IMF Working Paper

Fiscal Cycles in the Caribbean

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Abstract

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The sharp increase in debt in the Caribbean since the mid-1990s has focused attention on the conduct of fiscal policy in the region. This paper aims to diagnose how fiscal policy has behaved during this period by looking at three main cycles of the economy: the business, election, and natural disaster cycles. Our main findings suggest that fiscal policy has been mostly procyclical in the region, while disasters have been heavily "insured" by foreign transfers. The "when it rains, it pours" phenomena suggested by Kaminsky, Reinhart and Vegh (2004) seems to take place in the Caribbean.

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I. INTRODUCTION

High indebtedness has characterized the recent economic history of Latin America, and its neighbor countries seem to be following a similar path. The Caribbean countries are now among the most indebted countries in the world. At the same time, the Caribbean region is marked by a susceptibility to natural disasters and high dependency on tourism. The signs of unsustainable debt paths raise questions about the role played by fiscal policy.

Not uncommonly, default events have been associated with the adoption of procyclical policies, in which governments tend to overborrow during periods of abundant international liquidity.[2] Lately, total public debt in the Eastern Caribbean Currency Union (ECCU) has averaged more than 100 percent of GDP, culminating in 2004–05 with debt restructurings in Dominica and Grenada. Figure 1 shows total public debt-to-GDP ratios in selected emerging markets, with most of the ECCU economies leading this group of countries (Sahay, 2006a, 2006b).

Figure 1. Public Sector Debt in Selected Emerging Market Countries, end-2008

(In percent of GDP)
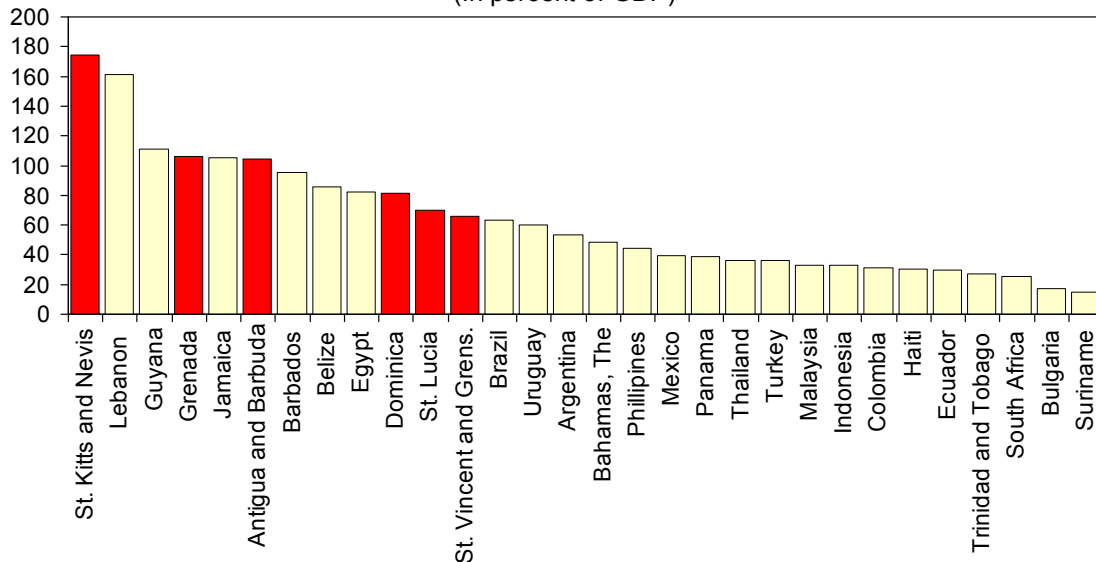
Sources: IMF, World Economic Outlook; and country authorities.

Recently the literature on fiscal procyclicality has bloomed. Indications that goverments could be adopting expansionary fiscal policy during good times and contractionary policy in bad times have intrigued the profession and boosted both the theoretical and empirical

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[2] See Reinhart, Rogoff and Savastano (2004).

literature. In the effort to identify which countries, if any, had followed procyclical policies, Kaminsky, Reinhart and Vegh (2004) (referred to hereafter as KRV (2004)) have provided a broad picture on the matter. Based on a sample of 104 countries, they point out that developing countries are predominantly procyclical, in contrast with more developed economies which tend to have a fiscal policy that is either countercyclical or acyclical. Gavin and Perotti (1997) had previously contrasted the behaviour of procyclical fiscal policy in Latin America with that of industrialized economies.[3] Similarly, Samuel (2008) has recently found procyclical fiscal policy (particularly of public expenditure) for Caribbean countries.

This paper aims to investigate the behaviour of fiscal policy in the Eastern Caribbean that has led to the massive accumulation of debt. To that end we will focus on government fiscal policies during the past 25 years regarding three different cycles: the business, the natural disaster, and political cycles. Section II will focus on the cyclicality of fiscal and financial accounts relative to the business cycle. Section III discusses the pattern of disasters and, in their aftermath, transfers to the region. Section IV will investigate the presence of election cycles. Finally, conclusions will be presented in Section V.

II. BUSINESS CYCLES

A. Descriptive Statistics

We analyse annual data from 1983 through 2006, with the sample chosen based on data availability. The countries considered are the Fund members of the ECCU: Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. The fiscal accounts are reported separately for the revenue and expenditure sides in Table 1, showing the composition by the share of each subaccount.

A key characteristic of the tax system in the Eastern Caribbean is that it relies heavily on indirect taxation. Gavin et al. (1996) report that indirect taxes represent 29 percent of total revenues in Latin America.[4] As shown in Table 1, the total share of revenues associated with taxes on goods and services and international trade adds up to 58 percent. For the countries in our sample, indirect taxation on international trade generates the most revenue. Since the countries in our sample depend heavily on imported products, import duties, together with the revenue collected from taxes on goods and services imported from abroad (which are also included in international trade revenue), are a primary source of government income. While the share of indirect taxation differs significantly between the ECCU and Latin America, income taxation has a more similar share in the two regions: 22 percent in the former and

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[3] For the most recent debate, see Rigobon (2004), Alberola and Montero (2007), Jaimovich and Panizza (2007), Ilzetzki and Vegh (2008).

[4] This number is the average for 1970 through 1994.

