

Taming Volatility:

Fiscal Policy and Financial Development for Growth in the Eastern Caribbean



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Macroeconomic and Fiscal Management Global Practice
Caribbean Countries Management Unit
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Acronyms and Abbreviations

AMC	Asset Management Company
AML	Anti-Money Laundering
BAICO	British Insurance Company
CLI	CLICO International Life
CLICO	Colonial Life Insurance Company
CLF	Trinidad and Tobago based CL Financial Ltd.
ECAMC	Eastern Caribbean Asset Management Corporation
ECCB	Eastern Caribbean Central Bank
ECCU	Eastern-Caribbean Currency Union
ECHMB	Eastern-Caribbean Home Mortgage Bank
EM	Emerging Market
FATCA	U.S. Foreign Account Tax Compliance Act
FATF	Financial Action Task Force
FINDEX	Household Financial Exclusion Challenge
FD	Financial Development
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IADI	International Association of Deposit Insurance
ICRG	International Country Risk Guidance
IFC	International Finance Corporation
IQ	Institutional Quality
IMF	International Monetary Fund
IV	Instrumental Variable
LAC	Latin America and the Caribbean
LCR	Latin America and the Caribbean Region
NFA	Net Foreign Assets
NPL	Nonperforming Loans
OAS	Organization of American States
OECS	Organization of Eastern Caribbean States
OLS	Ordinary least square estimations
PCG	Partial credit guarantee
RGSM	Regional Government Securities Market
SIDS	Small-Island Development States
SME	Small- and Medium-Sized Enterprises
TFP	Total Factor Productivity
TOT	Terms of Trade
US	United States
WDI	World Development Indicator
WEO	World Economic Outlook

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Executive Summary

This report assesses the sources of macroeconomic volatility in the Eastern Caribbean and discusses policy options to deal with the effects of volatility and that could have positive effects on long-term growth. In doing so, the report contrasts the performance of the member countries of the Organization of Eastern Caribbean States (OECS) with that of other developing economies in the Caribbean and other regions of the world. More specifically, the analysis focuses on the interplay between terms of trade volatility, fiscal policy (pro) cyclical, and financial development on growth in the OECS region. By considering the interaction between these factors, the report investigates whether (i) an increase in volatility results in lower GDP growth; (ii) the negative impact of volatility on growth is more pronounced in less financially developed countries, and (iii) in countries where fiscal policy is more pro-cyclical.

Understanding the sources of macroeconomic volatility and how to deal with them is important for a region that is prone to face exogenous shocks. Economic growth rates in the OECS are now higher than in the recent past and this represents an opportunity for the region to strengthen its ability to manage the impacts of unexpected shocks. Output growth rates over the last three years are at a higher level than the average for the period 2009-13 period and there is hope that this growth momentum can be sustained. However, history suggests that the small, open economies of the OECS will remain vulnerable to considerable volatility stemming from terms of trade shocks. In the past, the region has been affected by a series of adverse events,

including the erosion of trade preferences; the decline in official foreign assistance; turbulence in the business cycles of the countries that matter the most for the region in terms of tourism revenues and foreign direct investments; and recurrent natural disasters. With the incipient recovery, the OECS economies have an opportunity to build resilience to exogenous shocks.

The report is structured in four chapters that outline the main sources of volatility in the region and suggest ways to mitigate the impacts of that volatility on growth. Chapter 1 presents stylized facts associated with the growth performance of the Eastern Caribbean over the last 40 years. It contrasts the growth performance of the OECS with the rest of the Latin America region and shows that the two groups of countries have shown significant heterogeneity over the business cycle. The chapter also highlights some of the factors that might be responsible for the volatility of growth in the OECS, including the region's exposure to natural disasters, high debt, and adverse developments in the financial sector. Chapter 2 provides new evidence on output volatility and the cyclical, and financial development in the OECS and discusses why countries are better off avoiding a pro-cyclical fiscal policy stance. Chapter 3 assesses the level of financial development in the region as well as the relationship between financial development, growth, and volatility. The chapter also explores critical policy options to strengthen financial development in the OECS. Chapter 4 assesses empirically the combined effects of terms of trade volatility, fiscal policy (pro) cyclical, and financial development on growth in the OECS and other countries using two complementa-

ry modeling approaches. First, through an econometric model using panel data for 175 countries over the period 1980-2010. Second, by using impulse-response analysis based on a structural model of the business cycle in the OECS region.

Growth in Latin America and the Eastern Caribbean

While economic growth in the Latin America region has plummeted over the last five years, the economies of the Eastern Caribbean are showing signs of a growth rebound. With the end of the “commodity super-cycle”, the Latin America region has been experiencing a significant growth deceleration for the last five years or so. Countries in the south of Latin America have followed a different cycle when compared with those in the north and the Caribbean. Since the beginning of the “great deceleration” in 2011, the commodity-dependent south has followed closely the business cycle observed in China. The countries in the north, on the other hand, have followed more closely the business cycle of the U.S., which has started to show signs of some recovery. In the Caribbean, however, the story is slightly different as growth rates are now much higher than immediately after the global financial crisis.

The close ties with the U.S. economy and its business cycle means that the OECS remains vulnerable to the fluctuations of output in the U.S. as well. Evidence presented in this report confirms that the economic performance of the small islands of the OECS is much more closely associated with developments in its main trade partners, especially the United States and the European Union, than with its peers in the Caribbean. Tourism is the single-most important industry for the OECS countries, ranging from 26 percent of GDP in St Vincent and the Grenadines to 74 percent of GDP in Antigua and Barbuda. Most of the tourists who visit the Caribbean with frequency come from the U.S. and Europe. As tourism is very income-elastic, when these two countries face a shock and the income of their residents drops, tourism trips to the Caribbean and elsewhere are likely among the first items to be cut. The pro-cyclicality of tourism is also mimicked by foreign direct investment (FDI) inflows, which have also been found to follow closely the business cycle observed in the U.S. economy.

The small size, degree of trade openness, and other intrinsic characteristics of the OECS economies

have contributed to the volatility of economic growth in the region. This report finds that economic growth volatility in the OECS is higher than the average for the world. Although output volatility was more pronounced in the early half of the 1990s and more recently during the global financial crisis than it is now, several factors make the region prone to exogenous shocks that can be a source of volatility. These include small size, openness to trade, and the synchronization with major global growth poles (such as the U.S. and EU), as well as the region’s exposure to natural hazards (such as hurricanes and severe storms and flooding, for example).

Output Volatility and the Cyclical Policy

The large majority of developing countries, including the ones in the Eastern Caribbean, have yet to graduate from procyclical fiscal policies. Although the number of developing countries following a more procyclical fiscal policy stance has declined over time, they are still outnumbered by the more industrialized economies. In the Caribbean, and the OECS in particular, the majority of the countries also tend to follow procyclical fiscal policies. The reasons for such behavior are various. This could be due to frictions in international credit markets that might prevent countries from borrowing in bad times and forcing them to lower spending during recessions. It could also be seen as a signal of weak and underdeveloped institutions in governments where there is limited technical capacity to develop the means to save in good times to spend in bad times.

Governments should avoid reinforcing the business cycle because this behavior jeopardizes their ability to lean against the wind in periods of hardship. A pro-cyclical fiscal policy can hamper government efforts to reduce the effects of volatility on growth. In general, government spending can mitigate the negative effect that volatility has on growth if: (i) government spending is counter-cyclical; and (ii) its impact on output is positive. From a risk management point of view, a counter-cyclical fiscal policy can be useful for at least three compelling reasons. First, by leaning against the wind, governments can continue to provide goods and services and to maintain public investment even in the event of a drop in public revenues. Second, in a downturn, a counter-cyclical fiscal policy can help governments increase social assistance. Third, as witnessed during the global financial crisis of 2008-09, a countercyclical fiscal pol-

icy can help countries stimulate the economy and cope better with the effects of a prolonged recession.

Most of the OECS economies have adopted a fiscal policy stance that seems to exacerbate output volatility. That is, they tend to behave in a pro-cyclical way during booms and downturns. The only exception seems to be St. Kitts and Nevis which appears together with Trinidad and Tobago, and Belize, in the group of countries that show a counter-cyclical behavior in booms, which is a good indication that they are saving for rainy days. However, these countries still display a pro-cyclical behavior in downturns. In doing so, they tend to amplify upswings and worsen recessions – what Kaminsky, Reinhart, and Vegh (2004) termed as the “when it rains, it pours” phenomenon. This behavior is in stark contrast with that of the large majority of industrialized countries that have largely adopted a counter-cyclical or even a-cyclical fiscal policy stance.

The volatility of output observed in the OECS region is also present in many of its relevant macroeconomic aggregates. An assessment of the volatility of major macroeconomic aggregates, including interest rates, trade balance, terms of trade, investments, government spending, and net foreign assets (NFA), shows that all of them are volatile. The observed volatility in the OECS is quite high compared to developed economies and even compared to a few other developing countries. The highest GDP volatility is observed in Antigua and Barbuda and in Grenada. Interest rates are also quite volatile in these countries but the magnitudes are similar across them, with the exception of St. Lucia. The volatility of trade balance and terms of trade shows much more dispersion across the OECS countries. In this context, the report finds that the OECS countries exhibit very volatile business cycles, even compared to developing economies.

Financial Development in the OECS

Financial development is an important driver of growth and can increase a country’s resilience to external shocks and volatility. Financially developed economies find it easier to mobilize savings, share information, improve resource allocation, and implement more effective diversification and risk management strategies. In the OECS context of a currency board that provides for a monetary anchor, limited fiscal space, and GDP that is highly dependent on services, the role of the

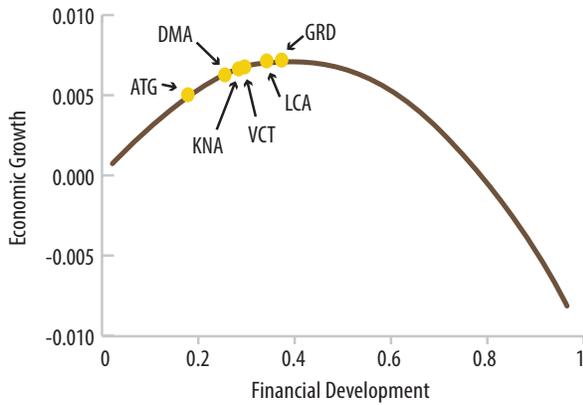
financial sector as a driver of growth is further enforced. Financial development also leads to financial stability to the extent that deep and liquid financial systems with more diverse instruments can help alleviate the impact of shocks. Financial development also helps countries to manage better the impact of terms of trade volatility, especially in the case of small, open economies such as in the case of the OECS.

The association between financial development and economic growth is well recognized in both the growth and finance literature. Economic theory suggests that well-functioning financial intermediaries and markets are the conduit to reduce information asymmetries, facilitate risk sharing and mobilize savings. This then leads to a more efficient resource allocation and, thus, may foster long-term growth. More recently, evidence points to a more complex relationship between finance and growth that may be non-linear or bi-directional depending on whether the financial market is equity or bank based.

In the OECS countries, there is clearly a non-linear association between financial development and growth as well as volatility. The analysis in this report has confirmed empirically the non-linearity in the association between financial development, growth as well as volatility for the OECS countries (Figure ES 1 and Figure ES 2). Using an index of financial development produced by the International Monetary Fund (IMF), our results are unequivocal that financial development impacts growth positively. However, this positive effect weakens at higher levels of financial development and then eventually turn negative portraying a bell-shaped relationship between growth and financial development. We have also confirmed the existence of a non-linear relationship between financial development and volatility. As a mirror image of the dynamics between financial depth and growth, financial development initially lowers volatility up to a certain point where it starts to create additional volatility (Figure ES 2).

The OECS should continue to pursue ways to strengthen its financial sector as this will contribute to reduce volatility and create appropriate conditions for sustainable growth. In both charts above, the position of each of the six OECS countries is well before the inflexion point, beyond which further development of the financial sector may have detrimental effects to economic growth and volatility. Given the high level of credit to

Figure ES1 Growth & Financial Development



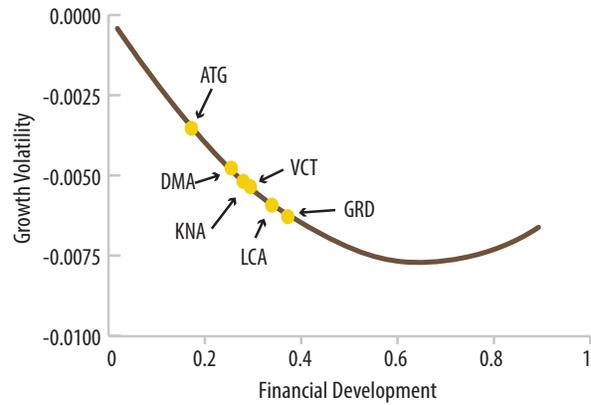
Source: Authors' own calculations using the financial deepening index developed by the IMF in Sahay and others (2015a).

GDP, the OECS should strive to reorient its financial sector to improve its comprehensive level of financial development. This reorientation – on both the supply and demand side – will positively contribute to economic growth and stability.

To reorient financial development in the region to be more comprehensive, a number of challenges need to be addressed. Over the last decade, the OECS countries have made progress to further develop their financial systems. However, there is scope to reorient financial development in the region so that it less prone to high collateral-low productivity projects, less likely to create asset price bubbles and is able to contribute to enhancing economic growth and reducing volatility.

There are feasible policy options that could help reorient financial development in what that would contribute to lower volatility, higher growth, and a more effective fiscal policy. Improving savings instruments, strengthening the regional supervision of insurance, and establishing deposit insurance could all help economic agents better manage volatility. Restoring banking stability can reduce the systemic volatility that has emanated from the heightened stress that the banking sector has experienced over the past five years. The new Banking Act that has been passed provides the foundation for improved banking supervision and future consolidation. Developing long term finance for infrastructure and more housing in addition to developing tools for more effective SME finance against the backdrop of improvements to the enabling environment and

Figure ES2 Volatility & Financial Development



Source: Authors' own calculations using the financial deepening index developed by the IMF in Sahay and others (2015a).

credit infrastructure are critical for enhancing economic growth. Finally, this chapter highlighted the importance of reversing the short-termism in sovereign debt markets in the OECS and striving for a more active secondary market as a way to improve the efficacy of fiscal policy in the OECS.

The Effects of Volatility, Fiscal Policy Cyclicity, and Financial Development on Growth

Econometric estimates show that the negative effect of terms of trade volatility on growth is mediated by cross-country differences in financial development. Using an econometric model that includes an interaction term between terms of trade volatility and the GDP share of domestic credit to the private sector we were able to confirm that terms of trade volatility has a significant negative effect on economic growth; however at higher values of financial development the effect loses significance. We have also confirmed through our econometric model the results discussed above that the relationship between GDP p.c. growth and the GDP share of domestic credit to the private sector is an inverted U-shaped. The average marginal effect of financial development on economic growth remains, however, positive and significant.

Terms of trade volatility has a particularly large negative effect on economic growth in countries where fiscal policy is procyclical. This relationship was confirmed by the empirical results of the econometric

model that includes an interaction term between the standard deviation of the terms of trade growth rate and the country-specific coefficients that measure the response of government spending to the business cycle. The coefficient on the interaction between terms of trade volatility is negative in all specifications. In addition, the results show that the coefficient on the interaction between terms of trade volatility, fiscal procyclicality, and the OECS indicator is significantly negative. Further, the interaction between terms of trade volatility and fiscal procyclicality is also negative and significantly different from zero. These results suggest that: (i) fiscal procyclicality exacerbates the negative growth effect of terms of trade volatility – for the OECS region and for other regions; and (ii) the mediating role of fiscal cyclicality is particularly pronounced in the OECS region. It is also noteworthy that the coefficient on the interaction between terms of trade volatility, financial development, and the OECS indicator is significantly positive.

A structural model of business cycles in the OECS confirmed that further financial development could help reduce volatility in the region. By using a complementary modeling approach, we have looked at the impacts of different types of shocks to fiscal policy in the presence of financial frictions on the economic performance of the region. Our simulations (based on impulse-response analysis) suggest that eliminating fiscal policy shocks could reduce the volatility of consumption and trade balance, but without the volatility of GDP. We also show that domestic financial markets development plays an important role in buffering the effects of interest rate shocks on the economy. Eliminating the working capital constraint, while keeping all shocks in place, for example, could reduce the volatility of GDP, consumption, employment and government spending significantly.

Directions for Policy to Reduce Volatility and Sustain Growth in the OECS

Moving toward a more counter-cyclical fiscal policy should be a priority for all the countries in the OECS. This will have particularly high payoffs in terms of reducing the adverse growth effects of terms of trade volatility in the region. One way of strengthening the region's ability to shift toward a more counter-cyclical fiscal policy stance would be through the adoption of fis-

cal responsibility laws and fiscal rules. These are widely recognized as effective mechanisms that can increase the discipline and credibility of the fiscal authorities. Not only would these policy tools help in making fiscal policy less pro-cyclical in the OECS, but they would also help the countries in the region to make significant progress in reigning in fiscal expenditures and implementing effective fiscal consolidation programs. The introduction of fiscal rules would need to be supported by expenditure reforms in the context of a medium term fiscal framework to signal the authorities' commitment to fiscal sustainability. Given that natural disasters are common across the region, OECS countries would do well to integrate the likelihood of a disaster in their fiscal programming exercises. Many countries in similar situations have benefitted from the parallel creation of an independent fiscal council that monitors macroeconomic projections underlying the budgeting process and the compliance with the fiscal rule.

This report argues that OECS countries can also draw on existing good practices on how to strengthen their fiscal positions and be better equipped to adopt counter-cyclical fiscal policies. Moving towards a full blown FRL, with or without a formal fiscal rule, requires some preparation and building technical capacity in order to design, implement, and monitor the new policy tool. There are some well-established good practices in that regard that could help the Eastern Caribbean states to become less procyclical. In addition to internalizing the likelihood of a natural disaster in their financial programming exercises, countries in the region should consider establishing savings funds with a strong institutional framework, a solid governance structure and clear operational rules for the allocation of the fund's resources. The proceeds accumulated in such a fund could be used for emergency situations, following a disaster or a protracted economic shock, for example. The OECS countries should also strive to ensure that fiscal policy guides the budgetary process and not the other way around; this could be done through the adoption of medium-term fiscal frameworks (MTFFs) and medium-term debt management strategies. Other policy options that could help Eastern Caribbean countries respond in a more symmetric way to the business cycle include, for example, expenditure ceilings, cyclical deficit targets, and rules-based stabilization funds.

Reducing volatility and sustaining growth will require more stable financial markets and stronger financial

sector institutions. This report discusses a few options for designing policies to help the OECS economies to achieve that objective. First, greater openness to international financial markets is important as it could help the OECS economies to hedge fluctuations in fundamental shocks, such as shocks to technology, terms of trade, and shocks associated to natural hazards. Second, greater openness must be accompanied by improvements in domestic financial markets and government's efforts to stabilize domestic risk-premium. By reducing the frictions in the domestic financial markets, these economies can cushion the negative effects of interest rate shocks on domestic economic activity, and achieve lower volatility. Third, if pro-cyclical fiscal policies induce higher country risk-premium in the international markets, governments of the OECS countries can stabilize their country's risk-premium by switching to counter-cyclical policies. Fourth, if government consumption is strongly complementary with private consumption, switching to an independent or counter-cyclical fiscal policy stance can reduce the volatility of consumption in the economy. All of these should have a positive effect on long-term growth.

To strengthen financial development in the region, a number of challenges need to be addressed. Over the

last decade, the OECS countries have made progress to further develop their financial systems. However, there is scope for further financial development in the region. The report identified specific measures that can be adopted to further enhance financial sector development. A new Banking Act has been passed which provides the foundation for improved banking supervision and future consolidation, and the insurance sector would benefit from similar harmonization. NPL management should be strengthened, and if an AMC is adopted, its scope and nature should follow leading global examples. Financial access can be improved through better credit information tools and institutions that help to reduce the elevated levels of SME credit risk such as a guarantee scheme. Finally, there are legal and regulatory improvements in the secured transactions framework and in the foreclosure legislation that would greatly help the sector. Careful coordination across all of the above will ensure that a strengthened and more nimble financial sector is better able to provide for the needs of the economy of the OECS. Once the financial sector is strengthened in the region, a deposit insurance scheme can be developed to provide a formal financial sector safety net.

A summary of the main recommendations of the report are presented in Table ES 1.

Table ES1: This Report's Main Policy Recommendations

Policy Objectives and Strength of Policy Leverages

Priority Areas to Reduce Volatility and Buttress Growth

What Has Been Done to Strengthen Fiscal Discipline

What Could Be Done to Make Fiscal Policy Less Pro-cyclical

GRENADA REMAINS THE ONLY COUNTRY IN REGION TO HAVE ADOPTED A RULES-BASED FISCAL POLICY FRAMEWORK AND ITS EXAMPLE SHOULD BE EMULATED IN ITS NEIGHBORING COUNTRIES.

A SAVINGS FUNDS WITH CLEAR OPERATIONAL RULES FOR THE ALLOCATION OF THE FUND'S RESOURCES COULD BE A GOOD COMPLEMENT TO THIS INITIATIVE.

MANY OECS COUNTRIES HAVE DEFINED FISCAL SURPLUS TARGETS, CEILINGS ON PUBLIC SPENDING, OR LIMITS ON DEBT CREATION, BUT THE REGION REMAINS LARGELY VULNERABLE TO NATURAL DISASTERS.

COUNTRIES IN THE REGION ARE STRONGLY ADVISED TO INCLUDE IN THEIR FISCAL TARGETS BUFFERS TO COVER FUTURE DISASTER-RELATED EXPENSES.

HOMEGROWN FISCAL CONSOLIDATION PROGRAMS ARE BEING DEPLOYED ACROSS THE REGION WITH A VIEW TO REIGN IN EXPENDITURES AND REDUCE DEBT.

ADOPTION OF MEDIUM-TERM FISCAL FRAMEWORKS (MTFFs) AND MEDIUM-TERM DEBT MANAGEMENT STRATEGIES COULD HELP STRENGTHEN FISCAL DISCIPLINE AND ENSURE THAT FISCAL POLICY GUIDES THE BUDGETARY PROCESS AND NOT THE OTHER WAY AROUND.

FISCAL POLICY REMAINS LARGELY PRO-CYCLICAL IN THE OECS.

ADOPTION OF FORMAL FISCAL RESPONSIBILITY LAWS (FRLs) AND/OR FISCAL RULES AND FISCAL COUNCILS COULD HELP OECS COUNTRIES STRENGTHEN FISCAL DISCIPLINE AND MOVE TOWARD A MORE COUNTER-CYCLICAL FISCAL POLICY STANCE.

What Has Been Done to Strengthen Financial Development

What Could Be Done to Increase Depth and Stability in the Financial Sector

THE OECS HAS A REGIONAL SOVEREIGN DEBT MARKET (RGSM) WHICH HAS RECENTLY BEEN DE-MATERIALIZED AND IS FULLY ELECTRONIC.

THERE IS A NEED TO REVERSE THE SHORT-TERMISM IN THE RGMS, STRENGTHEN THE SECONDARY MARKET IN ORDER FOR FISCAL POLICY TO BE MORE EFFECTIVE.

A NEW BANKING ACT HAS BEEN PASSED WHICH WILL REDUCE SOME OF THE SYSTEMIC VOLATILITY THAT THE RECENT BANKING STRESS HAS CREATED.

RESTORING THE STABILITY IN THE BANKING SECTOR WILL HELP REDUCE THIS SYSTEMIC VOLATILITY. FURTHER, IMPROVING SAVINGS INSTRUMENTS, STRENGTHENING THE REGIONAL SUPERVISION OF INSURANCE, ESTABLISH DEPOSIT INSURANCE COULD ALL HELP REDUCE VOLATILITY.

FINANCIAL DEVELOPMENT HAS NOT BEEN GROWTH FOCUSED IN THE OECS.

THE OECS NEEDS TO WORK ON DEVELOPING MORE LONG-TERM FINANCE (INCLUDING INFRASTRUCTURE AND HOUSING) AND SME FINANCE WHILE WORKING IN PARALLEL TO IMPROVE THE ENABLING ENVIRONMENT AND CREDIT INFRASTRUCTURE. THIS WILL HELP REORIENT FINANCIAL DEVELOPMENT TO BE MORE COMPREHENSIVE AND ENHANCE ECONOMIC GROWTH.

Chapter 1.

Growth In The Caribbean: Vulnerable And Volatile

Introduction

The Organization of Eastern Caribbean States (OECS) region has suffered the effects of the global financial crisis and is starting an encouraging recovery. Economic growth rates over the last three years are now higher than their average during the 2009–13 period and there is hope that this growth momentum can help the region reduce poverty faster than in the past. However, history demonstrates that this region remains vulnerable to considerable volatility. This volatility has many sources and can be manifested in different forms. In the past, the region has been affected by a series of adverse exogenous shocks, including the erosion of trade preferences; the decline in official foreign assistance; turbulence in the business cycles of the countries that matter the most for the region in terms of tourism revenues and foreign direct investments; and recurrent natural disasters. While there is optimism with the incipient recovery in the OECS, there is no reason to believe that the latent sources of vulnerability and volatility in the region have subsided.

This chapter presents some stylized facts associated with the growth performance of the Eastern Caribbean over the last 40 years. In the first section, we contrast the growth performance of the OECS with the rest of the Latin America region and show that the two groups of countries have shown significant heterogeneity over the business cycle. Section 2 focuses on the main factors that explain the growth trajectory of OECS countries, including the role of Total Factor Productivity. Section 3 discusses some of the aspects that may have

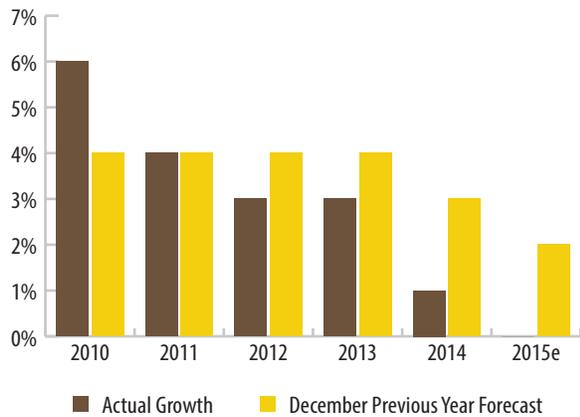
contributed to a history of growth vulnerability in the region and Section 4 highlights some factors that might contribute to the volatility of growth in the OECS, including the region's exposition to natural disasters, high debt, and adverse developments in the financial sector.

