A Fiscal Insurance Proposal for the Eastern Caribbean Currency Union

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Abstract

This paper proposes the implementation of a fiscal insurance mechanism for the member countries of the Organization of Eastern Caribbean States (OECS). Fiscal insurance would be important to cushion against transitory shocks and would also reinforce the union's long-term viability. These countries are already linked together through a common currency, administered by the Eastern Caribbean Central Bank (ECCB) under a currency board arrangement. Preliminary evidence suggests that volatility in fiscal accounts would be reduced if countries join a fiscal insurance arrangement through the possibility of cross-compensations under a risk-sharing scheme. Moreover, since the regional fluctuations of output and government revenues are not significantly correlated, a fiscal insurance mechanism can take advantage of these asymmetries and lead to welfare gains for all members. The paper presents numerical simulations for partial and full insurance schemes and quantifies the required size of the initial buffer. It also simulates what would be the welfare gains in terms of lower volatility and lower initial buffer as compared to self-insurance.

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I. Introduction

This paper provides preliminary empirical evidence to support the establishment of a fiscal insurance mechanism for the OECS[1] monetary union. The recent literature has recognized that fiscal insurance constitutes an important instrument for currency unions to respond to asymmetric shocks whenever there is a market failure in the provision of insurance.

Fiscal deterioration in the OECS, as reflected by recent high fiscal deficits and indebtedness, has given union members less room for further access to outside credit markets and debt rollovers. In addition, there are very limited market based insurance mechanisms to accommodate transitory shocks, like hurricanes, terms of trade shocks and fluctuations in tourism. Therefore, fiscal insurance would be important not only to cushion against transitory shocks but also to reinforce the union's long-term viability.

The present paper proposes a framework to analyze what would be the benefits and costs if a fiscal insurance scheme were implemented. Section II presents data on the economic characteristics of the region and in particular on what are the sources of volatility. Section III describes the trade-off between efficiency gains and the incentive cost of a fiscal insurance scheme. Section IV presents an analytical framework to analyze the proposed policy and suggests what would be the optimal characteristics of the contract given the incentives problems explained in section III. It also presents a Monte Carlo simulation to quantify what would have been the risk sharing gains in terms of initial buffer requirements and reduced volatility as compared to self-insurance. A simulation for full and partial insurance is performed in order to quantify the required initial buffer, net transfers from each member in different stages of the cycle and an assessment of the risk sharing gains as opposed to self-insurance. Section V analyzes further steps needed to implement the proposed scheme. Section VI concludes.

[1] Organization of the Eastern Caribbean States.

II. Background

This paper proposes the implementation of a fiscal insurance mechanism to cushion against transitory shocks in the Eastern Caribbean Currency Union (ECCU)[2]. Such an arrangement would also strengthen the monetary union, since member countries are small open economies subject to very large exogenous shocks.

Fiscal insurance refers to a system of intra-country compensating payments undertaken to smooth cyclical fluctuations. Members would agree to contribute to a buffer fund administered by a centralized fiscal authority like the Eastern Caribbean Central Bank (ECCB). The risk-sharing scheme would consist of a set of rules that would determine the amounts of net transfers according to permanent and cyclical components in government revenues.

In the context of a monetary union of countries subject to large exogenous shocks[3], a fiscal insurance mechanism could be of great value. It would strengthen the commitment to participate in the monetary union, as it would allow members to benefit from the insurance mechanism. For example, during recessions, members lacking financing could have incentives to leave the union to pursue monetary financing, or to use monetary policy to accommodate relative prices changes. Such incentives would be moderated by the possibility of receiving transfers from the common pool to cushion the shock. In this way, fiscal insurance adds credibility to the monetary union, further contributing to price stability and moderating volatility in consumption, thus removing incentives to leave the currency union.

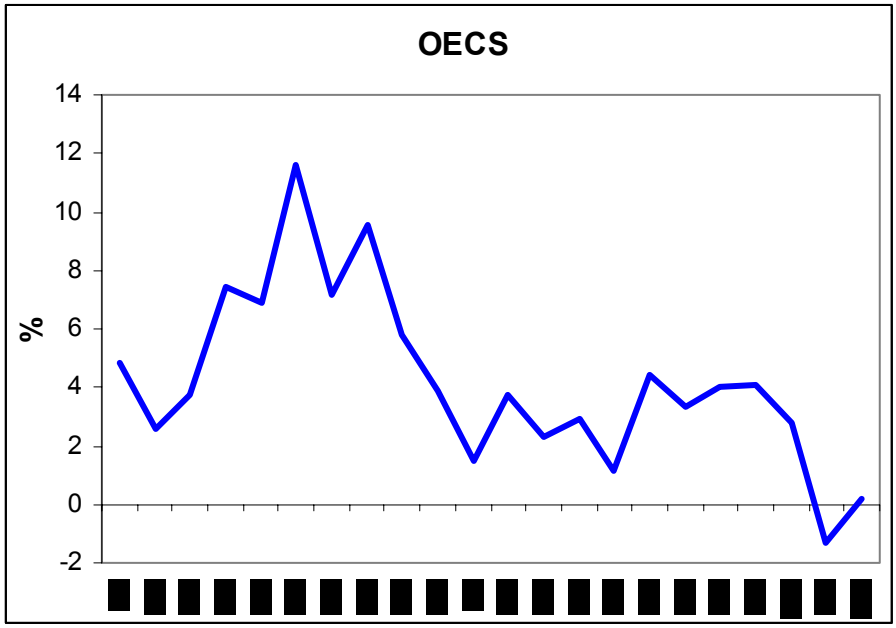
Strengthening the monetary union is an important objective since the OECS economies have been particularly vulnerable. Recent shocks have affected regional

[2] Eastern Caribbean countries are institutionally organized through the establishment in 1981 of the Organization of the Eastern Caribbean States (OECS). It includes six independent states: Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia and St. Vincent and The Grenadines; and three additional members which are overseas territories of the United Kingdom: Montserrat, Anguilla and The British Virgin Islands. Montserrat is a full member while Anguilla and The British Virgin Islands are associate members. This paper will only consider the 6 independent states mentioned above. Although the Monetary Union was consolidated in 1981, the countries have had a common currency since the time when they were British colonies. The common currency, the Eastern Caribbean dollar (EC$), is issued by the Eastern Caribbean Central Bank (ECCB) and has been pegged to the dollar since 1976 at the rate of EC$2.70=US$.

[3] The degree of asymmetry is evaluated in this section.

growth performance, which fell from an average rate of 6% in the 1980s to 3% in the 1990s (Figure 1). The volatility in economic performance is the result of multiple factors, including natural disasters, terms of trade shocks and fluctuations in the demand for export services, in particular financial services and tourism.

Figure 1. OECS GDP real growth



Source: Eastern Caribbean Central Bank.

Natural Disasters

Natural disasters such as hurricanes and flooding frequently hit the region. Table 1 shows the frequency and average cost of natural disasters in term of GDP for the period 1970-2000. In that period, St Lucia was the most adversely affected with an average cost of 143% of GDP, while the least affected was Grenada with an average cost of 4% of GDP. The same results hold if cost is weighted by frequency. As shown in Table 1, the cost as well as the frequency varies across islands.

Table 1. Frequency and Cost of natural disasters 1970-2000

Country	Frequency	Average Cost/GDP (in percent)
Antigua	6	10.76
Dominica	6	29.40
Grenada	4	3.93
St Kitts and Nevis	7	32.94
St Lucia/1	8	143.93
St. Vincent and the Grenadines	8	17.13

1/ in 1988 Hurricane Gilbert caused an estimated US$1 billion of damage
Source: World Bank (2002)a.

In addition, Table 2 shows which countries were affected by shocks in terms of persons and total costs for different periods. As can be seen, natural disasters have hit different islands in different years, with the exception of 2000 when most of the islands were affected. This asymmetry could be exploited through the proposed risk-sharing scheme in order to take advantage of potential welfare gains.