18 percent in the later.[5] The other large share of revenues in Latin America is related to social security programs (22 percent of total revenues).[6]

Table 1: Composition of Fiscal Accounts

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Total revenue and grants	100.0	100.0	100.0	100.0	100.0	100.0	100.0
International trade	51.9	38.1	43.4	40.5	47.7	41.4	43.8
Income	10.7	19.3	12.3	16.7	24.8	23.8	17.9
Goods and services	18.3	14.5	15.0	11.6	12.2	13.2	14.1
Other	1.5	1.3	2.9	1.5	0.6	1.9	1.6
Nontax revenue	12.9	11.2	8.1	24.2	8.5	13.9	13.1
Capital revenue	1.0	1.4	0.3	1.0	0.7	0.5	1.0
External grants	3.9	14.3	17.9	4.5	5.5	5.3	8.6
Expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Interest	13.5	9.0	7.7	11.2	5.4	7.3	9.0
Wages and Salaries	43.2	38.8	34.9	38.0	38.9	41.4	39.2
Goods and Services	22.9	14.0	11.9	25.7	15.4	20.4	18.4
Transfers	9.5	13.0	13.9	8.6	14.6	10.6	11.7
Capital	10.9	25.2	31.7	16.6	25.8	20.4	21.7

Source: Eastern Caribbean Central Bank (ECCB)
Note: Revenue figures correspond to average country share on total revenue and grants. Expenditure figures correspond to average country share on total expenditure and grants. ECCU values refer to average over the countries in our sample. The period is from 1983 through 2006 (except for Dominica for which sample covers 1990–2006).

On the expediture side, wages and salaries are commonly the largest category of expenditure in the ECCU. It accounts for around 40 percent of total expenditure, in contrast with only 18 percent in Latin America. On the other hand, interest payments are 22 percent in Latin America, but only 9 percent in the ECCU. As pointed out in Gavin et al. (1996), wage and interest payments are the type of expenditure that should be treated with caution, since any kind of contractionary adjustment usually requires additional time to be implemented.

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[5] Gavin et al. (1996).

[6] Note that a quarter of the revenue in St. Kitts and Nevis is generated from nontax revenue, more specifically, from post office and electricity-related revenues.

The second-highest government expenditure share varies between capital and goods and services, while transfers correspond on average to 12 percent of total expenditure. Note that in Latin America and the OECD, the latter figure is substantially higher, reaching on average 37 percent and 56 percent, respectively. In part, the difference in transfers can be explained by the history of the creation of the social insurance regimes. While in Latin America social insurance funds were developed in the 1920s, in the Caribbean the social insurance schemes are much more recent, following the establishment of political independence in the 1970s and 1980s. In terms of composition, we also find different patterns. In Latin America, most of the social protection transfers are devoted to social insurance, including cash-based social assistance schemes. On the other hand, most countries in Central America and the Caribbean direct their spending to in-kind social assistance transfers (see Lindert, Skoufias and Shapiro (2006).

B. Fiscal Policy

In order to assess the cyclicality of fiscal policy in the Eastern Caribbean, we need to define both the economy's cycle and a measure of comovement of the data and the cycle. A common definition of the business cycle was established by Burns and Mitchell (1946), characterizing it as fluctuations of output around the growth path that occur with a frequency of three to five years. The business cycle literature has frequently adopted the Hodrick-Prescott filter (the HP filter) as a way of detrending economic series. As Cooley and Prescott (1995) argued, compared to the first difference filter that emphasizes very high frequency movements in the data, the HP filter tends to extract frequencies closer to three to five years. After detrending the series, the comovements can be computed as the sample correlation between the cyclical component of output and the variable of interest.

Regarding the optimal detrending technique, the literature has moved towards the use of a filter that can more precisely extract periodic fluctuations. Cashin (2004, 2006) estimates the Caribbean business cycle by using a band-pass filter (from Corbae and Ouliaris (2006)), which has the superior property of being asymptotically consistent. While Cashin (2004, 2006) has addressed the differences in the Caribbean business cycle definition that might arise using different detrending techniques, we focus on the second step described above—computing comovement in the data. To that end, two approaches are used: the more standard sample correlation and a non-parametric estimation technique.

The non-parametric approach follows KRV (2004). This method consists in first computing the median real GDP growth for the entire sample. A certain period (year) is classified as "good times" if the real GDP growth is above the median value and as "bad times" if real GDP growth for the period falls below the median value. The variable of interest is averaged for both "good times" and "bad times," and the amplitude is defined as the difference between these two figures. For instance, consider the change in real government spending as the variable of interest. If the difference is positive (the change in real government spending

is greater in "good times" than in "bad times"), fiscal policy, in particular, the government's spending policy, is classified as procyclical.

The literature on the cyclicality of fiscal accounts has not focused on a single fiscal indicator, and a comparison across studies might be impaired by the lack of compatibility of information provided by each of these indicators. KRV (2004) illustrate this point. For instance, consider the primary balance and its components:

Primary Balance = Tax Revenues—Primary Expenditure,

where *Tax Revenues = Tax rate * tax base.*

As the authors point out, the direction of comovement of a certain fiscal indicator with the cycle in the data should be taken with caution, since the theoretical (or expected) sign of the correlation of the indicator with the cycle might be ambiguous. In order to discipline our study, we discuss the expected sign of comovement between the cycle and three fiscal variables that will be studied in this section: tax revenues, government expenditure and the primary balance.

Consider the tax revenues which depend intrinsically on the tax base. Assuming the tax base comoves positively with the economic cycle, tax revenues will comove with the cycle even if tax policies remain unchanged. A positive correlation of tax revenues and output can be the result of: (1) a countercyclical policy, with both tax rates and income increasing in good times; (2) an acyclical policy, with tax rates remaining constant and income rising in good times; and (3) a procyclical policy, with the reduction in the tax rates being dominated by the increase in income. While positive correlations are inconclusive, a negative or zero correlation indicates that either the tax rate reduction is enough to compensate for the rise in income or that it is enough to balance it out. The possible outcomes for tax revenues are displayed in the first column of Table 2.

Ideally, a researcher would like to focus on the fiscal instruments, rather than on fiscal variables that vary with the cycle. In the second column of Table 2, we find that government expenditure is a good example of an unambiguous indicator. If the fiscal authority typically increases government expenditure during booms, we will expect to observe a positive comovement between government expenditure and output in the data. The adoption of expansionary government expenditure during downturns will lead to an observed negative comovement between government expenditure and output. Finally, a lack of a systematic spending policy along the business cycle would imply no comovement in the data.

Table 2. Expected Correlation of Fiscal Variables and the Business Cycle

	Tax Revenues	Government Expenditure	Primary Balance
Procyclical	+/0/-	+	+/0/-
Countercyclical	+	-	+
Acyclical	+	0	+

In the same way that government expenditure is a strong indicator, tax rates also display an unambiguous property. Typically tax rate data is more difficult to obtain, at least on a time series basis. Another problem that arises is that even if available, tax rates do not display much variability and, because of that, a single political outcome might dominate the entire analysis. As an example, take the common tariff policy designed by the Caribbean Community (CARICOM), which is driving down regional tariffs. This event is likely to dominate any recent procyclical or countercyclical tax policy.