Growth in Latin America and the Caribbean – A Tale of Two Regions

Economic growth in Latin America has been on a downward spiral for the last five years. After several years of high commodity prices and strong regional growth during a period that was commonly referred to as the “commodity super-cycle,” commodity prices have been decreasing since 2011, along with Chinese economic activity, weakening the region's terms of trade. As a result, the region has witnessed its most pronounced and long-lasting growth deceleration since 2009, the year that marked the height of the global financial crisis. The deceleration has frustrated most growth forecasts due to its magnitude (Figure 1.1) and seems to reflect underlying weaknesses in both aggregate demand and supply in an unfavorable external environment. While growth has decelerated across the region, the regional average has been dragged down by developments in Argentina, Brazil and Venezuela, which have had the highest rates of growth deceleration in the region and recorded their worst economic performances in decades (Figure 1.2).

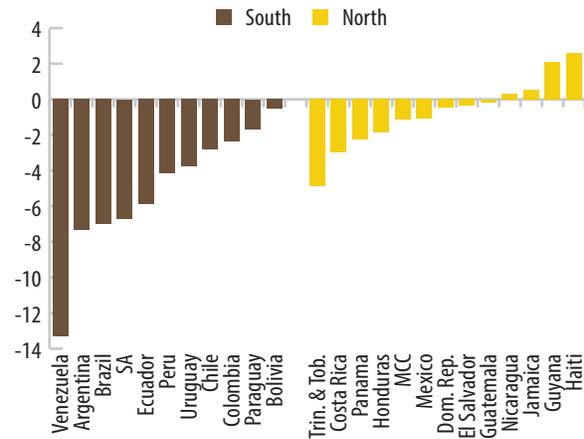
While growth has decelerated across the whole region, the countries in the south have followed a different cycle when compared to those in the north. The

Figure 1.1 Actual and Forecasted GDP Growth in LAC – 2010 to 2015



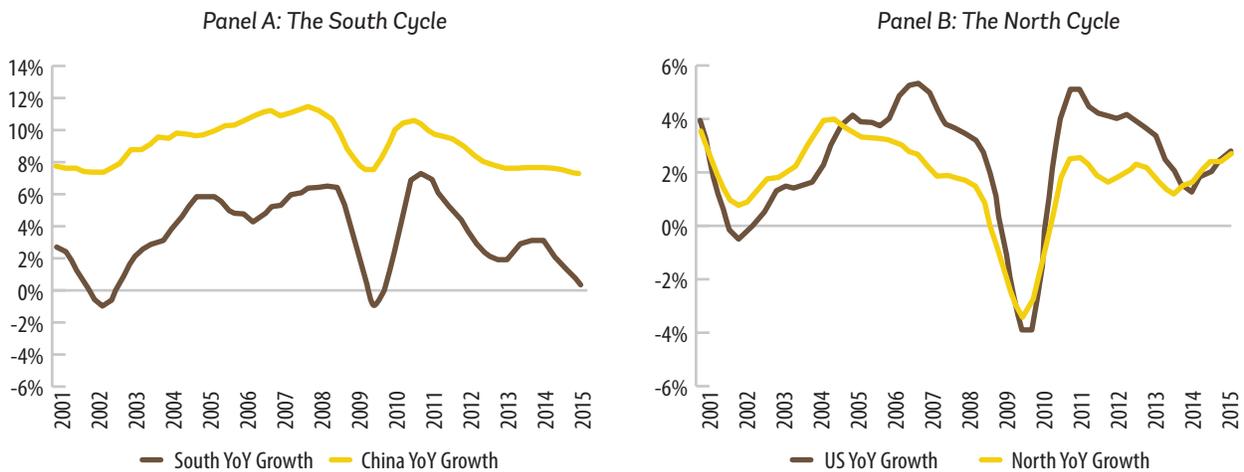
Source: LCR Chief Economist's Office estimates.

Figure 1.2 Growth Deceleration in LAC



Source: LCR Chief Economist's Office estimates.

Figure 1.3 Heterogeneity in Growth in Latin America



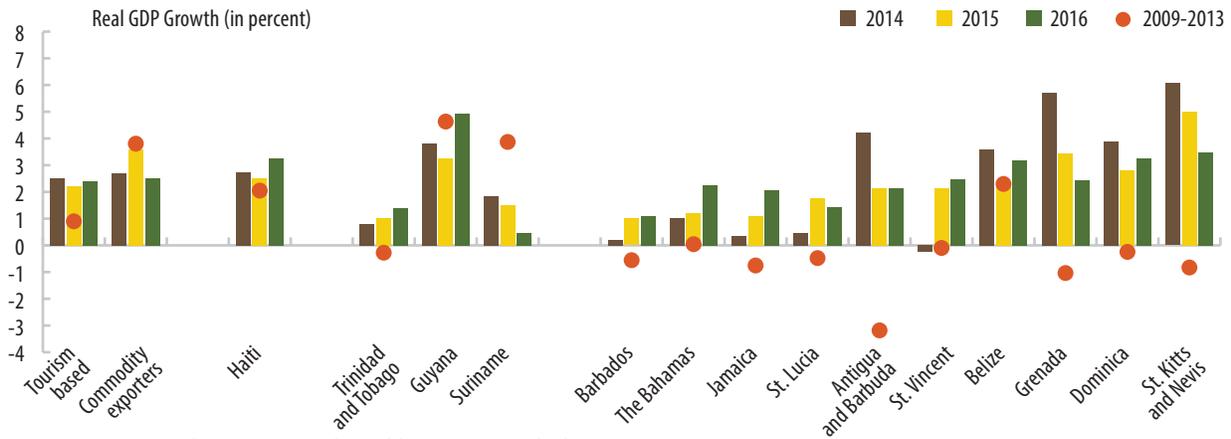
Note: Real GDP growth rates smoothed by the Hodrik-Prescott filter. South includes Argentina, Bolivia, Brasil, Chile, Colombia, Ecuador, Peru, and Uruguay. North includes Panama, Costa Rica, Dominican Republic, El Salvador, Guatemala, Jamaica, and Mexico. **Source:** LCR Chief Economist's Office estimates.

region's main commodity exporters, including, for example, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, and Uruguay are concentrated in the south of Latin America. This is the part of the region which has been hit the hardest by the fall in global commodity prices (Figure 1.2). The countries in the north, including Panama, Costa Rica, Dominican Republic, El Salvador, Guatemala, Jamaica, and Mexico, among others, have also shown significant growth decelerations, but the magnitude of this phenomenon has not been as pronounced as in the south. What is interesting to note is that the north and the south have followed very different business cycles since the beginning of the "great deceleration"

in 2011. The commodity-dependent south appears to follow closely the same business cycle as China's but with a much more pronounced drop in output in the recent period, even when compared with the growth slowdown observed in China. On the other hand, the north of South America seems to follow very closely the U.S. business cycle, but differently from what has happened in the most recent years in the south, growth seems to be recovering in the northern countries mimicking the pickup in the United States.

In the Caribbean, the story is slightly different from the rest of the region as growth has been much better

Figure 1.4 Caribbean Growth is Stronger Now than in the Past



Source: International Monetary Fund, World Economic Outlook.

now than in the past. Perhaps boasted by the recovery in the U.S. economy in the most recent years, the tourism-dependent economies of the region have shown growth rates in 2014–2015 that are much more robust than the ones observed over the 2009–13 period (Figure 1.4). More specifically, in 2014–15 the tourism sector was the main engine of growth in the tourism-intensive economies of the Caribbean (The Bahamas, Barbados, Jamaica, and the countries of the Eastern Caribbean Currency Union, ECCU), due to rising visitor arrivals (buoyed by the U.S. recovery). Tourism contributed to stronger-than-expected growth in these countries, except in the case of Jamaica, where a drought had deleterious effects on growth. The performance of the Caribbean commodity exporters (Suriname, Guyana, and Trinidad and Tobago), on the other hand, has been in line with that of the other commodity exporters from the south of Latin America where past growth has been higher than current growth. In addition, since 2011, there has been a positive terms-of-trade shock with the decline in commodity prices – one that turned sharper with the more recent decline in oil prices. The recent evolution of the terms of trade might be another important factor that could contribute to robust growth in the region.

The Recent Economic Performance in the OECS

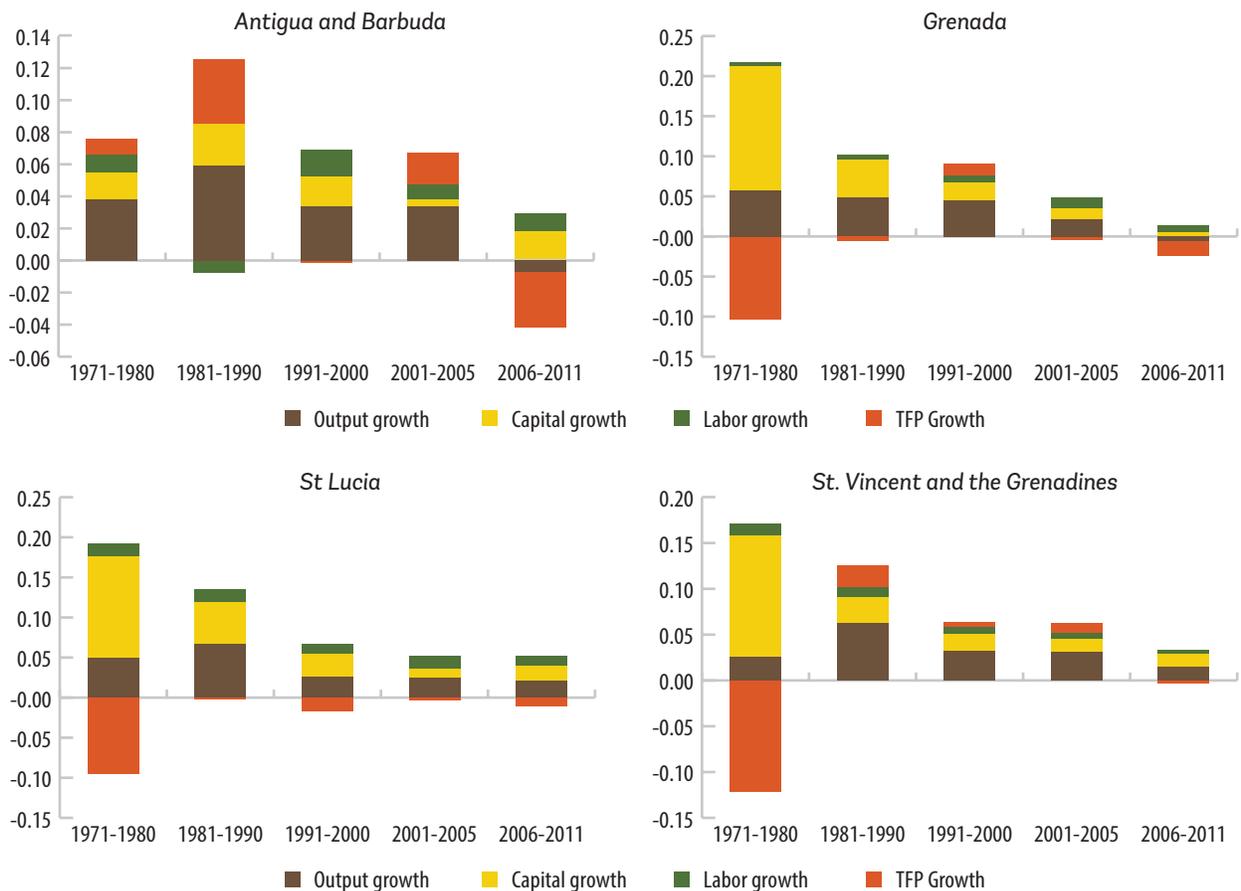
Historically, the economic performance of the members of the OECS has been particularly uneven. This is due to reasons that range from the need to reinvent themselves after the end of preferential trade agreements with Europe in the 1980s to the frequency of

natural hazards. After growing faster than the rest of the world in the 1980s at an annual average of 6 percent, the OECS countries have experienced a significant growth slowdown since the 1990s with annual growth rates of 2 percent or less on average. More recently, the region was severely hit by the effects of the global financial crisis of 2008–09 because of their close ties with the economies of the U.S., Canada, and Europe which are their main source of tourist arrivals.¹ Some common challenges faced by the small economies of the OECS include exposure to frequent natural disasters; vulnerability to external shocks; high debt; and lack of economies of scale.

Total Factor Productivity (TFP) has been an important determinant of growth in the OECS over the last 4 decades but its importance has declined more recently. Results from a growth accounting exercise reveal that TFP explains the bulk of the variation in economic growth in the ECCU during the last 40 years (Figure 1.5). TFP’s contribution to growth for the OECS on average has been declining after reaching its peak in the 1970s when it explained 86 percent of regional growth; this contribution has come down to just 8 percent in the early 2000s. The downward trend in TFP was mainly due to reduced productivity in Dominica, St. Lucia and more recently Grenada, with negative TFP growth observed in the cases of Dominica and Grenada (see Schipke et al. (2013)). More recently, however, a few countries in the OECS, including Antigua and Barbuda, St. Kitts and

¹ See Kouame and Reyes (2015) for evidence of how the Caribbean’s economic growth rates relate to those of key drivers of the global economy.

Figure 1.5 Output Growth Decomposition for Selected OECS Countries: 1971–2011



Nevis, and St. Vincent and the Grenadines, showed improvements in productivity growth between 2000 and 2005, but turned to negative TFP growth in the period that coincided with the global financial crisis (2006–11). While it may be difficult to precise the exact causes behind this trend, it might be the case that these countries were successful in gradually shifting towards more capital intensive tourism and away from labor intensive agriculture throughout the region during the first half of the 2000s and before suffering the impacts of the global crisis.

Updated data available for Antigua and Barbuda, Grenada, St. Lucia, and St. Vincent and the Grenadines reveal that TFP growth in the latter half of 2000s turned negative for all of these four countries. As pointed out by Barro (1998), negative TFP growth is hard to interpret because it suggests a decline in technical progress, reflecting a reduction in the efficiency with which the other factors of production are used either because of complementary factors or due to bad policies

and weak institutions. Another explanation for negative growth is the underutilization of resources, such as capital and labor. Negative TFP growth in the latter half of 2000s could be caused by the underutilization of capital in particular, or resources in general, during the Great Recession.

The performance of the OECS economies appears to follow closely the economic performance of the United States and the European Union. In a recent paper, Kouame and Reyes (2015) studied the relation between growth in the Caribbean and some global growth engines, namely the United States, the European Union, Brazil, and China. They first assessed empirically the relationship between growth rates in the Caribbean and the global growth poles, and then tried to discern the effect of business cycle movements in the global growth poles on the Caribbean. They found a statistically significant and positive relationship between growth in the United States and the Caribbean, as well as between growth in the European Union and the Caribbean. The

evidence of growth synchronization between Caribbean states with Brazil and China, however, was weak and not statistically significant. That finding is consistent with the good performance of the Caribbean, and especially the tourism-dependent economies of the OECS, in the most recent period.

A History of Vulnerabilities to Economic Shocks

Small states are subject to a number of vulnerabilities that can hamper their long-term growth. A recurring question commonly asked by those who live and work on small states is whether small economy states actually suffer from their smallness? Easterly and Kraay (2000) addressed this question head on and argued that there are good theoretical reasons to believe that they do. According to these authors, the provision of public services may be subject to indivisibilities that lead to increasing returns to scale, especially fiscal institutions and defense. They also raised theoretical arguments suggesting that increasing returns to scale in the private economy may be difficult to realize in small states and that small economies may also be at a disadvantage because their size prevents them from diversifying into a wide range of activities, making them more vulnerable to terms of trade shocks than large states. To complicate matters even further, many small states suffer from poor location in that they are remote and/or landlocked, and many are located in regions prone to hurricanes and volcanic activity. Easterly and Kraay (2000) argued further that public officials in small states may be much more likely to be subjected to conflicting pressures, and that it may be difficult to recruit a high-quality civil service given the limited pool of candidates in

small states. In what follows, we briefly discuss some of the sources of these vulnerabilities.

The high synchronization of the region with the U.S. business cycles means that the OECS remains vulnerable to exogenous shocks. We were able to confirm this by calculating the average correlation of the change in GDP per capita (in constant 2005 US\$) between OECS countries and the U.S. as well as the rest of the world between two consecutive periods, 1980-1999 and 2000-2014. The underlying assumption is that since OECS countries are very small, they are not expected to affect world GDP. The correlation, therefore, only reflects the impact of the world's economic volatility on the OECS countries. With the exception of probably Dominica, all other OECS countries' GDP per capita are highly correlated to the U.S and world output. The most vulnerable country is Antigua and Barbuda, with the correlation to the U.S. output of 0.66, which means that if the U.S. GDP were to drop by 1 percentage point in any given year, the GDP of Antigua and Barbuda would be expected to decline by 0.66 percentage point (see Table 1.1). The high correlation of Antigua and Barbuda with the US and world output might be related to the country's high dependence (the highest among the OECS countries – see Table 1.4) on tourism. While this high dependence represents an important source of vulnerability on the downward side of the business cycle, it also means that Antigua and Barbuda would be the OECS country standing to benefit the most from a growth acceleration in the U.S. economy.

The performance of the small islands of the OECS seems to be much more closely associated with external developments than its peers in the Caribbean-

Table 1.1: Correlation of OECS Real GDP Per Capita Growth with the U.S. and the Rest of the World (1980 to 2014)

Growth in real GDP per capita (constant 2005 US\$)	1980–1999		2000–2014	
	World	USA	World	USA
Grenada	0.5	0.21	0.41	0.5
Dominica	0.1	0.11	0.24	0.07
St. Vincent and the Grenadines	0.24	0.15	0.13	0.21
St. Lucia	0.45	0.46	0.39	0.39
St. Kitts and Nevis	0.64	0.49	0.47	0.46
Antigua and Barbuda	0.38	0.44	0.68	0.66

Source: World Bank staff calculations based on World Development Indicators.

an and elsewhere. To put OECS' external vulnerability into perspective, we compare their external dependence with that of other Caribbean countries and other small islands. From Table 1.2, two observations are noteworthy. First, the correlation between growth in OECS' GDP per capita and the world's as well as the U.S.' appears consistently in the range between 0.55–0.65 over time. This suggests that the OECS's output growth is consistently dependent on world output. Second, OECS economies are significantly more dependent on the world than other Caribbean islands and other non-Caribbean small islands. This finding reinforces the view that OECS countries are more vulnerable to external economic shocks than their comparators.

The export performance of the OECS countries is also closely associated with the business cycles in the U.S. and the rest of the world.

To gain a better understanding of the OECS's vulnerability to external shocks, we investigate three factors that could be responsible for this external dependence: export revenues, tourism revenues, and FDI inflows. In particular, we examine how dependent OECS export and tourism revenues are to the world and the U.S. GDP per capita. We start with an ex-

amination of the region's exports. Overall, we find that the OECS's export performance is positively correlated with U.S. and the world's GDP, with the exceptions of Dominica during the 1980s and 1990s, and St Lucia between 2000 and 2014. Among the other countries, St. Kitts and Nevis stands out as the country where export revenues are the most dependent on world GDP: its correlations to the U.S. and world GDP are 0.69 and 0.77, respectively (Table 1.3).

Tourism revenues in the OECS are highly vulnerable to external economic volatility.

Tourism is the single-most important industry for the OECS countries. The total contribution of international tourism in 2011, for example, ranged from 26.2 percent (for St Vincent and the Grenadines) to 74.2 percent of GDP (for Antigua and Barbuda) (see Table 1.4). Tourism, unfortunately, is very income-elastic. That is, when income falls, tourism trips are likely among the first items to be cut in a household's budget planning. Not surprisingly, tourism revenues are highly vulnerable to external economic volatility. This can be seen from Table 1.5 which presents the correlation between the change in the log of real international tourism revenue per capita and world real

Table 1.2: Regional Comparison of Correlation of Real GDP Per Capita

Growth in real GDP per capita (constant 2005 US\$)	1980–1999		2000–2014	
	World	USA	World	USA
OECS average	0.63	0.56	0.64	0.65
Other Caribbean	0.10	0.00	0.42	0.44
Other small islands	0.52	0.58	0.29	0.15

Source: World Bank staff calculations based on World Development Indicators.

Table 1.3: OECS' Export and World GDP

Growth in real export per capita	1980–1999		2000–2014	
	Growth in real GDP per capita World	Growth in real GDP per capita USA	Growth in real GDP per capita World	Growth in real GDP per capita USA
Grenada	0.240	0.256	0.22	0.08
Dominica	-0.248	-0.221	0.29	0.13
St. Vincent and the Grenadines	0.291	0.300	0.35	0.51
St. Lucia	0.270	0.165	-0.13	-0.02
St. Kitts and Nevis	0.436	0.491	0.69	0.77
Antigua and Barbuda	0.177	0.159	0.29	0.31

Source: World Bank staff calculations based on World Development Indicators.

Table 1.4: Travel and Tourism Contribution (2011, %)

	Direct Contribution to GDP	Total contribution to GDP	Direct Employment	Total employment	Exports
Antigua & Barbuda	17.8	74.2	18	69	74.4
Dominica	7.5	24.8	6.9	22.9	45.3
Grenada	7.3	24.2	6.8	22.4	66.7
St Kitts & Nevis	7.8	28.2	7.7	26.7	44.3
St Lucia	15.4	45.8	17.5	45.4	60.8
St Vincent & Grenadines	7.7	26.2	7.1	23.9	51.8

Notes: Direct contribution: Tourist transportation, food and leisure industries. Indirect contribution: capital investment in travel and tourism; government spending to support tourism, and supply chain effects.

Source: World Travel and Tourism Council; OECS; Caribbean Tourism Organization.

Table 1.5: Tourism and World GDP

Growth in real international tourism revenue per capita (2005 US\$)	2000–2014	
	Growth in real GDP per capita World	Growth in real GDP per capita USA
Grenada	0.18	0.00
Dominica	0.23	0.05
St. Vincent and the Grenadines	0.29	0.48
St. Lucia	0.04	0.24
St. Kitts and Nevis	0.52	0.64
Antigua and Barbuda	0.31	0.29

Source: Authors' own elaboration based on data from the World Travel and Tourism Council; OECS; Caribbean Tourism Organization.

GDP per capita between 2000 and 2014.² Table 1.5 reveals that international tourism revenues for the OECS are very dependent on the U.S.'s and world GDP. This is especially true for St. Vincent and the Grenadines, and St. Kitts and Nevis.

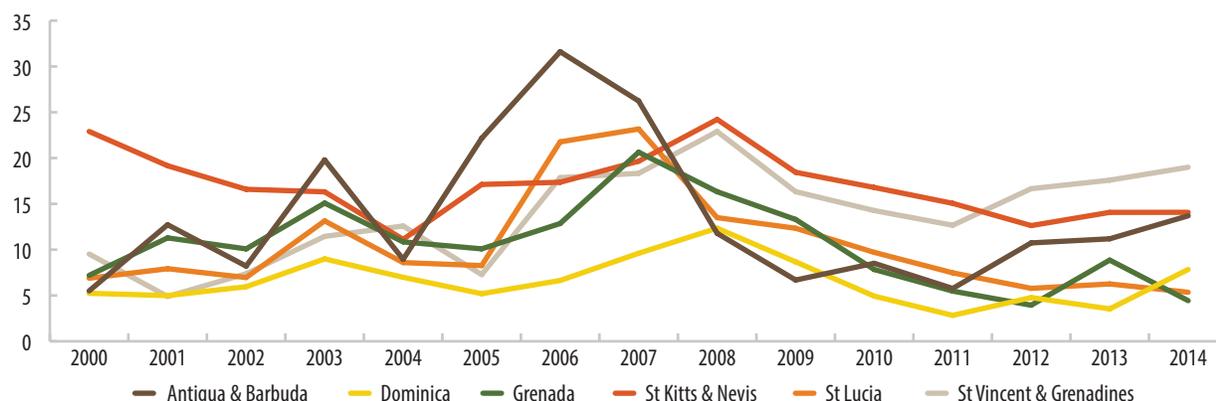
FDI inflows to the OECS are highly pro-cyclical with external developments. Figure 1.6 shows that FDI inflows to the OECS vary a great deal, ranging from 5 to 37 percent of GDP. Not only that, they are also highly dependent on the world economy (which serves as a push factor). In the boom time prior to the Great Recession (2000–2005), FDI inflows increased sharply for all OECS countries, peaking in 2006 and 2007. However, when the major growth poles suffered the effects of the Great Recession, FDI inflows to the OECS also collapsed sharply. Table 1.6 confirms the analysis with longer time series. It shows the correlation between the change in

FDI inflows (as a share of GDP) and the change in the log of world real GDP per capita, as well as U.S.'s real GDP per capita, for the period between 1980 and 2014. Overall, we observe a positive correlation between the change in FDI inflows to the OECS countries (as a share of output) and real growth in real GDP per capita of the world and the U.S.

Differentiated performance among the OECS countries are evident. As shown in Figure 1.4, some OECS countries.

The Caribbean region has experienced low-long term growth despite large inflows of FDI. One would expect that foreign direct investment inflows should be associated with higher growth rates due to knowledge transfers and spillover effects. However, this is not the rule in the Caribbean region, and in particular in the service-oriented economies of the OECS. Antoine, de Piniés and Martin-Sanchez (2015) show that the service ori-

² Unfortunately there were not enough data points for the 1980–1999 period to yield meaningful analyses.

Figure 1.6 FDI Inflows to OECS, Percentage of GDP**Table 1.6: FDI Inflows and World Output**

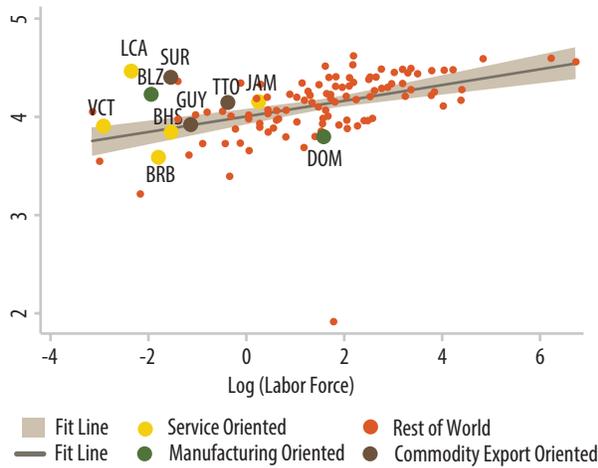
$\Delta FDI/GDP * 100$	Growth in real GDP per capita	
	World	USA
Antigua & Barbuda	0.24	0.143
Dominica	0.068	0.041
Grenada	0.057	0.082
St Kitts & Nevis	0.221	0.244
St Lucia	0.191	0.021
St Vincent & Grenadines	0.147	0.111

Source: Authors' own elaboration based on World Development Indicators.

ented economies of the Caribbean have received more foreign direct investment than other countries in the region but have not seen significantly elevated growth rates. According to these authors, this lack of positive growth spillovers from FDI inflows is associated with the small size of these economies. Figure 1.7 shows that the percentage of inputs of domestic origin in foreign affiliates, an indication for backward linkages, is higher for countries with larger labor forces. In addition, they note that the foreign firms investing in the service-oriented countries in the Caribbean tend to rely mostly on foreign technologies which they find is associated with a lower propensity for backward linkages. While this could be an indication that these economies do not have the skilled labor force required to develop backward linkages in more advanced services, Lederman and Lesniak (2016) do not find evidence in support of this argument and show that the small size of these economies is a more compelling reason behind this phenomenon (see Figure 1.8).