Table 2. Main Natural Disasters in OECS (1979-2000)

Year	Country (Hazard Type's Name)	Persons Affected	Damage US(000s)/1
1979	Dominica (David and Frederick)	72,100	44,650
1980	St Lucia (Allen)	80,000	87,990
1989	Montserrat (Hugo)	12,040	240,000
1989	Antigua, St Kitts & Nevis, Montserrat (Luis)	33,790	3,579,000
1995	St Kitts & Nevis (Luis)	1,800	197,000
1999-2000	Antigua, Dominica, Grenada, St.Lucia (Lenny)	--	268,000

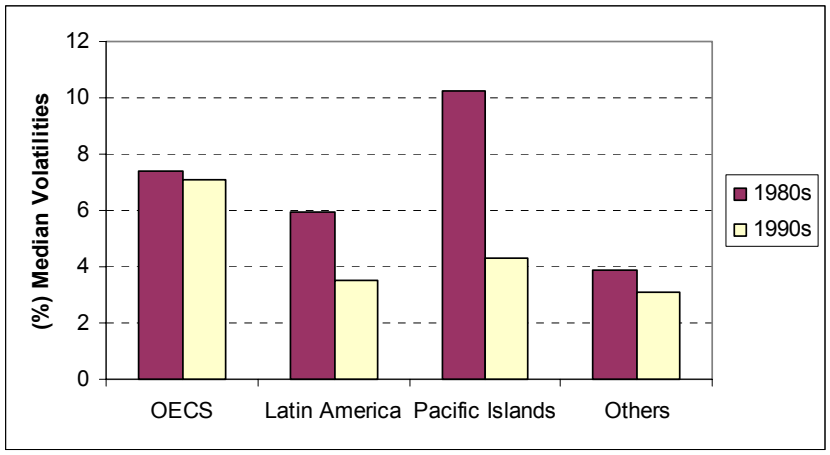
1/Damage is valued at the year of the event
Source: World Bank (2002)c. and OFDA/CRED International Disaster Database (EM-DAT) 2002. Hurricane Lenny Recovery in the Eastern Caribbean.

Terms of Trade Shocks

Export prices fluctuations can constitute another source of volatility, which can have large effects on economic activity given the degree of openness and export concentration in terms of a small number of commodities like tobacco, banana, cocoa, beverages and sugar. In the case of the Eastern Caribbean economies, export of services like tourism constitutes one of the main sources of income; as a result export

concentration is high only when export services in tourism is included in the calculation. For example, when tourism is added to the calculation, export concentration for the region is on average 60%[4] but when considering only the first four commodities, export concentration drops to only 10%. As a result, term of trade volatility has been high –as compared to other regions- due to the high degree of openness, export to GDP shares has been for the OECS around 60%. Figure 2 displays the volatility of terms of trade shocks where price volatility is weighted by openness. Notice that OECS term of trade volatility is relatively high compared to other regions.

Figure 2: Volatility of Terms of Trade Shocks/1



/1: Term of Trade shocks are defined as (trade/GDP)*(change in term of trade)

Source: WDI-GDF, World Bank and terms of trade data are from the IMF.

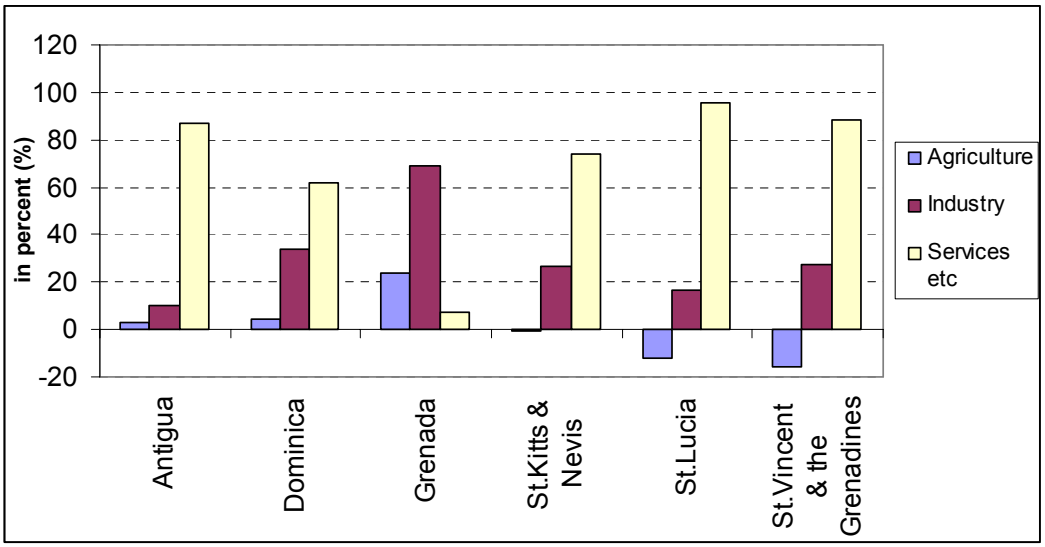
Depending on the sectoral contribution to GDP (Figure 3), the different shocks described above have impacted OECS countries' growth volatility in different ways. For example, hurricanes and flooding usually have a greater impact on primary producers since it is difficult for agricultural producers to insure their production against natural disasters[5]. On the other hand, fluctuations in tourism and financial services have a greater impact in countries with a larger services sector. Figure 3 shows each sector's contribution to growth by country. The poor growth performance in the case of St Kitts and Nevis, St Lucia, St Vincent and Dominica reflects the large share of the primary

[4] Export concentration in 1998 was approximately 58% in the case of Antigua and Barbuda, 38% Dominica, 48% Grenada, 86% St. Lucia, 60% St. Kitts and Nevis and 57% St Vincent and the Grenadines. (World Banks staff calculations based on GDF-WD).

[5] "The average farmer in these countries is particularly vulnerable to catastrophes because he is unlikely to have any form of crop insurance coverage" World Bank (2002) b, p. iv.

goods sector as a proportion of GDP compared to other countries in the region. It also reflects the fact that they were the most affected by hurricanes during the nineties. In addition, Dominica's zero and negative growth rates during 2000 and 2001 result from a decline in export earnings in the banana industry[6].

Figure 3. Sectoral Contribution to Growth (1990s)



Source: Based on World Bank estimates, World Bank (2002)a.

These sources of volatility have not only affected economic growth but also have complicated the management of government finances. Fiscal expenditures have had to respond to large shocks, affecting countries' compliance with the fiscal guidelines set by the Eastern Caribbean Central Bank (ECCB). Currently, the ECCB sets fiscal guidelines without any enforcement mechanism resulting in low rate of compliance by its member's countries. Moreover, the external debt of these islands has grown significantly in the late 1990s as well as the central government's overall deficit (Table 3).

[6] The fall in export earnings is mainly due to the change in the European Union banana regime in 1993 and by WTO ruling against preferential market access that Dominica had with the EU. This sector's value-added as percent of GDP was around 20% during the 1990s.

Table 3. OECS Selected Economic Indicators (as percent of GDP).

	GDP Growth (% change)	Central Government Deficit (% GDP)	Current Account Deficit (% GDP)	Public External Debt (% GDP)
1998	4.0	-1.5	-14.2	42.7
1999	4.1	-2.9	-16.1	75.8
2000	2.8	-4.4	-14.8	46.4
2001	-1.3	-6.4	-14.7	52.7
2002	0.2	-6.8	-16.5	62.7

Source: Eastern Caribbean Central Bank (ECCB).

The current policy of the ECCB is to issue recommendations about the desired level of fiscal savings to reduce expenditures or increase revenues. However, the fact that most islands do not comply with the fiscal targets set by the central bank, exerts pressure on the whole union. This complicates the overall fiscal outlook and leads to further constraint on growth, affecting the institutional stability of the union that has sought to maintain an environment of growth and price stability since its creation in 1981[7].

[7] See Appendix IV for a table of ECCB quantitative guidelines and country compliance.

III. Benefits and Limitations of Fiscal Insurance

A. Why Would Fiscal Insurance be Important in the Context of a Monetary Union?

Under a currency union the member states cannot implement independent monetary policy to smooth business cycle fluctuations. This increases the importance of fiscal policy, which could be useful to accommodate asymmetric and country-specific shocks. Such shocks are not addressed by a centralized monetary authority, which only accommodates symmetric shocks. In recent years the indebtedness of some OECS member has been increasing, constraining their ability to conduct counter-cyclical fiscal policy since foreign debt is likely to be charged at higher interest rates if creditors perceive that debt could become unsustainable. Higher debt levels in some member countries, may eventually affect the viability of the monetary union, if over-indebted governments seek financing from the regional central bank affecting indirectly the viability of other less indebted countries. Under such a scenario, fiscal insurance could not only provide an additional mechanism to accommodate asymmetric shocks and smooth consumption, but it could also help to reinforce the willingness to participate by countries with better market access and lower debt levels.

