Viable Financial Sectors: Assessing Repayment Risk in Small Island Economies.

Seymour Douglas Economics and Programming

Caribbean Development Bank and Emory University ¤

Wildey, St. Michael, Barbados

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ABSTRACT

The importance of access to capital for economic development has acquired the status of 'stylised fact' in both policy and theoretical discussions. In this paper I examine the likelihood that a country will have di¢culties in servicing debt and use this as a springboard to discuss the role of adequate and e¤ective risk assessment in developing viable capital markets. A theoretical model is constructed then tested empirically. In the theoretical model, equilibrium is characterised in an economy populated by a government , a …nancial sector. The model is a variant of Coles and Kehoe (1996). To test the model empirically, I characterise the Kehoe-Cole default parameter and use it as a basis to explore the likelihood of di¢culties with debt payment in the OECS.

¤Dr. Keith Worrell, Director of Economics and Programming and Alan Slusher, Chief Country Economist at the Caribbean Development Bank provided useful discussion of capital markets and risk. Brian Francis, Economist at the Eastern Caribbean Central Bank provided and discussed data on domestic debt in the OECS.

1 Introduction

Access to capital is a fundamental requirement for development generally. Capital markets, while critical in the development process will function e¤ectively if and only if agents participating in these markets are able to assess the risk associated with traded assets with a high degree of accuracy. This paper attempts to address the question of the risk associated with traded assets by examining the likelihood of debt repayment di¢culties. Our aim is to establish a preliminary framework for allowing agents to estimate and forecast the probability that regional governments may have di¢culties in …nancing payment on debt instruments they have issued.

Capital markets are underdeveloped in the Caribbean. The market for equity is better developed in Jamaica and Trinidad, though the level of capitalisation remains low as borrowing from commercial banks remains the preferred means of …nancing expansion among domestic …rms. Guyana and Barbados have developed vestigial stock markets but as in Trinidad and to a lesser extent, Jamaica, trading volumes have remained low due in part to fears of hostile takeover from domestic and foreign interests.

The Organization of Eastern Caribbean States (OECS) is economic union of eight of the smaller economies in the Caribbean.[1] Currently, none of the OECS nations operate a stock market but this will change when the Capital Market Development Programme sponsored by the Caribbean Development Bank (CDB), United States Agency for International Development (USAID) and in particular by Inter-American Development Bank (IADB) through its Multilateral Investment Fund (M.I.F) becomes operational. The broad objective of this initiative is to promote private sector development through expansion of market based activity. The speci…c objective is to expand market based activity through creation of appropriate institutions. The programme consists of establishing an Over-the-Counter Electronic Stock Exchange and promotion export competitiveness.

Government debt instruments constitute a large proportion of …nancial assets in the Caribbean.

[1] The member countries are Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines.

These instruments are not widely traded and are held mainly by commercial banks and insurance companies in a bilateral monopoly arrangement with government. There is considerable room for widening and deepening the ownership of government debt instruments in the Caribbean. This paper, by outlining a framework for assessing one type of risk associated with these instruments, tries to lay part of the foundation necessary to achieve wider participation in the market for …nancial instruments.

The remainder of this paper is constituted as follows: Section 2 provides a broad overview of the large literature on repayment di¢culties. In section 3, dynamic general equilibrium is characterized in an economy with three types of agents: consumers, a government that is able to default on debt payments and a …nancial sector consisting entirely of banks. The government's default parameter is used to estimate likelihood functions for the OECS in Section 4. The paper is concluded in Section 5.

2 The Literature.

The literature on predicting or assessing the likelihood of di¢culties with debt repayment is fairly extensive with most of the e¤ort concentrated in examining either theoretically or empirically, varying implications of default on external debt. The analytical framework which dominates conceptualization of this problem evolved from Bardhan (1967). Bardhan's contribution was to construct an intergenerational model of foreign borrowing to examine conditions under which default on debt payments could arise. Eaton and Gersovitz (1981) deviated marginally from Bardhan's approach and analysed, in a general equilibrium portfolio setting , the borrowing behaviour of credit constrained LDCs'. Foley and Hellwig (1975) used a continuous time model of borrowing to show how lenders will attempt to limit a debtor's credit to paths which equate the present value of loans to the present value of future income streams unless the lender is deceived or receives incomplete information sets. Sachs and Cohen (1982) proposed that credit ceilings will be enforced when the likelihood of default for a debtor nation exceeds some critical value. Corden, (1988) took a di¤erent route in examining a subset of issues analysed by Sachs and Cohen (op.cit.). Corden considered the use of an international debt facility to reduce the likelihood of debt default by buying LDC debt and marking down its contractual value prior to re-selling it.