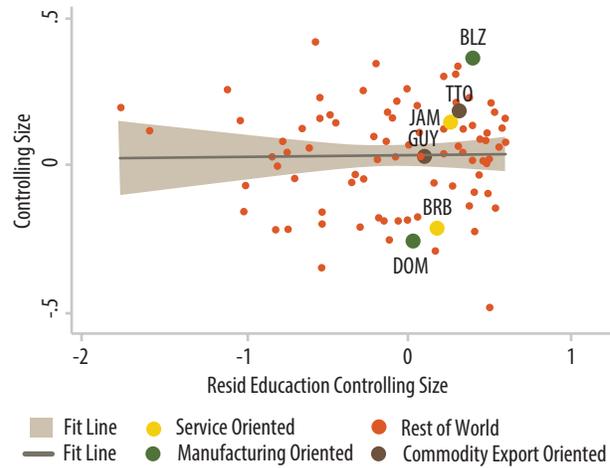
Along with other small economies, Caribbean countries also exhibit high levels of public debt relative to GDP. Figure 1.9 shows the median debt to GDP ratio in 2013 over several country groupings. While it is not entirely clear that debt is directly related to size, it is immediately apparent that the Caribbean stands out as a particularly high debt region. This may be partly related to the constant need to rebuild infrastructure after frequent natural disasters and partly due to the fact that government revenues as a share of GDP are consistently low. Haque et al. (2016) find that small states, in general, have accumulated public debt at a faster rate than larger countries. For example, over the more recent period, lower-middle and upper-middle income small states accumulated public debt at an average rate of 1.3 percent of GDP and 1.8 percent of GDP per annum, respectively, over 2009–2014. According to Haque et al. (2016), this compares to slightly negative debt accumulation for other states.

Figure 1.7 Backward Linkages Increase with Size



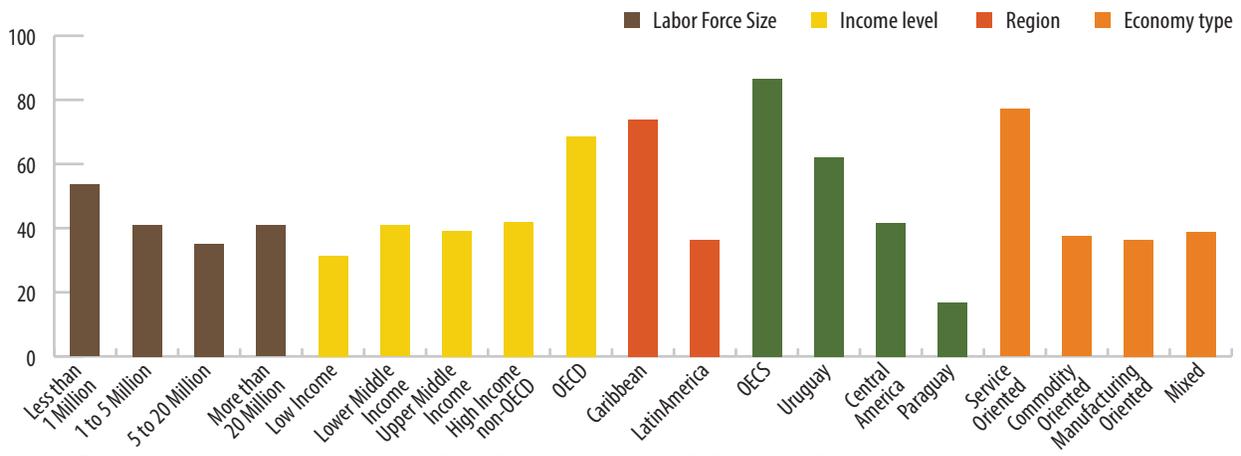
Note: Graph shows fit line of the following linear regression: $\text{Log}(\text{Percentage of inputs of domestic origin}) = \text{log}(\text{labor force}) + \text{error}$. The relationship is positive and statistically significant at the 1% level with a coefficient of .09. **Source:** Antoine, de Pinies, and Sanchez-Martin (2015) based on World Bank Enterprise Survey, World Bank World Development Indicators database.

Figure 1.18 Partial Correlation Between Backward Linkages and Average Years of Education Attained Controlling for Labor Force Size



Note: Graph shows the fit line of an ordinary least squares regression. It is calculated by first estimating the following two equations: (1) $\text{Log}(\text{percentage of inputs of domestic origin}) = \text{log}(\text{labor force}) + \text{error1}$; (2) $\text{Log}(\text{average years of education}) = \text{log}(\text{labor force}) + \text{error2}$. Then the plot represents the regression of error1 on error2. This can be thought of as representing the relation between the % of domestic inputs a firm uses and the average years of education attained by workers in a country controlling for the size of the labor force. The relationship is positive with a coefficient of .01 but not statistically significant. **Source:** Lederman and Lesniak (2016) based on data from Barro Lee Education Data set, World Bank enterprise Survey, World Bank World Development Indicators database, and author's calculations.

Figure 1.9 Government Debt in 2013



Notes: Bars represent the median value of the Gross Government debt to GDP ratio in 2013 for the grouping. Labor force groups are: less than 1 million, 1 million to 5 million, 5 million to 20 million, and larger than 20 million (upper border included in higher category). Country Income groups/levels defined as in the World Bank WDI. Caribbean includes: Antigua and Barbuda, The Bahamas, Belize, Barbados, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, Suriname, Trinidad and Tobago, and St. Vincent and the Grenadines. OECs includes: Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. Service Oriented Economies includes: Antigua and Barbuda, The Bahamas, Barbados, Dominica, Grenada, Jamaica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. Manufacturing/Services oriented includes: Belize, Dominican Republic, and Haiti. Commodity Export Oriented includes: Guyana, Suriname, and Trinidad & Tobago. Latin America includes: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. **Source:** Lederman and Lesniak (2016) based on data from the IMF World Economic Outlook database April 2015, and author's calculations.

The main drivers of public debt accumulation in small states appear to be rising fiscal deficits. Haque et al. (2016) present evidence showing that, for lower-middle income countries, debt accumulation is driven by larger primary deficits (3.2 percent of GDP compared to 1.9 percent of GDP for larger states) and slower growth (-1.6 percent of GDP, compared to -1.8 percent for larger states). While upper-middle income small states have run smaller primary deficits than larger countries, high existing debt burdens including significant commercial debt have led to a strong contribution from real interest rates (1.6 percent of GDP per annum, compared to slightly negative contribution for larger states). Haque et al. (2016) conclude that higher average primary deficits are associated with public debt accumulation across small states and that the impact of primary deficits dominates growth effects, with several small states experiencing reasonable rates of growth combined with increasing debt stocks in the presence of large primary deficits.

Small states also tend to accumulate external debt at a faster pace than larger countries. According to the evidence presented by Haque et al. (2016), lower-middle and upper-middle income small states accumulated debt at 1.1 percent and 2.9 percent of GDP per annum respectively, compared to debt accumulation of just 0.1 percent for larger countries. The major driver of increased

external debt accumulation for small states was the size of the current account deficit (11.5 percent of GDP for lower-middle income small states, 10.4 percent of GDP for upper-middle income small states, and 5.6 percent of GDP for larger states). Slower growth in smaller states also exacerbated negative external debt dynamics.

Is Economic Growth Excessively Volatile in the OECS?

The OECS countries have suffered historically with volatility of economic growth. Economic growth volatility in the OECS has been higher than that observed in other groups of countries with similar characteristics such as other small states of the Caribbean, the broader group of small-island development states (SIDS), and Central American countries (Figure 1.10). Output volatility in the region was particularly pronounced in the early half of the 1990s and 2000s and then more recently during 2008–2010 as a result of the global financial crisis. This is not surprising given these countries' small size, high degree of openness, dependence on tourism from a not so diversified range of countries, and proneness to natural hazards which make them highly exposed to external shocks.

The most volatile countries in the OECS are Antigua and Barbuda and Grenada and to a lesser extent are

Figure 1.10 The OECS countries face higher volatility compared to regions with similar economies

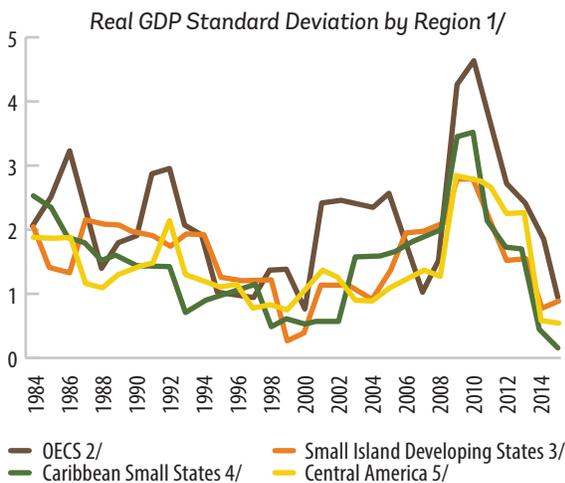
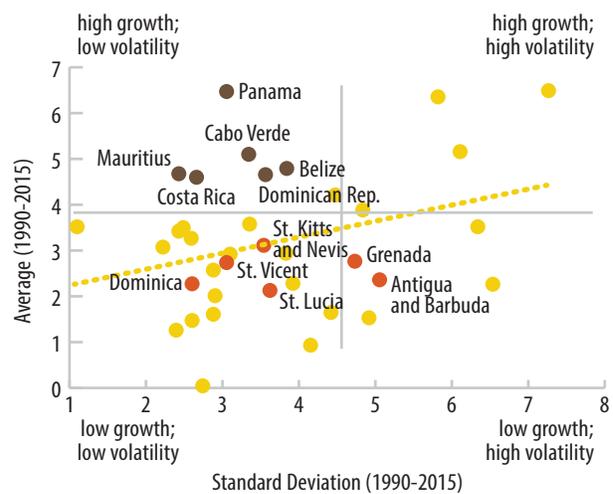


Figure 1.11 Growth Volatility in the OECS

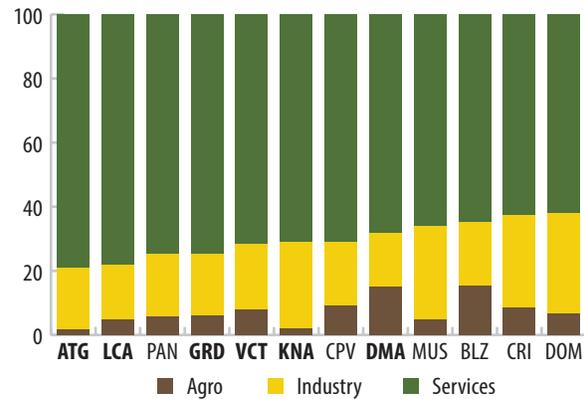


Note: 1/ 5 year moving standard deviation; 2/ Antigua and Barbuda, Dominica, Grenada, St. Lucia, St. Kitts and Nevis, and St. Vincent and the Grenadines; 3/ Comoros, Djibouti, Fiji, Guinea-Bissau, Kiribati, Maldives, Marshall Islands, Mauritius, Micronesia, Fed. Sts, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Seychelles, Singapore, Solomon Islands, Timor-Leste, Tonga, and Vanuatu; 4/ The Bahamas, Barbados, Belize, Guyana, Suriname, Jamaica, and Trinidad and Tobago; 5/ Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. **Source:** IMF; WEO and World Bank staff calculations.

St. Lucia and St. Kitts and Nevis. Dominica and St. Vincent and the Grenadines, on the other hand, seem to experience the lowest levels of volatility in the region (Figure 11). It is also worth noting that the countries that exhibit the highest levels of volatility in the OECS are also the ones that are less diversified and that rely the most on services related to tourism as their major growth driver. By contrast, the countries which exhibit the lowest volatility in the region are those which have become more diversified and where the contribution of other sectors GDP growth, such as agriculture and industry, mainly construction activity, is also important (Figure 1.12).

The relationship between terms of trade volatility and economic growth is negative for a large sample of countries, including the OECS. Figure 1.13 plots on the y-axis countries' average GDP per capita growth (over five years); on the x-axis is the standard deviation of the terms of trade growth rate (also computed over a five year period). We see from Panel A in Figure 1.10 that for a sample of 175 countries terms of trade volatility has a negative average effect on economic growth. The coefficient from a bivariate regression that corresponds to the plot in Panel A of Figure 1.10 is -0.31; this coefficient is significant at the 1 percent level (p-value 0.007). Panel B shows that a negative relationship between terms of trade volatility and economic growth is visible also within the sub-sample of OECS countries. The coefficient from a bivariate regression that corresponds to the plot in Panel B of Figure 1.10 is -0.36; thus it is quantitatively very close to the slope coefficient that emerges in Panel

Figure 1.12 Countries That Are More Diversified Have Higher Growth Rates and Less Volatility

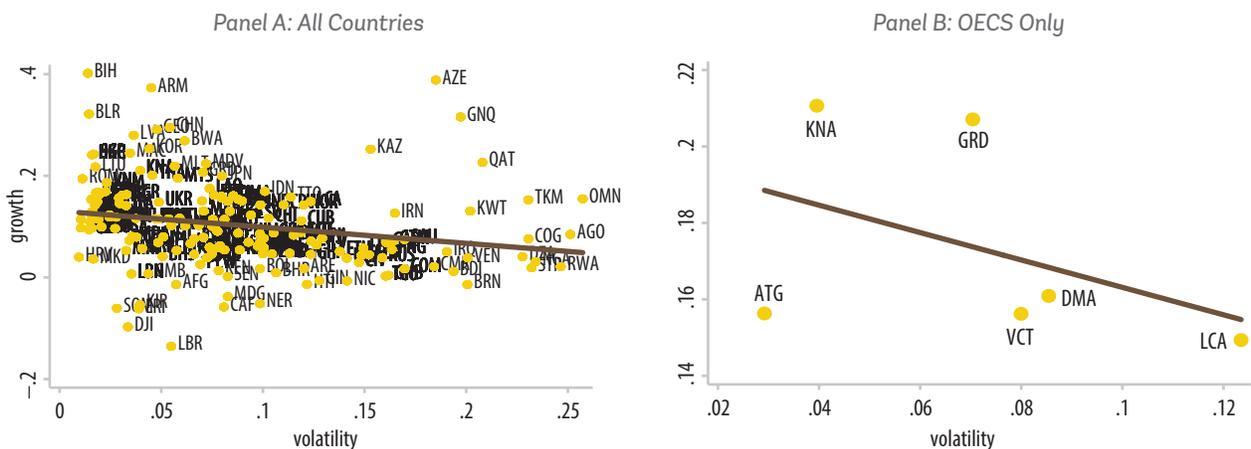


Source: IMF; WEO and World Bank staff calculations.

A. Statistically, we cannot reject the hypothesis that the slope coefficient in Panel A is equal to the slope coefficient in Panel B (t-value 0.91).

Nevertheless, growth volatility in the OECS, while substantially higher than the world average, is within the range of their comparators. Most notably, growth volatility for the OECS countries is in the same range of other small island countries throughout the previous decades (3.68 percent versus 3.70 percent in 1980s; 1.99 percent versus 2.03 percent in 1990s; 3.53 percent versus 2.87 percent in 2000s, and 2.42 percent versus 2.11 percent since 2011). Interestingly, OECS growth is more volatile than in other Caribbean countries in previous decades, but since after the Great Recession,

Figure 1.13 The Negative Relationship Between Economic Growth and Volatility

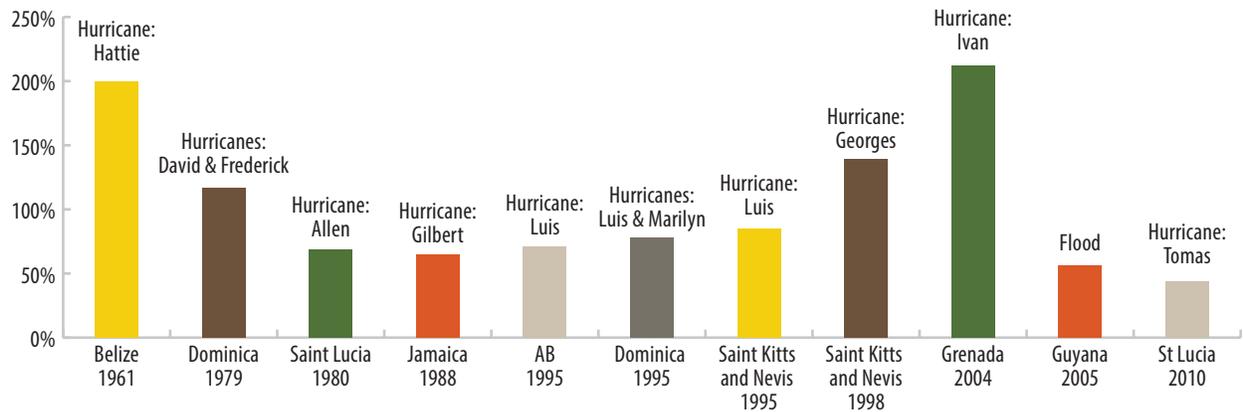


Source: Brueckner and Carneiro (2015).

Table 1.7: Growth Volatility, OECS

	1980–1999			
	1980–89	1990–99	2000–09	2010–14
Antigua and Barbuda	3.96	3.09	7.04	4.81
Dominica	3.78	1.80	3.44	1.85
Grenada	4.23	3.88	6.11	2.70
St. Kitts and Nevis	4.05	2.97	4.21	4.33
St. Lucia	10.27	6.48	3.86	1.17
St. Vincent and the Grenadines	4.00	2.61	3.60	2.06
OECS average	3.68	1.99	3.53	2.42
Other Caribbean	2.03	2.34	2.62	5.91
Other small islands	3.70	2.03	2.87	2.11
World average	1.32	0.84	1.91	0.73

Figure 1.14 Impact of Damages from Disasters are Significant



Source: EM-DMT.

other Caribbean countries suffered significantly higher volatility (5.91 percent versus 2.42 percent). The finding suggests that small islands, including the OECS, other Caribbean, and other small islands around the world, are facing significantly higher growth volatility.

Substantive exposure to natural disasters contributes to output volatility in the OECS. The region concentrates the countries in the world that are most exposed to natural hazards. Natural disasters such as hurricanes and tropical storms have seriously impacted the countries' growth performance by severely affecting the productive sectors of the economy, such as agriculture and tourism, and communities and households. Natural disasters have also added pressure on the fiscal

position of the governments, exacerbating existing expenditure pressures, redirecting public resources away from long-run development plans and increasing indebtedness. Between 1993 and 2012, average OECS annual losses from natural disasters reached 4.3 percent of GDP. In addition, Hurricanes Ivan (2004) and George (1998) caused damages amounted to over 200 percent of GDP in Grenada and 140 percent of GDP in St. Kitts and Nevis, respectively (Figure 1.14).

The level of financial development is also believed to affect the impact that volatility has on economic growth. Recent studies suggest that beyond a certain level financial development may generate decreasing returns to growth and stability (Arcand, Berkes, and

Taming Volatility

Panizza (2012); Sahay et al. (2015a)). A few arguments might explain why this is so. One such view is that too much finance may increase the frequency of booms and busts thus increasing volatility and affecting economic growth negatively. Excessive availability of finance can also cause a diversion of talent and human capital away from productive sectors and toward the financial sector without a clear net positive impact on growth. Also, excessive leverage and risk taking can lead to increased economic and financial volatility, with potentially negative consequences for long-term growth, especially if regulation and supervision are inadequate (IMF (2003); Reinhart and Rogoff (2011); Sahay et al. (2015a) and (2015b)).

Financial soundness in the OECS region has deteriorated post crisis. A formal assessment of the impact of financial sector development on volatility and ultimately growth is presented in Chapter 4, but it is worth mentioning that the region has suffered with inadequate

access to credit and the quality of the banking sector, especially after the 2008 global crisis. As a result of the economic slowdown following the crisis, nonperforming loans (NPLs) in the banking sector worsened, increasing to 18.0 percent of total loans in 2014 from 7.7 percent in 2008, and domestic banks have experienced losses region wide. Credit growth to the private sector continued to fall and since 2013 is now negative. Most of the credit tightening occurred in services (such as tourism-related services) although the highest share of loans are to individuals (54 percent) for acquisition of property and home construction and renovation, which has been increasing in recent years. Provisioning levels have increased for these NPLs but continues to provide inadequate coverage of bad debts and these are still below international standards for provisioning. Insufficient access to credit to the private sector, in particular small and medium enterprises in the tourism sector, has weakened the fragile recovery in the region and remain a challenge.

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Chapter 2.

Output Volatility and the Cyclical-ity of Fiscal Policy in the OECS

Introduction

There is a wealth of evidence on the pro-cyclical-ity of fiscal policy in industrialized and emerging market economies. The latter group is usually associated with a more pro-cyclical behavior of fiscal policy. That is, developing countries tend to orient government consumption and investment in the same direction as that of the cycle in general economic activity. In doing so, they tend to amplify upswings and worsen recessions – what Kaminsky, Reinhart, and Vegh (2004) termed as the “when it rains, it pours” phenomenon. Industrialized countries, on the other hand, are believed to behave largely in a counter-cyclical or even in a-cyclical fashion.³

In this chapter, we provide new evidence on the cyclical-ity of fiscal policy across countries placing a special emphasis on the Eastern Caribbean. This analysis is important and sets the stage for the following chapter where we test the hypothesis that a pro-cyclical fiscal policy in the context of weaknesses in the financial sector exacerbate the negative effects of output volatility on economic growth in the Caribbean and elsewhere. After this introduction, Section 2 discusses why countries are better off avoiding a pro-cyclical fiscal policy stance. Section 3 assesses how fiscal policy

³ Evidence on the pro-cyclical pattern of fiscal policy in developing countries was first found by Gavin and Perotti (1997) who showed that Latin American tended to adopt policies that were expansionary in good times and contractionary in bad times. Talvi and Vegh (2000) then showed that such behavior was far from being a trademark of Latin America alone as many other developing countries across the world espoused a pro-cyclical fiscal policy stance.

cyclical-ity differs in rich and developing countries and presents new evidence on the “when it rains it pours” phenomenon. Section 4 presents stylized facts on the cyclical-ity and volatility of key macroeconomic variables for the OECS countries. Section 5 discusses good practice policy options that could help the countries in the region to strengthen fiscal discipline and respond more symmetrically to the business cycle. Concluding remarks are discussed in Section 6. The chapter includes an appendix with methodological details of the econometric analysis used to investigate the main determinants of fiscal policy cyclical-ity.

Why Should Countries Avoid a Pro-cyclical Fiscal Policy?

From a theoretical point of view, the pro-cyclical-ity of fiscal policy remains a puzzle. Governments should be able to exercise discretion and avoid making a bad situation turn worse. From that perspective, it does not seem to be optimal to exacerbate the business cycle by adopting an expansionary fiscal policy in booms and a contractionary fiscal stance in a downturn. In what economists call the neoclassical world, marked by less intervention of the state in the economy, the optimal fiscal policy stance is either a-cyclical (Barro (1979)) or counter-cyclical (Baxter and King (1993)). In contrast, in a Keynesian framework, in the presence of price and wage rigidity and a greater presence of the state in the economy, the optimal fiscal policy stance is counter-cyclical (Christiano et al. (2011) and Nakata (2011)).

Irrespective of theoretical prescriptions, fiscal policy remains rather pro-cyclical in a number of countries.

The reasons for such behavior are various. One explanation is that frictions in international credit markets might prevent countries from borrowing in bad times forcing these countries to lower spending during recessions (Gavin and Perotti (1997)). A pro-cyclical fiscal policy stance could also be seen as a signal of weak and underdeveloped institutions in governments where there is limited technical capacity to develop the means to save in good times to spend in bad times (e.g., Calderon and Schimdt-Hebel (2008)). Another explanation for pro-cyclical government expenditures relies on political economy reasons which suggest that during good times governments face political pressures and temptations to keep spending high and run fiscal deficits. In addition, delays in the implementation and execution of fiscal policies could contribute to fiscal policy pro-cyclicality.

A more recent strand of the literature has argued that the cyclicality of government spending depends on the quality of institutions. Alesina et al. (2008), for example, argue that the pro-cyclicality of government spending is related to corruption. Based on a sample of 83 countries during 1960-2003, they find that in democracies with higher levels of corruption government spending tends to be more pro-cyclical. The authors explain their finding through the lens of a political economy model where voters “starve the Leviathan” in order

to reduce political rents. During a boom, voters demand more public goods and lower taxes in order to prevent corrupt politicians from appropriating tax revenues.

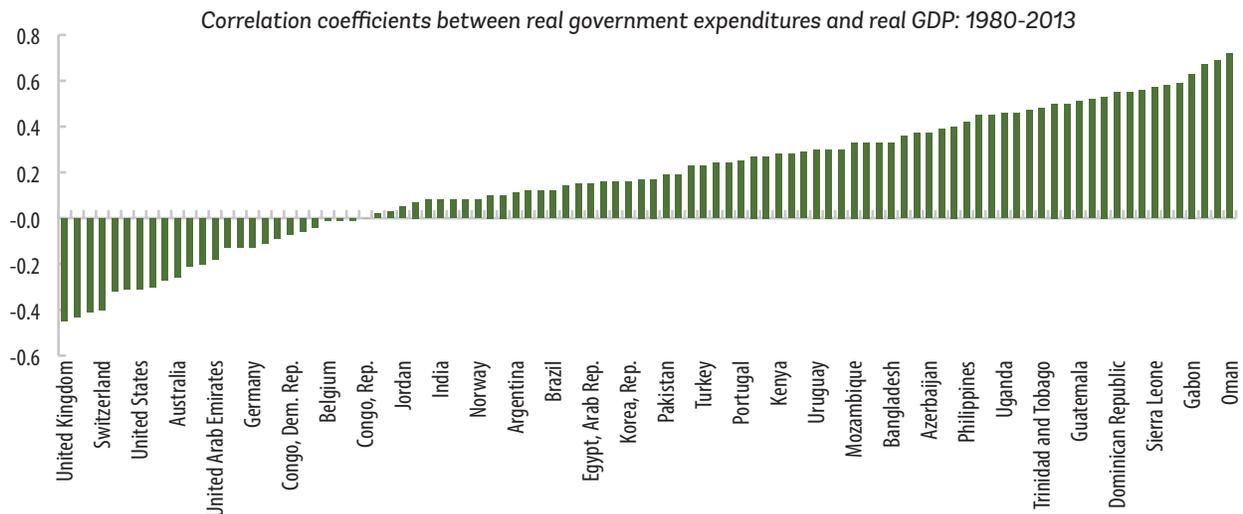
A very clear economic reason as to why governments should avoid reinforcing the business cycle is associated with their ability to lean against the wind in periods of hardship.