Perhaps the most popular fiscal indicator is the primary balance as a ratio of GDP. Its appeal stems from the fact that it summarizes better the overall fiscal condition of the economy. The expected sign of the correlation of the primary balance with the cycle is shown in the last column of Table 2. Unfortunately, it inherits the uncertainties of tax revenues, with the sign of the correlation of this indicator with the business cycle being ambiguous.

Revenues

In Table 3, the results for the nonparametric approach for fiscal revenue and its components are reported for each country of the ECCU and for the entire region.[7] The third panel at the bottom of Table 3 presents the amplitude for the components of fiscal revenue, with the amplitude being the difference between revenue during good times (upper panel) and that in bad times (middle panel). While a positive amplitude does not allow us to identify any cyclical pattern, a negative or zero correlation indicates a procyclical policy.

Table 3 reveals that 42 percent of the results are either negative or close to zero. However, the majority of the signs on total revenue and international trade, income and goods and services revenues are positive. The correlations computed in Table 4 using HP-filtered data are also positive and thus inconclusive.

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[7] The results for the ECCU refer to the average value across the country members.

Table 3: Cyclicality of Fiscal Revenue by Type
(Percentage change in real government revenues)

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Good Times 1/							
Revenue and grants	10.0	3.3	7.1	4.6	5.9	4.7	5.9
International trade	7.3	-9.0	14.5	6.1	6.4	7.4	5.4
Income	12.9	4.6	1.0	10.4	6.8	5.4	6.8
Goods and services	13.2	20.7	-3.9	16.2	8.7	8.4	10.5
Other	-1.2	16.7	8.1	17.4	-16.0	-12.5	2.1
Nontax revenue	-1.5	8.4	-0.7	-0.7	1.7	1.2	1.4
Capital revenue	28.3	-12.8	-41.2	-8.4	-4.2	9.8	-4.8
External grants	44.1	-0.5	15.5	-24.3	-16.6	-8.6	1.6
Bad Times 2/							
Revenue and grants	1.7	2.6	-0.6	5.8	0.8	2.7	2.2
International trade	3.4	0.3	-1.5	3.7	0.1	0.5	1.1
Income	2.1	-2.1	1.3	7.3	0.0	2.4	1.8
Goods and services	2.5	11.0	5.3	6.6	6.4	5.8	6.3
Other	7.3	-0.1	13.0	4.4	19.9	13.6	9.7
Nontax revenue	0.5	-1.7	1.5	6.3	0.1	0.4	1.2
Capital revenue	-12.9	-2.1	13.6	-7.9	6.9	0.0	-0.4
External grants	-26.5	8.5	-9.4	29.4	21.1	-15.8	1.2
Amplitude 3/							
Revenue and grants	8.3	0.7	7.7	-1.2	5.1	1.9	3.8
International trade	3.9	-9.3	15.9	2.3	6.3	6.9	4.3
Income	10.8	6.6	-0.3	3.1	6.8	3.0	5.0
Goods and services	10.6	9.7	-9.2	9.6	2.2	2.6	4.3
Other	-8.5	16.8	-4.9	13.0	-35.9	-26.1	-7.6
Nontax revenue	-2.0	10.1	-2.2	-6.9	1.6	0.8	0.2
Capital revenue	41.1	-10.7	-54.8	-0.5	-11.1	9.8	-4.4
External grants	70.6	-8.9	24.9	-53.7	-37.7	7.2	0.4

Source: ECCB.
1/ "Good times" denote periods in which the real GDP growth is above the median.
2/ "Bad times" denote periods in which the real GDP growth is below the median.
3/ The amplitude is defined as the difference between "good times" and "bad times".

Capital revenues and external grants are not part of tax revenues, and should not be interpreted in the same manner as in the first column of Table 2. While the former account for only 1 percent of total revenues in the ECCU, the latter are responsible for 9 percent of total revenues. A positive amplitude indicates that external grants have been donated in a procyclical manner, and in this sense, Antigua and Barbuda and Grenada display strongly procyclical transfers. On the other hand, St. Kitts and Nevis' and St. Lucia's external grants appear to be strongly countercyclical. The fact that external grants appear to be procyclical for half of the sample and countercyclical for the other half indicates that, in some cases, higher grants might be a result of a downturn and in others, higher grants might be generating an upturn. In Section III, when we discuss the cycles of disasters and transfers, we will return to this issue.

Table 4: Correlation of Cyclical Component of Real Government
Revenue and Real GDP

Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
0.81*	0.49*	0.23	0.54*	0.46*	0.02	0.42

Source: ECCB.

Note: * denotes statistically significant values at the 10 percent level. The cyclical component was found using the HP-filter.

Expenditure

Here we consider the results for total government expenditure and its subaccounts. Besides the subaccounts reported by KRV (2004), we add expenditure related to transfers and capital. We are particularly interested in these accounts since they can be more informative regarding the effect that natural disasters might have on both the output cycle and government spending in the Eastern Caribbean region.

Most results indicate a procyclical spending policy, as indicated by the positive amplitude of the cycle for most types of government expenditure (Table 5). Of the 36 indicators computed, 21 of them have an amplitude above 1 percent, indicating a procyclical policy. In 6 of them, the amplitude falls between -1 percent and +1 percent, and we classify the policy as acyclical. Finally, in 9 cases, we find that the amplitude is below -1 percent.

Antigua and Barbuda, Dominica, and St. Lucia exhibit a procyclical total expenditure policy. For these countries most subaccounts are also procyclical. In general, the capital expenditure account stands out as being strongly procyclical. This finding is similar to Lane (2003), where the author shows that government investment is very procyclical in OECD countries. The main difference lies in the fact that, for OECD countries, government investment is the only procyclical account. For most of the countries in our sample, expenditure on goods and services appears to be strongly procyclical, and government expenditure with wages varies between mildly procyclical, acyclical or countercyclical.