The imperfect correlation of economic fluctuations across members makes the case for a fiscal insurance mechanism, which would allow transfers from regions experiencing booms to regions in recession. Another source of welfare gains may be a reduction in individual countries' fiscal volatility that results from a volatile environment and from government responses to accommodate asymmetric shocks[8]. A reduction in volatility may be possible through fiscal insurance system of cross compensations that would result in the union's output and fiscal accounts being less volatile than that of its individual members[9].

A fiscal insurance mechanism provided at the union level would be a second best policy under the assumption that financial markets cannot provide full insurance to

[8] See below a correlation of fiscal account and regional output.

[9] Ahmad and Singh (2003) emphasize that "…even in the absence of a negative correlation between regional-shocks a region with a volatile income, such as an oil producer, would still have an incentive to form a federation with regions with more stable incomes", p.4.

individuals or to regional governments. Incomplete markets and liquidity constraints favor government intervention at the union level. As was explained, in the case of OECS, the high indebtedness of some islands can make it difficult to obtain further market access and they may face liquidity constraints. Pressures at the union level arise from the fact that the ECCB would eventually have to intervene if local governments cannot service their debt, affecting the union's financial stability. Thus, in the presence of externalities, fiscal insurance could contribute to more efficient outcomes since it would help to promote more fiscal coordination among its members. In addition, under the presence of spillovers, free rider problems may arise when members benefit from other members' fiscal expansion. This could in turn constitute another source of welfare losses.

On the other hand, in the presence of negative externalities in terms of financial instability being transmitted to all members, the central bank could then make the case for effective debt and deficit targets. However, fiscal and debt targets may constitute a burden in a recessionary period. In that case, fiscal insurance would not only help to cushion for transitory shocks, but it would also make easier for the countries to comply with the targets.

B. Benefits of a Fiscal Insurance Scheme

Recent literature on monetary unions[10] suggests that fiscal insurance mechanisms may be an important element in making a union's operation smoother than without insurance because of the possibility of buffering transitory shocks, therefore reinforcing the sustainability of the union.

If members of the union coordinate their fiscal policies in such a way that asymmetries in cyclical fluctuations of economic activity or tax revenues are smoothed out by transfers from the buffer, potential conflicts in the desired short-run monetary policy would be lower. For example, suppose member A is in a boom and member B is in a bust. In such a case the equilibrium real exchange rate of island A would tend to appreciate while that of B would tend to depreciate. Suppose that as a result of this situation the government of island B has a preference for devaluation, to facilitate accommodation of relative prices and to reduce unemployment. Then, for A, this would

[10] See Alesina(2001) and (2002), Eichengreen (1997), Wyplosz (2001), Bayoumi and Masson (1997), Blejer, Frankel, Leiderman and Cheney (1997), Grauwe (2001), Masson and Patillo (2001).

clearly be an inadequate monetary policy, as monetary expansion would tend to be inflationary. Now, if a fiscal buffer were in place, A would be making positive contributions to the buffer, while B would be withdrawing funds. With A saving and B spending, the real exchange rate divergence would be moderated and perhaps even eliminated, resulting in reduced conflict about monetary policy.

The fact that the OECS central bank operates under a fixed exchange rate regime does not make this potential conflict less important. As explained above, a member who has high preference for devaluation may decide to leave the union and conduct an independent monetary policy. Therefore, a fiscal insurance scheme could reinforce the union by reducing incentives to exit.

Another potential benefit of the fiscal insurance scheme is lower borrowing costs, since the central bank may be able to issue debt with the buffer as collateral. In addition, aggregate external public debt may be lower under a fiscal insurance scheme, since the implicit system of internal cross-compensations may substitute for the current problem of liquidity constraints that make debt rollover costs higher. All of these factors may improve the market perceptions of the future sustainability of the fiscal accounts and may lead to more favorable access to international credit markets.

C. Limitations of a Fiscal Insurance Scheme

A fiscal insurance proposal would have to take into account the incentive problems that this type of policy generates. For example, moral hazard problems constitute an important source of inefficiency if countries are guaranteed a certain level of revenues. In that case, countries might have lower incentives to put efforts into collecting tax revenues, as they can benefit form insured revenues levels.

In addition, a common-pool problem may arises when each region has an incentive to abuse the insurance mechanism since its cost is fully financed by the union's tax payers, not just domestic contributors, resulting in lower willingness to participate as countries may not want to end up transferring resources to "free rider" nations.

Moreover, willingness to participate will be an important aspect to consider as it might be affected by each member risk tolerance; heterogeneity in risk tolerance can

result in different preferences for the final amount of insurance that each country would be willing to buy.

Finally, rent-seeking behavior by politicians may be exacerbated under pooling of reserves or centralized buffer mechanisms. Constitutional rules that restrain the discretionary power of politicians could resolve this problem (Brennan and Buchanan, 1977). Alternatively, as suggested by Rogoff (1985), competition for resources among regional governments could solve the rent-extraction problem.

D. Preliminary Evidence for the OECS

In this section preliminary evidence to support the proposal for a fiscal insurance mechanism is studied. In particular, it is shown that lower volatility for the aggregate as compared to individual countries would induce participation in the insurance scheme. In addition, evidence of the co-movements of the fiscal accounts with the economic cycle is presented to observe the degree of possible cross compensations at the aggregate level.

Table 4 shows that GDP volatility of the union has been lower than GDP volatility of each member countries. To make the volatility measures comparable, the coefficient of variation shows the relationship between average growth and volatility within the region. For example, during the 1990s volatility was four times larger than the average in the case of Dominica and one and a half times larger for St. Lucia. The union's coefficient of variation is the lowest along with the coefficient of St Kitts and Nevis.

Table 4. Growth and Growth Volatility in OECS (in percent)

	Antigua & Barbuda	Dominica	Grenada	St. Kitts & Nevis	St. Lucia	St. Vincent & the Grenadines	OECS
Growth (%)							
Avg 80-90	6.1	5.4	6.2	6.6	7.3	6.1	6.4
Avg 91-01	3.4	0.8	3.8	4.4	2.0	3.4	2.9
Std Dev (%)							
Std. Dev. 80-90	3.7	3.6	3.2	4.4	4.8	3.2	2.8
Std. Dev. 91-01	3.3	3.3	3.4	2.3	2.8	2.6	1.4
Coef. of Variation[1/]							
Coefficient 80-90	0.6	0.7	0.5	0.7	0.7	0.5	0.4
Coefficient 91-01	1.0	4.1	0.9	0.5	1.4	0.8	0.5

[1/] Coeficient of Variation = Standard Deviation/ Average Growth

Source: Own calculations based on Eastern Caribbean Central Bank (ECCB).

Moreover, as shown in Table 5, when the volatility in growth for each individual country is compared with the union's volatility of the total six countries (including that particular country) and with the union's volatility of only five (without including that particular country), the volatility of each individual country is consistently higher. As illustrated in Table 5, for the period 1990-2001, the first column (individual country) is always higher than the second and third column, implying that no member seems to be overwhelmingly more stable that its partners; as a result the likelihood of countries deciding not to participate to avoid importing volatility from very unstable partners does not appear very high.

Table 5. Growth Volatility 1990-2001 (in percent)

	Individual Country Std. Dev.(%)	All Six Countries Std. Dev (%)	Five Countries/1 Std. Dev (%)
Antigua & Barbuda	3.3	1.4	1.7
Dominica	3.3	1.4	1.3
Grenada	3.4	1.4	1.3
St. Kitts & Nevis	2.3	1.4	1.5
St. Lucia	2.8	1.4	1.4
St. Vincent & the Grenadines	2.6	1.4	1.6

/1 Five Countries calculates the standard deviation in growth for the five countries without including the country of that row.
Source: Own calculations based on Eastern Caribbean Central Bank (ECCB)

These results support the conclusion that countries would have an incentive to participate because they may end up reducing their volatility since the group as a whole is more stable as compared to individual country volatility.