In addition, a pro-cyclical fiscal policy can hamper government efforts to reduce the effects of volatility on growth. In general, government spending can mitigate the negative effect that volatility has on growth if: (i) government spending is counter-cyclical; and (ii) its impact on output is positive. For conceptual clarity it is useful to note that: (i) refers to the behavior of government spending, i.e. the response of government spending to the business-cycle; (ii) refers to the government spending multiplier, i.e. the effectiveness of government spending with regard to changing output in the short-run (and possibly the long-run). If government spending is pro-cyclical and the government spending multiplier is positive, this will then increase the variance of exogenous shocks which will tend to have a more negative effect on growth.

From a risk management point of view, a counter-cyclical fiscal policy can be useful for at least three compelling reasons.

First, by leaning against the wind, governments can continue to provide goods and services and to maintain public investment even in the event of a

Figure 2.1 A Substantive Number of Developing Countries Follows a Pro-Cyclical Fiscal Policy



Source: Authors' own calculations based on the IMF's World Economic Outlook (WEO) for real GDP and for real government expenditures over the period 1980-2013. Note: The information reported by WEO on real government expenditures refers to General Government Net Lending (GGXCNL) defined as the difference between General Government's revenues and expenditures.

drop in public revenues. Second, in a downturn, a countercyclical fiscal policy can help governments increase social assistance and insurance to a large number of citizens affected by more adverse macroeconomic conditions. Third, as witnessed during the global financial crisis of 2008-09, a countercyclical fiscal policy can help countries stimulate the economy and cope better with the effects of a prolonged recession (see World Bank (2014)). In that regard, as argued by Mollick et al. (2011), in the aftermath of the global financial crisis it became clear that the countries that weathered the effects of the crisis better were those that had followed some sort of concerted macro-fiscal responses that helped them build resilience to exogenous shocks. When the crisis hit, these countries were able to have more favorable access to credit in international financial markets, and resist speculative attacks. Not only they had stronger fundamentals entering the crisis, which allowed them to quickly deploy counter-cyclical fiscal policies, they were also better positioned to adopt exit strategies faster by raising interest rates, controlling domestic credit growth and reverting to more orthodox fiscal policies.

How Does Fiscal Policy Cyclicity Differ in Rich and Developing Countries?

A significant number of authors have documented a more pro-cyclical behavior of fiscal policy in developing countries. Industrialized countries, in turn, tend to behave largely in a counter-cyclical or at worst a-cyclical fashion (see Figure 2.1). An idea put forward by Kaminsky, Reinhart, & Végh (2004) was that, for developing countries, and in particular for upper middle-income countries, macroeconomic policies and in special fiscal policy tend to reinforce the business cycle. These authors coined this behavior as the when-it-rains-it-pours syndrome and we will shed some light on its relevance in the context of the Caribbean and the OECS further down below.

More broadly, emerging markets in Latin America and elsewhere have a long track-record of pro-cyclical government spending. Evidence on the pro-cyclical pattern of fiscal policy in developing countries was first found by Gavin & Perotti (1997) who showed that Latin American was much more expansionary in good times and contractionary in bad times. Talvi & Vegh (2000) then showed that such behavior was far from being a trademark of Latin America alone as many other devel-

oping countries across the world espoused a pro-cyclical fiscal policy stance.

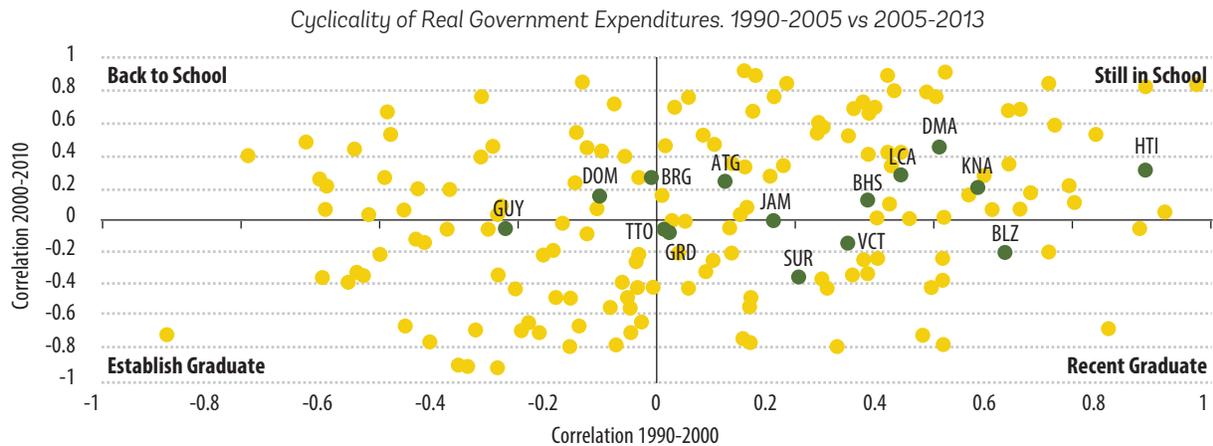
There is a number of different explanations as to why developing countries tend to behave in that fashion vis à vis industrialized economies. Some of the reasons most commonly found in the literature include credit constraints faced by developing countries, which would prevent them from raising money in international capital markets in bad times and would force them to adopt a contractionary fiscal policy in downturns Gavin & Perotti (1997). Political economy considerations would also seem to play a role as good times could encourage fiscal profligacy (Tornell & Lane (1999), Alesina & Tabellini (2005)).

A more interesting and elucidating exercise requires investigating whether countries that have followed a pro-cyclical fiscal policy have been able to switch to a more counter-cyclical fiscal policy stance over time.

To address this question, we have constructed a proxy for fiscal policy cyclicity based on correlation coefficients for time series of real government expenditures and real GDP smoothed by the Hodrick-Prescott filter, following the same methodology as in Frankel et al. (2013). This allowed us to classify countries according to their ability to move from a pro-cyclical to a counter-cyclical fiscal policy stance. A negative (positive) correlation coefficient between the cyclical component of government spending and GDP indicates a counter-cyclical (pro-cyclical) fiscal policy stance. Figure 2.2 plots countries according to their “graduating classes”, which are defined as follows:

- i) Established graduates (EG) as those with counter-cyclical fiscal policies in the first and second periods;
- ii) Recent graduates (RG) as those with pro-cyclical policies in the first period and counter-cyclical in the second;
- iii) Still in school (SS) as those with pro-cyclical fiscal policies in the first and second periods; and,
- iv) Back to school (BS) as those with counter-cyclical fiscal policies in the first period and pro-cyclical in the second.

The large majority of Caribbean countries, including the ones in the OECS sub-region have yet to graduate from procyclical fiscal policies. That is, they are either “still in school” or “back to school”. Not surprisingly, most

Figure 2.2 Graduating Classes for Fiscal Policy Cyclicity

Note: Proxy for fiscal cyclicality based on correlation coefficients for time series of real government expenditures and real GDP smoothed by the Hodrick-Prescott filter. We use a sub-period, 1990-2010, from the overall 1980-2013 dataset because for many countries, data on real government expenditures and/or on GDP are missing, mostly for the early 1980s. Caribbean countries are highlighted in red.
Source: Carneiro and Garrido (2015) based on IMF's World Economic Outlook (WEO).

of the countries classified as “established graduates” are industrialized economies, as noted earlier (see Figure 2.1). In Figure 2.2, most of the countries in the upper quadrants are developing economies. Interestingly, a number of those in the “recent graduates” class are emerging economies. Among the Caribbean countries, Guyana is the only one which made it to the “established graduates” class. Grenada and Jamaica, which have been implementing fiscal adjustment programs under an IMF program, have made it to the “recent graduate” class along with Suriname, Belize, and St. Vincent and the Grenadines. Note, however, that these results are sensitive to the time period in which correlation coefficients are computed, as we discuss below.

The robustness of these results was tested by investigating whether the graduating classes changed significantly if the sample period was split in different points in time. We did this by running tests of structural break for the time series of real government expenditures for each country and splitting the sample when a structural break was identified (see Carneiro and Garrido (2015) for details). After following this approach we confirmed only one Caribbean country actually classified as an established graduate (Guyana) and 3-4 countries moving away from pro-cyclical to counter-cyclical policies, compared to 1-3 countries falling back into pro-cyclical fiscal policies.⁴ When one looks at changes

in correlation coefficients (not the Boolean classification of countries in graduating classes) the evidence on Caribbean countries moving away from pro-cyclical fiscal policies is more compelling under this country-specific approach. Twelve out of fifteen economies now show a declining correlation coefficient for the fiscal stance proxy (see Figure 2.3).

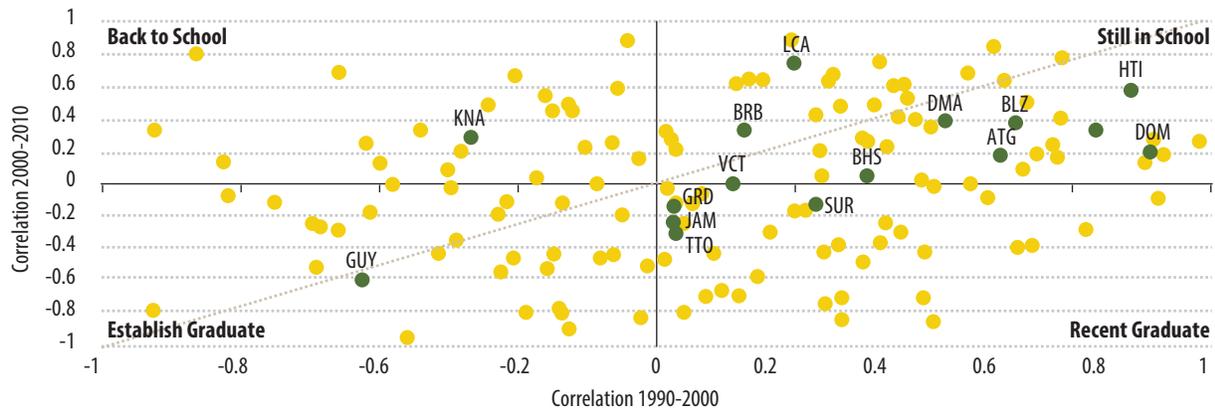
Does it really pour when it rains?

We make two implicit assumptions as to why countries might change their fiscal stance during booms and downturns. First, we consider changes as generally not random. That is, they are mostly associated to policy shifts within given administrations, which may or may not be politically motivated (as incumbent administrations tend to spend more ahead of elections), or across administrations after elections, influenced by ideological principles. Second, we assume that those changes are generally driven or motivated by observed trends in economic activity and not the other way around. This assumption is not uncontroversial. For instance, Rigobon (2004) argues that fiscal policy shocks drive output and not the other way around, while Ilçetçki & Vegh (2008), on the other hand, find causality running both ways.

Keeping these assumptions in mind we have re-computed correlation coefficients for the fiscal cyclicality proxy for 180 countries over the period 1990-2011 by differentiating what happens in fiscal policy in different parts of the business cycle. This is an important

⁴ Only Jamaica and Trinidad and Tobago are recent graduates under all filtering methods; and only St. Kitts and Nevis is consistently back in school for all methods.

Figure 2.3 Cyclicity of Real Government Expenditures under Country-Specific Year Breaks



Note: For this chart we use data for real government expenditures and real GDP covering 180 countries for the period 1980-2013. We also apply a criterion for splitting the sample, by country, at potentially different points in time based on potential structural breaks in (per capita GDP) data. The intuition is that changes in macroeconomic policies and performance generally reflect on changes in per capita income. A structural break on the series for the latter may be indicative of changes in fiscal stance. **Source:** Carneiro and Garrido (2015) based on IMF, WEO.

exercise because it allows one to have an indication of the impact of fiscal policy (pro) cyclicity might have on output volatility, for example. Countries that are, on average, pro-cyclical in booms and downturns, would tend to exacerbate their business cycle; those that are counter-cyclical in both, booms and downturns, have a fiscal policy that contributes to stabilize the cycle.

Because countries may not always be pro-cyclical or counter-cyclical we have considered different scenarios. Whenever a country exhibits an average counter-cyclical fiscal stance in booms, and a pro-cyclical stance in downturns, other things equal, it will likely improve its medium to long term fiscal sustainability profile. A country that is pro-cyclical in booms and counter-cyclical in downturns would, ceteris paribus, deteriorate its fiscal sustainability profile.

An interesting pattern emerges when we classify countries according to their fiscal policy stance over the different phases of the business cycle. Figure 2.4 plots the value of the fiscal stance proxy in periods of expansion (when the cyclical component of real GDP is positive) against that registered in downturns. We have identified high-income countries in red while developing economies appear in blue. By quadrants⁵, we identify four groups of countries:

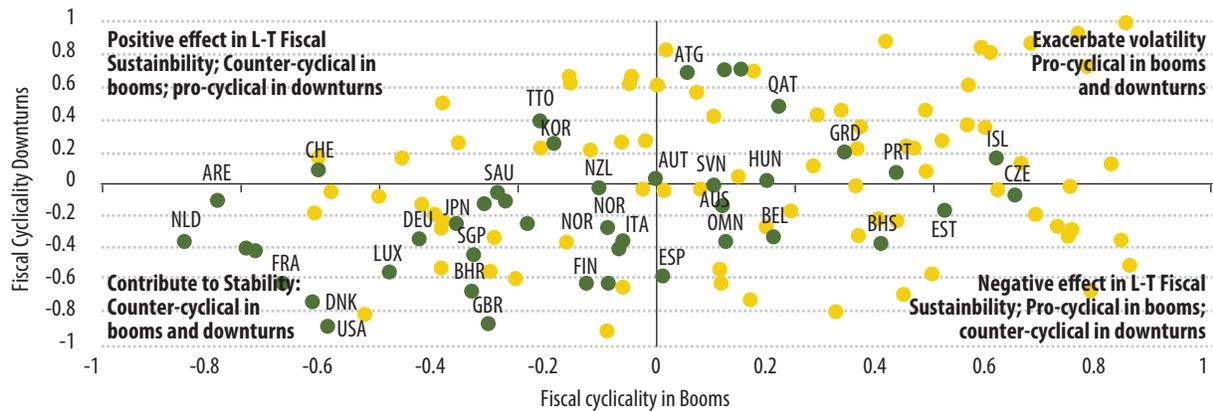
- *Upper right quadrant:* Those that exhibit pro-cyclical

fiscal policies in both booms and downturns. Other things equal, such stance contributes to exacerbate output volatility. Not surprisingly, one finds many resource-rich economies in this category. In addition, many upper middle-income countries appear prominently in that group.

- *Upper left quadrant:* Those that exhibit counter-cyclical fiscal policies in booms and pro-cyclical fiscal policies in downturns. Other things equal, such fiscal behavior improves a country's fiscal sustainability profile.
- *Lower left quadrant:* Those that exhibit counter-cyclical fiscal policies in both booms and downturns. Other things equal, such stance contributes to stabilize output around its long-term trend. Expectedly, most of high-income countries fall under this category.
- *Lower right quadrant:* Those that exhibit pro-cyclical fiscal policies in booms and counter-cyclical fiscal policies in downturns. Other things equal, such behavior deteriorates a country's fiscal sustainability profile.

We have confirmed earlier findings that emerging and industrialized countries tend to behave in a different fashion over the business cycle. Most of the countries in the upper and lower right quadrants in Figure 2.4 are developing economies (in blue) and most importantly upper middle-income countries. In contrast to that, most of the high income countries appear on the upper and lower left quadrants with fiscal stances that largely contribute to long-term fiscal sustainability.

⁵ Initial debt levels might have a big impact on which quadrant a country ends up falling into.

Figure 2.4 Fiscal Cyclicity in Booms and Downturns (1990–2011)

Note: Proxy for fiscal cyclicity based on correlation coefficients for time series of real government expenditures and real GDP smoothed by the Baxter-King filter. Source: Carneiro and Garrido (2015) based on IMF's World Economic Outlook (WEO).

Some of these results may seem counter-intuitive but they actually reveal the benefits associated with fiscal discipline. For instance, one may be surprised to see Chile, a country that has earned a reputation of fiscal prudence and good overall macro management, in the fourth quadrant. As it turns out, Chile is, on average, for the period 1990–2011, moderately pro-cyclical in booms and markedly anti-cyclical in downturns. Their ability to sustain a strong fiscal position arises from having a system of buoyant tax revenues and the great contribution of the private sector to economic activity, so the country is able to register solid, positive fiscal balances both in booms and recessions with marked improvements in its overall fiscal stance. Compare this performance with that for Greece, for example, especially during the post-financial crisis period when it showed deteriorating fiscal balances, faster increase in expenditures relative to revenues, and poor economic performance, with an exacerbated contribution to volatility derived from a more pro-cyclical fiscal stance. With this, there is no doubt that Greece has yet to earn enough stars to join the same status as Chile's.

Most of the OECS economies have adopted a fiscal stance that seems to exacerbate output volatility. That is, they tend to behave in a pro-cyclical way during booms and downturns. The only exception seems to be St. Kitts and Nevis which appears together with Trinidad and Tobago, and Belize, in the “back to school” quadrant, where countries show a counter-cyclical behavior in booms, which is a good indication that they are saving for rainy days, but still display a pro-cyclical behavior in downturns (Figure 2.5). As members of the ECCU, the

OECS countries can rely only on fiscal policy as an economic stabilization tool, which makes a counter-cyclical fiscal policy even more important to control output volatility.

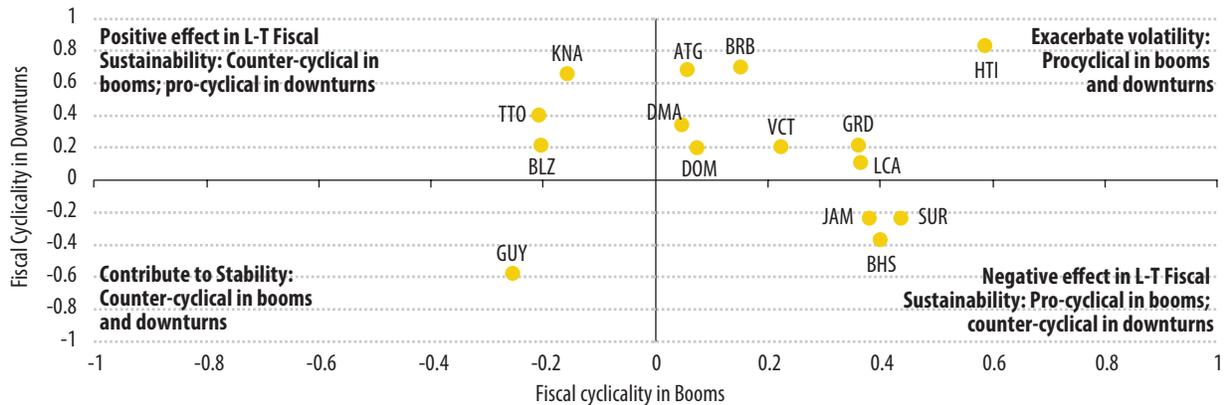
When we looked at the determinants of fiscal policy cyclicity, we found robust evidence of the relevance of institutional quality for a country's ability to move to counter-cyclical fiscal policies. The results are robust to different definitions of fiscal cyclicity, different sample periods, alternative ways of measuring institutional quality, and to the inclusion of other control variables in the estimations.⁶ However, for the sub-sample of Caribbean countries, the evidence in that regard is more mixed. The three Caribbean countries that became more pro-cyclical (St. Kitts and Nevis, St. Lucia and Barbados) are among those with the highest improvement in institutional quality (see Figure 2.6).⁷

The importance of institutional quality as an important determinant of a country's ability to behave in a counter-cyclical way was confirmed after we addressed potential endogeneity concerns. Endogeneity concerns are common in the context of analysis involving institutional quality and other macroeconomic vari-

6 See Appendix for methodological details and Carneiro and Garrido (2015) for a full set of results.

7 Compare an average institutional quality index, based on the Kunčič (2013) dataset, equal of 0.54 (in a 0-1 scale; with higher values indicating better institutions) for the Caribbean countries relative to an average index equal to 0.39 for the sample of lower middle income countries and 0.56 for the sample of upper middle income countries in the period 1990–2000. The variance for Caribbean countries is 0.01. All countries, except Haiti have an initial IQ index of 0.4 or higher, and 10 out of 15 have initial IQ of 0.5 or higher.

Figure 2.5 Caribbean Countries: Fiscal Cyclicity in Booms and Downturns (1990–2011)



Source: Carneiro and Garrido (2015) based on IMF’s World Economic Outlook (WEO). Note: Proxy for fiscal cyclicity based on correlation coefficients for time series of real government expenditures and real GDP smoothed by the Baxter-King filter.

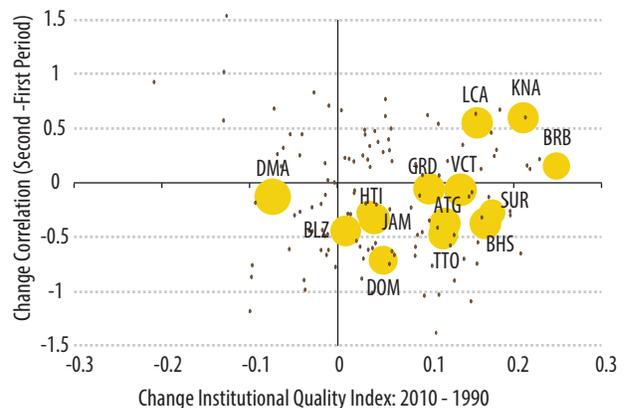
ables because it may be difficult to establish the direction of causality. We addressed this issue by following the approach used by Acemoglu, Johnson, & Robinson (2001) to look for potential endogeneity problems (see Appendix 1 for methodological details).⁸ We used alternative definitions of institutional quality (International Country Risk Guidance (ICRG) and Kunčič (2013)) and alternative fiscal stance proxies. Instruments for institutional quality are European settlers’ mortality rates (in logs) and latitude. We have also added a set of controls, including financial depth, financial integration, debt to GDP ratios, government accountability, output volatility and the reserves to import ratio. Tables 2.1 and 2.2 show the results of ordinary least square estimations (OLS) and instrumental variable (IV) specifications under the alternative institutional quality (IQ) and fiscal stance proxies. In all cases we were able to find evidence of causality running from IQ to fiscal stance confirming the robustness of our results.

Pro-Cyclicality and Macroeconomic Volatility in the OECS

In what follows, we focus on stylized facts of the OECS economies for a number of key economic variables over the business cycle. In that regard, we document in detail the growth experience of OECS countries

⁸ Acemoglu et al. (2001) provided an excellent framework for the analysis of institutional quality on current economic performance, by tracing historical relationships of European settler mortality to the type of settlements and quality of early institutions in former colonies, to current quality of institution and level of income. From their methodological point of view, the authors were able to identify a source of exogenous variation in institutions that affected a country’s current per capita income.

Figure 2.6 Change in Fiscal Stance Proxy vs Change in Institutional Quality Index



Note: A positive change in correlation indicates the country has become more pro-cyclical. The size of the bubbles indicate the initial quality of institutions. Source: Authors’ calculations based on IMF, WEO, and Kuncic (2013).

over the past several decades; the business cycle facts in these economies, such as the volatility of output, consumption, investment, trade balance, and real interest rates; the cyclicity of these variables with output and interest rate, as well as their persistence; and the properties of fiscal policy in these countries, with a particular focus on its cyclical characteristics.⁹

⁹ All data are from the International Monetary Fund’s World Economic Outlook (WEO) database and cover the period 1980–2014 at annual frequency. To transform the data into real terms, all nominal quantities are deflated by the GDP deflator. Interest rate is real lending rate obtained as the difference between the lending rate and the consumer price index (CPI) inflation rate. We also considered an effective interest rate on government debt computed as the ratio of general government interest expenditures and gross debt. The two rates are highly correlated, with the average correla-

Table 2.1: OLS and Two-Stage Least Square for Instrumental Variable Estimation regarding the effect of Institutional Quality on fiscal cyclicality stance without control variables**Dependent Variable is the Correlation Coefficient of Real Government Expenditures and Real GDP, 1990-2011 (Alternative filtering methods)**

VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	Hodrick-Prescott		Baxter-King		Christiano-Fitzgerald		Butterworth	
IQ: ICRG Avg. 1990-2011	-1.119*** (-7.096)	-1.284*** (-4.550)	-0.941*** (-5.771)	-1.170*** (-4.112)	-0.996*** (-6.056)	-1.017*** (-3.469)	-0.838*** (-4.951)	-1.039*** (-3.305)
Constant	0.718*** (7.633)	0.751*** (5.103)	0.618*** (6.351)	0.701*** (4.724)	0.651*** (6.636)	0.619*** (4.049)	0.530*** (5.249)	0.596*** (3.630)
Observations	123	71	123	71	123	71	123	71
R-squared	0.294	0.360	0.216	0.305	0.233	0.288	0.168	0.219
r2_a	0.288	0.351	0.209	0.295	0.226	0.277	0.162	0.207
F	50.36	20.71	33.31	16.91	36.67	12.04	24.51	10.93

Dependent Variable is the Correlation Coefficient of Real Government Expenditures and Real GDP, 1990-2011 (Alternative filtering methods)

VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	Hodrick-Prescott		Baxter-King		Christiano-Fitzgerald		Butterworth	
IQ: Kuncic Avg. 1990-2011	-0.973*** (-5.805)	-1.429*** (-4.058)	-0.787*** (-4.595)	-1.292*** (-3.652)	-0.853*** (-4.998)	-1.233*** (-3.594)	-0.738*** (-4.231)	-1.143*** (-3.143)
Constant	0.611*** (6.642)	0.813*** (4.633)	0.509*** (5.405)	0.745*** (4.209)	0.547*** (5.844)	0.718*** (4.195)	0.455*** (4.749)	0.639*** (3.524)
Observations	145	84	144	83	145	84	145	84
R-squared	0.191	0.130	0.129	0.065	0.149	0.128	0.111	0.084
r2_a	0.185	0.119	0.123	0.0537	0.143	0.117	0.105	0.0724
F	33.70	16.47	21.12	13.34	24.98	12.92	17.9	9.881

Note: Instruments are log of settler mortality following Acemoglu, Johnson & Robinson (2001).
t-statistics in parentheses *** p<0.01, ** p<0.05, *p<0.1

Government spending can mitigate the negative effect that volatility has on growth in different ways.