Since KRV (2004) concentrate on the expenditure side of the fiscal accounts, we can compare our results. The primary expenditure amplitude for the ECCU countries is 3.2, above the primary expenditure amplitude of 1.4 for OECD countries but below the amplitude of 6.2 for middle-low income countries. The amplitude for expenditure on goods and services

for the ECCU appears to be 4.1, closer to the average of 4.7 for middle-low income countries than the average of 1.0 for OECD economies.[8]

Table 5: Cyclicality of Fiscal Expenditure by Type
(Percentage change in real government spending)

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Good Times 1/							
Expenditure	12.6	2.6	1.5	5.5	5.7	4.3	5.4
Primary Expenditure	12.6	3.6	2.1	4.8	5.9	3.9	5.5
Wages and Salaries	5.9	1.7	3.6	2.7	2.5	4.1	3.4
Goods and Services	7.0	5.2	7.8	4.0	0.4	1.4	4.3
Transfers	11.3	5.3	1.2	-8.0	4.9	2.8	2.9
Capital	30.9	6.1	1.1	22.7	15.8	9.0	14.2
Bad Times 2/							
Expenditure	1.4	0.2	3.1	5.7	2.7	3.8	2.8
Primary Expenditure	1.2	-1.1	2.4	4.7	2.1	4.2	2.3
Wages and Salaries	3.4	0.0	1.7	5.8	2.5	3.3	2.8
Goods and Services	-0.5	0.1	-1.2	0.2	2.6	-0.2	0.2
Transfers	9.6	4.5	1.7	16.8	2.5	17.0	8.7
Capital	-9.2	-7.2	3.1	2.8	1.4	5.5	-0.6
Amplitude 3/							
Expenditure	11.3	2.5	-1.6	-0.2	3.0	0.5	2.6
Primary Expenditure	11.5	4.7	-0.2	0.0	3.7	-0.3	3.2
Wages and Salaries	2.4	1.7	1.9	-3.1	0.0	0.7	0.6
Goods and Services	7.5	5.1	9.0	3.8	-2.2	1.6	4.1
Transfers	1.8	0.8	-0.5	-24.8	2.4	-14.2	-5.8
Capital	40.1	13.4	-2.0	19.8	14.3	3.4	14.8

Source: ECCB.

1/ "Good times" denote periods in which the real GDP growth is above the median.
2/ "Bad times" denote periods in which the real GDP growth is below the median.
3/ The amplitude is defined as the difference between "good times" and "bad times".

Even though countercyclical policies are not rare, St. Kitts and Nevis and St. Vincent and the Grenadines both display a clear countercyclical transfer policy. Countercyclical movements in this account have been associated with automatic stabilizers in the economy, like social insurance programs. For these countries, however, this result might be a reflection of discretionary stabilization policy in the aftermath of natural disasters.

The best way to picture the behavior of fiscal policy along the business cycle is by looking at Figure 2. There we have plotted the cyclical component of real government expenditure against the cyclical component of real GDP, and vertical bars mark the natural disasters that

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[8] These results are broadly similar to Samuel (2008) for a larger group of Caribbean countries.

have impacted the region. As noted by Rasmussen (2004), the countries in the Eastern Caribbean are the most disaster-prone in the world, and natural disasters are estimated to cause a same-year real GDP growth reduction of 2.2 percent. For the region and period considered, disasters have included droughts, earthquakes, floods, mud slides, volcanic eruptions, and the most frequent event: wind storms.

Figure 2 shows that comovements between real government expenditure and real output are high for all countries in question. The common exception occurred in 2002–2003, when we can observe an opposite movement of both series in all six graphs. The period coincides with the aftermath of the September 11, 2001 attacks and the downturn of the US economy that adversely affected the Eastern Caribbean economies through a drop in tourism. The shift of the main economic activity from traditional agricultural sectors to tourism has increased these countries' vulnerability to world cycle changes (see IMF 2005). The surprising feature is that countercyclical policies seem to have been commonly used. The correlations for these two series are computed and displayed in Table 6. All countries exhibit positive correlation, and the majority are statistically significant. Dominica stands out with the highest correlation coefficient of 0.64 and, on average, the region has a coefficient of 0.43, higher than the middle-low income correlation of 0.22 found in KRV (2004).

Fiscal Balance

In principle, one would expect the fiscal balance to be stationary in a long timeframe. However, the levels of debt-to-GDP in the ECCU countries in 2007 were markedly higher than in earlier periods. For example, as shown in Figure 1, total public debt at end-2007 in St. Kitts and Nevis, Grenada, and St. Lucia were, respectively, equal to 181, 118 and 67 percent of GDP. In 1997, these economies had much lower levels of 86, 41 and 35 percent, respectively. Sahay (2006a, 2006b) aims to identify the determinants of debt accumulation in Caribbean economies—the results show the deterioration of the primary balance as the single most important factor.

Figure 2. Cyclical Component of Real GDP and Real Government Expenditure
(Deviations from trend in percent)

- - - Real GDP (left scale) ——— Real expenditure (right scale)
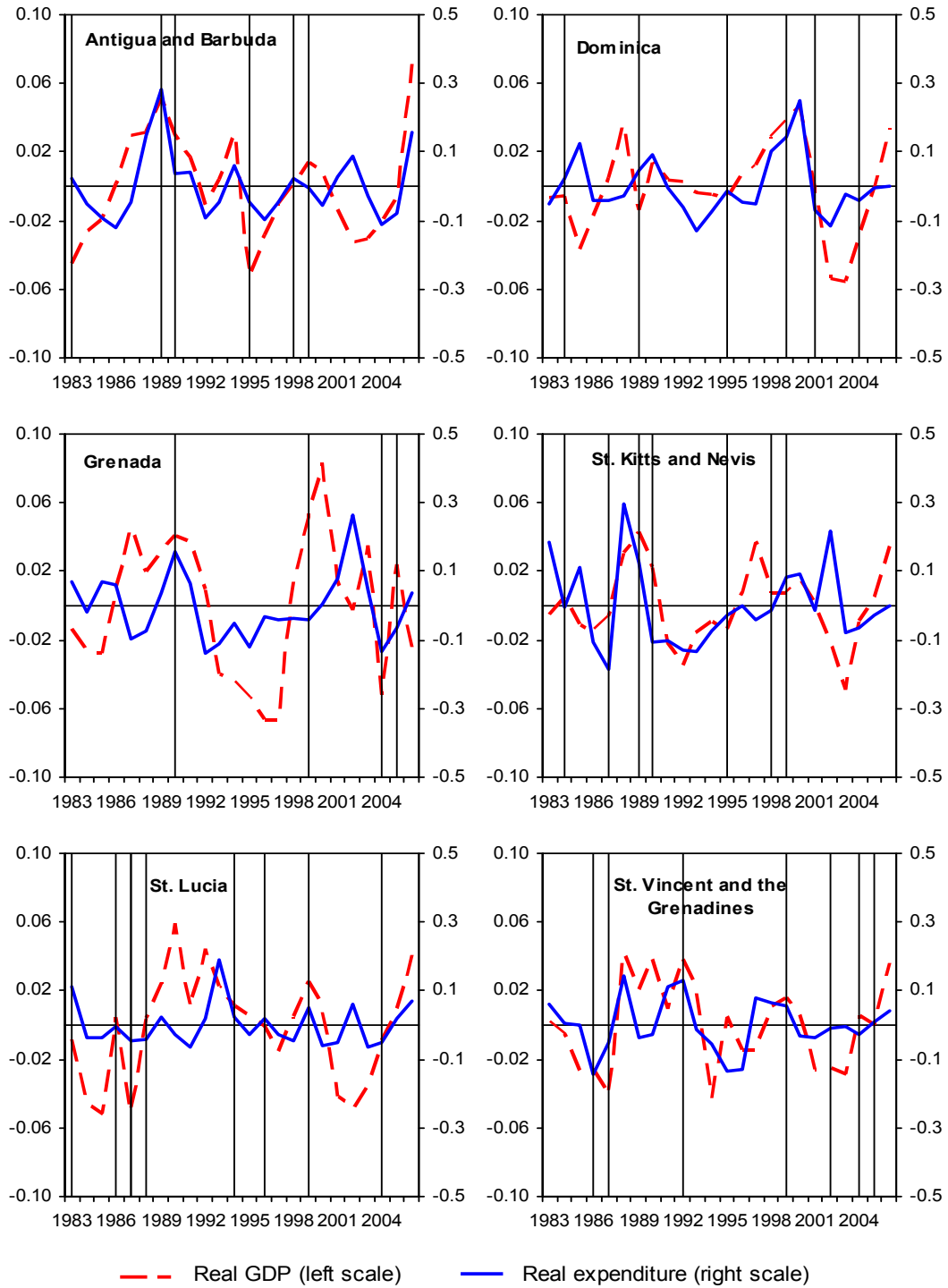
Sources: Country authorities; and author's calculations.