A preliminary analysis of fiscal accounts in the OECS, in particular revenues and expenditures' real growth, shows a volatile environment. The standard deviation for different sample periods and countries (depending on data availability) was calculated as shown in Figure 5 and 6.

The volatility in the case of revenues (Figures 5.a and 5.b) shows that the aggregate for the OECS is consistently lower than the volatility for all other individual members with the exception of St. Vincent and the Grenadines for more recent periods. In the case of expenditures (Figure 6.a and Figure 6.b), volatility has been consistently lower for the aggregate in both of the periods considered.

In addition, volatility in expenditures and in revenues has been decreasing over time as shown in Figure 5.b. and 6.b. In particular, for the period 1984-1992 volatility in expenditures has been on average higher than volatility in revenues, 14% and 9% respectively. This is also reflected in the aggregate volatility in expenditure (7.5%) and revenues (3.8%). In contrast in more recent periods (1993-2001) volatility in expenditures and in revenues has been closer across countries and for the regional aggregate. It has been on average 9% in the case of expenditures and 7% in the case of revenues, and 3% and 3.3% respectively for the regional aggregate.

The fact that aggregate volatility has been lower than the individual country volatility provides an important incentive to join the fiscal insurance mechanism. IN addition, the convergence in the volatility between expenditures and revenues might facilitate the operation of the insurance scheme since the centralized fiscal authority (CFA) would have to guarantee a certain level of expenditures that would have to be attained with revenue resources.

Figure 5. Volatility in Revenue Real Growth

Figure 5.a. Standard Deviation (1994-2001)

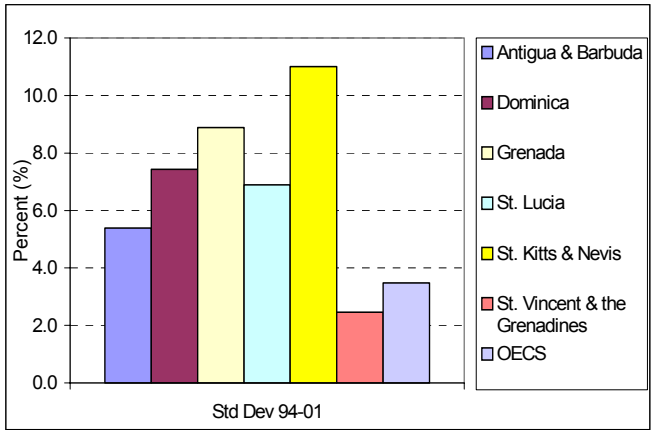
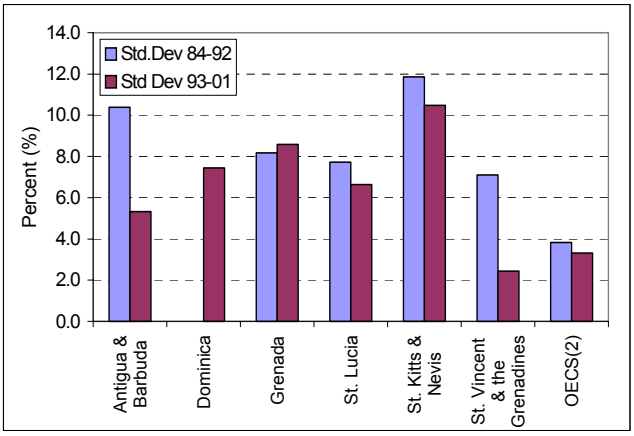


Figure 5.b. Standard Deviation (84-92 / 93-01)



(2) It does not include Dominica due to data unavailability for the period 84-03.

Source: Own calculations based on Eastern Caribbean Central Bank.

Figure 6. Volatility in Expenditure Real Growth

Figure 6.a. Standard Deviation (1994-2001)

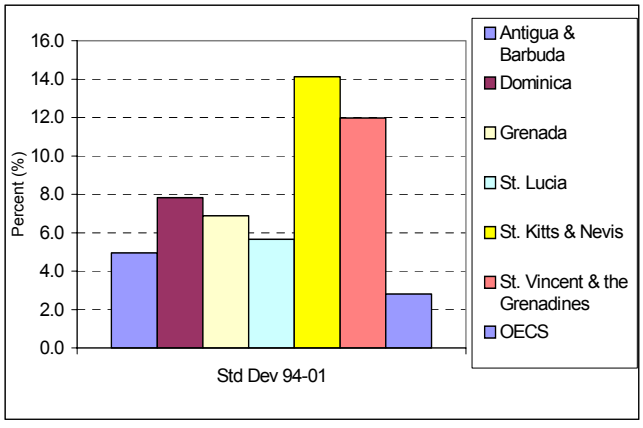
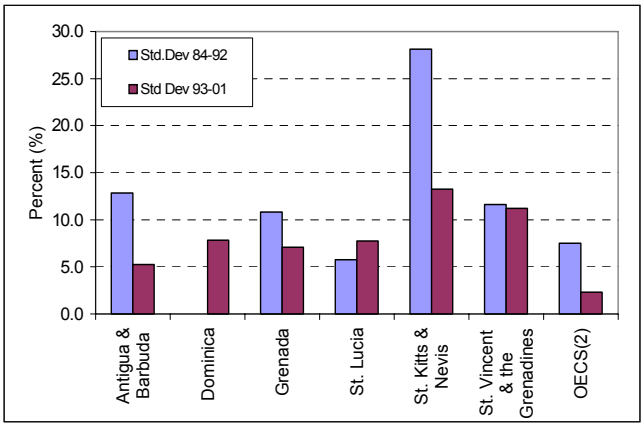


Figure 6.b. Standard Deviation (84-92 / 93-01)



(2) It does not include Dominica due to data unavailability for the period 84-03.

Source: Own calculations based on Eastern Caribbean Central Bank.

Cross-compensation under a risk sharing mechanism implies that cyclical fluctuations should ideally be negatively correlated for the proposed policy to yield maximum potential benefits. Correlations of revenues and expenditures with regional GDP are shown in Table 6.

Table 6. Correlation of Regional GDP with Countries' Revenues and Expenditures (1981-2001)

	Revenue- GDP/1		**Expenditures-GDP/1**	
	Correlation	Sig Level	Correlation	Sig Level
Antigua & Barbuda	0.89(*)	0.00	0.76(*)	0.00
Dominica	0.05	0.89	0.24	0.54
Grenada	0.27	0.27	-0.39	0.10
St. Kitts & Nevis	-0.11	0.64	-0.28	0.21
St. Lucia	0.94(*)	0.00	0.73(*)	0.00
St. Vincent & the Grenadines	0.61(*)	0.00	0.34	0.12

1/Note: Correlation of the cyclical component of revenues and expenditures with OECS cyclical output.
(*) 5% statistical significance.
Source: Eastern Caribbean Central Bank (ECCB)

As can be seen when the union as a whole is in a boom or a bust, there is no clear pattern of behavior in the individual fiscal accounts. While some countries' fiscal accounts move pro-cyclically relative to the union cycle, e.g. Antigua, St. Lucia and St Vincent, others seem to move in opposite direction, but the coefficients are not significant. Positive but not significant coefficients may imply that the observations are very noisy, or that fiscal accounts do not show a clear pattern of correlation with the regional GDP.

These preliminary results suggest that a fiscal insurance mechanism for the OECS may be feasible to implement. The limited correlation of individual fiscal accounts as well as lower aggregate volatility at the regional level may imply that there is room for potential gains under a risk-sharing mechanism.

IV. A Fiscal Insurance Proposal for the OECS

The analysis in the previous sections suggests that under a fiscal insurance mechanism OECS countries may be able to smooth consumption, reduce volatility and obtain significant welfare gains. In addition, increasing the perceived gains from participation would eventually reinforce the union' institutional environment.

This section formulates a quantitative assessment of the amount of resources required for the buffer stock to be sustainable. Different coverage alternatives are considered for various degrees of insurance, ranging from full insurance to partial insurance coverage. After assessing this basic question, some further analysis and details on implementation are presented in section V.

IV.1. Basic Framework: Initial Buffer and Level of Coverage

A. Size of the Buffer and Coverage

Two alternatives are considered: full insurance and partial insurance. The types of contract would depend on countries' ability to affect outcomes, i.e. the amount of revenues that they are able to collect. In the case of full coverage, members would be insured a certain level of revenues that would guarantee a desired expenditure level. If the individual member cannot affect the level of revenue outcomes then this type of contract would be optimal. On the other hand if countries can affect revenue outcomes, this type of contract raises two problems: moral hazard and free rider problems.