This can happen, for example, if government spending is counter-cyclical, and when its impact on output is positive. For conceptual clarity it is useful to note that the first effect refers to the behavior of government spending, i.e. the response of government spending to the business-cycle. The second effect refers to the government spending multiplier, i.e. the effectiveness of government spending with regard to changing output in the short-

run (and possibly the long-run). If government spending is pro-cyclical and the government spending multiplier is positive, then increases in the variance of exogenous shocks will have a more negative effect on growth.

Over the last 35 years or so, the OECS region recorded average positive growth rates albeit while keeping low investment levels.

We begin by reporting the key properties of some of the variables that best characterize the region's economic performance. Table 2.3 presents the GDP growth rates for the OECS countries, the average real interest rate as well as the average investment and government expenditures as a share of GDP. We also report the net foreign asset (NFA) position of the OECS member countries. The OECS countries were growing at an average rate of 3 percent per year over the 1980-2014 period. The average interest rate was

tion across countries equal to 0.89. As a result, the stylized facts are very similar for the two interest rates, with the main difference being the lower average effective interest rate as compared to the lending rate. We choose to proceed with the lending rate, as it better reflects the cost of borrowing to the private firms. While this rate does not capture the cost of borrowing internationally for the domestic firms, the fact that it has very similar dynamics to the interest rate on government debt (both domestic and foreign) gives us some confidence in its appropriateness for our analysis.

Table 2.2: OLS and Two-Stage Least Square for Instrumental Variable Estimation regarding the effect of Institutional Quality on fiscal cyclicality stance with control variables

Dependent Variable is the Correlation Coefficient of Real Government Expenditures and Real GDP, 1990-2011 (Alternative filtering methods)

VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	Hodrick-Prescott		Baxter-King		Christiano-Fitzgerald		Butterworth	
IQ: ICRG Avg. 1990-2010	-1.028*** (-3.903)	-1.650* (-1.926)	-0.732** (-2.586)	-1.178 (-1.394)	-1.130*** (-3.929)	-1.448 (-1.602)	-0.697** (-2.411)	-1.516 (-1.513)
Chinn-Ito Index of capital openness, average 1990-2011	-0.009 (-0.348)	0.021 (0.553)	-0.041 (-1.507)	0.009 (0.230)	-0.001 (-0.036)	0.005 (0.106)	-0.022 (-0.785)	0.034 (0.768)
Financial depth (M2 Ratio to GDP), average 1990-2011	0 (-0.295)	0.001 (0.462)	0 (0.046)	0 (-0.086)	0.001 (0.477)	0.002 (0.576)	0 (-0.297)	0.002 (0.513)
GDP volatility (Squared Cyclical Component of GDP), average 1990-2011(x)	36.180** (2.450)	78.034 (1.625)	33.693 (1.110)	105.036** (2.082)	0.376 (0.411)	-2.008 (-1.188)	27.232 (0.607)	185.837 (1.043)
Proxy for political Checks and Balances, average 1990-2011	-0.003 (-0.132)	0.002 (0.064)	-0.011 (-0.489)	-0.010 (-0.377)	-0.002 (-0.089)	-0.009 (-0.298)	-0.006 (-0.253)	-0.002 (-0.063)
Debt to GDP ratio, average 1990-2011	-0.001 (-1.106)	-0.001 (-1.593)	-0.001 (-1.118)	-0.002** (-2.440)	-0.001 (-1.142)	-0.001 (-0.766)	0 (-0.555)	-0.001 (-1.551)
Reserves to Imports Ratio, average 1990-2011	-0.012 (-1.595)	-0.019 (-1.599)	-0.007 (-1.058)	-0.019* (-1.696)	-0.001 (-0.221)	-0.015 (-1.228)	-0.006 (-0.793)	-0.024 (-1.782)
Constant	0.775*** (5.223)	1.016** (2.550)	0.616*** (3.694)	0.926* (2.382)	0.757*** (4.793)	0.946*** (2.389)	0.550*** (3.361)	0.949*** (2.032)
Observations	122	71	122	71	122	71	122	71
R-squared	0.342	0.428	0.258	0.432	0.249	0.349	0.187	0.296
r2_a	0.301	0.364	0.212	0.369	0.203	0.277	0.137	0.218
F	8.450	5.133	5.660	5.608	5.405	2.449	3.744	2.917

Note: Instruments are log of settler mortality following Acemoglu, Johnson & Robinson (2001). t-statistics in parentheses *** p<0.01, ** p<0.05, *p<0.1

at 7.22 percent, with the lowest average interest rate observed in Barbados at 5.72 percent and the highest average rate – in Antigua and Barbuda at 8.39 percent. Investment stood at 27 percent of GDP on average, while government expenditures at 30 percent of GDP across this group of countries over our sample period. All OECS countries had positive NFA, with the average NFA-to-GDP ratio equal to 12.6 percent. Thus, all these countries were net lenders to the rest of the world during 1980-2014, on average.

The region has seen high volatility in many of its relevant macroeconomic aggregates. Table 2.4 reports the percentage standard deviation of the key variables, as well as the relative standard deviation. It shows that all variables are quite volatile with the average real GDP volatility equal to 3.72 percent. This is quite high com-

pared to developed economies and even compared to a few other developing countries (see Neumeyer and Perri, 2005). The highest GDP volatility is observed in Antigua and Barbuda and in Grenada. Interest rate is also quite volatile in these countries but the magnitudes are similar across them, with the exception of St. Lucia. The volatility of trade balance and terms of trade shows much more dispersion across the OECS countries, although the main result stands – the OECS countries exhibit very volatile business cycles, even compared to developing economies.

Consumption and government expenditures are more volatile in the Caribbean than elsewhere. As is commonly observed in the business cycles literature, investment is the most volatile variable among the expenditure components of GDP, with the relative volatil-

Table 2.3: Averages Values for Selected Key Macroeconomics Variables: 1980-2014

	GDP growth	Int rate	Inv/GDP	Gov exp/GDP	NFA/GDP
Antigua and Barbuda	3.23	8.39	33.73	26.35	9.16
Barbados *	0.84	5.72	15.63	37.13	8.61
Dominica	2.71	6.94	20.20	32.34	14.82
Grenada	3.37	6.98	29.87	27.65	11.20
St. Kitts and Nevis	3.80	7.19	35.65	30.32	23.96
St. Lucia	3.52	7.94	24.85	26.24	2.60
St. Vincent and the Grenadines	3.50	7.34	25.70	27.79	18.07
Average	3.00	7.22	26.52	29.69	12.63

Notes: (*) We note that Barbados is not a member of the OECS region, nor the ECCU, but given its proximity and similarity with the OECS countries we have included it in the analysis. Int rate is the real interest rate computed as the lending rate minus inflation rate. Source: World Economic Outlook.

Table 2.4: Volatility of Key Macroeconomic Variables: 1980–2014

	% Standard deviation			% Standard deviation of x % Standard deviation of GDP			
	GDP	TB/GDP	TOT	Int rate	Inv	Gov exp	Cons
Antigua and Barbuda	5.38	6.98	6.76	2.87	3.42	2.64	4.56
Barbados	3.56	2.31	7.95	2.28	4.82	1.22	1.06
Dominica	2.49	6.17	4.03	2.90	6.88	3.96	2.82
Grenada	4.28	4.61	7.24	2.72	4.19	2.36	1.64
St. Kitts and Nevis	3.55	6.07	4.01	2.20	5.26	3.69	3.87
St. Lucia	3.63	5.04	6.20	3.23	4.07	1.46	2.50
St. Vincent and the Grenadines	3.11	5.32	6.04	2.63	3.33	2.50	2.17
Average	3.72	5.21	6.03	2.69	4.57	2.55	2.66

Notes: TOT is terms of trade; TB/GDP is exports minus imports over GDP; Int rate is the real interest rate computed as the lending rate minus inflation rate. All series (except trade balance, terms of trade and real interest rate) were log-transformed. To obtain the cyclical components of the key variables, they were Hodrick-Prescott (HP) filtered with the smoothing parameter of 100. Source: World Economic Outlook.

ity in the OECS countries equal to 4.6 on average. This number is comparable to that found for other countries. Government expenditures also exhibit higher volatility than GDP in the OECS countries by a factor of 2.55. This is in line with the findings in Male (2010) for developing countries. In contrast, in developed countries the ratio of volatility of government expenditure and GDP tends to be closer to 1. We found that the volatility of consumption in the OECS countries is strikingly high, equal to 2.66 times that of GDP volatility. This is quite high compared to both developing countries and developed economies. The highest consumption volatility is observed in Antigua and Barbuda and St. Kitts and Nevis, while the lowest – in Barbados and Grenada. In

all OECS countries the relative volatility of consumption to GDP is well above 1.

The examination of the cyclical properties of the key variables reveals important insights. Table 2.5 reports the correlations between GDP and various macroeconomic aggregates. We notice, for example, that investment and private consumption are pro-cyclical, with the average correlations equal to 0.61 and 0.36, respectively. We also find that government expenditures are pro-cyclical with a correlation coefficient of 0.39. This finding confirms earlier results in the literature that developing countries tend to follow pro-cyclical fiscal policies. In addition, we find that interest rates in the OECS

Table 2.5: The Correlation of GDP with Key Macroeconomic Variables: 1980–2014

	Correlation of GDP with					
	Inv	Gov exp	Cons	TB/GDP	TOT	Int rate
Antigua and Barbuda	0.48	0.31	0.63	-0.44	-0.27	-0.33
Barbados	0.79	0.20	0.50	-0.33	0.39	-0.27
Dominica	0.56	0.65	0.23	-0.32	-0.23	-0.30
Grenada	0.56	0.49	0.32	-0.10	0.19	-0.21
St. Kitts and Nevis	0.65	0.38	0.04	-0.33	0.31	-0.32
St. Lucia	0.72	0.22	0.44	-0.27	-0.32	-0.55
St. Vincent and the Grenadines	0.55	0.52	0.38	-0.10	-0.08	-0.51
Average	0.61	0.39	0.36	-0.27	0.00	-0.36

Notes: TOT is terms of trade; TB/GDP is exports minus imports over GDP; Int rate is the real interest rate computed as the lending rate minus inflation rate. Source: World Economic Outlook.

Table 2.6: The Correlation of Interest Rates with Key Macroeconomic Variables: 1980–2014

	Correlation of Interest rate with						
	GDP	Inv	Gov exp	Cons	TB/GDP	TOT	Effective int rate
Antigua and Barbuda	-0.33	-0.30	0.04	-0.21	-0.08	0.00	0.79
Barbados	-0.27	-0.21	-0.17	-0.40	0.39	0.11	0.93
Dominica	-0.30	-0.50	-0.18	-0.22	0.72	0.43	0.87
Grenada	-0.21	-0.01	0.01	-0.35	-0.06	0.04	0.92
St. Kitts and Nevis	-0.32	-0.06	0.24	-0.37	0.03	-0.04	0.94
St. Lucia	-0.55	-0.53	0.02	-0.27	0.31	0.14	0.86
St. Vincent and the Grenadines	-0.51	-0.43	-0.23	-0.51	0.40	0.37	0.92
Average	-0.36	-0.29	-0.04	-0.33	0.24	0.15	0.89

Notes: TOT is terms of trade; TB/GDP is exports minus imports over GDP; Int rate is the real interest rate computed as the lending rate minus inflation rate. Source: World Economic Outlook.

countries are countercyclical – another important result that distinguishes the business cycles in developing countries – with the correlations ranging from -0.55 in St. Lucia to -0.21 in Grenada. With the currency board, an external shock generally translates into a decline in international reserves and monetary contraction that leads to an increase in interest rates. Lastly, we show that net exports are countercyclical, in line with the findings for developing economies in other studies.

Finally, we look at the correlation of real interest rates with various macroeconomic variables. The fact that real interest rates are countercyclical with GDP suggests that they may also be negatively correlated with

investment, government expenditures, and consumption. Indeed, we find that this is the case for investment, where the correlation with interest rate is equal to -0.29, on average; and for consumption, where the correlation ranged from -0.51 in St. Vincent and the Grenadines to -0.21 in Antigua and Barbuda, with the average of -0.33. The correlation of the interest rate with government expenditures was close to 0, on average, although with a significant spread ranging from -0.23 for St. Vincent and the Grenadines and 0.24 for St. Kitts and Nevis (Table 2.6). Our finding that real interest rates are volatile and countercyclical in the OECS countries mirrors the results in Neumeyer and Perri (2005), Uribe and Yue (2006), and others for developing economies.

How to Make Fiscal Policy More Effective and Less Procyclical

Effective fiscal policies respond symmetrically to the business cycle and help countries build positive reputational capital. As this chapter has argued, discretionary fiscal policy is quite often applied asymmetrical over the business cycle. In that vein, many countries tend to raise government expenditures in a recession, but fail to lower it sufficiently in good economic times to balance the budget over the business cycle. This asymmetric response is thus associated with unsustainable growth in government expenditures and debt mostly because the increase in expenditures tends to impose permanent consequences on public finances. However, there are various options available for countries that seek a more balanced and prudent path for their fiscal policy, ranging from the adoption of fiscal responsibility laws (FRLs) to the adoption of fiscal councils. These options, when adopted effectively, help countries build reputational capital over time.

There are several aspects that need to be taken into account when a country considers adopting a fiscal responsibility law as a policy tool. First, FRLs by definition sacrifice discretion and replaces it by rules. The implication of this tradeoff is that it makes the careful design of fiscal legal frameworks extremely important. Rules can be rigid and can limit the ability of policy makers to adjust fiscal policy when needed to respond to changes in economic circumstances. If there are no provisions for such unforeseen circumstances in the FRL, governments may find it difficult to adjust in the face of an exogenous shock, for example. Second, the effectiveness of FRLs in supporting fiscal discipline strengthens with their successful implementation for extended periods of time and vice-versa. Third, to work effectively, a legal framework for fiscal responsibility requires adequate PFM systems aligned with the framework's level of sophistication (see van Eden, Khemani, and Emery Jr, 2013).

Fiscal rules represent another policy tool that has helped many countries to strengthen fiscal discipline and behave less procyclically. According to research by the IMF, fiscal rules have spread worldwide over the last 20 years or so (Schaechter, Kinda, Budina, and Weber, 2013). The more prevalent use of national fiscal rules reflects responses to different pressures on public finances and are now more prevalent

in advanced and emerging economies. Factors that motivated their adoption range from reigning in debt excesses that resulted from banking and economic crises in the early 1990s (e.g., Finland, Sweden) and debt crises in Latin American countries (e.g., Brazil, Peru), consolidation needs to qualify for the euro area (e.g., Belgium), and more generally attempts to reduce trends of rising deficits and debts (e.g., the Netherlands, Switzerland). In some cases, the introduction of the rules coincided with large fiscal adjustments, in others (e.g., in Finland) it followed an improvement in fiscal positions to ensure continued fiscal discipline after the crisis.

It is common to find countries with more than one fiscal rule in place today. The trend to multiple fiscal rules is in part the result of the introduction of supranational fiscal rules, but also reflects decisions to broaden national fiscal rules arrangements, in particular in emerging economies. Adopting two or more fiscal rules also help to define the anchor for fiscal policy, and in that context having different rules could help a country address different policy objectives under particular economic circumstances. The most frequently used rules constrain debt and the budget balance, often in combination. In part, this reflects that supranational rules for members of monetary unions and the EU include these two types of rules, except the ECCU which only has a budget balance rule. Across national fiscal rules, expenditure rules are often combined with budget balance or debt rules to provide a greater anchor for debt sustainability. Revenue rules play a much more limited role, likely because they are less well suited to ensure the sustainability of public finances.

There are several reasons that make fiscal rules an attractive option for countries that seek to strengthen their fiscal discipline and manage better the business cycle. A significant weakness of fiscal principles and procedural rules is their lack of specificity about the actual fiscal policy stance a country should adopt. Numerical fiscal rules, however, provide a clear anchor for fiscal policy. Ideally, they determine, given the present economic and fiscal situation of the country, the levels at which fiscal aggregates should be set. Fiscal rules—in the ideal situation—can provide automatic and objective answers that would otherwise require a great deal of economic analysis, judgment, and political compromise. They thus decrease policy transaction costs and provide better fiscal outcomes.

It is important to embed flexibility in the design of either a FRL or a fiscal rule to enable governments to respond to unexpected events. As argued in a recent World Bank report (World Bank, 2013), pragmatism calls for the development of well-designed escape clauses in FRLs, allowing the fiscal rule framework to be waived or adjusted during exceptional economic circumstances. A second solution, combining rules and discretion, would be for the FRL to define the fiscal rules that must be adhered to but leave the numerical values to be determined by government on a recurring basis (van Eden, Khemani, and Emery Jr., 2013).

Countries that seek the path of fiscal discipline will inevitably have to develop a sound medium-term fiscal framework to operationally either a FRL or fiscal rule. An MTF requires a more disciplined approach to fiscal policymaking by formalizing the development of a medium-term fiscal strategy and medium-term orientation within the budget process through a combination of (1) a medium-term macroeconomic framework that provides multiyear projections of macroeconomic variables such as GDP, inflation, exchange rates, and the balance of payments; (2) a framework that produces a set of multiyear targets or ceilings on fiscal aggregates, such as overall government expenditure, borrowing, and debt; and (3) identification of concrete policy measures that translate the projected overall resource envelope and the government's fiscal objectives into a set of credible and binding multiyear expenditure ceilings and policies.

In the Eastern Caribbean, there are non-binding supranational fiscal guidelines that establish fiscal principles that should be adopted by member countries. The fiscal guidelines of the Eastern Caribbean Currency Union (ECCU) members aim to put the countries on a path consistent with the reduction of their public debt-to-GDP ratios to 60 percent by 2020. ECCU members also had in place for some time an overall deficit target of 3 percent of GDP for which compliance was weak because of various shocks. This overall deficit target was dropped in 2006 and the level of the primary balance consistent with the debt target in 2020 has been used to guide fiscal policy, but it has not been strictly followed.

The experience of the ECCU countries with fiscal consolidation has been mixed and only more recently there has been a more explicit move to strengthen

fiscal discipline in the region. Many ECCU countries have embarked on homegrown fiscal consolidation programs to reign in public spending, but the adoption of a rules-based fiscal policy framework remains rare in the region, with the exception of Grenada (see Box 2.1). In many instances, guided by the IMF or by virtue of necessity, ECCU member states have defined fiscal surplus targets, ceilings on public spending, or limits on debt creation, as a way to address concerns with debt sustainability and revenue shortfalls. For example, Antigua and Barbuda targeted a primary surplus of 3 percent of GDP under an IMF Stand By Agreement (SBA) in 2010; Dominica is currently implementing a fiscal adjustment equivalent to 6 percent of GDP over the next five years. Other common measures adopted throughout the region include negotiated wage freezes to control the growth and the size of wage bills, revision of tax holidays and tax exemptions to improve tax revenue collections, and enhanced monitoring of the operations and performance of state-owned enterprises (SOEs).

The OECS countries can draw on existing good practices on how to strengthen their fiscal positions and be better equipped to adopt counter-cyclical fiscal policies. Moving towards a full blown FRL, with or without a formal fiscal rule, requires some preparation and building technical capacity in order to design, implement, and monitor the new policy tool. There are some well-established good practices in that regard that could help the Eastern Caribbean states to become less procyclical. First, when establishing primary fiscal surplus targets, countries in the region are strongly advised to include in their targets buffers to cover future disaster-related expenses. Second, the creation of a savings fund associated with the fiscal buffers mentioned above could be a good and transparent way to discipline the use of these set-aside resources. This would require the development of a strong institutional framework and governance structure with clear operational rules for the allocation of the fund's resources. Third, the adoption of medium-term fiscal frameworks (MTFFs) and medium-term debt management strategies could help strengthen fiscal discipline and ensure that fiscal policy guides the budgetary process and not the other way around. Finally, pursue symmetric fiscal policy responses through the use of fiscal rules aimed at stabilizing macroeconomic shocks by adopting, for example, expenditure ceilings, cyclical deficit targets, and rules-based.

Grenada's Rules-Based Fiscal Policy Framework

Grenada's fiscal responsibility law set an important step in the transition to a rules-based fiscal framework in the OECS region. In June 2015 Grenada's Parliament was the first in the OECS to approve a landmark fiscal responsibility law. The new legal framework establishes a 2 percent cap on real expenditure growth and a debt ceiling of 55 percent of GDP to be achieved by 2022. The framework includes escape clauses in the event of unpredictable shocks such as natural disasters, public health epidemics, and economic and financial crises.

The rule-based fiscal framework will be implemented in three phases.

Phase 1. Under the Government's homegrown program, a primary balance of 3.5 percent of GDP should be achieved by 2016, aiming to reduce the debt-to-GDP ratio and restore debt sustainability.

Phase 2. During Phase 1, the primary balance is maintained at 3.5 percent of GDP on average until public debt is lowered to 55 percent of GDP.

Phase 3. Once the debt target has been achieved, the debt is maintained at this level, while the primary balance is maintained at its debt-stabilizing level, currently estimated around 1 percent of GDP.

In addition, the rules-based fiscal framework contains guidelines on public sector wage negotiations, a ceiling on PPP-related contingent liabilities, and the use of CBI receipts. The law also sets a public wage-bill target of 9 percent of GDP, establishes a cap on PPP related contingent liabilities at 5 percent of GDP, and provides for a share of monthly Citizenship by Investment (CBI) inflows to be saved and used to finance future budgetary contingencies or natural-disaster and response efforts.

This framework is expected to provide a strong basis for counter-cyclical fiscal policy and enduring medium-term fiscal and debt sustainability. It is more binding than previous fiscal targets used by OECS member countries, which lacked clear operational guidelines and were not fully adhered to.

Source: Authors' elaboration based on IMF Grenada-Second Review under the Extended Credit Facility (June 2015)

Concluding Remarks

We have confirmed earlier findings in the literature showing that a number of developing countries have graduated from fiscal policy pro-cyclicality. In comparison with industrialized countries, however, developing countries tend to behave in a way that contributes to exacerbate the effects of the business cycle; that is, they tend to exhibit more often than industrialized economies pro-cyclical fiscal policies in both booms and downturns, contributing to exacerbate output volatility. This result coincides with the findings from Kaminsky et al. (2004) and represent additional evidence in support of the "when-it-rains-it-pours" phenomenon.

We have also shown that the business cycles in the OECS countries exhibit the properties that are typical of developing countries. In particular, these countries, very much like other developing countries, are charac-

terized by (i) higher volatility of most macroeconomic variables when compared to other more advanced economies as exemplified, for example, by the volatility of the key variable affecting welfare – consumption – which is above the volatility of output in developing countries, but below output volatility in advanced economies; (ii) countercyclical real interest rates in developing countries as opposed to mildly pro-cyclical or a-cyclical real interest rates in advanced economies; net exports are also found to be much more countercyclical in developing countries relative to the developed economies; and (iii) fiscal policy is pro-cyclical, while it tends more frequently to be countercyclical in advanced economies.

A result worth mentioning is that we have also found evidence in support of the idea that institutional quality is an important determinant of a country's fiscal stance. This is an important finding that suggests that efforts to graduate from fiscal policy pro-cyclicality

need to be accompanied by policy reforms that seek to strengthen the ability of countries to save in good times to generate fiscal buffers that could be used in bad times. In that regard, initiatives such as the establishment of fiscal councils and the adoption of fiscal rules, the development of sound debt management strategies that reinforce fiscal discipline, and the strengthening of macro prudential regulations appear to be necessary conditions for graduation from pro-cyclicality.

Finally, we have argued that the countries in the region would have much to gain in terms of their ability to respond in a symmetric way to the business cycle by following well-established good practices. While the adoption of full-blown FRLs and formal fiscal rules

would be the optimal solution, fiscal discipline can be buttressed in the OECS by the adoption of intermediate but nevertheless good practice policy options. These would include (i) building fiscal buffers, that could be embedded in primary fiscal balance targets, to cover future disaster-related expenses; (ii) creating savings funds with a strong institutional framework and governance structure with clear operational rules for the allocation of the fund's resources; (iii) adopting medium-term fiscal frameworks (MTFFs) and medium-term debt management strategies to strengthen fiscal discipline and ensure that fiscal policy guides the budgetary process and not the other way around; and (iv) pursuing symmetric fiscal policy responses through the use of fiscal rules aimed at stabilizing macroeconomic shocks .

APPENDIX

Methodological Approach Used to Investigate the Determinants of Fiscal Policy Cyclicity

We begin by estimating equation (1) below (using a country panel fixed effects specification) linking the cyclical component of real government expenditures ($g_{i,t}^c$) to the cyclical component of real GDP ($y_{i,t}^c$) and a proxy for institutional quality ($IQ_{i,t}$) where we denote a given country by “i” in a given year “t”. The interaction variable is meant to show how institutional quality increases (a positive sign for α_3 , in the event of $\alpha_2 > 0$) or decreases ($\alpha_3 < 0$, in the event of $\alpha_2 > 0$) fiscal pro-cyclicality.

$$(1) \quad g_{i,t}^c = \alpha_1 + \alpha_2 \times y_{i,t}^c + \alpha_3 \times (y_{i,t}^c \times IQ_{i,t}) + IQ_{i,t} + \eta_i + \varepsilon_{i,t}$$

We then expand the analysis by including the role of initial institutional quality ($IQ_{i,t}^{initial}$) and changes of the variable ($\Delta IQ_{i,t}$) in equation (2). One expects both signs of the parameters of the interaction terms included in the equation, α_3 and α_4 , to be negative and significant in explaining the relationships between cyclical components of real government expenditures and real GDP (in the event of $\alpha_2 > 0$).

$$(2) \quad g_{i,t}^c = \alpha_1 + \alpha_2 \times y_{i,t}^c + \alpha_3 \times (y_{i,t}^c \times IQ_{i,t}^{initial}) + \alpha_4 \times (y_{i,t}^c \times \Delta IQ_{i,t}) + \alpha_5 \times IQ_{i,t}^{initial} + \alpha_6 \Delta IQ_{i,t} + \eta_i + \varepsilon_{i,t}$$

As a next step, we added to this panel equation a vector Z of “q” additional controls to look for possible omitted variable bias problems. One expects to observe significant values for the institutional quality variable after controlling for the variables included in Z_q vector.

$$(3) \quad g_{i,t}^c = \alpha_1 + \alpha_2 \times y_{i,t}^c + \alpha_3 \times (y_{i,t}^c \times IQ_{i,t}) + IQ_{i,t} + \alpha_q \times Z_q + \eta_i + \varepsilon_{i,t}$$

Finally, we tried a different approach with equation (4) by switching to a cross section specification where the dependent variable (ρ_i^{avg}) is the correlation coefficient of real government expenditures and real GDP for a given time period. The specification is first computed including the average value of the institutional quality variable (IQ_i^{avg}) for the same period as sole control, and then adding additional explanatory variables (vector Z). Again, the value for α_2 is expected to be negative and statistically significant.

$$(4) \quad \rho_i^{avg} = \alpha_1 + \alpha_2 \times IQ_i^{avg} + \alpha_q \times Z_q + \eta_i + \varepsilon_i$$

In all cases, we used alternative definitions of fiscal cyclicality, namely by applying different filters to smooth the series including the Hodrick-Prescott, Baxter-King, Christiano-Fitzgerald and Butterworth filters. The specifications were applied for the following periods and samples:

- i) First, for the period 1984-2009, using the Frankel, Vegh, & Vuletin (2014) sample of real government expenditures and real GDP, as well as the set of controls identified by these authors, including the institutional quality proxy, based on the International Country Risk Guide (ICRG) data.¹⁰
- ii) Next, for the period 1990-2011, using a sample of 180 countries and including the same controls defined by Frankel, Vegh, & Vuletin (2014). A problem we found was that of availability of data for the ICRG variable. In particular, the source includes information for 138 countries up to 2010 only. To get around this limitation, we considered an alternative proxy for IQ based on Kunčič (2013), which is available for 193 economies for the period 1990-2011. This is also motivated out of our interest to test whether results found by Frankel, Vegh, & Vuletin (2014) are robust to the choice of IQ variable and hold for a different (larger) country sample.¹¹

¹⁰ While the data on real government expenditures and real GDP was kindly provided by Frankel, Vegh, & Vuletin (2013), we compiled the remaining information from the original sources.

