment and collection of revenues. Notwithstanding the cost to undertake such a project, a National Revenue Authority would result in the consolidation of selected services which in turn may yield numerous efficiency gains and economies of scale.

Given the importance of taxes for providing much needed revenue for essential social services and government infrastructural projects, it is imperative that persons be sensitized about the role of taxes. This would go a long way in dispelling the notion that taxes are mainly a government sanctioned device to extort funds from the populace. Public information agencies and the media, in collaboration with the respective revenue collection agencies of the government, should cooperate to educate persons about the importance of paying taxes and the tangible benefits which can accrue to citizens when they do so. This maybe a major task, but it is necessary if tax reforms are to be meaningful and successful.

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Appendix

The following are the diagnostic tests carried out on each model:

- A: Lagrange multiplier test of residual serial correlation
- B: Ramsey's RESET test using the square of the fitted values
- C: Based on a test of skewness and kurtosis of residuals
- D: Based on the regression of squared residuals on squared fitted values

Table 1.6 ARDL Output

Estimators	St Kitts and Nevis			Saint Lucia			St Vincent and the Grenadines		
	Total Tax	Direct Tax	Indirect Tax	Total Tax	Direct Tax	Indirect Tax	Total Tax	Direct Tax	Indirect Tax
Long Run	1.304 [.000]	1.402 [.000]	1.273 [.000]	1.219 [.000]	No Cointegration	1.164 [.000]	1.162 [.000]	No Cointegration	1.275 [.000]
Short Run	1.375 [.006]	0.886 [.029]	1.493 [.015]	0.897 [.000]		1.116 [.001]	0.892 [.000]		1.004 [.000]
ECM	-0.408 [.084]	-0.632 [.018]	-0.440 [.069]	-0.736 [.000]		-0.461 [.068]	-0.767 [.000]		-0.787 [.000]
Goodness of Fit Tests									
R-squared of Model	0.985	0.965	0.977	0.98776		0.979	0.996		0.995
R-squared of ECM Representation	0.408	0.304	0.335	0.577		0.463	0.738		0.765
Diagnostic Tests									
A: Serial Correlation	[.252]	[.037]	[.033]	[.120]		[.585]	[.608]		[.625]
B: Functional Form	[.102]	[.055]	[.278]	[.777]		[.256]	[.686]		[.221]
C: Normality	[.873]	[.080]	[.503]	[.668]		[.844]	[.725]		[.975]
D: Heteroscedasticity	[.617]	[.014]	[.584]	[.282]		[.850]	[.535]		[.192]

P-values are in brackets []