Table 6: Correlation of Cyclical Component of Real Primary Government Expenditure and Real GDP

Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
0.62*	0.64*	0.27	0.21	0.37*	0.47*	0.43

Source: ECCB.

Note: * denotes statistically significant values at the 10 percent level. The cyclical component was found using the HP-filter.

Not surprisingly, both the fiscal and primary balances are statistically nonstationary for all countries in our sample. Therefore, we will be interested in looking at the first difference of the fiscal and primary balance. As discussed previously, a negative or zero amplitude identifies a procyclical fiscal policy. Table 7 displays the results. The overall fiscal balances are procyclical for half of our sample and inconclusive for the other half. Notice that we report the primary balance as a ratio to GDP. Even though we have argued that this indicator leads to ambiguous theoretical correlation signs, the results were qualitatively the same as the ones delivered by the primary balance indicator.

Table 7: Cyclicality of Fiscal Balance
(Percentage change in real fiscal balance to GDP ratio)

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Good Times 1/							
Fiscal Balance	-0.84	0.37	2.51	-0.25	0.10	0.13	0.34
Primary Fiscal Balance	-0.65	0.00	2.16	-0.04	0.05	0.19	0.28
Bad Times 2/							
Fiscal Balance	0.12	0.87	-1.31	-0.07	-0.53	-0.34	-0.21
Primary Fiscal Balance	0.13	1.34	-1.04	0.38	-0.36	-0.42	0.00
Amplitude 3/							
Fiscal Balance	-0.96	-0.50	3.82	-0.18	0.63	0.47	0.55
Primary Fiscal Balance	-0.78	-1.34	3.21	-0.43	0.42	0.61	0.28

Source: ECCB.

1/ "Good times" denote periods in which the real GDP growth is above the median.
2/ "Bad times" denote periods in which the real GDP growth is below the median.
3/ The amplitude is defined as the difference between "good times" and "bad times".

When looking at the sample correlations of the HP-filtered real fiscal balance and real GDP, the evidence is clearer. All correlations are either negative or close to zero, suggesting a procyclical fiscal policy. Overall, we might summarize our results by saying that the strongest evidence of fiscal procyclicality appears on the expenditure side, especially for expenditure on goods and services. While the evidence on the revenue side is inconclusive, the fiscal balance cyclicality results depend on whether we consider the amplitude of the cycle or the sample correlation.

Table 8: Correlation of Cyclical Component of Real Fiscal Balance and Real GDP

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Fiscal Account							
Fiscal Balance	-0.08	-0.34	-0.05	0.10	0.09	-0.54*	-0.13
Primary Fiscal Balance	-0.02	-0.47*	-0.08	0.12	0.07	-0.49*	-0.15

Source: ECCB.

Note: The correlation of the cyclical component of real GDP and real government fiscal balance is reported. * denotes statistically significant values at the 10 percent level. The cyclical component was found using the HP-filter.

C. Financial Flows

We now investigate whether financial flows have contributed to counteracting output cycles. We adopt two measures for that: the first is the amplitude of the change of real capital flows during good times versus bad times, and the second is the correlation of the cyclical component of real capital flows and of real GDP. The term, "capital flows," is used here to refer only to the financial account of the balance of payments.

Since most ECCU countries have attracted foreign financial flows in recent years, an upward trend is present in the data. Therefore we concentrate the study on the first difference of capital inflows to GDP, instead of the level of capital inflows to GDP. Table 9 presents our initial results. We find that half of our sample appears to be procyclical, with the other half either countercyclical or acyclical.[9] The results contrast with the evidence in Rasmussen and Tolosa (2006) of countercyclical capital flows in the Eastern Caribbean. The difference arises from the fact that their study follows KRV (2004), where they analyze the level of capital inflows to GDP.

We then turn to the cyclical component of real capital flows and its relation to the cyclical component of real GDP. The correlations are positive for most countries (Table 10), shedding some light on our previous result. If we take a step further by focusing on one of

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[9] We have also looked at changes in real capital flows using the GDP deflator, instead of ratios of capital flows to GDP, and found similar qualitative results.

the main components of the financial accounts, foreign direct investment, we are able to refine our findings. Net foreign direct investment to the region is positively correlated with the cycle, consistent with the general idea that periods of high productivity should lead to an increase in investments in the domestic economy.

Table 9: Amplitude of Financial Flows
(Percentage change in the ratio of financial accounts to GDP)

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Good Times 1/							
Total	4.2	-3.4	4.1	3.1	2.2	0.5	1.8
FDI	2.3	-1.3	0.9	3.2	1.5	1.1	1.3
Bad Times 2/							
Total	-2.2	3.4	-1.1	-1.3	1.3	2.4	0.4
FDI	0.1	3.1	0.4	1.6	1.2	1.6	1.3
Amplitude 3/							
Total	6.3	-6.9	5.2	4.3	0.9	-2.0	1.3
FDI	2.2	-4.4	0.5	1.6	0.3	-0.5	0.0

Source: IMF, World Economic Outlook (WEO).
1/ "Good times" denote periods in which the real GDP growth is above the median.
2/ "Bad times" denote periods in which the real GDP growth is below the median.
3/ The amplitude is defined as the difference between "good times" and "bad times".