¹¹ An additional reason for using the Kunčič (2013) dataset is that it includes data on the IQ proxy for 14 out of 15 Caribbean countries that are of special interest in this research, whereas ICRG data only covers 6 of those countries.

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iii) Third, we generated results for additional specifications, not included in Frankel, Vegh, & Vuletin (2014), and introduced additional controls.

Tables A3.1 and A3.2 show the results of econometric estimations that confirm the relevance of institutional quality as an important determinant of fiscal policy cyclicalities. The full set of results can be found in Carneiro and Garrido (2015) and will not be repeated here. Our results show that IQ is strongly significant as an explanatory variable of movements away from cyclicalities for all specifications using ICRG as a proxy for IQ and for all but one specification that rely on the Kunčič (2013) dataset, following Equation 1. When we separate the effects of initial IQ from changes in IQ (Equation 2) we observe that the former variable is strongly significant under all filtering methods when using ICRG as proxy for IQ, but less so in the specifications using Kunčič (2013) data. On the other hand, the latter specifications show higher statistical significance for the changes in IQ compared to the former. When the same panel specification was expanded to account for the role of additional controls (Equation 3), one can observe how robust the significance of IQ is when ICRG is used as a proxy under all filtering methods. The cross-country regression results for the period 1990-2011 through the estimation of equation (4) considers the correlation between cyclical components of real government expenditures and real GDP as a function of average IQ and average values for other controls, as in Frankel, Vegh, & Vuletin (2013). This specification also shows robust results for institutional quality under all filtering methods and for alternative IQ definitions.

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Table A2.1: Panel Regression: Determinants of Cyclical Component of Real Gov. Expenditures (alternative filters), Additional Controls. Period 1984-2009

VARIABLES	Cyclical Component Real Gov. Exp.			
	1 HP filter	2 BK filter	3 CF filter	4 BU filter
Cyclical Component Real GDP, alternative filters (x)	2.899*** (8.337)	3.061*** (7.631)	1.940*** (7.280)	3.218*** (7.273)
Interaction Cyclical Component Real GDP filter and Institutional Quality (x)	-3.021*** (-5.042)	-3.042*** (-4.406)	-1.319*** (-3.218)	-3.222*** (-4.064)
Interaction Cyclical component of Real GDP and Chinn-Ito Index of Capital Openness (x)	0.086 (1.440)	0.099 (1.407)	0.043 (1.106)	0.100 (1.207)
Interaction Cyclical component of Real GDP and financial depth (M2/GDP) (x)	-0.003 (-1.230)	-0.005 (-1.505)	-0.003* (-1.888)	-0.004 (-1.040)
Interaction Cyclical component of Real GDP and Volatility (Squared cyclical component GDP) (x)	-5.571 (-0.319)	-5.200 (-0.208)	17.303 (0.848)	-8.466 (-0.294)
Interaction Cyclical component of Real GDP and Proxy Political Checks and Balances (x)	0.072 (1.437)	0.107* (1.791)	0.047 (1.380)	0.146** (2.086)
Interaction Cyclical component of Real GDP and Debt Ratio to GDP (x)	-0.005*** (-3.855)	-0.007*** (-4.443)	-0.005*** (-5.247)	-0.009*** (-5.527)
Interaction Cyclical component of Real GDP and Reserves Ratio to Imports (x)	-0.079*** (-5.777)	-0.065*** (-3.833)	-0.026** (-2.355)	-0.060*** (-3.035)
Institutional Quality Proxy	0.000 (0.001)	0.001 (0.049)	0.052* (1.953)	0.014 (0.823)
Chinn-Ito Index of Capital Openness	0.001 (0.590)	0.001 (0.466)	0.001 (0.479)	0.001 (0.785)
Financial Depth (M2 Ratio to GDP)	0.000 (1.513)	0.000* (1.750)	0.000* (1.904)	0.000 (1.444)
GDP volatility (Squared Cyclical Component of GDP)	-0.489 (-0.354)	0.278 (0.193)	0.443 (0.322)	0.201 (0.183)
Proxy for Political Checks and Balances	-0.001 (-0.332)	-0.001 (-0.513)	-0.003 (-1.382)	-0.000 (-0.262)
Debt to GDP ratio	0.000 (1.136)	0.000 (1.246)	0.000*** (5.493)	0.000*** (4.178)
Reserves to Imports Ratio	-0.000 (-0.604)	-0.000 (-0.849)	0.001 (1.046)	0.000 (0.008)
Constant	-0.010 (-0.707)	-0.013 (-0.911)	-0.060*** (-3.534)	-0.023** (-2.168)
Observations	1,952	1,768	1,768	1,768
R-squared	0.085	0.087	0.082	0.077
Number of ccode1	91	90	90	90
r2_a	0.0328	0.0302	0.0243	0.0195
F	11.41	10.60	9.863	9.272

Notes: t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. (x) The filter used to compute the cyclical component of GDP is the same as that used for computing the dependent variable. **Source:** Authors calculations.

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Table A2.2: Cross country Regression. Fiscal Cyclical Proxy under alternative filtering methods. 1984-2009. Role of Instit. Quality and Determinants

VARIABLES	Correl. Cyclical Component Real Gov. Exp. And Real GDP							
	1 HP filter	2 BK filter	3 CF filter	3 BU filter	4 HP filter	5 BK filter	6 CF filter	7 BU filter
Institutional Quality (from ICRG), average 1984-2009	-0.946*** (-6.420)	-0.763*** (-5.263)	-0.812*** (-5.267)	-0.645*** (-4.318)	-1.118*** (-4.460)	-0.883*** (-3.504)	-1.187*** (-4.515)	-0.778*** (-3.165)
Chinn-Ito Index of Capital Openness, average 1984-2009					0.001 (0.023)	-0.001 (-0.021)	-0.006 (-0.217)	-0.038 (-1.388)
Financial Depth (M2 Ratio to GDP), average 1984-2009					0.001 (0.566)	0.000 (0.367)	0.000 (0.408)	0.001 (0.833)
GDP volatility (Squared Cyclical Component of GDP), average 1984-2009 (x)					95.657** (2.109)	118.368* (1.925)	3.916* (1.971)	345.230** (2.294)
Proxy for Political Checks and Balances, average 1984-2009					0.029 (1.213)	0.027 (1.129)	0.038 (1.579)	0.061** (2.606)
Debt to GDP ratio, average 1984-2009					-0.001 (-1.386)	-0.001 (-1.577)	-0.002** (-2.292)	-0.002** (-2.362)
Reserves to Imports Ratio, average 1984-2009					-0.020*** (-2.706)	-0.013* (-1.671)	-0.017** (-2.195)	-0.014* (-1.851)
Constant	0.648*** (7.502)	0.567*** (6.652)	0.587*** (6.492)	0.476*** (5.433)	0.742*** (4.921)	0.627*** (4.133)	0.844*** (5.852)	0.459*** (3.088)
Observations	92	91	92	92	91	90	91	91
R-squared	0.314	0.237	0.236	0.172	0.413	0.313	0.364	0.334
r2_a	0.306	0.229	0.227	0.162	0.364	0.254	0.311	0.278
F	41.22	27.69	27.75	18.65	8.358	5.325	6.793	5.945

Notes: t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. (x) The filter used to compute the cyclical component of GDP is the same as that used for computing the dependent variable. **Source:** Authors calculations

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Table A2.3: Panel Regression: Determinants of Cyclical Component of Real Gov. Expenditures (alternative filters and two alternative proxies for Instit. Quality). Additional Controls. Period 1990-2013.

	Institutional Quality proxy is that of Kuncic (2013)				Institutional Quality proxy is ICRG			
	Cyclical Component Real Gov. Exp.							
	1 HP filter	2 BK filter	3 CF filter	3 BU filter	4 HP filter	5 BK filter	6 CF filter	7 BU filter
Cyclical Component Real GDP, Alternative filters (x)	1.025*** (3.853)	1.086*** (3.193)	0.825*** (5.193)	-0.191 (-0.614)	2.150*** (8.195)	2.653*** (7.004)	1.267*** (8.396)	2.130*** (6.005)
Interaction Cyclical Component Real GDP filter and Institutional Quality, Alternative filters (x)	-0.564 (-0.867)	-0.143 (-0.184)	-0.031 (-0.103)	1.812** (2.179)	-2.296*** (-4.404)	-3.092*** (-4.389)	-0.792*** (-3.628)	-2.274*** (-3.330)
Interaction Cyclical component of Real GDP and Chinn-Ito Index of Capital Openness, Alternative filters (x)	-0.042 (-0.794)	-0.070 (-1.104)	-0.014 (-0.822)	-0.058 (-0.892)	-0.007 (-0.155)	0.002 (0.035)	-0.035** (-2.142)	0.009 (0.145)
Interaction Cyclical component of Real GDP and financial depth (M2/GDP), Alternative filters (x)	-0.007*** (-2.884)	-0.007** (-2.547)	-0.002*** (-2.671)	-0.010*** (-3.668)	-0.008*** (-3.924)	-0.003 (-1.216)	-0.002*** (-2.612)	-0.008*** (-2.953)
Interaction Cyclical component of Real GDP and Volatility (Squared cyclical component GDP), Alternative filters (x)	-3.047 (-1.562)	-9.535* (-1.945)	-1.397** (-2.124)	4.028 (0.921)	1.705 (0.569)	8.989 (0.768)	-2.020*** (-2.770)	-2.993 (-0.697)
Interaction Cyclical component of Real GDP and Proxy Political Checks and Balances, Alternative filters (x)	0.007 (0.145)	-0.019 (-0.337)	-0.035** (-2.252)	-0.015 (-0.241)	0.013 (0.301)	-0.001 (-0.016)	-0.012 (-0.747)	0.019 (0.345)
Interaction Cyclical component of Real GDP and Debt Ratio to GDP, Alternative filters (x)	0.002** (2.380)	0.002** (2.021)	0.000 (0.251)	0.004*** (3.412)	-0.001 (-0.913)	-0.002** (-1.976)	-0.000 (-0.612)	-0.001 (-1.018)
Interaction Cyclical component of Real GDP and Reserves Ratio to Imports, Alternative filters (x)	0.004 (0.646)	-0.016 (-1.578)	0.006 (1.627)	0.006 (1.027)	0.005 (0.847)	-0.016 (-1.473)	0.008*** (3.290)	0.003 (0.493)
Institutional Quality Proxy	0.010 (0.244)	0.009 (0.198)	0.016 (0.345)	0.014 (0.460)	0.013 (0.476)	0.039 (1.273)	-0.069** (-2.037)	0.011 (0.532)
Chinn-Ito Index of Capital Openness	0.000 (0.064)	0.002 (0.801)	0.001 (0.275)	0.001 (0.338)	-0.001 (-0.320)	0.001 (0.241)	-0.002 (-0.677)	0.000 (0.030)
Financial Depth (M2 Ratio to GDP)	0.000*** (2.856)	0.000*** (2.584)	0.000 (1.146)	0.000* (1.708)	0.000** (2.536)	0.000** (2.345)	0.000 (0.562)	0.000 (1.348)
GDP volatility (Squared Cyclical Component of GDP), Alternative filters (x)	-0.804 (-1.485)	-0.684 (-0.732)	0.228 (0.505)	-0.287 (-0.668)	1.137 (1.499)	0.674 (0.592)	0.513 (1.572)	-0.129 (-0.404)
Proxy for Political Checks and Balances	-0.002 (-1.067)	-0.002 (-1.107)	-0.006*** (-2.627)	-0.001 (-1.028)	-0.001 (-0.457)	-0.001 (-0.815)	-0.003 (-1.060)	-0.001 (-0.649)
Debt to GDP ratio	0.000* (1.931)	0.000 (1.067)	0.000* (1.948)	0.000** (2.040)	0.000*** (2.864)	0.000 (0.381)	0.000 (1.635)	0.000* (1.719)
Reserves to Imports Ratio	-0.000 (-0.528)	-0.000 (-0.185)	0.000 (0.741)	-0.000 (-0.418)	-0.001 (-1.249)	-0.000 (-0.295)	0.000 (0.900)	-0.000 (-0.537)
Constant	-0.019 (-0.925)	-0.020 (-0.856)	-0.017 (-0.675)	-0.015 (-0.929)	-0.022 (-1.321)	-0.035* (-1.814)	0.034 (1.564)	-0.011 (-0.893)
Observations	2,538	2,318	2,538	2,538	2,264	1,978	2,264	2,264
R-squared	0.069	0.056	0.055	0.029	0.122	0.083	0.082	0.059
Number of ccode1	155	153	155	155	125	124	125	125
r2_a	0.00256	-0.0168	-0.0123	-0.0399	0.0643	0.0143	0.0224	-0.00244
F	11.70	8.577	9.213	4.782	19.63	11.11	12.72	8.900

Notes: t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1 *** p<0.01, ** p<0.05, * p<0.1. (x) The filter used to compute the cyclical component of GDP is the same as that used for computing the dependent variable. **Source:** Authors calculations

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Table A2.4: 2-period Panel Country Regression. Changes Fiscal Cyclical Proxy under alternative filtering methods. Role of Instit. Quality and Determinants. Instit. Quality proxy is that of Kuncic (2013) (*)

	Correl. Cyclical Component Real Gov. Exp. And Real GDP							
	1 HP filter	2 BK filter	3 CF filter	3 BU filter	4 HP filter	5 BK filter	6 CF filter	7 BU filter
Initial Correlation Real Gov. Exp-GDP, alternative filters (Avg. 1990-2000) (x)	-0.937*** (-10.292)	-0.837*** (-9.897)	-0.978*** (-11.085)	-1.028*** (-11.313)	-0.968*** (-10.561)	-0.848*** (-9.784)	-1.010*** (-11.300)	-1.016*** (-10.761)
Initial Institutional Quality (Avg. 1990-2000) based on Kuncic (2013)	-0.491** (-2.158)	-0.772*** (-3.781)	-0.482** (-2.122)	-0.464** (-2.022)	-0.440 (-1.010)	-0.681* (-1.742)	-0.340 (-0.783)	-0.454 (-0.987)
Initial Chinn-Ito Index of Capital Openness (Avg. 1990-2000)					0.001 (0.025)	0.006 (0.188)	-0.008 (-0.204)	0.027 (0.659)
Initial M2 Ratio to GDP (Avg. 1990-2000)					-0.002 (-1.494)	-0.002 (-1.186)	-0.003* (-1.717)	-0.002 (-1.375)
Initial GDP volatility (Squared Cyclical Component of GDP), alternative filters (Avg. 1990-2000) (x)					6.178 (0.316)	7.928 (0.597)	7.507 (0.396)	11.952 (0.713)
Initial Checks and Balances (Avg. 1990-2000)					-0.013 (-0.376)	0.000 (0.006)	-0.017 (-0.476)	0.001 (0.018)
Initial Debt to GDP ratio (Avg. 1990-2000)					0.000 (0.026)	0.001 (0.455)	-0.000 (-0.162)	0.000 (0.045)
Initial Reserves to Imports Ratio (Avg. 1990-2000)					-0.014 (-0.901)	-0.012 (-0.864)	-0.016 (-1.046)	-0.015 (-0.935)
Change in Institutional Quality (2000-2010 vs 1990-2000) based on Kuncic (2013)	0.224 (0.323)	-0.247 (-0.403)	0.009 (0.013)	-0.285 (-0.397)	0.613 (0.825)	0.386 (0.584)	0.295 (0.396)	0.048 (0.061)
Change in Chinn-Ito Index of Capital Openness (2000-2010 vs 1990-2000)					-0.003 (-0.058)	-0.006 (-0.134)	0.002 (0.053)	0.073 (1.459)
Change in M2 Ratio to GDP (2000-2010 vs 1990-2000)					-0.003 (-1.160)	-0.004* (-1.869)	-0.002 (-1.077)	-0.003 (-1.367)
Change in GDP Volatility, alternative filters (2000-2010 vs 1990-2000) (x)					8.767 (0.575)	30.415** (2.378)	4.395 (0.304)	11.544 (0.501)
Change in Checks and Balances (2000-2010 vs 1990-2000)					-0.062 (-1.265)	-0.045 (-1.018)	-0.058 (-1.167)	-0.075 (-1.441)
Change in Debt to GDP Ratio (2000-2010 vs 1990-2000)					0.000 (0.148)	0.000 (0.160)	0.000 (0.251)	-0.000 (-0.040)
Change in Reserves to Imports Ratio (2000-2010 vs 1990-2000)					-0.023** (-2.473)	-0.016** (-2.023)	-0.019** (-2.188)	-0.013 (-1.310)
Constant	0.212 (1.571)	0.368*** (3.036)	0.217 (1.613)	0.184 (1.367)	0.476** (2.019)	0.475** (2.237)	0.485** (2.046)	0.368 (1.490)
Observations	131	131	131	131	128	128	128	128
R-squared	0.456	0.437	0.493	0.503	0.531	0.507	0.564	0.563
r2_a	0.443	0.424	0.481	0.491	0.469	0.440	0.506	0.504
F	35.43	32.85	41.16	42.81	8.471	7.665	9.658	9.615

Notes: t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1 *** p<0.01, ** p<0.05, * p<0.1. (x) The filter used to compute the cyclical component of GDP is the same as that used for computing the dependent variable. **Source:** Authors calculations

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Chapter 3.

Comprehensive Financial Development for Growth and Lower Volatility in the OECS

Introduction

Comprehensive financial development can be an important driver of economic growth and can increase a country's resilience to external shocks and volatility. Fully financially developed economies find it easier to mobilize savings, share information, improve resource allocation, and implement more effective diversification and risk management strategies. In the OECS context of a currency board that provides for a monetary anchor, limited fiscal space, and GDP that is highly dependent on services, the role of the financial sector as a driver of growth is further enforced. Comprehensive financial development also leads to less volatility to the extent that deep and liquid financial systems with more diverse instruments can help alleviate the impact of shocks. Comprehensive financial development also helps countries to manage better the impact of terms of trade volatility, especially in the case of small, open economies such as in the case of the OECS.

This chapter explores critical policy options to strengthen financial development in the region. In what follows, we first discuss the structure and evolution of the financial sector, in particular the banking sector in the OECS region over the past 15 years. Second, we assess the level of financial development in the region as well as the global relationship between comprehensive financial development, growth, and stability. We do this by using a comprehensive index of financial development recently created by the IMF that captures different aspects of financial development. The chapter

concludes by exploring specific policy options that could help reorient financial development so that it could be supportive of; (i) lower volatility; (ii) enhanced economic growth, and (iii) a more effective fiscal policy.

The OECS Financial Sector: Large and Frail

The financial sector in the OECS is dominated by the banking sector and is large as a percentage of GDP.

The region has a high level of credit and is overbanked: in 2015, banking sector assets represented 166 percent of the region's overall GDP. There are some 40 licensed commercial banks (among them, 13 are indigenous banks and 26 are branches or subsidiaries of foreign banks, primarily Canadian-owned). Total commercial banks' assets for the OECS amounted to US\$10.4 billion as of December 2015 while total bank deposits stood at US\$6.2 billion for the same period. Further, the number of commercial bank branches per 100,000 people is 27 in the OECS compared with a LAC average of just 20. The commercial banks are regulated by the Eastern Caribbean Central Bank (ECCB), and indigenous banks make up about half of the banking system as measured by assets, deposits, as well as loans.

The non-banking sector is gaining importance in the OECS with credit union membership on the rise. As of 2015, there were 51 active credit unions, which manage total assets of about US\$880 million (13 percent of the region's GDP) and have a membership base of 304,699, which is just under 50 percent of the region's population. Credit union membership in the OECS is high as

compared with other countries, and its membership increased steadily during 2001-10 despite a decline in the number of credit unions. Credit unions have come into prominence in light of stringent credit conditions in the banking sector following the global financial crisis. Its assets and deposits experienced steady growth, especially for 2005-10, a period over which its total asset size almost doubled. In particular in 2015, credit union assets account for as much as 44 percent GDP in Dominica. For Grenada, St. Vincent and the Grenadines, and St. Lucia, credit union assets vary between 14 to 16 percent of GDP.

The insurance sector in the OECS is relatively large and is characterized by regional conglomerates. The two major insurance companies are the Sagicor Financial Group and Guardian Holdings. Assets for the sector constitute approximately 17 percent of regional GDP. The January 2009 collapse of Trinidad and Tobago based CL Financial Ltd. (CLF) and related companies (such as CLF's insurance subsidiaries, the Colonial Life Insurance Company (CLICO), CLICO International Life (CLI), and the British Insurance Company (BAICO)) affected the Caribbean, but hit the OECS region the hardest because of its high exposure to CLICO and BAICO that was estimated at 15 percent of GDP in 2009.

Offshore financial sectors in the region have been developed as a means to increase fiscal revenues, while not taxing their population. The OECS member states have a relatively small share of worldwide offshore activity, while they offer financial services ranging from international banking for corporations and individuals, to FDI, to insurance. Within the OECS, Antigua and Barbuda and St. Kitts and Nevis have the most active offshore financial sectors. However the offshore sector has been under threat due to: (i) the OECD Global Forum to fight tax evasion; (ii) the Anti Money laundering (AML) regulation of the Financial Action Task Force (FATF); and (iii) more recently U.S. Foreign Account Tax Compliance Act (FATCA).¹²

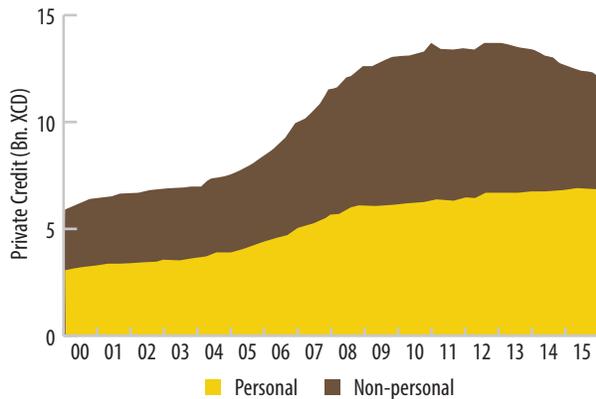
¹² The original FATF Forty Recommendations were drawn up in 1990 aimed at combating the misuse of financial systems through money laundering. After several rounds, the revised FATF AML regulation addresses new and emerging threats. The FATF Standards have also been revised to strengthen the requirements for higher risk situations. The Foreign Account Tax Compliance Act (FATCA) is a United States federal law that requires United States persons, including individuals who live outside the United States, to have yearly reported themselves and their financial accounts held outside of the United States to the Financial Crimes Enforcement Network.

The OECS has a regional capital market that remains underdeveloped. The Regional Government Securities Market (RGSM) was established in 2002 for the primary issuance of government debt securities for 8 ECCU member countries to create a single regional financial space for government debt. Since the establishment of the RGSM, the holding of sovereign debt across borders has also increased. The increased exposure of banks to sovereign debt increases their liquidity and solvency risks of other governments than their own. Only five of the eight member countries – Antigua and Barbuda, Grenada, St. Lucia, St. Kitts and Nevis, and St. Vincent and the Grenadines – have thus far issued securities in the regional market, with St. Lucia and St. Vincent and the Grenadines being the most active issuers. However, the ECCB has not succeeded in creating a proper sovereign debt market, as there is no secondary markets, and as a result financial institutions buy and hold debt to maturity. Secondary market activity in government securities has also been precluded under the RGSM on account of a broker/dealer system that is not conducive to secondary market trading. There is also an Interbank Market and Repo Market administered by the ECCB and Eastern Caribbean Home Mortgage Bank (ECHMB) which also comprise of the long term debt capital market.

Before the 2008 global financial crisis, credit in the OECS expanded rapidly that was not supported by underlying economic growth. The banking sector in the OECS expanded rapidly in the early 2000s due to a credit boom during the run-up to the 2007 Cricket World Cup, and rapid credit expansion to the public sector to help finance governments' public sector investment programs. Between 2003 and 2008, credit to the private sector across the OECS grew at an average annual rate of 13.7 percent, as show in Figure 3.1 and Figure 3.2. In St. Lucia private credit to the private sector grew at 19 percent a year. Over 50 percent of this credit was for the acquisition of personal property and the growth of lending for services also grew sharply. The high prevailing level of credit to the private sector to GDP (which reached 85 percent in 2013) combined with GDP growth of only 1.4 percent annually between 2003 and 2013, was not sufficient to support this level of credit growth. This then led to a deterioration in asset quality.

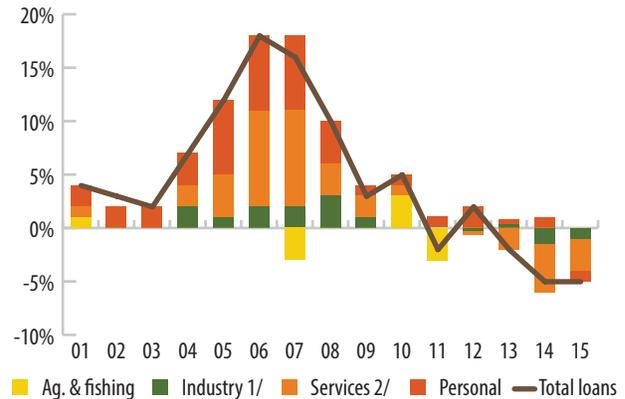
At the onset of the global financial crisis, economic activity contracted sharply leading to a sudden increase in non-performing loans. After a significant

Figure 3.1 Private Sector Credit



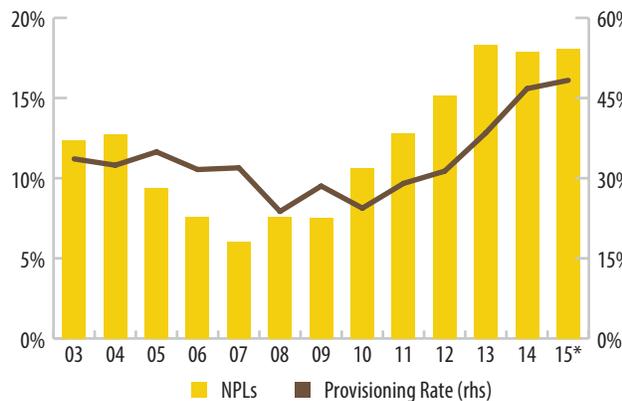
Source: ECCB.