The model used here is in the tradition of Calvo (1988). In the two-period model developed by Calvo, debt repudiation increases the …rst period cost of borrowing and induces further debt repudiation in the second period. Calvo then shows that for some parameter values, two Pareto-rank equilibria exist and that a Pareto superior equilibrium in which there is no debt repudiation can be chosen by pegging nominal interest rates.

The empirical literature has followed a more homogeneous path. The roots of this literature is Avramovic's (1968) study of the relation between capital in‡ows and growth. One interesting result of Avramovic's paper was that it raised the curiosity of those who found it implausible that the productivity of external debt …nanced capital would be high enough and of a consistency not to place

severe pressures on the B.O.P of LDCs'. Cline and Frank (1971) was a response to some of the concern raised by Avramovic. These authors used discriminant analysis to show how some of the debt service ratios identi…ed by Avramovic could be used to predict the likelihood of debt default in a sample of 26 countries for the period 1960-1968 . Dhonte (1975) pursued a relatively unique path at the time by using principal components analysis to assess the relative power of ten debt indicators for the period 1959 to 1971. A number of commentators have slighted Dhonte's study for not presenting a credible reason for his choice of "signi…cant variables". Feder and Just (1977) initiated a tradition by using logit analysis to predict debt default. The choice of logit was based on its "being speci…cally developed to deal with the binary valued dependent variables as opposed to discriminant or principal components analysis which did not allow further statistical testing of the relative importance of di¤erent indicators.

Sargen (1977) followed a similar route to that taken by Just and Feder but went further in that he tested debt default as a monetary phenomena. Sebastian Edward's (1984) approach was markedly dissimilar to that of Just and Feder. Edwards evaluated the relationship between the spread on the London Inter-Bank O¤er Rate (henceforth LIBOR) and its impact on default likelihood. Hajivassiliou (1987) chose to approach the problem from a di¤erent angle. Unlike Sebastian Edwards whose main contention was that "one of the most interesting result obtained is the robust and signi…cant positive relation (with a coe¢cient of approximately 0.6) between the log of the spread on LIBOR and the debt-output ratio ", Hajivassiliou proposed that the spread on LIBOR was insigni…cant in determining the allocation of international credit to LDC's'. Instead, Hajivassiliou argued, international credit is allocated explicitly on the basis of "quantity o¤ers and requests". The suggested explanation for this thesis is that moral hazard is given a greater weighting when a credit decision matrix is constructed with less than complete information and that bargaining is a rational choice for an allocative mechanism in that there exists a positive correlation between default probability and interest rate charged . Extensive discussion of both the empirical and theoretical literature are contained in Palac-McMiken (1995).

Di¢culties with domestic debt has not …gured prominently in the literature except for those countries whose domestic debt instruments are held or traded internationally. The neglect or apparent lack

of interest in examining the likelihood of difficulties with domestic debt stems from two sources. The first source is related to the 'Debt Crisis' during the 1980's and early 1990's and its consequences for the international financial system. The second source, especially in developing countries, was related to greater flexibility governments had in managing domestic debt and its consequence in reducing the likelihood of difficulties. To be specific, domestic debt can be repurchased through the issue of domestic currency and through revenues raised by domestic taxation.

There has been little or no analysis of repayment difficulties and domestic debt in the Caribbean. This paper tries to fill a part of the gap.

3 The Model

The model presented here abstracts from Cole and Kehoe (1996) by focusing on estimating a default parameter. I characterize equilibrium in the Cole-Kehoe economy and estimate a variation of the government's default parameter for the member countries of the OECS. The characteristics of the model economy can be inferred from the behavior of its three representative agents: a consumer, a government and a bank representing the …nancial sector. There is one good in this model economy. This good can either be consumed or used as capital. The supply of labor is inelastic and production utilises the single good in its capital form.

Consumers are in…nitely lived, identical and are distributed on a continuum with measure one. The representative consumer's objective is to maximise

$$E \sum_{t=0}^{\infty} \beta^t (c(t) + v(g(t))); \qquad (1)$$
$$\beta \in \{0, 1\}$$

where c(t) is private consumption and g(t) is government consumption. In addition it is assumed that v(:) is continuously di¤erentiable, concave and monotonically increasing. The consumer's budget constraint is

$$c(t) + k(t+1) \cdot (1 - \mu) a(t) f(k(t)): \qquad (2)$$

The productivity factor a(t) is a function of whether or not the government has defaulted and $\mu \in \{0, 1\}$ is ‡at tax on domestic income.