Figure 3 displays the percentage deviations from trend of real foreign direct investment and real GDP. There we can see that, with the exception of St. Vincent and the Grenadines, both series tend to comove in the data.

Table 10: Correlation of Cyclical Component of Real Capital Flows and Real GDP

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
Financial Account							
Total	0.21	0.07	0.37*	0.11	0.42*	0.23	0.24
FDI	0.34*	-0.11	0.36*	0.49*	0.33*	0.13	0.26

Source: IMF, World Economic Outlook (WEO).

Note: Values for Dominica, Grenada and St.Vincent are not reported since portfolio flows only started in 2000, 1997, and 1996, respectively.

Figure 3. Cyclical Component of Real GDP and FDI - HP Filter
(Deviations from trend, in percent)

Real GDP (right scale)　　　FDI (left scale)
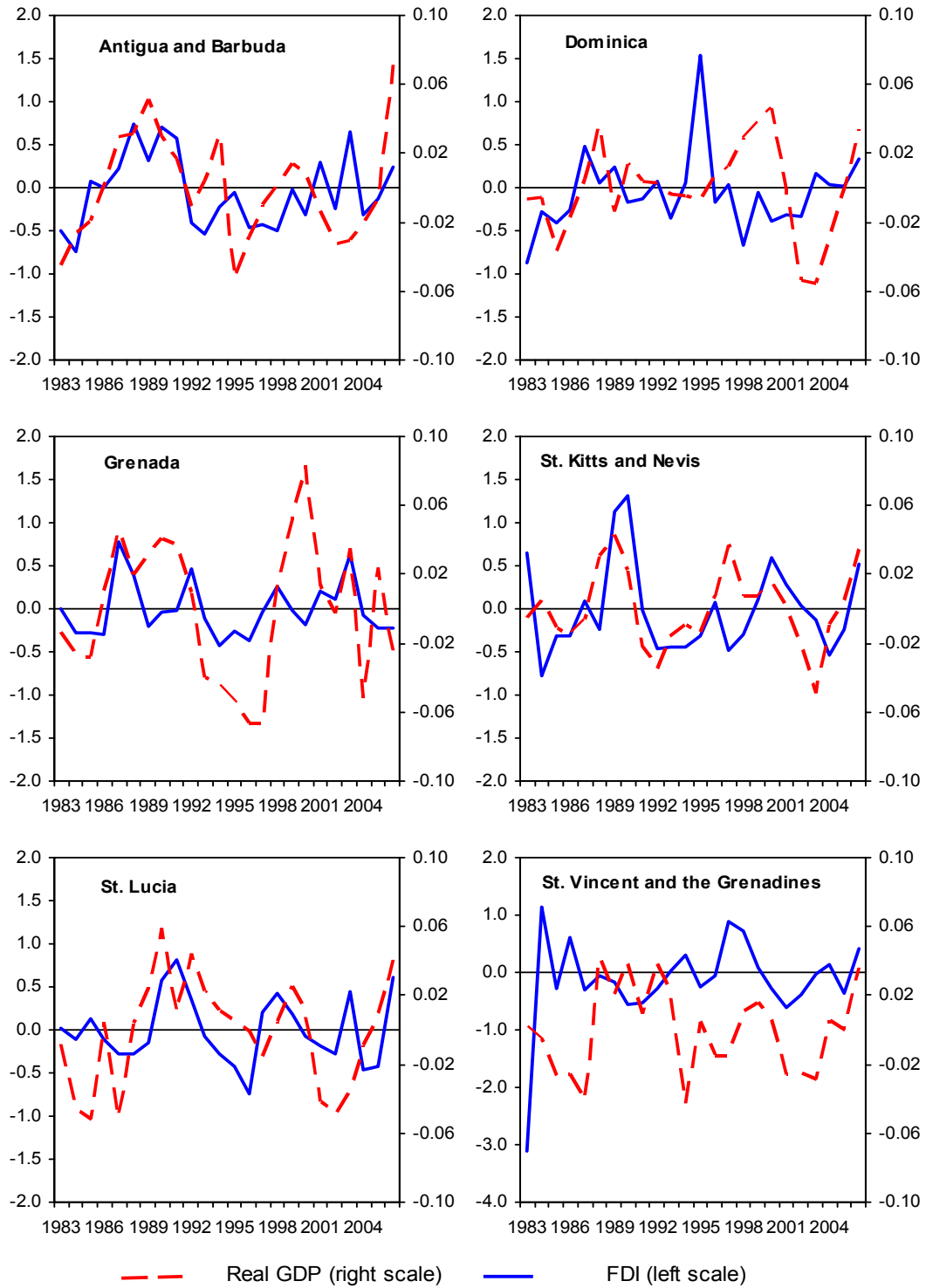
Sources: Country authorities; and author's calculations.

Most of the countries have experienced portfolio trade for only a short part of the period being analyzed, and the variability of the two remaining components of the financial account—reserve assets and other investments—is dominated by pointwise strong reversals. Therefore, we will not discuss these subcomponents separately.

Reduced inflows of capital and contractionary fiscal policy during economic downturns, that is, the "when it rains it pours" phenomena described by KRV (2004), seems to take place in the Eastern Caribbean. However, as was pointed out by Rasmussen and Tolosa (2006), the volatilities of these economies are at the lower end of the emerging market economies despite their exposure to natural disasters. Even though the financial accounts have received the most attention in the literature, another inflow to the region might be relevant in the case of the Eastern Caribbean economies. In the next section, we take a look at the transfer flows that have occurred in the region.

III. DISASTER CYCLES

As noted above, the region has been subject to a substantial number of disasters, especially hurricanes. During these difficult times, donations have aimed to rehabilitate the damaged region. We start by taking a closer look at the periods of natural disasters since they represent a natural exogenous shock to the economy. By observing Figure 2, we can see that disasters are not necessarily associated with recession periods. As a matter of fact, they have been associated with both downturns and upturns in the cycle. The latter has been attributed mostly to the inflow of transfers in the aftermath of the disasters.