Moral hazard could arise when there are low incentives for tax collection efforts given that a basic level of expenditures is guaranteed by, for example, a centralized fiscal authority (CFA). Free riding may result from the government's incentives to tax at lower rates and access resources collected by other members through the buffer. These limitations make it necessary to consider a second possibility: partial insurance in order to limit incentive problems.

Under partial insurance the CFA would have to determine the level of coverage (which would now be less than 100%), to moderate moral hazard problems, that is, the level of revenues for which there is no fiscal insurance.

It is worth noting that in the case of the OECS, moral hazard problems can be considered moderate. Since moral hazard, by definition, arises under asymmetric information and unobservable actions that affect outcomes, in the case of OECS, member countries are affected mostly by exogenous shocks, which are observable. The types of shocks are, as mentioned before, terms of trade shocks, hurricanes and floods. This does not imply that perverse incentives under full insurance do not exist, but rather that they are moderated since the main source of risk cannot be affected by governments' actions.

The fact that most of the shocks are exogenous and observable makes full insurance an interesting possibility worth analyzing. In addition, a simulation for full insurance would be useful to provide a measure of the maximum amount of potential initial buffer sizes. On the other hand, full insurance is very difficult to apply and would only work under pure asymmetric shocks. In that case, partial insurance would not only be useful to solve incentives problems but it would make a fiscal insurance proposal more feasible. That is, access to the buffer would be allowed only under extraordinary outcomes.

B. Initial Buffer Financing

The initial buffer financing would depend on the international market conditions at the time the buffer is established together with countries initial conditions.

Initial conditions would affect the initial buffer fund financing. In particular, a study of the potential regional fiscal savings would be important in order to determine if countries can rely on regional savings or additional resources from the market would be needed.

In term of market access, if at the time the policy is implemented interest rates are low and there is good access to international financial markets, this condition would help to add to government savings and in that case governments could issue a bond with guaranteed future flows to the buffer. In contrast, if interest rates were very high and the debt level reaches an upper bound, countries would have to rely on its own resources. International organizations could be a source of additional funds at the beginning, depending on the coverage that would be provided (full or partial insurance). This may be particularly important in the case of full insurance, since it would require a larger buffer.

C. Full and Partial Coverage Contracts.

Full coverage

Under full coverage, fiscal insurance would completely cover expenditure fluctuations from falling revenues due to transitory shocks, such as natural disasters or terms of trade shocks. It is assumed that countries cannot affect outcomes (no incentives problems).

The buffer would make positive transfers to close the gap between insured expenditure levels and observed fiscal revenues. As a result, the buffer would get positive net transfers from countries whose revenues are above the trend, and would be making positive transfers to (getting net negative transfers from) countries below the insured level of expenditures.

Under full coverage the fiscal authority managing the buffer would charge an actuarially fair premium such that the expected losses would equal expected revenues of the buffer[11]. The buffer would charge a premium at the beginning of each period, and would transfer resources to each country in accordance to the ex-post realization of shocks.

Given that the CFA would be pooling risk under an actuarially fair scheme, risk averse countries would be benefiting in expected value terms from participation. That is self-insurance would be more costly than union insurance. This makes it likely that members' countries would voluntarily agree to participate in a regional fiscal insurance scheme.

Partial Coverage

Partial coverage would be optimal in order to moderate incentive problems under full coverage like moral hazard and free riding. It is usually assumed that individual members may affect outcomes, i.e. the level of revenues that they can collect.

However, partial coverage would be costly in terms of welfare because it would only permit partial smoothing of expenditures. The optimal contract would trade off the benefit of additional coverage against the incentive cost of moral hazard. As a result,

[11] Assuming zero profits and that fiscal authority would be risk neutral while member countries are risk averse.

countries would have to internalize a part of the risk in order to moderate incentive problems. A possible contract would include a "deductible" in order to limit coverage. The buffer would disburse resources to insure expenditures that fall below some threshold level as determined by the deductible. This means that governments would have to issue debt or rely on their own savings to prevent expenditures from falling within some limited range. If the optimal deductible over cyclical revenues were d, payments form the buffer would only be liable after *d* occurs and would only cover cyclical revenues that fall up to a predetermined value N, e.g. two standard deviations below the trend. That is, from zero to *d* and above N the country would have to cover the risk[12]. That is, the CFA would be transferring N-d resources covering partially the revenue shocks.

IV.2. Simulation Exercise

Assumptions and Methodology[13]:

1. Constant real growth rates of GDP, fiscal revenues and expenditures are assumed over the long run.

2. The CFA would only cover for transitory shocks (only cyclical changes in revenues will be considered).

3. In order to compute permanent and transitory components in revenues and expenditures a linear trend on the logarithm of real revenues and expenditures was computed[14]. The trend in revenues sets the basis for the calculation of the permanent sustainable path of expenditures for each island, which is the path of the expenditures that the central fiscal authority (CFA) would guarantee to each member.

[12] This is one possible contract with partial coverage. An alternative feature could be a falling coverage after the upward threshold is reached. That is, when revenues fall below two standard deviations the buffer would only pay two standard deviations for additional fall in revenues beyond the threshold.
[13] Dominica is not included due to data unavailability.
[14] An alternative method would be to filter the data using Hodrik-Prescott (HP) filter. But the H-P filter has two limitations that make it difficult to apply. First, the position of the trend in the last portion of the sample changes as the sample size grows over time, which implies that there is a large degree of uncertainty in the last points of the trend estimate. Second, the trend estimate is very sensitive to the weight parameter. By contrast, a linear trend is more stable since all the observations in the sample have equal weight whereas HP gives a relatively larger weight to the last observation.

4. A Monte Carlo simulation[15] of 100 50-year histories of fiscal revenues observations was generated to test the performance of the insurance scheme for different random shocks and assuming full insurance and partial insurance

5. Rules for net transfers: total fiscal revenues in excess of the expenditure trend (expenditure targets will be equal to the trend in revenues) would be transferred to the CFA. If revenues were below that target, financing would be provided by the CFA.

6. Initial buffer level is determined as a percentage of the initial period GDP for full insurance if in 100 out of 100 histories the buffer is never busted or partial insurance if the buffer turns positive only between 90 and 40 times out of 100 histories.

7. The Law for the dynamic evolution of the buffer stock in real terms:

$$B_{t+1} = B_t(1+i) + \sum_{j=1}^{5} \frac{(R_t - TrendE_t)}{(1+g)^t} \qquad \begin{array}{l} t = 0, \ldots, 50 \text{ (100 histories)} \\ j = 1, \ldots, 5 \quad \text{(countries)} \end{array}$$

Where,

B_t = Buffer stock at time t.
R_t = Revenue at constant prices in time t.
$TrendE_t$ = Expenditure Trend[16]
R_t-$TrendE_t$ = Net Transfers to the Buffer.
(1+i)= real interest rate (3%)

A. Full Coverage

In this particular exercise, full coverage is assumed to try to estimate what would be the maximum cost of the proposed policy. That is, a simulation for full insurance is run provided that the buffer fund is never depleted. The importance of using a Monte Carlo simulation instead of the actual data is that it is not path dependent and on the contrary allows for multiple paths to evaluate the proposed scheme.

Table 7 below presents what would be the required amount of the initial period buffer fund at 1983 prices and as a percentage of the initial period GDP (1983), for full insurance for the baseline case of 100 50-year histories. Robustness for different periods is also shown.

[15] See Appendix I description of the methodology.
[16] Expenditure trend is equal to revenue trend.

Table 7. Initial Buffer Fund. Simulation for Full Insurance

Periods [/1]	Initial period OECS-GDP[/2] (EC$ 1983 Millions)	B0 (EC$ 1983 Millions)	B0/GDP (%)
19 years	1593	250	15.7
30 years	1593	222	13.9
50 years (baseline)	1593	230	14.4
100 years	1593	230	14.4

B0 refers to the initial period Buffer Fund

B0/GDP is the initial period share of the Buffer Fund over the GDP

[/1]: Note that the simulation generated approximately 5000 observations in revenues that were divided in: 263 19-year histories; 160 30- year histories; 100 50-year histories; 50 100-year histories.