The …nancial sector consists entirely of banks. Bankers are assumed to have the same life span and distribution as consumers. They are risk neutral and have utility function

$$E \sum_{t=0}^{\infty} \beta^t x(t): \qquad (3)$$

The representative banker's endowment set consists of $\bar{x}$ units of the consumption good. The budget

constraint facing this banker is

$$x(t) + q(t)b(t+1) \quad \cdot \quad \text{¥} + z(t)b(t): \tag{4}$$

$$b(t+1) \quad , \quad \text{¡ } A \tag{5}$$

The variable $z(t) \ 2 \ f0; 1g$ is very important to the analysis undertaken in this paper. It represents the government's default parameter. The price paid for one period government bonds is $q(t)$, the yield on these bonds is $b(t+1)$ if $z(t+1) = 1$ and zero if $z(t+1) = 0$. The parameter A is a limiting factor included to rule out Ponzi schemes but does not bind in equilibrium. Bankers are assumed to hold b_0 in government debt at $t = 0$:

In each period government chooses the new level of borrowing $B(t+1)$ irrespective of whether or not there has been a default on old debt. The government's decision to default a¤ects the real sector in that if $z(t) = 0$ then productivity falls form $a(t) = 1$ to $a(t) = ® < 1$:

The government's objective is to maximise consumer welfare. The constraint it faces in achieving this objective is

$$g(t) + z(t)B(t) \cdot a(t)f(k(t)) + q(t)B(t+1):$$

This constraint guarantees the economy's solvency by requiring that government spending, $g(t)$ plus government borrowing be less than or equal to current production plus new debt obligations.

4 The Recursive Equilibrium

The fundamental dynamic of any recursive system is that it allows one work backward to derive the necessary equilibrium outcomes. Accordingly, the timing of each agent in this model becomes important because the timing and results of the action depends on the information each agent has at the time any particular action is taken. The timing of action in each period is as outlined in Table 1:

Action	Player/Agent
1	There is an aggregate (the status quo) state $s(t) = (B(t); K(t); s(t ¡ 1))$:
2	The government chooses $B(t + 1)$ using $q(t) = q(s(t); B(t + 1))$:
3	The …nancial sector decides whether to acquire $B(t + 1)$ which determines $q(t)$:
4	The government chooses $z(t)$ and $g(t)$:
6	Consumers choose $c(t)$ and $k(t)$:

In any period, equilibrium is determined by the aggregate state, governments policy decision, the price of bonds and consumers" choice. An agent's state depends on the aggregate state, individual state variables and all variables a¤ecting the agent's decisions or state in the next period. The solution to an agent's maximization problem is a Bellman value function showing the maximum utility attainable by the agent in that state, and the policy functions which provide the maximizing choices of the agents choice variable in the current period given the state.

4.1 The Consumers' Value Function

The consumer makes decision knowing the aggregate state, current government borrowing, default decision, and expenditure. They also know the price the …nancial sector is willing pay for $q(t)$. The consumers"s state can therefore be de…ned as$(k(t); s(t); B(t + 1); g(t); z(t))$. The consumer's value function is then

$$V_c((k(t); s(t); B(t + 1); g(t); z(t))) = \max_{c;k"} c(t) + v(g(t)) + \bar{}EV_c(k(t); s(t); B(t + 1); g(t + 1); z(t + 1))$$

$$
\begin{aligned}
& \text{subject to} \\
c(t) + k(t+1) - k(t) &\leq (1-\mu)a(s(t);;z(t))f(k(t)) \\
c(t);k(t+1) &\geq 0 \\
s(t+1) &= (B(t+1);K_{t+1}(s(t);B(t+1);g(t);z(t));a(s(t);z(t)) \\
g(t+1) &= g_t(s(t+1);B_{t+1}(s(t+1));q_t(s(t);B_{t+1}(s(t+1))) \\
z(t+1) &= z(s(t+1);B_{t+1}(s(t+1));q_t(s(t);B_{t+1}(s(t+1)))).
\end{aligned}
$$