It thus seems natural to focus on the total amount of transfers that have occurred during these periods. To that end, we construct the following measure. We define a disaster period as an interval of three years where period zero denotes the year that the disaster occurred, and period 1 and 2 refer to the two subsequent years. We then compute the total accumulated one-year change of transfer flows that occurred during this interval, always in comparison to the year previous to the disaster. That is:

$$\frac{tr_0^{\ d}}{y_{-1}} = \frac{tr_0 - tr_{-1}}{y_{-1}} + \frac{tr_1 - tr_{-1}}{y_{-1}} + \frac{tr_2 - tr_{-1}}{y_{-1}}$$

where $tr_t^{\ d}$ denotes our measure of the total accumulated transfers due to the disaster in period t, tr_t denotes the actual transfer that occurred in period t and y_t denotes GDP in period t. The actual transfer consists of the sum of current transfers (e.g., cash transfers, gifts of food, clothing, and medical supplies) and capital transfers.[10] [11]

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[10] In the past, the two accounts were merged in a unique account of the current account. In the most recent methodology of the Balance of Payments Manual (fifth edition, BPM5), current transfers are part of the current account and capital transfers are part of the capital account.

[11] Data for capital transfers were not available so we use the capital account since capital transfers account for most of the capital account.

A characteristic of the region that brings attention to the capital transfers account is the high level of emigration (see Mishra, 2006), which has resulted in high levels of migrant transfers to the region. Our measure attempts to remove the level effect of transfers by subtracting the amount of transfers that occurred in the year before the disaster.

At the same time, we also do not want to pick up variations which are the consequence of output fluctuations that have followed the disaster. To that end, we take ratios of transfers with respect to GDP in period -1, the year before the disaster occurred. In some cases, disaster intervals have overlapped. In such cases, the level of transfers in period -1 might appear to be very high due to a previous disaster. Whenever the year before the disaster belonged to a previous disaster period, period -1 refers to the latest year that did not belong to any disaster interval.

Table 11 shows our measure of transfer flows in the aftermath of all the natural disasters that were reported by the Emergency Events Database (EM-DAT). We find that the average disaster transfer was equal to 19 percent of GDP. Rasmussen (2006) classifies the 12 largest natural disasters in the ECCU that occurred during 1970-2002 as the ones that had estimated damages exceeding 2 percent of GDP. The average disaster transfer for this group of events was equal to 24 percent of GDP.

By taking a closer look at Table 11 we can see that the total disaster transfer has a huge variance. It is also the case that many of the disasters have no cost estimates for the damage, making it hard to have a true assessment of the impact of each specific event and the size of its economic damage.

In the last line of Table 11, we then choose the three major disasters in terms of the magnitude of the disaster transfer and show the sum of these three disaster transfers. Our findings suggest that for the most recent 25 years, the average accumulated top three disaster transfers have totaled more than 115 percent of GDP. Apparently, transfer flows seem to be the major mechanism of insurance in this region against extreme events.

IV. ELECTION CYCLES

It is not uncommon to associate pre-election periods as times of higher government spending. The conjecture is that governments stimulate aggregate demand to impress voters and enhance their chances of being re-elected. The political business cycle models, as in Nordhaus (1975) and Lindbeck (1976), attempt to capture this fact. The following generation of models, as in Rogoff and Sibert (1988) and Rogoff (1990), also deliver cyclical patterns of policy variables, known as election cycles, but manage to incorporate a rational electorate.

Table 11: Transfer Flows in the Aftermath of a Disaster

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	ECCU
1970							
1971						6.7	6.7
1972							-
1973							-
1974							-
1975			-0.3				-0.3
1976							-
1977						9.1	9.1
1978							-
1979		105.9				41.7	73.8
1980		53.2	33.1		17.2	61.6	41.3
1981							-
1982							-
1983	8.1				28.8		18.5
1984		23.3		10.5			16.9
1985							-
1986					35.4	-0.7	17.4
1987				26.5	28.1	1.6	18.7
1988					-8.2		-8.2
1989	0.6	1.8		19.6			7.3
1990	-2.0		5.0	11.9			5.0
1991							-
1992						-1.6	-1.6
1993							-
1994					-0.5		-0.5
1995	18.1	27.6		13.5			19.7
1996					2.8		2.8
1997							-
1998	38.7			41.1			39.9
1999	13.9	2.8	-2.2	38.9	-1.1	-4.5	8.0
2000							-
2001		7.7					7.7
2002						1.0	1.0
2003							-
2004		32.2	46.9		-3.1		25.4
2005			39.3				39.3
2006							-
2007							-
Average	12.9	31.8	20.3	23.1	11.0	12.8	18.7
Average major disasters	0.6	43.7	26.6	24.0	17.2	31.6	23.9
Accumulated top 3 transfers	70.7	191.4	119.4	106.5	92.3	110.0	115.1

Sources: EM-DAT; and country authorities.

Drazen (2000) points out that the strongest econometric evidence supporting the existence of a political business cycle is in the behavior of fiscal policy (see Brender and Drazen (2005) for a summary on the evidence of fiscal political cycles). Election cycles might have played an important role in the case of the Eastern Caribbean. The region is characterized by well-established parliamentary democracies. Elections are typically held every 4–5 years, and social goals are top of the agenda of most political parties, given their labor movement pre-independence roots.

We look at different fiscal indicators in order to detect any presence of election cycles in the period from 1983 through 2006.[12] First we plot the average change in the primary expenditure-to-GDP ratio in the years surrounding the elections: two years prior to the election, the year prior to the election, the election year, and the year after the election has occurred for each of the Eastern Caribbean countries. In general, in each country elections took place in different months (election dates are provided in the Appendix). However, only a sixth of the elections took place in the second semester. Therefore, the election year should reflect mostly a post-election period. An increase in the deficit (Figure 4) seems to occur in the two years preceding an election or in the year before an election, while an improvement in the primary balance tends to occur during and after the election year.[13]

Figure 5 shows the average of primary government expenditure growth during the same periods surrounding the elections. The year prior to election tends to be the year with highest government consumption growth (for Dominica, this is the election year). Duttagupta and Tolosa (2006a, 2006b) show a similar result that fiscal primary spending in the ECCU tends to increase with the proximity to the election year. We also find that either the election year or the year after the election exhibit a very low (and sometimes negative) government consumption growth. The only country that exhibits a very different pattern is St. Lucia, which has its highest expenditure one year after the election.

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[12] Election data is from the International Organization of Parliaments of Sovereign States (www.ipu.org/english/home.htm).

[13] The high peak in Figure 4 is due to two exceptional improvements in the primary balance-to-GDP ratio in 1984 and 2003 in Grenada. In 2003, the ECCU countries initiated fiscal reform programs in an effort to recover from the deterioration in the budgetary position. Despite the run-up to the elections that occurred at the end of the calendar year of 2003, Grenada has shown a large improvement in its primary fiscal balance in this same year.