[/2]: OECS GDP is the GDP summation of the five-islands considered. The initial period GDP is in 1983 where the fiscal data starts for all five islands.

The initial buffer fund that would be required would be around 14.4% of the initial period GDP from the 100 histories of 50 years, and between 14% and 16% if we consider different period horizons. It is interesting to compare this result with the country's international reserves assets at the ECCB (Table 8), which has been between 13% and 17% in recent years. In particular, during 2002 Grenada and Antigua registered the maximum and minimum share respectively with reserves of 21.2% and 12.2% as shares of GDP. As can be seen, these countries have been holding reserves as buffer funds at the ECCB in magnitude comparables to the simulation exercise above, with the caveat that they are not exercising risk sharing with these resources. Moreover, the ECCB is lending only 40% of this reserves asset under very strict circumstances; as a result, countries cannot fully use these amounts of reserves as a buffer against transitory shocks.

Table 8. International Reserves Assets minus Gold (percentage of GDP)

	1999	2000	2001	2002
Antigua and Barbuda	10.7	9.6	11.4	12.2
Dominica	11.8	11.0	11.9	17.9
Grenada	13.4	14.2	16.1	21.2
St. Kitts and Nevis	16.3	13.7	16.4	18.5
St Lucia	11.2	11.5	13.7	14.2
St Vincent and The Grenadines	12.9	16.4	17.6	14.7
Average	**12.7**	**12.7**	**14.5**	**16.5**

Source: IFS and WEO, IMF

B. Partial Coverage

The CFA would provide partial coverage to reduce incentives problems resulting from moral hazard and "free rider" issues. Countries would bear a share of the costs in the case of low revenue levels, improving the incentives problems. That is, sometimes the buffer is depleted ("bust") provided that there is no full insurance, and the member countries would need to cover for the remaining portion of the shock for which the CFA authority is not giving coverage.

In case that the CFA would cover a percentage of the revenue shocks, Appendix III, Table 1 shows the initial buffer requirements from the Monte Carlo simulation run for OECS and for individual members for coverage between 90% and 50%. One interesting result of the simulation is that for coverage of 90%, the regional (OECS) initial buffer needed would be only 7.3% of the initial period (1983) regional GDP representing half of the buffer requirement for the regional full-insurance (14.4%) or around 116 EC$ Millions in 1983 prices, which is the initial period from which data is available. For coverage between 80-70% the initial buffer needed would be around 5-4% of GDP and for 60-50%, around 2%[17].

[17] Further research on the optimal contract is needed to take into account countries' preferences for risk.

C. Risk Sharing Gains: Lower initial Buffer and Lower Revenue Volatility

Lower Initial Buffer

The welfare gains of a risk sharing mechanism as opposed to individual full insurance are shown in Table 9 where the same simulation was run for individual cases.

Table 9. Initial Buffer.
Simulation for Individual Member's Full Insurance
-Baseline Case (100 50-years histories)-

	GDP (EC$ 1983 Millions)	B0 (EC$ 1983 Millions)	B0/GDP (%)
Antigua & Barbuda	414	78	18.8
Grenada	273	40	14.6
St. Lucia	491	149	30.3
St. Kitts & Nevis	161	133	82.5
St. Vincent	254	32	12.6
ECCU_5	**1593**	**230**	**14.4**

B0 refers to the initial period Buffer Fund
B0/GDP is the initial period share of the Buffer Fund over the GDP

Table 9 shows which are the islands that are clearly benefiting from the risk-sharing mechanism: Antigua and Barbuda, St. Lucia, St Kitts and Nevis and Grenada would have to start with a higher initial buffer to cover for all shocks in cyclical revenues and only St Vincent would need a lower initial buffer than the region as a whole. It is worth noting that St Kitts and Nevis and St Lucia are the ones that benefit the most.

Considering that cyclical revenues fell for the period 1983-2001 between 4 and 10% of GDP, reaching savings of 14% of the GDP as shown in Table 9 would have been costly for the region. The previous simulation only shows what would have been the maximum cost of the proposed policy, independent of the revenue path and for different types of shocks.

The minimum cost that a risk-sharing scheme would require is shown under the partial insurance simulation. Depending on the desired coverage, countries will not only

need lower initial resources for the aggregate –as compared to individual cases- but also, lower than the full coverage option; this would make the risk sharing mechanism easier to implement. Welfare gains in the case of partial insurance are shown in Table 10 for coverage between 90%, 80% and 70%[18] as compared to full insurance (100%), where for all cases, the regional requirement of initial buffer is lower than what individual members would need to fulfill, with the exception of St. Vincent and the Grenadines.

Table 10. Initial Buffer.
Simulation for Individual Member's *Partial Insurance*
-Baseline Case (100 50-years histories)-

Countries	GDP (EC$ 1983 Millons)	100%		90%		80%		70%	
		Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)
Antigua & Barbuda	414	261	63.0	154.0	37.2	110.5	26.7	78.0	18.8
Grenada	273	225	82.3	131.0	47.9	99.5	36.4	72.0	26.3
St. Lucia	491	285	58.0	145.0	29.5	105.5	21.5	83.0	16.9
St. Kitts & Nevis	161	228	141.4	102.0	63.3	89.0	55.2	73.0	45.3
St. Vincent	254	269	105.9	119.0	46.9	102.0	40.2	79.0	31.1
ECCU_5	**1593**	**72**	**4.5**	**21.0**	**1.3**	**13.0**	**0.8**	**7.0**	**0.4**

B0 refers to the initial period Buffer Fund
B0/GDP is the initial period share of the Buffer Fund over the GDP

Lower Revenue Volatility

To evaluate the gains in term of reduced volatility and inter-temporal smoothing, looking at actual revenues from 1983-2001 would serve as an indication of what would have been the gains if the buffer had been in place for that period.

Figure 1 in Appendix II shows the evolution of expenditures and net transfers vis-à-vis the CFA if the system had been in place since 1983. Fluctuations of revenues around the expenditure trend target set by the CFA determine the cyclical component of revenues that constitute net transfers to the buffer if they are above the trend and net transfers from the buffer if they are below the trend. As can be seen, buffer fund fluctuations for the OECS are smoother than individual members' revenue fluctuations, which are the source of inflows to the buffer. In fact, individual member's volatility in cyclical revenues would have been higher than regional fluctuations around the trend

[18] See Appendix III for lower coverage levels.

(Table 11) for all members except St Vincent, which has the same volatility shown for the OECS region.

Table 11. Cyclical Revenue Volatility (1983-2001)

(in percents)

Countries	Std Dev (%)
Antigua	10.5
Grenada	5.6
St Lucia	13.3
St Kitts & Nevis	11.5
St Vincent & The Grenadines	6.8
OECS_5	6.8

Source: Own calculations based on ECCB

The important information provided in Table 11 and Figure 1 in Appendix II is that net contributions and net transfers would have been compensated over time and the risk sharing mechanism would have been sustainable with gains in terms of consumption smoothing and lower volatility. Also, Figure 2 in Appendix II shows the discounted value at the initial period (1983) of revenue net inflows to the buffer for the period 1983-2001. As was emphasized, contributions would have been positive and negative allowing risk sharing between the members.

To illustrate this conclusion the matrix in Table 12 shows how the cyclical fluctuations in revenues are correlated across members. As can be seen, correlation coefficients can be negative, positive or near zero, but in most cases they are not significant at 5% level. That is, for this particular simulation there is not a perfect correlation in the cyclical component of revenues among member countries.

Table 12. Correlation Matrix of Cyclical Revenues (1983-2001)

	Antigua	Grenada	St Lucia	St Kitts & Nevis	St Vincent & The Grenadines
Antigua	1.00				
Grenada	-0.05 0.83	1.00			
St Lucia	0.81(*) 0.00	0.35 0.15	1.00		
St Kitts & Nevis	0.15 0.54	-0.18 0.46	0.01 0.95	1.00	
St Vincent & The Grenadines	0.68(*) 0.00	0.13 0.58	0.60(*) 0.01	-0.23 0.33	1.00

(*) 5% statistical significance level

Source: Own calculations based on ECCB fiscal data. Correlations are calculated with the cyclical revenues in logarithms.