4.2 The Financial Firm's Value Function

The knowledge available to the representative individual …rm in the …nancial sector consists of the size of the government"ss bond o¤er, the aggregate state and the …rm"s current holding of bonds. The representative …rm"s state is therefore$(b(t);s(t);B(t+1))$; The value function is then

$$
\begin{aligned}
V_b(s(t);B(t+1);b(t)) &= \max_{x;b(t+1)} x(t) + \bar{}EV_b(b(t+1);s(t+1);B_{t+1}(s(t+1))) \\
& \text{subject to} \\
x(t) + q(s(t);B(t+1))b(t+1) &\leq \bar{x} + z(s(t);B(t+1);q(s(t);B(t+1))b(t) \\
x \geq 0; b(t+1) &\geq -A(t) \\
s(t+1) &= (B(t+1);K_{t+1}(s(t);B(t+1);g(t);z(t));a(s(t);z(t)) \\
z(t+1) &= z(s(t+1);B_{t+1}(s(t+1));q_t(s(t);B_{t+1}(s(t+1)))).
\end{aligned}
$$

4.3 The Government's Value Function

The government's actions are largely determined by the …nancial sector's response to its bond o¤ering. Accordingly, government observes the …nancial sector valuation of its bond o¤er then decides if it will default or not. The government's knowledge at the time of its bond o¤ering is the aggregate state, when z(t) and g(t) are determined, the …rms knows the price it will receive for the bonds. The

government's value function can thus be written as

$$
\begin{aligned}
V_g s(t) &= \max_{B(t+1)} c(K(t); s(t); B(t+1) + v(g(t)) + \bar{E}V_g(s(t+1)) \\
&\quad \text{subject to} \\
g(t) &= g(s(t); B(t+1); q(s(t); B(t+1)) \\
z(t) &= z(s(t); B(t+1); q(s(t); B(t+1)) \\
s(t+1) &= (B(t+1); K(t+1); g(t); z(t)); a(s(t); z(t))
\end{aligned}
$$

Since the government is benevolent, its actions must maximise the consumer's welfare, it must therefore be a solution to

$$
\begin{aligned}
&\max_{g(t);z(t)} c(K(t); s(t); B(t+1) + v(g(t)) + \bar{E}V_g(s(t+1)) \\
&\quad \text{subject to} \\
g + z(t)B(t) &\cdot \mu a(s(t); z(t)) f(K) + q(t)B(t+1) \\
z &= 0 \text{ or } z = 1 \\
g &\text{ , } 0 \\
s(t+1) &= (B(t+1); K(t+1); g(t); z(t)); a(s(t); z(t)):
\end{aligned}
$$

4.4 The Equilibrium

In a recursive system, equilibrium is a set of value functions for each player and a set of policy functions such given the relevant variables each value function is a solution to each agent's maximization problem. A policy function de…nes the variables over which and agent has control and the variables determining the choice the agent makes. In this model, there are three value functions, one for each player and …ve policy functions. The policy functions are;

Government	Consumers	Banks
$g(q(s(t); B(t+1); s(t))$	$c(k(t); s(t); B(t+1); g(t); z(t))$	$q(s(t); B(t+1))$
$z(q(s(t); B(t+1); s(t))$	$k_{t+1}(k(t); s(t); B(t+1); g(t); z(t))$	
$B_{t+1}(s(t))$		

5 Empirical Analysis

The empirical analysis of this model focuses on the government's default parameter. To motivate our approach recall that z(t) can take two values, 0 if the government has defaulted and 1 otherwise. Let x be a set of variables determining the value z(t). Then the government's default decision can be characterized as

$$Pr(z(t) = 1) = F(\beta' x) \tag{7}$$

$$Pr(z(t) = 0) = 1 - F(\beta' x) \tag{8}$$

where β is a set of parameters re‡ecting the impact of changes in x on the probability. Once this is done, our problem devolves to determining the set of variables composing x: We can then proceed to estimate z(t) by choosing any regressor vectors such that

$$\lim_{\beta' x \to +\infty} Pr(z(t) = 1) = 1 \tag{9}$$

$$\lim_{\beta' x \to -\infty} Pr(z(t) = 1) = 0$$

Ordinary least squares could be used to between estimate the relationship between z(t) and x because from (7)and (8)

$$E(z(t)) = 1{:}F(\beta' x) + 0(1 - F(\beta' x)) = F(\beta' x) \tag{10}$$

which allows us to estimate z(t) as

$$\begin{aligned} z(t) &= E(z(t)) + z(t) - E(z(t)) \\ &= F(\beta' x) + \varepsilon{:} \end{aligned} \tag{11}$$

$F(\beta' x) + \varepsilon$ is a linear probability model. Apart from being heteroscedastic, this model does not satisfy (9). To circumvent the problems associated with this model, z(t) is also estimated using probit and logit models. In spite of its well known problems, with some modi…cation the linear probability model (see Aldrich and Nelson (1984)) can yield useful results and is included in my estimates for that reason.