Figure 3.2 Private Sector Credit Growth



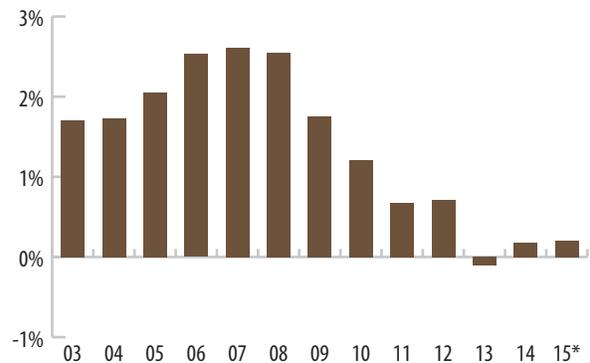
Source: ECCB. 1/ Includes manufacturing and construction. 2/ Includes distributive trades, tourism, entertainment, transport, public utilities, professional services, and financial institutions.

Figure 3.3 NPLs & Provisioning



Source: ECCB. Data from 2015 is from September 2015.

Figure 3.4 Return on Average Assets



Source: ECCB. Data from 2015 is from September 2015.

credit expansion to the private sector during 2000-07, regional economic activity experienced a sharp contraction as a result of the 2008 global financial crisis. This has put significant stress on the banks' balance sheets and exposed vulnerabilities in the banking system. Credit growth to the private sector continued to fall and since 2013 is now negative (Figure 3.3). Most of the credit tightening has occurred in services (such as tourism-related services) although the highest share of loans are to individuals (54 percent) for acquisition of property and home construction and renovation, which has been rising in recent years.

As a result, there has been a deterioration in asset quality evidenced by a sharp increase in the share of nonperforming loans (NPLs) in the regional banking

sector. Commercial banks' NPLs rose from 7.7 percent in 2008 to 18.0 percent in 2014 (see 3.3). The over-extension of credit proved to be unsustainable, and a credit overhang has been created. Protracted foreclosure processes which in some countries require judicial reviews have meant that the NPLs have remained on bank's balance sheets for the past six to eight years. Although provisioning levels have increased for these non-performing loans, these are still below international standards for provisioning. As show in Figure 3.4, the deteriorating asset quality has weighed down significantly on profitability.

The new Banking Act has now been passed in each of the eight OECs member states, and this provides the framework for improved supervision and reso-

lution, if needed. Important efforts have been made to improve the regulatory and supervisory framework. The new Banking Act, which is harmonized across the ECCU, has strengthened the regulatory and supervisory frameworks, including by introducing higher minimum capital requirements, a more effective resolution of failed banks, and a stronger depositor protection. Looking ahead, the currency union will need to operationalize the new Banking Act towards enhanced supervision and eventually strive to implement risk-based supervision and Basel II regulation for banks and non-banking financial institutions.

Against this backdrop and the efficiency of the sector, there is need to build a stronger banking and financial system that will be able to contribute towards growth and reducing volatility. In addition to the high number of branches per capita, commercial bank costs structures in the OECS are expensive. The average 2014 cost-to-income ratio at the indigenous banks in the OECS is 79 percent, which is well above the emerging market average of 45 percent. This combined with the level of NPLs suggests that efforts towards strengthening and consolidating the sector will significantly aide its ability to contribute towards growth and development.

Financial Development in the OECS: A Partial and Incomplete System

The ratio of credit to GDP and credit growth have recently been questioned as their comprehensiveness of measuring financial development, as they may not capture the ability of financial sectors to contribute towards growth and reducing volatility. The previous section showed that commercial bank assets and credit in the OECS expanded rapidly in the 2000s. However, high bank credit to the private sector may be a misleading indicator to measure financial development. For a country with a relatively high credit to GDP ratio, for instance, financial depth alone may only be a necessary but not sufficient condition to guarantee financial development. More importantly, if credit is not used for productive purposes, it can contribute to financial sector instability. Or it could have a limited contribution to economic development through excessive personal lending or in the creation of asset price bubbles. This section assesses the current level of financial development in the OECS region from the perspective of a more comprehensive measure of financial development. This measure captures depth, access, as well as efficiency.

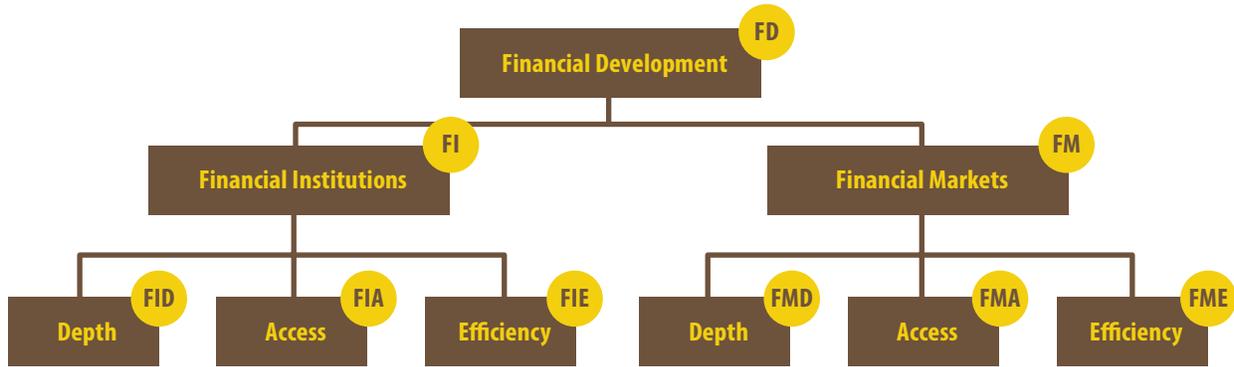
We use a comprehensive index of financial development that captures the multidimensional components of financial sector development. Traditionally, the literature has used the ratio of private credit to GDP as a proxy to measure the level of financial development. However, this indicator does not fully capture the full set of financial sector attributes, such as development of non-bank financial sector which consists of pension funds, credit unions, insurance companies, mutual funds, or securities markets. Over the past decade, however, the non-banking financial sector has significantly contributed to the overall financial sector development in the Latin America and the Caribbean. This is also true for the OECS. The IMF's newly constructed comprehensive index of financial development (Sahay et al. (2015)) – the Financial Development (FD) Index – aims to capture different aspects of financial development rather than relying on a single proxy, such as, credit to GDP. The index consists of two major components: financial institutions and financial markets. Each component is broken down into three sub-components: depth, access, and efficiency (see Figure 3.5).¹³

Although the OECS scores well in the credit-to-GDP ratio, its index of comprehensive financial development is low. Figure 3.6 shows the credit to GDP ratio for the OECS as well as key comparator countries and country groupings.¹⁴ Compared to the LAC and Emerging Market (EM) average, which are each 47 and 49 percent, the OECS is well above these two benchmarks. The OECS indicator is above both the level in Slovenia and Sri Lanka. However, as Figure 3.7 shows, the level of its comprehensive financial development as measured by the index construction referenced above, is lower than these country groupings and peer countries. The index is scaled from 0 to 1, and the higher the index the better the level of financial development: the U.S. scores 0.8, for example. The OECS scores 0.30 on this index, while the LAC average is 0.31. Compared to the comparator countries and regions, the OECS scores much lower, the difference in score between the

¹³ These subcomponents are constructed based on a number of underlying variables that track development in each area. The database includes 123 countries for 1995-2013.

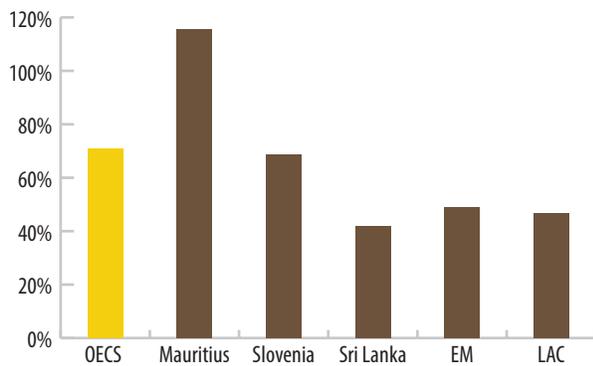
¹⁴ The rationale for selecting these comparator countries are: (i) Mauritius for its tourism and service-based economy (though Mauritius does have a large offshore financial sector that is aggregated in domestic measures); (ii) Slovenia for a small open-economy that was able to navigate the financial crisis through careful fiscal management, and (iii) Sri Lanka for a service-based economy that has been able to increase SME lending over the past two decades.

Figure 3.5 Components of the Financial Development Index



Source: Sahay et al. (2015a).

Figure 3.6 Private Credit to GDP



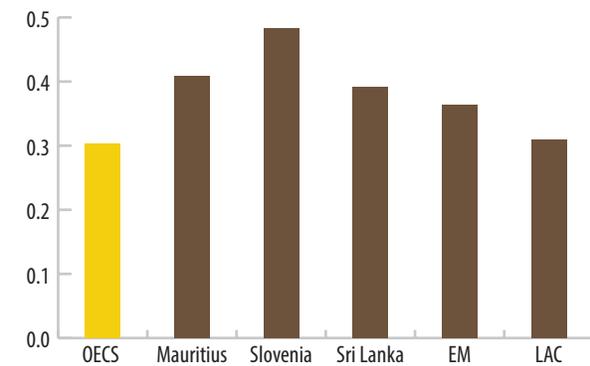
Source: WDI (2015).

OECS and Slovenia is 0.18, which is approximately one standard deviation of the 2013 index across the world.

With reference to the components of the comprehensive financial development index, the OECS performs less well in the financial market indicators. Figure 3.5 shows the composition of the financial development index used herein. As expected, the OECS performs well in the depth of financial institutions measure, as one of inputs to this sub-measure is private credit to GDP. However, in financial intuitions in the areas of access and efficiency it performs less well. The main factor that lowers the score of the OECS is the financial market scores. These are measures of the demand side – including the levels of equity and debt market developments.

The relationship between financial development and economic growth is well recognized in both the growth

Figure 3.7 Financial Development Index



Source: Sahay et al. (2015a).

and finance literature. Economic theory suggests that well-functioning financial intermediaries and markets are the conduit to reduce information asymmetries, facilitate risk sharing and mobilize savings. This then leads to a more efficient resource allocation and, thus, may foster long-term growth.¹⁵ A large empirical literature provides evidence that financial development matters for growth. However, there is less consensus as to whether the effect is mainly due to banks, stock markets or both. The “finance-led growth” hypothesis states that financial development exerts a positive and causal effect on real economic output. This is mainly supported in cross-country studies that focus on bank development proxies.¹⁶ When stock market development is also considered, either the direction of causality becomes

15 See (Greenwood J. a., 1990), (Levine R. , 1991), (Bencivenga, 1991), (Greenwood J. a., 1997) and (Blackburn, 1998).

16 (King, 1993), (Levine R. N., 2000), (Calderón, 2003) , (Christopoulos, 2004), (Rioja, 2004) and (Loayza, 2006).

Figure 3.8 Growth & Financial Development

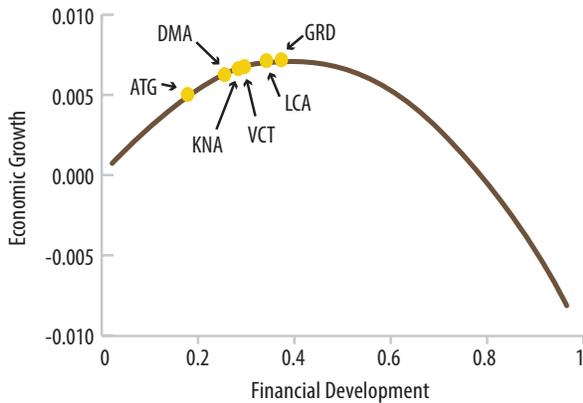
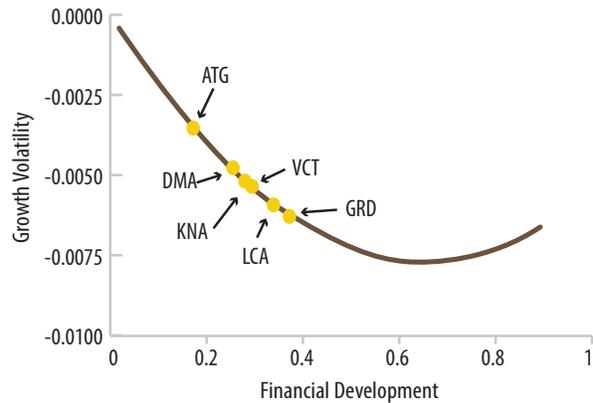


Figure 3.9 Volatility & Financial Development



Source: Authors' own calculations using the financial deepening index developed by the IMF in Sahay and others (2015a). Note: The curve in Figure 3.8 shows the predicted effect of financial deepening on growth for each level of the index, holding fixed other controls. The curve in Figure 3.9 shows the predicted effect of financial deepening on growth volatility, holding fixed other controls. Growth volatility is measured as the standard deviation of GDP growth rates over a five-year moving average.

more difficult to assess or the impact of banking sector development on growth is negative.¹⁷

More recently, evidence points to a more complex relationship between finance and growth that may be non-linear. Sahay et al. (2015a) develop a new and broader measure of financial development and find that the effect of financial development on economic growth is bell-shaped. The authors also present evidence that increased financial development is positively related to economic growth at lower levels of financial development, but that economic growth is weakened at higher levels of financial development. Cecchetti and Kharroubi (2015) show that an exogenous increase in finance may disproportionately benefit high collateral/low productivity projects and affect total factor productivity growth negatively. These authors also show that, in a model with skilled workers and endogenous financial sector growth, skilled labor will tend to absorb labor talent with the financial sector growing more quickly at the expense of the real economy. Based on these findings, the authors conclude that financial growth may disproportionately harm financially dependent and R&D-intensive industries.

The level of financial development has also been shown to affect the level of volatility in an economy. Aghion et al. (2010) identified a transmission channel through the existence of credit constraints in the economy. In the absence of financial frictions, long-term investment is believed to be counter-cyclical because

the cost of long-term investment is lower in recessions. Moreover, Carneiro and Hnatkowska (2016) argue that when domestic financial markets are under-developed, domestic households and firms face binding financial constraints that become tighter in bad times, and this could amplify the effects of interest rate fluctuations on domestic activity. To the extent that higher volatility leads to lower investment rates, output and consumption, it will result in lower economic growth and welfare.

Following the literature above, the non-linear relationship between comprehensive financial development and growth as well as volatility also holds for the OECS countries. We have confirmed empirically the non-linearity in the association between comprehensive financial development, growth as well as volatility for the OECS countries (Figure 3.8 and Figure 3.9). Using the FD index, our results are unequivocal that comprehensive financial development impacts growth positively. However, this positive effect weakens at higher levels of comprehensive financial development and then eventually turn negative portraying a bell-shaped relationship between growth and financial development. We have also confirmed the existence of a non-linear relationship between comprehensive financial development and volatility. As a mirror image of the dynamics between financial depth and growth, financial development initially lowers volatility up to a certain point where it starts to create additional volatility (Figure 3.9). Given a low FD index of 0.3 for the OECS on average out of 1.0, this suggests that there are additional net benefits to be de-

¹⁷ (Beck, 2004), (Shen, 2006), (Arcand, 2012).

rived amongst OECS countries from strengthening their financial sector in order to foster economic growth and lower volatility, given the minimal scope of policy design.

The results above strongly demonstrate that there is sufficient room for the OECS to improve its comprehensive financial development, which will in turn contribute positively to economy growth and in reducing volatility. In both Figure 3.8 and Figure 3.9 the position of each of the six OECS countries is well before the inflexion point, beyond which further comprehensive development of the financial sector may have detrimental effects to economic growth and volatility. Given the high level of credit to GDP, the OECS should strive to reorient its financial sector to improve its comprehensive level of financial development. This reorientation – on both the supply and demand side – will positively contribute to economic growth and stability. The subsequent section explores specific policy options to reorient financial so that it could be more supportive of: (i) lower volatility; (ii) enhanced economic growth, and (iii) a more effective fiscal policy.

Entry Points to Reorient Financial Development in the OECS

To reorient financial development in the region to be more comprehensive, a number of challenges need to be addressed. Over the last decade, the OECS countries have made progress to further develop their financial systems. However, there is scope to reorient financial development in the region so that it less prone to high collateral-low productivity projects, less likely to create asset price bubbles and is able to contribute to enhancing economic growth and reducing volatility. This section discusses entry points across three areas: (i) reducing volatility; (ii) enhancing economic growth, and (iii) effective fiscal policy.

Reorienting Financial Development to Reduce Volatility

More comprehensive and reoriented financial development can significantly contribute to volatility reduction in two main areas in the OECS. The first is through financial instruments and institutions that are volatility reducing. Better and more sustainable savings instruments, a stronger insurance market and the development of a deposit insurance scheme can all contribute to reducing volatility. The second is through

restoring the stability of the banking sector itself. As shown above, the sector has come into a period of stress – and this has directly increased volatility. Tackling the source of the stress directly can help reduce volatility in the region.

Financial Instruments and Institutions for Volatility Reduction

It is well noted that financial instruments such as savings and insurance, and institutions such deposit insurance help economic agents better manage shocks and smooth consumption. This sub-section provides an overview of savings, insurance and deposit insurance in the OECS to understand the policy options that can be adopted to reorient financial development towards improved volatility reduction.

The cost of financing is largely determined by the bank lending rate. As we have seen, banks are the principal source of financing for larger enterprises in the OECS. For smaller enterprises, too, bank lending is important: directly and also indirectly as a source of financing for the firms that provide them with trade credit. The ECCU has a statutory minimum savings rate that all regulated entities must pay to savings deposits. In a competitive market, the bank lending rate is equal to the cost of lending. The cost of lending consists of the cost of the necessary funds—for simplicity, we will take this to be the rate the bank pays on deposits—and on other costs. In a competitive market the ‘spread’—the difference between the lending rate and the deposit rate is equal to the sum of these other costs. If the market is not competitive, banks will be able to raise their lending rates and/or lower their deposit rates, and the spread will be larger than the sum of the costs.

If the demand for loans increases then both the lending rate and the deposit rate will rise. If the supply of deposits increases then both the deposit rate and the lending rate will fall. An increase in ‘other costs’ will cause the spread, and so the lending rate, to increase. In the ECCU, this simple picture is altered by the imposition of the Minimum Savings Deposit Rate (MSDR). This is a regulation that sets the minimum rate that banks may pay on savings deposits. Its level is determined periodically by the Monetary Council of the ECCB. The MSDR was changed most recently in April, 2015, when it was lowered to 2% from 3% (where it had been since August 2012).

The effect of MSDR is that by setting the deposit rate at a level above the market-clearing rate it creates an excess supply of funds. The supply of deposits at that rate is greater than the demand for loans at that rate plus the spread. The difference between the two is 'excess liquidity'—funds the bank is borrowing but unable to lend profitably.

The MSDR has two effects on the lending rate. The first is direct: if the lending rate is the deposit rate plus the spread, and if the spread is unchanged, then raising the deposit rate to the level of the MSDR will raise the lending rate. The second effect is indirect. The excess liquidity created by the MSDR represents a fixed cost to the banks: they have to pay interest on funds they take in but are unable to lend profitably. This increase in fixed costs increases the spread, further raising the lending rate, reducing the amount of lending and exacerbating the excess liquidity. A study by the ECCB found empirical evidence of this effect. Of course, the MSDR will have these effects only if it is above the market-clearing rate. If it is below the market-clearing rate, it will be irrelevant and have no effect at all.

The decrease in the demand for loans and the increase in the supply of deposits should have led to a significant fall in the rate on savings deposits. In the United States, the rate on savings deposits fell, in the same period, to close to zero and has remained there ever since: today, the average rate on MMAs (a popular type of savings deposit) is 0.11%. The market-clearing rate in the OECS today is probably similarly close to zero. So a MSDR of 2% is effective, and it is probably raising the lending rate by significantly more than 2% by creating excess liquidity.

This is an example of 'financial repression' and the precise motivation for the MSDR is unclear. Perhaps it is a politically popular subsidy for savers or an extension of the welfare system. Perhaps the MSDR is a way of bailing out the national social security schemes which deposit a large part of their funds in the banks. Nevertheless, the MSDR is an example of the broader phenomenon of 'financial repression'—the suppression of market-driven financial activity as a result of government involvement in the financial system and of poor management of government finance. The effects of financial repression in general are to raise borrowing rates for the private sector and to reduce the availability of financing.

Although the MSDR is good for savers in the short-run, it has and will have deleterious long-term effects on the financial system, and less distortionary savings instruments and sustainable welfare programs should be developed for the OECS population. Savings instruments should not be held captive to the remainder of the financial system – as this too can actually increase systemic volatility. Rather less distortionary instruments are needed – perhaps even Unit Investment Trusts – to access foreign markets domestically could be developed. From the welfare perspective, more targeted programs should be developed to the extent that the MSDR plays a strong welfare role.

In addition to changes to the savings market, strengthening regulation is critically needed in the insurance sector. Drawing the lessons from the failure of CLICO/BAICO, a new insurance law was drafted in 2013. One innovation of the law is to create a single financial space, that is insurance companies would get a single license to operate in the 8 ECCU countries. In return they would have to increase their minimum capital and be subject to stronger prudential standards. The bill provides the supervisory with stronger corrective action and intervention powers. The insurance bill was drafted together with the bill establishing a single supervisor for non-bank starting with insurance: Eastern Caribbean Financial Services Commission (ECFSC). The purpose is to optimize supervisory resources and make them more efficient and better able to supervise multi-country insurers. However the insurance bill faces opposition from small insurers, which would face a consolidation process, and the bill on the single non-bank supervisor has encountered opposition from the country supervisors. Both bills should be urgently approved to ensure financial soundness and more efficient supervision.

The overcrowding of financial institutions has adverse implications for supervision and harmonizing this should be a long term goal. The reality of eight different jurisdictions means that the required supervisory apparatus is subject to an 8 times multiplier effect, being applied to a number of licensees that is already much larger than necessary. Based on data provided by the ECCB, the 61 regionally licensed insurers actually comprise a group of 161 separate registrants because most of the insurers are licensed in more than one of the eight jurisdictions (see Table 3.1). The creation of a single non-bank supervisor should also be considered,

Table 3.1: Number of Insurers

Country/ Region	Population	No. of insurers	Insurers per 100,000
ECCU	600,000	61	10.17
Bahamas	383,054	29	7.57
Barbados	283,380	26	9.17
Belize	351,706	15	4.26
British Virgin Islands	32,680	1	3.06
Trinidad	1,354,483	24	1.77
UK	64,559,135	911	1.41
Puerto Rico	3,548,397	54	1.52
Canada	35,543,658	233	0.66
Panama	3,867,535	28	0.72
Germany	80,970,732	560	0.69
Jamaica	2,720,554	18	0.66
Dominican Republic	10,405,943	31	0.30

Source: Individual country Insurance Commissions, WDI.

and made a long term goal. In 2013, as a lesson learned from the failures of BAICO and CLICO, the ECCU countries agreed to set up a single non-bank supervisor for insurance, credit unions and offshore businesses, which would start with insurance. In addition, the quality of supervision of credit unions is uneven across countries, and a regional body could implement the best practices in the least advanced countries. These changes in harmonized supervision, will help strengthen the insurance market particularly, and by doing so will contribute to a reduction in volatility.

The lack of an explicit financial safety net is a glaring gap from both the stability and depositor protection perspective. The OECS countries are amongst the few middle-income countries without explicit deposit insurance.¹⁸ Instead they have an implicit guarantee on the deposits, which, in the absence of fiscal space, is not fully credible. The tight fiscal situation severely constrains the governments' capacity to underwrite the deposit base. In addition, the provision of emergency liquidity assistance by the ECCB is restricted by the currency board. Therefore it is critical that the foundations for a formal deposit insurance scheme should be put in place once the system has been sufficiently strengthened,

and could even be used as an incentive for banks to strengthen their balance sheets.

A new deposit insurance scheme should follow the International Association of Deposit insurance (IADI) elements, in addition to precluding legacy issues from affecting the new scheme. The IADI essential elements for an effective deposit insurance provide an excellent framework for devising new schemes. The four elements are: (i) limited but credible limits for insured deposits; (ii) adequate funding for the deposit insurer and explicit back-up funding to allow the fund to respond to a number of institution failures at once; (iii) an effective public awareness campaign to make sure that depositors know the rules on coverage and are aware of the extent of and limits to existing compensation arrangements, and (iv) an effective deposit insurance system requires certain prerequisites including the presence of a working supervisory framework and good coordination among all members of the financial safety net. Finally, in the context of the ECCU it must be the case that legacy issues do not impair the viability of the scheme.

Restoring Banking Sector Stability to Reduce Volatility

The banking sector is currently in a position of instability, and restoring the stability of the banking sec-

¹⁸ Out of the 28 middle-income countries without explicit deposit insurance, 6 are in the OECS (WB staff calculations from Demirgüç-Kunt, Kane, & Laeven (2014)).

tor will itself contribute to reduced volatility. In the aftermath of the financial crisis, the banking sector in the OECS has experienced a period of prolonged stress. Given its size, this stress has increased volatility in the region. This has been manifested by increased NPLs, lower profitability, higher bank fees and three resolved banks over the past five years. Addressing this very stress will contribute to more comprehensive financial development and reducing volatility.

The new Banking Act is a significant legislative improvement across the ECCU and its operationalization will be critical for the future stability of the region. As of early 2016 all eight member countries of the OECS have now passed the new Banking Act. This is very welcome as it provides the foundation for a stronger banking sector. This has strengthened the regulatory and supervisory frameworks, including by introducing higher minimum capital requirements, a more effective resolution of failed banks, and a stronger depositor protection. Looking ahead, enhancing and establishing supervisory procedures to meet the new legislation will be critical to underwrite the stability of the banking system and thereby reduce volatility that has been created from banking sector weaknesses.

The diagnostic work to assess the strength of the banking system has now been completed, and commensurate supervisory as well as regulatory actions will be required to strengthen the commercial banking system. An extensive diagnostic exercise was undertaken to assess the degree and spread of commercial bank strengthening needs. Now that this has been completed, a comprehensive strategy is now needed to collectively buttress the foundation of the financial sector. Given the prevailing efficiency and business models of the sector, a focus on consolidation and leaner commercial banks will augur well for both the strength of the banking system as well as its ability to serve the needs of the economy.