V. Further steps on implementation

The previous sections have presented a framework on the type of contracts, possible size of the initial buffer and degree of coverage. Further work would be needed on the institutional characteristics of the CFA. The fact that managing the buffer would require a degree of coordination at the regional level may make the case for a supra-national organization. The Eastern Caribbean Central Bank (ECCB), which is currently coordinating the monetary policy and establishing fiscal targets guidelines may be the best suited to run this policy. In addition, the Organization of the Eastern Caribbean States that decides on economic and development issues at the union level may be important for political coordination with the countries.

Although fiscal insurance may require coordination with a centralized authority the fact that fiscal policy is currently run at the country level may require at the first stage a certain degree of decentralization to help countries to build institutional as well as technical knowledge to support the work of the CFA.

It would be important that individual countries discuss this policy within their parliaments and in close contact with the ECCB so that they can learn what would be the potential welfare gains of this policy. This information campaign would be critical since countries would want to keep control of the fiscal policy at the country level and could

oppose this policy for political reasons. If the source and magnitudes of gains for each particular country is not clearly established it would be difficult to gain their support. An alternative to be considered in this regard is that countries can be extended a bond to account for the value of their net asset position with the buffer. The buffer would issue a bond in exchange for each country's contribution (that is, every time each member pays a premium), and would have to redeem bonds to the CFA every time it qualifies to withdraw resources. In this way, countries would feel ownership of "their share" of the buffer fund, and their own net asset position in the buffer would reflect their own past fiscal behavior. More research in this area would be important in order to determine the optimal contract and the amount of the premiums.

VI. Conclusions and Suggestions for Future Research

This paper has provided empirical evidence to support the formulation of a fiscal insurance mechanism in the OECS monetary union. A fiscal insurance mechanism will be important to cushion transitory shocks and reinforce the union long-term sustainability. Fiscal deterioration, as reflected by members' indebtedness problems, has given union's members limited room for further market access and debt rollovers. The fact that there are limited insurance mechanisms provided by the market to accommodate for transitory shocks makes it relevant to consider fiscal insurance provided at the regional level.

It was shown that volatility in fiscal accounts would be reduced if countries join a fiscal insurance arrangement due to the possibility of cross-compensations under a risk-sharing scheme. Moreover, since the regional fluctuations of output and government revenues are not highly correlated, a fiscal insurance mechanism can also take advantage of these asymmetries and lead to welfare gains for all members. It is important to consider that a fiscal insurance scheme would reinforce the countries' commitment to the union. Therefore, fiscal insurance would be important not only to cushion against transitory shocks but also to reinforce the union's long-term viability.

The simulation exercise with full coverage shows that an initial buffer in the order of 14% of regional GDP would be required. But the fact that these islands are very open economies indicates that full coverage may be difficult to implement and risky. On the other hand, the simulation with partial coverage seems to reflect that a risk sharing mechanism may exert clear welfare gains since the aggregate fiscal accounts show lower volatility than the individual member's volatility. In addition lower coverage would make fiscal insurance easier to implement since it would require a lower level of funding for the buffer. More research on what would be the optimal contract for partial insurance is recommended.

Further research in this area would be useful not only for the OECS but for other monetary unions experiencing lack of fiscal coordination and similar types of shocks. For example, extension to the CFA franc countries in West Africa would be an interesting case[19].

[19] CFA stands for "Communauté Financière Africaine". In particular, the West African Economic Monetary Union (WAEMU), and the Central African Economic and Monetary Community (CEMAC).

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APPENDIX I

Monte Carlo Simulation

This appendix explains the Monte Carlo simulation used to estimate the initial buffer size for both full and partial insurance. In order to measure the size of the required buffer, 100 50-years histories of revenues were generated for the five member countries: Antigua and Barbuda, Grenada, St Lucia, St Kitts and Nevis and St Vincent[20].

First, in order to estimate the relationship among member's countries fiscal revenues, a first-order Vector Auto-Regression (VAR) was run with the original cyclical revenues for the period 1983-2001, as follows:

(1) $R_{t,i} = \alpha + \beta R_{t-1,i} + \varepsilon_{t,i}$ where i=1…5 economies

The coefficients α and β capture the relationship among the five member countries and ε is the observed or reduced form residual. Following Sims (1980) equation (1) can be re-expressed as a reduced form equation that comes from a structural VAR:

(2) $R_{t,i} = B^{-1}\Gamma_0 + B^{-1}\Gamma_1 R_{t-1,i} + B^{-1}\mu_{t,i}$

Where,
$\mu \sim N(0, 1)$
$B^{-1}\Gamma_0 = \alpha$
$B^{-1}\Gamma_1 = \beta$
$B^{-1}\mu_{t,i} = \varepsilon_{t,i}$
Matrix B^{-1} is the Cholesky factorization matrix

From equations (1) and (2), note that ε is the observed or reduced form residual and μ is the unobserved structural innovation.

Second, in order to generate five thousand new revenue variables the estimated coefficients (α and β) from (1) were used in periods of fifty years and assuming that the initial period revenues are zero ($R_0 = 0$). In addition, five thousand new random variables ε will be needed to get the new revenues variables recursively from (1). In order to get ε, five thousand random numbers μ were generated for each of the economies[21] and using the Cholesky factorization matrix (B^{-1}), the observed errors (ε) were recovered as follow:

(3) $\varepsilon_{t,i} = B^{-1}\mu_{t,i}$

[20] Dominica was not included due to data unavailability for the period 1983-2001.

[21] These random numbers are drawn from a standard normal cumulative distribution. In order to obtain the original values, the inverse of the cumulative distribution was calculated.

Finally, using the 100 50-years histories of revenues and the buffer accumulation equation, the initial buffer would depend on what type of insurance is provided. Two options were considered:

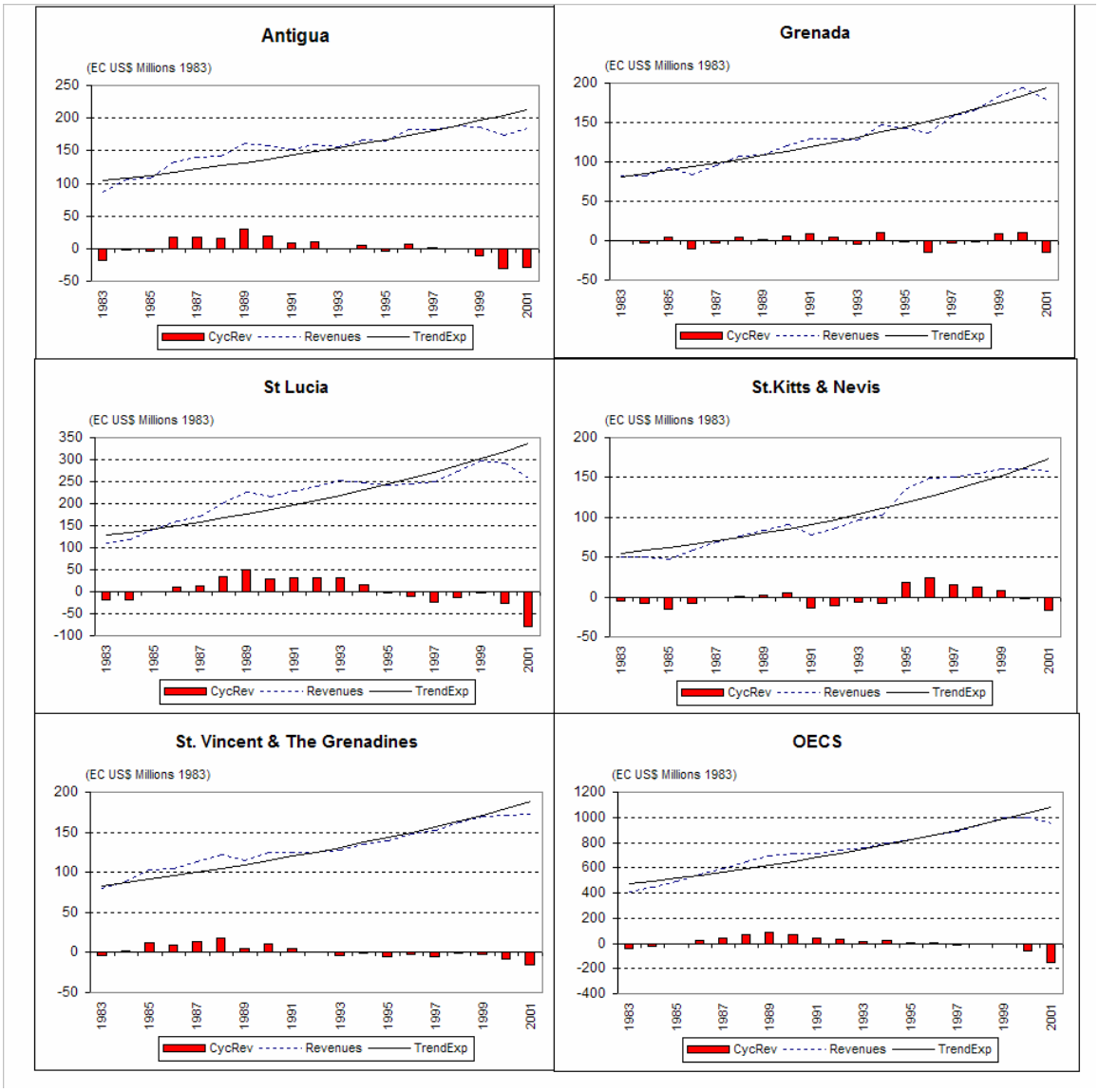
1. **Full Insurance:** B_0 is such that in every period $B_t > 0$ for 100 50-year histories