Table 1 and presents preliminary estimates. The analysis used cross sectional and time series data for the member countries of Organisation of Eastern Caribbean States for the period 1989-1994. None of the economies in the OECS has had any experience of rescheduling international or domestic debt and by any most measures none of these economies would be considered highly indebted. All of these countries however, have had episodes of arrearage on external or domestic debt. Arrearage represents a decision deliberate or not to renege on current debt service obligations and is therefore a form of risk to creditors . For this reason arrearage is used to represent z(t) in the estimates. The model that was estimated can then be represented as

$z(t) = F(Rer_i; Open_i; Grow_i; Infl_+; DebtServ_+, DebtGrow_+; DebtGDP_+; DebtRev_+; Avgint_+; Dom_+)$

Rer = This is the real exchange rate. It is expected the strengthening of currency reduces the likelihood of debt repayment difficulties.

Open = This measures the country's degree of openes and is defined as the sum of exports and imports divided by GDP.

Grow = This is real economic growth.

Infl = Rate of inflation.

Debtserv = This is the ratio of cost of servicing debt obligations relative to export receipts.

Debtgrow = The rate of accumulation of debt. It is hypothesised that rapid accumulation of debt is a sign of fiscal disequilibria and should raise the likelihood of arrearage.

DebtGDP = This is the ratio of current debt obligations to current output . This is in effect a gauge of a country's debt burden and corresspondingly,the higher the burden, the higher the expected likelihood of arrearages or difficulties with debt repayment.

DebtRev = This is the ratio of interest payment and amortisation to recurrent revenue.

AvgInt = This is the average interest rate on outstanding debt.

Table 1: OLS and Linear Probability Results

Variable (st.error)	OLSa	OLSb	LPa	LPb
Constant	-50.84	81.09	-2.13	–3.05
	(187.8)	(183.3)	(2.14)	(2.26)
Real Exchange	-0.299	-1.56	0.032	0.041
	(1.69)	(1.68)	(0.019)	(0.021)
Openness	170.9	160.26	-0.174	-0.11
	(26.34)	(24.72)	(0.3)	-(0.31)
Growth	-3.36	-2.95	$0.11£10^{i2}$	$0.18£10^{i2}$
	(1.06)	(1.01)	(0.012)	(0.012)
In‡ation	-2.66	-2.51	0.021	0.019
	(3.12)	(2.91)	(0.035)	(0.036)
Debt Service	3.03	4.5	(0.09)	0.08
	(2.69)	(2.57)	(0.03)	(0.03)
Debt Growth	0.208	0.18	$0.8£10^{i2}$	0.0082
	(0.347)	(0.324)	$(0.4)£10^{i2}$	(0.004)
Debt to GDP	-56.42	-45.81	-0.037	-0.122
	(20.38)	(21.32)	(0.2326)	(0.263)
Debt Service to Revenue	10.36	5.16	-0.038	$0.54£10^{i3}$
	(5.96)	(6.402)	0.23	(0.0789)
Average Interest on Debt	-25.0	-21.23	-0.13	-0.155
	(3.54)	(3.65)	(0.046)	(0.044)
Domestic Interest Payments		6.63		-0.038
		(3.53)		(0.044)
Domestic Debt		-0.0838		$0.2£10^{i3}$
		(0.185)		(0.002)
$\bar{R}^2$; F	0.86, 22.1	0.88, 21.73	0.45, 2.9	0.49, 2.6