Figure 4. Election Cycles and Primary Balance
(Change in primary balance to GDP ratio)
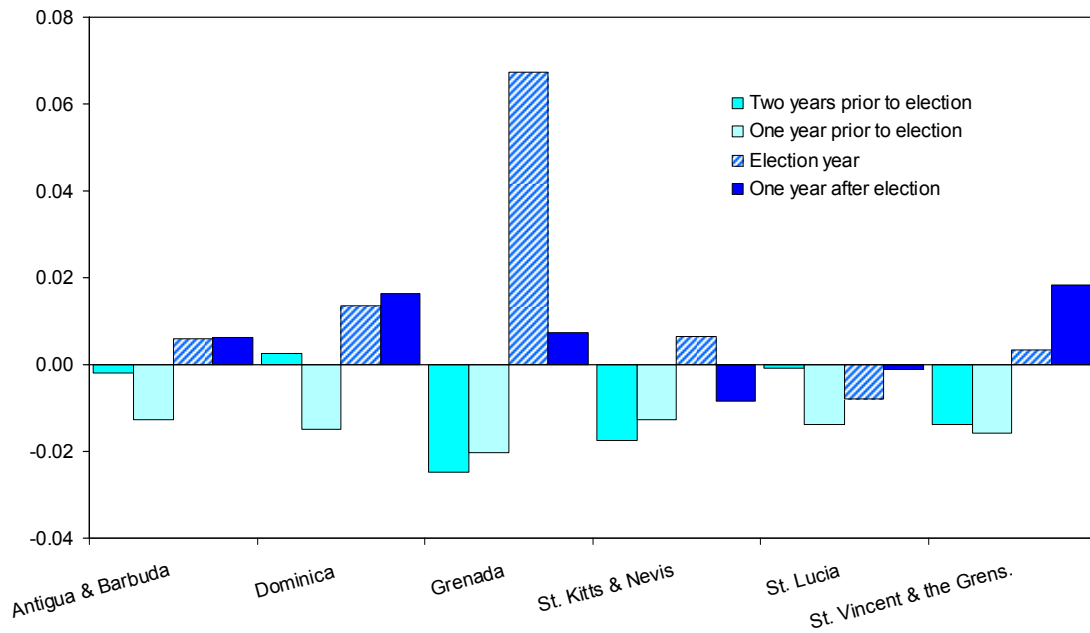
Sources: Country authorities; and author's calculations.

Figure 5. Election Cycles and Primary Expenditure
(Primary government expenditure growth, in percent)
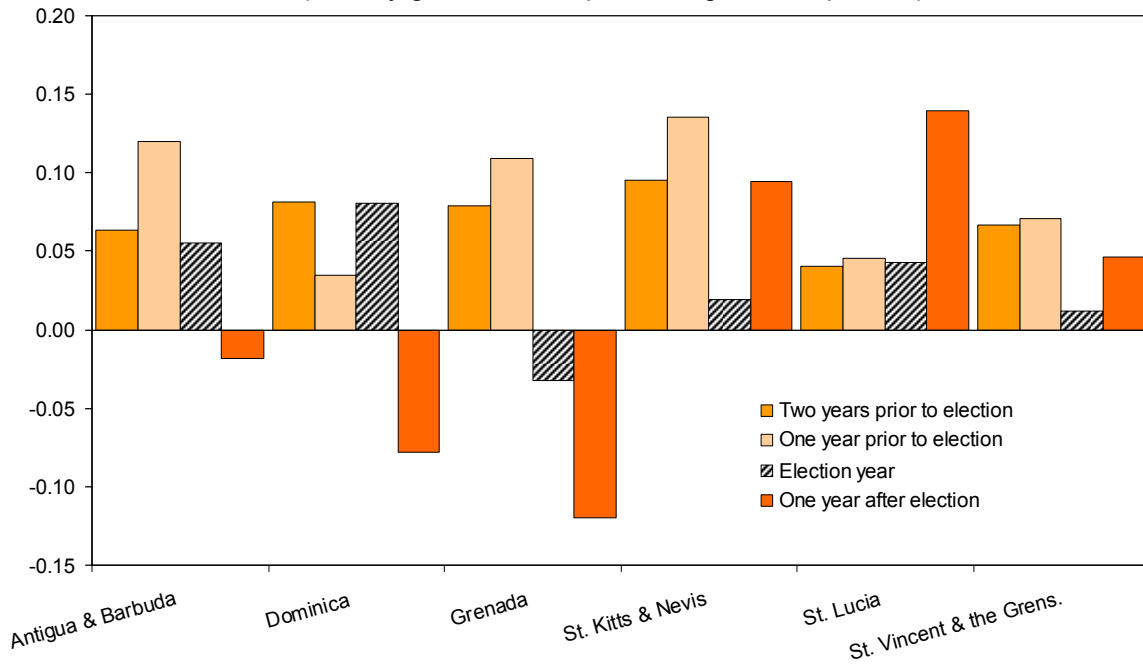
Sources: Country authorities; and author's calculations.

V. CONCLUSION

This paper has investigated whether fiscal policy has changed systematically along with business cycles, natural disaster cycles and political cycles. Because of the high accumulation of debt, fiscal policies in the Eastern Caribbean economies have recently received extra attention. Is the accumulation of debt the result of policies that have contributed to attenuating risk or were these sources of fluctuations? Our findings suggest that government expenditure, for the most part, has risen during prosperous times and dropped off otherwise. The evidence has shown this type of behavior as more typical of developing economies in contrast to more developed economies that tend to have either countercyclical or at least less procyclical fiscal policies. While this paper has not offered explanations for the procyclicality, future research might examine the source of this problem.

Appendix

Appendix Table. Election Dates

Antigua and Barbuda	March 23, 2004
	March 9, 1999
	March 8, 1994
	March 9, 1989
	April 17, 1984
Dominica	May 5, 2005
	January 31, 2000
	June 12, 1995
	May 28, 1990
	July 1, 1985
Grenada	July 8, 2008
	November 27, 2003
	January 18, 1999
	June 20, 1995
	March 13, 1990
	December 3, 1984
St. Kitts and Nevis	October 24, 2004
	March 6, 2000
	July 3, 1995
	November 29, 1993
	March 21, 1989
	June 21, 1984
St. Lucia	December 11, 2006
	December 3, 2001
	May 23, 1997
	April 27, 1992
	April 6, 1987/ April 30, 1987
St. Vincent and the Grenadines	December 7, 2005
	March 28, 2001
	June 15, 1998
	February 21, 1994
	May 16, 1989
	July 26, 1984

Source: Country authorities.

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