2. **Partial Insurance:** B_0 is such that sometimes $B_t < 0$. That is, sometimes the buffer is depleted ("bust"), provided that there is no full insurance. Thus, the buffer coverage will be equal to:

$$\% \text{ Coverage} = \frac{\#number\_of\_histories\_whereB_t > 0}{\#of\_histories(100)} * 100$$

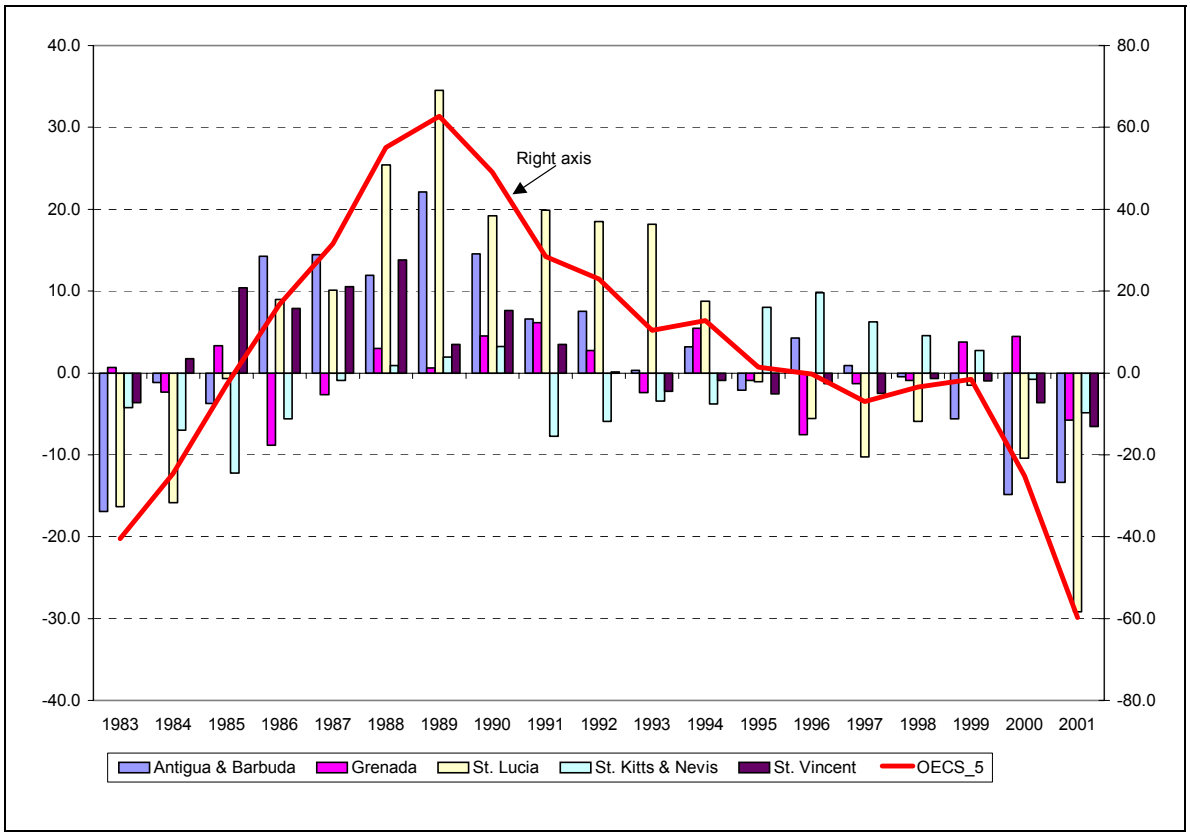
Appendix II

Figure 1. Net Transfers by Country and for the Aggregate OECS



Source: Own calculations based on Eastern Caribbean Central Bank (ECCB)

Figure 2. Net Contributions to the Buffer
(in 1983 EC$ Millions, discounted)



Appendix III

Table 1. Initial Buffer Simulation for Individual Member's Partial Insurance

-Baseline Case (100 50-years histories)-

Countries	GDP (EC$ 1983 Millons)	100%		90%		80%		70%		60%		50%	
		Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)	Bo (EC$ 1983 Millons)	B0/GDP (%)
Antigua & Barbuda	414	78	18.8	39.3	9.5	27.0	6.5	16.0	3.9	11.0	2.7	7.0	1.7
Grenada	273	40	14.6	31.0	11.3	22.0	8.1	18.0	6.6	14.0	5.1	10.5	3.8
St. Lucia	491	149	30.3	78.0	15.9	63.0	12.8	45.0	9.2	37.0	7.5	24.0	4.9
St. Kitts & Nevis	161	133	82.5	81.0	50.3	67.0	41.6	56.0	34.7	47.0	29.2	36.0	22.3
St. Vincent	254	32	12.6	14.0	5.5	9.0	3.5	5.2	2.0	2.2	0.9	1.2	0.5
ECCU_5	**1593**	**230**	**14.4**	**116.0**	**7.3**	**85.3**	**5.4**	**63.0**	**4.0**	**40.5**	**2.5**	**30.7**	**1.9**

Annex IV
OECS Compliance with ECCB Fiscal Guidelines as of 2002

Central Government Savings of 4-6% of GDP				Public Sector Savings 7-8% of GDP			
Do not comply		**Comply**		**Do not comply**		**Comply**	
ECCU	3.8	St Vincent	1.4	ECCU	1.4	Grenada	2.1
Antigua & Barbuda	11.8			Antigua & Barbuda	11.8	St Lucia	7.5
Dominica	6.8			Dominica	6.8	St Vincent	4.3
Grenada	1.9			St Kitts and Nevis	3.0		
St Kitts and Nevis	3.0						
St Lucia	0.9						
Overall Central Government Deficit <= 3% of GDP				**Public Sector Investment 12% of GDP**			
Do not comply (Deficit > 3%)		**Comply (Deficit < 3%)**		**Do not comply (Investment < 12%)**		**Comply (Investment > 12%)**	
ECCU	9.6	St Vincent	3.6	ECCU	8.8	Grenada	13.2
Antigua & Barbuda	13.2			Antigua & Barbuda	1.5	St Kitts and Nevis	14.4
Dominica	11.0			Dominica	5.4	St Vincent	12.1
Grenada	8.1			St Kitts and Nevis	10.4		
St Kitts and Nevis	13.4						
St Lucia	7.4						
Central Government Debt <= 60% of GDP				**Public Sector Primary Balance**			
Do not comply (Debt > 60%)		**Comply (Debt < 60%)**		**Do not Comply (Deficit)**		**Comply (Surpluse or Balance)**	
ECCU	92.0	St Lucia	56.6	ECCU	3.2	St Lucia	4.0
Antigua & Barbuda	102.3			Antigua & Barbuda	7.8		
Dominica	105.8			Dominica	5.7		
Grenada	103.7			Grenada	3.8		
St Kitts and Nevis	137.2			St Kitts and Nevis	6.1		
St Vincent	74.1			St Vincent	2.1		

Source: IMF (2003) based on ECCU member country authorities and IMF staff estimates.