Table 2: Probit and Logit Results

Variable (St.error)	Probit	Partial E¤ects	Logit	Partial E¤ects
Constant	-35.1		-60.67	
	(26.3)		(48.64)	
Real Exchange	0.38	0.00068	0.66	0.00248
	(0..26)		(0.482)	
Openness	2.99	0.00528	5.2	0.01958
	(3.83)		(6.97)	
Growth	-0.167	-0.0003	-0.296	-0.00111
	(0.134)		(0.254)	
In‡ation	0.11	0.00019	0.216	0.00081
	(0.352)		(0.623)	
Debt Service	0.95	0.00168	1.597	0.006
	(0.415)		(0.767)	
Debt Growth	0.083	0.00015	0.151	0.00057
	(0.068)		(0.129)	
Debt to GDP	-4.46	-0.0079	-7.91	-0.02971
	(2.74)		(5.2)	
Debt to Revenue	0.523	0.00093	0.999	0.00375
	(0.73)		(1.33)	
Average Interest	-1.92	-0.00339	-3.36	-0.01271
	(0.917)		(1.78)	
Pseudo-$\bar{R}^2$, $\hat{A}^2$	0.93, 29.1		0.9, 21.82	

where the signs in subscript re‡ect the expected change in probability associated with each variable. The second column of Table 1 are the results obtained when the OECS is treated as an homogeneous group. Real growth, openness , debt to GDP, Debt Service to Government Revenue and the average interest on debt were signi…cant but Openness, Debt to GDP and the Average interest rate had the wrong signs. The real exchange rate, debt service and debt growth had the expected signs but were statistically insigni…cant. The magnitude of the coe¢cients are plausible. The coe¢cient for real exchange rate imply that a one per cent increase in the real exchange reduced arrears by 0.96 of a percentage point. A similar change in real growth translates to a reduction in arrears equivalent to 0.35 of a percentage point. Debt service as a proportion of recurrent revenue had a strong impact on arrears with a one percent increase in this ratio translating to 2.5% increase in arrears. The condition number for the independent variables indicated mild collinearity but the robustness of the estimates rules out signi…cant distortion from its presence. The regression …t was good, 86% of the variation in the dependent variable is tracked by movement in the independent regressors.

The third column tries to control for country-speci…c facto. All of the variables sued in this regression are measured as deviations from country speci…c three year averages for each variable. The results are very interesting. The coe¢cient for all the regressor statistically indistinguishable from column 2 but the constant term changes sign but remains insigni…cant. The change in the constant term is probably an indication that country speci…c factor have been omitted from the analysis and are showing up in the behavior of the constant term. The next iteration in the research agenda will include one way …xed e¤ects analysis..

Columns 4 and 5 are the results from the linear probability model. The coe¢cients for openness, in‡ation, debt service and debt growth had the right signs but only debt service and debt growth were statistically signi…cant. The coe¢cient for the average interest create was signi…cant but had the wrong sign. An LM test failed to accept this model as alternative to the model in column 1. Generally, the linear probability did poorly. A Goldfeld-Quandt test could not reject the presence of heteroscedasticity.

Table 2 presents results from the probit and logit models. Both models assume no country speci…c controls which probably limits the robustness of these results. Of the coe¢cients that were signi…cant, only that for debt service had the right sign. The coe¢cient for debt to GDP had the wrong sign but had the greatest e¤ect on the likelihood of arrearage, with a 1% movement in this index e¤ecting an 8% change in the likelihood of arrears. The second most in‡uential variable was the index of openness, a 1% change in which could raise the likelihood by over 5%. The …t for this model was good but the sparse signi…cance warrants treating the results with caution. The results from the logit model was relatively unimpressive when measured by the standard error of the coe¢cients. The average interest rate and debt service were signi…cant and both had the correct signs. The variables having greatest in‡uence on the likelihood of arrearage was debt to GDP,openness and the average interest rate respectively. The regression …t as measured by the pseudo- R^2 was good for both models but should be treated with caution because no account has been taken of the numerous country speci…c sources of variations which this measure may be re‡ecting.

6 Concluding Remarks

Our analysis has shown that it is possible to estimate some of the risk associated with arrears on government debt in the OECS. Full implementation of a system to provide timely and accurate assessment of these risk is a cornerstone in any e¤ort to develop e¤ective and credible capital markets in the region. Both the Eastern Caribbean Central Bank and multilateral and bilateral …nancial institutions can further contribute to development of truly viable capital markets and private sector led development through continuing and increased cooperation in :

- Improving institutional capacity to ensure adequate and timely delivery of information related to domestic debt and other …nancial information.
- Support in the development and implementation of adequate risk assessment systems.
- Programmed support for initiatives geared toward widening the array of traded instruments.

The next iteration in the research agenda will pursue re…nements of the analytical framework to identify some of the country speci…c factors in‡uencing arrearage and other risks. In particular, it may be useful to examine the stability of the system when cyclical political and random shocks such as natural disasters are included in the model.

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