Aside from strengthening the banking system, a number of key steps have been taken to better manage future NPLs. In the long run, a stronger insolvency framework will be a key enabler to helping banks better manage collateral collections. However foreclosure is last resort and yields the lowest recovery rates, and therefore efforts should also be made to help the system consider liquidation, receiverships and reorganizations within the insolvency frameworks. There is incipient reform in St. Lucia and St. Vincent and the Grenadines

along these lines, and this should be regionalized. Further, when fully operationalized, the new Banking Act will reduce NPLs classification challenges and raise loan loss provisioning standards. Finally, the new Appraisal Institute that has been established, that will harmonize real estate appraisals across the region and reduce arbitrage. On the other hand, provisions should be assigned to debtors (rather than to loans), with more frequent reviews and cash flow analysis to determine categories; in addition provisioning levels should be more stringent, while write-off standards could also be strengthened.¹⁹

For current NPLs, more concerted efforts will be required to swiftly dispose of and thereby recognize these losses. The World Bank has recently released a toolkit for public asset management companies (AMC).²⁰ An AMC is a statutory body or corporation that assumes the management of distressed assets and strives to recoup the public cost of resolving them. Other options are to improve the framework for debt enforcement so as to facilitate the enforcement of collateral. This goes beyond insolvency reform but does take considerable time, as demonstrated in Latvia. On the other hand, if distressed assets are confined to limited number of institutions, special purpose vehicles can be established as a subsidiary of the bank or its holding function in order to work out the distressed assets. A final option is to attract private distressed asset funds. These usually have a minimum size threshold (and are therefore not suited to small loan sizes) and require higher rates of return. They do, however, require no public funds and are usually more expedient than public agencies.

The World Bank public AMC toolkit highlights important preconditions that must be in place. Public AMCs require assessing whether there exist the conditions to ensure that the objective of the effective management and sale of distressed assets through a public entity. The preconditions relate to (i) a commitment to comprehensive reforms, (ii) a systemic problem and public funds at risk, (iii) a solid diagnostic and critical mass of impaired assets, (iv) a tradition of institutional independence and public accountability, and (v) a robust legal framework for bank resolution, debt recovery, and creditors' rights. The analysis of nine case studies of AMCs in the toolkit shows that AMCs have a mixed track record.

¹⁹ For instance a prudential requirement that after a certain time past due the loan be written off; or raising risk-weights on impaired assets beyond a certain vintage.

²⁰ World Bank (2016) Public Asset Management Companies: A Toolkit

AMCs are costly to establish and to operate; therefore their costs and benefits should be assessed carefully before they are established.

A regional Asset Management Company (AMC) could help clear the vast amount of NPLs. A regional public AMC would offer various advantages including:

- Address the lack of scale and depth of property markets at the national level: a regional AMC would be able to bundle loans from different banks and countries to facilitate their sale to investors.
- Address constraints in country insolvency and foreclosure legislation: the regional AMC has been granted special powers to expedite the management of bad loans, which draw on the most advanced country legislation and would benefit all the ECCU region.
- Ensure transparency: the regional AMC has been set up as a statutory body owned by all governments. It would be subject to strong transparency requirements and the scrutiny of all country Parliaments.
- Minimize corruption: the distressed asset management business is prone to corruption. A regional body would be less prone to local political interference and pressures from the banks.
- Attract specialized expertise: a regional institution with a critical mass of assets would be more able to attract international and expert staff than a local one. Currently there is very limited expertise in distressed asset management in the ECCU.

As of early 2016, Eastern Caribbean Asset Management Corporation (ECAMC) Agreement was signed by seven OECS member countries²¹ and the ECAMC legislation had been passed in seven territories.²² This legislation provides for: time bound safeguards that limit the period for purchasing assets and a fixed sunset clause; financial safeguards for initial equity, a leverage ratio; a minimum capital ratio of 2 percent; and, a dual mandate: for the AMC to (i) purchase NPLs from solvent institutions; and (ii) act as a receiver and thus managing NPLs of insolvent institutions. This in addition to its special powers to expedite the management of bad loans, which draw on the most advanced country legislation and would benefit all the OECS region.

²¹ Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, St. Lucia and St Vincent and the Grenadines.

²² St. Lucia which await assent, Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat and St Vincent and the Grenadines.

The outcome of the process of managing and resolving existing NPLs should be favorable if the right tools to address existing NPLs are used. International best practice has shown that resolving NPLs is tricky, especially once political economy implications are considered. What is critical is that the management and resolution of existing NPLs is swift and non-reversible. This could be a combination of a public AMC, working with private distressed asset funds as well as improving the framework for debt enforcement. Provided that these tools are designed well, have sufficient scale and use public resources efficiently, the banking sector and the inherent volatility therein would strongly benefit from the removal of this heavy strain on its balance sheet.

Reorienting Financial Development for Enhanced Economic Growth

As has been shown above, the financial sector of the OECS is overly reliant on the high collateral low productivity model and is prone to asset price bubbles, and therefore needs to reorient towards more comprehensive financial development for achieving enhanced economic growth. This section covers three areas that could help reorient financial development and support growth: (i) long-term finance; (ii) SME finance, and (iii) the enabling environment and credit infrastructure.

Long-Term Finance

The scarcity of long-term credit in developing market economies is recognized as an obstacle to productivity growth and a source of volatility which further hampers growth. Investments in infrastructure, factories and equipment, new housing and commercial business, research and development and education are all necessary to expand the productive frontier. Firms and households need to fund these investments through financial markets. The scarcity of long-term credit is one of the most important impediments to the operations of firms in emerging markets; rollover risks prevent borrowers from undertaking long-term investments with short-term loans which in turn negatively affects productivity.²³ Scarcity of long-term financing has also been argued to increase the pro-cyclicality of investment, amplifying macroeconomic volatility and lowering growth. According to the 2014 Financial Development Barometer, 75 percent of respondents indicated

²³ (Demirgüç-Kunt, 1999), (Schiantarelli, 1997), (Schiantarelli F. a., 1997), (Jaramillo, 2002), (Almeida, 2009)

that low use of long-term finance in their countries was primarily a supply problem.²⁴ Extending the maturity structure of financing is at the core of sustainable financial development.

Banking systems are the main providers of long-term financing to the private sector around the world.

Long-term funding is typically defined as debt (loans or bonds) over one year maturity (following the definition of fixed investment in National accounts). The Group of 20 (G-20, 2013) defines it, however, as debt of over 5 years maturity. Equity, as it is not repayable, can also be considered long-term finance. Firms around the world obtain most of their funds to fund fixed assets from banks, regardless of their size. While firms in high income countries raise more long-term and debt from capital markets that firms in developing countries, over 60 percent of their investments is funded by bank loans. Households' main long term investment, housing, is also overwhelmingly funded by banks. Capital markets are also important indirect source of long-term financing to the extent they fund banks provision of long-term credit through purchases of long-term bank bonds and equity or through investments in long-term deposits in the case of pension funds and insurance companies.

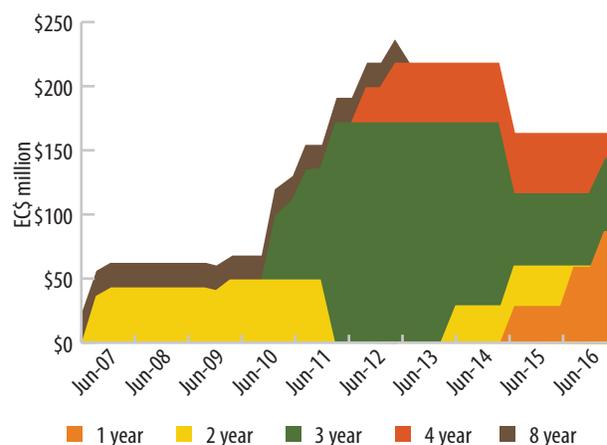
In the OECS there is a need for more long-term finance for infrastructure and housing finance.

Given the region's susceptibility to natural disasters, the disaster risk mitigation (DRM) agenda is steep. Long-term financing is required for such projects. However, the market for infrastructure finance is not very well developed. Granted it is a small market, however given the amount of liquidity in the market it would be worth exploring to what extent long-term infrastructure projects can be securitized either by banks or the capital markets. However, in housing more has been done through the creation of the Eastern Caribbean Home Mortgage Bank (ECHMB).

Over most of its existence the ECHMB has acted as a liquidity provider for mortgage lending.

The ECHMB's stated objective is promoting the development of the secondary mortgage market within the Member States. Its principal activity is buying and selling mortgage loans on residential properties, in order to develop and maintain a secondary market in these instruments. As such, the Bank aspires to be the principal provider of

Figure 3.10 ECHMB Bonds Outstanding by Tenor



funding liquidity for the Primary Lenders. Only recently has the ECHMB sold back mortgages. Thus for most of its existence the ECHMB has not operated as a two-way liquidity buffer, instead it has only generated liquidity. The ECHMB's operations are by definition limited to the mortgage market. While the Primary Lenders may have recycled the funds received from sales of mortgages into other lending lines, providing general liquidity to the banks is not part of the ECHMB's mandate.

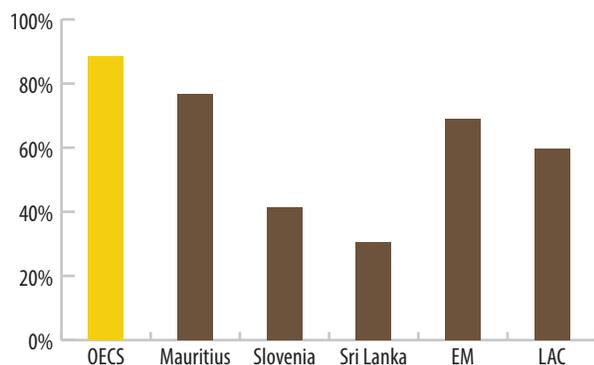
Of late, the same patterns of moving to shorter tenors hold true for the ECHMB as it does for the sovereign debt market, although on a smaller scale and involving fewer tenors.

ECHMB began its bond funding in early 2008 using a combination of 8-year and 2-year debt. Beginning in mid-2011 it shifted to using 3-year and 4-year debt. Then in late 2013 it moved to using 1-year and 2-year maturities. The overall picture is a shift to short-term bonds, with the attendant lower rates. Lately the ECHMB seems to be relying on 1-year securities almost exclusively.

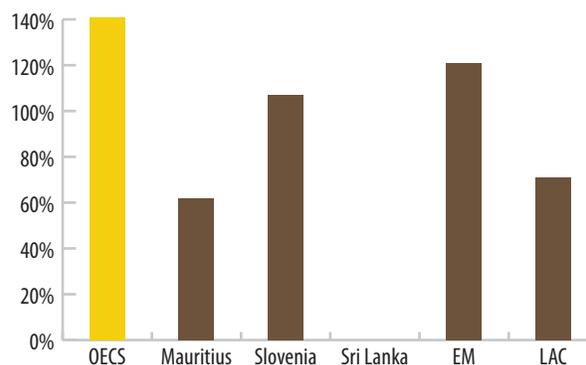
Therefore the long-term finance agenda needs to be reinvigorated to enhance economic growth.

One clear departure from the high collateral low productivity model is greater long-term finance for productive uses. This is both for banking as well as the capital markets. Indeed, it is worrisome that the capital markets for sovereign debt have become more short term. Efforts to develop infrastructure finance, improve the ECHMB mandate and the market for housing as well as work on long terms corporate financing will help to reorient financial development into being more com-

24 Financial Development Barometer. www.worldbank.org/financialdevelopment.

Figure 3.11 Loans Requiring Collateral

Source: OECS (2014 Compete Caribbean Survey), Mauritius (2009 Enterprise Survey), Slovenia (2009 Enterprise Survey), Sri Lanka (2011 Enterprise Survey), EM and LAC are Enterprise Survey averages 2009-2011.

Figure 3.12 Collateral Value to Loan (%)

Source: OECS (2014 Compete Caribbean Survey), Mauritius (2009 Enterprise Survey), Slovenia (2009 Enterprise Survey), no data for Sri Lanka, EM and LAC are Enterprise Survey averages 2009-2011.

prehensive and thereby contribute to enhanced economic growth.

SME Finance

Credit markets for Small- and Medium-Sized Enterprises (SME) are notoriously characterized by market failures and imperfections, and this is the case in the OECS as well. These include information asymmetries, inadequacy or lack of recognized collateral, high transaction costs of small-scale lending and perception of high risk. This is also because commercial banks are restricted by the central bank in types of collateral they consider to be acceptable. In weak informational environments, commercial banks traditionally display a preference for consumer lending which is perceived as less risky. As can be seen in Figure 3.1 and Figure 3.2 the stock of credit has begun to decrease over the recent past. This decrease has affected non-personal lending more than personal lending.

One main structural challenge in SME lending in the OECS is represented by the over reliance on collateralized lending. Given that lending to SMEs is risky, many financial institutions require collateral. However, when the lending culture becomes over collateralized, then few economically viable projects get funded as lending decisions are over determined by the quality of the collateral, and less so on the strength of the business plan. Figure 3.10 and Figure 3.11 show the percentage of granted loans that require collateral and the collateral value to loan value for loans to enterprises. In 2014, 88 percent

of loans to enterprises (including large enterprises) required collateral in the OECS. This is much higher than the LAC average of 60 percent. Further, loan size in the OECS have much larger discounts with respect to the underlying collateral. In 2014, the collateral to loan value was 144 percent. This certainly reflects the same concern about inflated asset prices, however the data from other peer countries and regions shows that for its level of income, this ratio is very high.

The second structural challenge in SME lending is the complete lack of credit information systems. Information asymmetries contribute to higher credit spreads and lower financing for SMEs. The OECS neither has credit bureaus nor credit registries. This lack of information on borrowers is a key structural challenge. In fact all six OECS countries have a global rank of 152 out of 185 countries in the World Bank's getting credit indicator of its Doing Business rankings, and this is primarily due to no credit bureau or registry coverage, but also because of creditor rights (Figure 3.13).

More recently, there have been signs of a cyclical stress in intermediation to SMEs as a result of the financial crisis and the subsequent increase in NPLs. The prevailing trends from Figure 3.1 and Figure 3.2 show that credit has begun to contract across the OECS. As asset quality has deteriorated and in the context of poor information on borrowers, financial institutions have pivoted their portfolios towards personal lending. Figure 3.2 shows that the only lending segment that experienced positive credit growth in 2012, 2013,

and 2014 was personal lending. Interviews with financial institutions have confirmed that credit risk for SMEs has now increased as a result of the past experience of SME portfolios.

There is a risk that this cyclical stress could further worsen the structural challenges in SME lending if left unaddressed. This evolving credit market imperfections requires attention, and there is a small possibility that SMEs financing comes to stall, which would have worrying consequences for economic growth and job creation. Some initiatives have already been attempted, however a review of 11 regional and national interventions (mainly grant-based) showed that they suffered implementation and funding challenges, and have been unable to fully close the gap.²⁵

As the engines of economic growth, countries respond in four main ways to addressing such market imperfections. The first is through liquidity support, the second through directed lending, the third through building credit infrastructure and the fourth through guarantee schemes. Given the lack of fiscal space, the limited number of state banks and no historical precedent of directed lending, as well as the level of liquidity in the system suggests that the latter two would be instruments to consider to reverse the tide of credit away from SMEs. This would directly help in the reorientation of financial development towards being more comprehensive, and contribute to enhanced economic growth.

On credit guarantees, the World Bank has recently released a set of principles as well as necessary pre-conditions that are required when setting up such schemes. Partial credit guarantee (PCG) schemes provide third-party credit risk mitigation to financial intermediaries with the objective of increasing access to finance for SMEs. This is done through the absorption of a portion of the lender's losses on the loans made to SMEs in case of default, in return for a fee from the financial institution. The appeal of PCGs is partly due to the fact that they typically combine a subsidy element with market-based arrangements for credit allocation, therefore

leaving less room for distortions in credit markets than more direct forms of intervention such as state-owned banks. The recently released principles provide sixteen guidelines to maximize their success.²⁶

There is a continued need for training and upgrading of skills of SMEs to help facilitate their financing. A short 2015 World Bank survey of SMEs across the OECS showed that 40 percent of firms lacked business plan development skills. There is a critical gap in that many financial institutions do not have the full expertise to assess credit for SMEs, while many SMEs do not have the requisite training or skills in accounting or business planning to secure financing. There are a number of regional initiatives which have shown promise – including the Organization of American States (OAS) Small Business Development Centers, the OECS Commission's Competitive Business Unit as well as the recent due diligence conducted by the German Savings Bank. It is important that these efforts are harmonized and coordinated with the supply side instruments chosen to address the evolving credit market imperfection for SMEs.

Enabling Environment & Credit Infrastructure

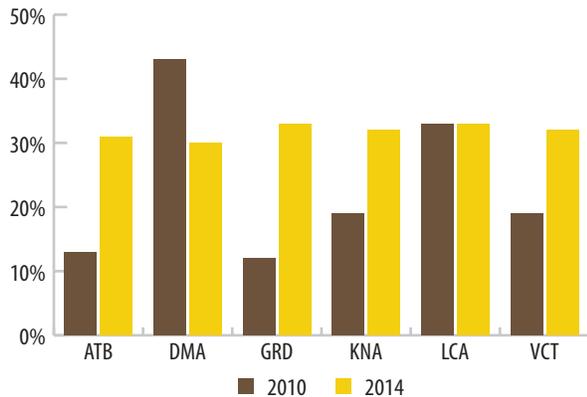
Access to financing remains a key obstacle for enterprises across the OECS, despite the high number of institutions and the high level of credit to GDP. Between 2010 and 2014 the percentage of enterprises that report access to finance as the main obstacle to doing business has increased from an average of 23 percent of 28 percent. Figure 3.12 shows the number of firms in each OECS country reporting access to finance as their main obstacle. This has increased in every country except for Dominica. Figure 3.13 shows that obtaining credit remained an important deterrent to the business environment in the Doing Business surveys of 2007 and 2015. For all the countries in the region, their ranks have worsened – this is a result of other countries improving their credit bureau and registry coverage as well as their depth of credit information.

Credit reporting systems are critical components to reduce information asymmetries and allow lenders to more accurately evaluate risks. Good and reliable information can ease the adverse selection problem and lower the costs of credit for good borrowers. For example in Egypt, the average percent of sub-standard loans decreased by 0.94 percentage points between 2009-11

²⁵ Dominica Small Business Unit, Dominica Youth Business Trust, Waitukubuli Entrepreneurs L'évé, Dominica Women Entrepreneurs Fund and Startup Stars: Youth Special Fund ,Grenada Industrial Development Corporation Technical Assistance ,Grenada Ministry of Agriculture & Fisheries Lending Program, Grenada Small Business Development Fund, St. Lucia National Competitiveness and Productivity Council, Antigua Small Business Credit Guarantee Scheme, ECCB Eastern Caribbean Enterprise Fund, and the ECCB Export Credit Guarantee Scheme

²⁶ World Bank (2015) Principles for Public Credit Guarantees

Figure 3.13 A2F Main Constraint (%)



Source: 2010 Enterprise Survey and 2014 Compete Caribbean Survey.

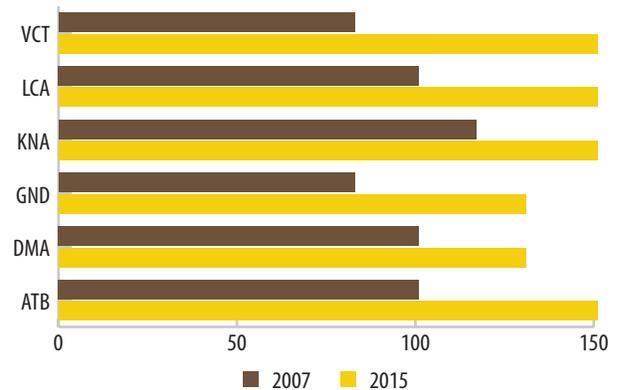
after credit bureau was established in 2007. Further there is evidence that this information can also increase credit volumes and improves access to credit. Data show that there are 89 percent higher approvals in cases where full-file information sharing exists, 11 percent higher approvals where information is collected from traditional and non-traditional lenders; and in another case 12 percent more firms have access to bank financing when a credit bureau exists.²⁷ Finally, these systems support the introduction of credit scoring and automated underwriting, which lowers lender’s operational costs and improves profitability.

A draft credit reporting bill has been prepared for the OECS region and once passed this can facilitate the beginning of a new credit bureau. Although the legislation is ready, it is important to finalize a thorough consultation process to share the changes that this new legislation will bring. As with any new legislation there are uncertainties and these need to be fully understood before embarking on its implementation. Given the OECS member states are small island economies, maximizing scale through the development of a single registry for the entire union is certainly preferable. Further, ongoing financial literacy and awareness raising for the general public and for all other stakeholders should be perused.

The second pillar of credit infrastructure is secured transactions which provides greater flexibility in loan

27 Love and Mylenko (2003): Credit Reporting and Financing Constraints, World Bank Policy Research Working Paper 3142, October 2003; Barron and Staten (2003): The Value of Comprehensive Credit Reports: Lessons from the U.S. Experience.

Figure 3.14 DB Getting Credit Ranks



Source: World Bank Doing Business Survey.

transactions and in the property that can be used as collateral. In well-functioning markets this can increase the credit capital available in the local economy, creating a virtuous legal / economic environment. If the collateral registries also include movables, this allows SMEs to use movable assets – which comprise of 80 percent of SME assets in general – as collateral for a loan. There is evidence that this can increase the competitiveness of domestic economic actors: in China, the total number of commercial loans involving movable assets grew by 21% per year over 2008-2010, in comparison to a flat rate over the preceding period.²⁸ Finally, secured transactions provides certainty and transparency in the priority of creditors (including insolvency proceedings) and certainty in the rights of third parties, reducing risk and cost of credit.

There is an ongoing initiative in St. Lucia on the legal framework for movable secured transactions that could potentially be regionalized. As with the importance of any credit reporting system to be regional, so is the case for secured transactions. An OECS-wide secured transactions initiative could build on the work that has already commenced in St. Lucia. This could begin with the development of an OECS legal framework to support the implementation of a modern system of financing secured by movable assets, or the drafting and harmonization of local legal frameworks. Other options could include the possible development and design of an OECS security interest registry, and the building of local capacity to benefit from the new system, including stakeholder training.

28 Secured Transactions Advisory Project in China. IFC Advisory Services. International Finance Corporation. 2012.

On non-movable secured transactions – land – there is a need to work on land reform across the OECS and this could have substantial impacts for the financial and non-financial sector. Land reform is lengthy, cross-cutting and is not politically straight forward. However there is a strong need to harmonize and digitize land registries. The OECS has both a registered system and an unregistered system. A registered system provides conclusive evidence of the holders of rights in a particular property. While an unregistered system does not provide conclusive evidence of land ownership. In four territories there is a cadastral system (Anguilla, Antigua, St. Lucia and Montserrat), in St. Vincent and the Grenadines there is a deed system, while in Dominica and St. Kitts and Nevis, and Grenada there is conveyancing.

The last pillar of credit infrastructure is insolvency and creditor and debtor rights, and data from Doing Business 2016 show that reorganizations present the best proceedings of insolvency. Studies have shown that effective insolvency reform is associated with: lower credit costs; increased access to credit; improved creditor recovery; strengthened job preservation; promotion of entrepreneurship, and other benefits for small businesses.²⁹ Insolvency is often associated only with foreclosure, but there are four possible proceedings of insolvency: foreclosure, liquidations, receivership and reorganization. Data from Doing Business show that recoveries are 79 percent in reorganizations and only 30 percent in foreclosure.

In St. Lucia there are efforts underway at reforming the insolvency framework and the OECS would benefit from regionalizing this initiative. The new legislation addresses insolvency regulation of corporates, SMEs (such as sole proprietorships) and individuals. The new law is intended to be a model for the whole OECS region and beyond, and follows many practices already initiated by Jamaica and Trinidad & Tobago. Once the law is passed, outreach and training will need to be conducted to ensure effective implementation. Regionalizing this initiative across the OECS and ensuring coherence with the secured transitions reform would contribute greatly to the progression towards the single financial space.

Reorienting Financial Development for Effective Fiscal Policy

There is an important link between financial development and fiscal policy: sovereign debt markets. Around the world, governments finance fiscal deficits through public borrowing from the financial markets. The effectiveness of fiscal policy from this perspective depends on two key variables. The first is the interest rate of public debt and the second is the tenor of public debt. The confluence of financial market development and macroeconomic variables (such as inflation, country risk, and economic growth) determine the range of these two variables. Low interest and longer tenor debt allow governments to attain cheaper (in present value terms) public finance and facilitate better planning of medium to long terms public finance.

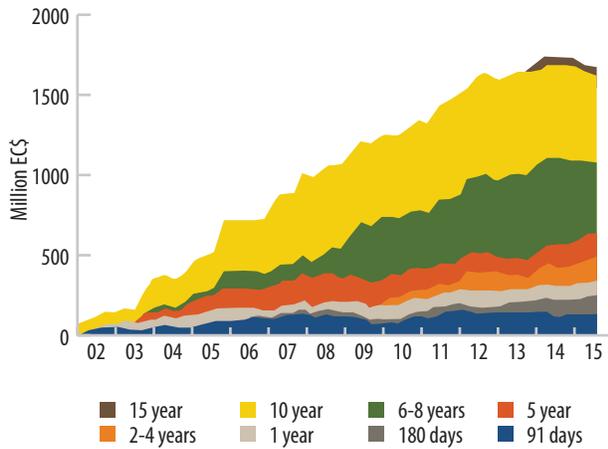
The Regional Government Securities Market (RGSM) handles both the primary market (offerings) and secondary market (trading) of the debt instruments issued by the OECS Member States. Today, five jurisdictions participate: Dominica, Antigua and Barbuda, Grenada, St. Lucia and St. Vincent and the Grenadines. The RGSM handles both treasury bills (91 days to 1 year maturities) and treasury bonds (maturities up to 10 years). The market was established in November 2002 and utilizes the ECSE's fully electronic platform. Auctions and trading are performed through the ECSE's trading system with transactions cleared and settled through its depository / registry subsidiary.

At first glance the government securities market offers a variety of tenors in growing numbers. Using auction data provided by the RGSM we have calculated the amount of government securities issued and outstanding through the ECSE, for all participating countries combined. Figure YY shows outstanding government securities in excess of EC\$ 1.6 billion, divided fairly evenly among the tenors. This would seem to indicate a wide choice of investment maturities. Indeed focusing on the outstanding tenor amounts over the nearer term (i.e., the last 5 years) reinforces the idea that there are a variety of longer term tenors available.

However, if one focuses on the levels of recent offerings among the available tenors it is clear that only a minimal amount of longer-term securities are being issued. The vast majority of auctions conducted on the RGSM are to rollover existing short term T-Bills (91 and

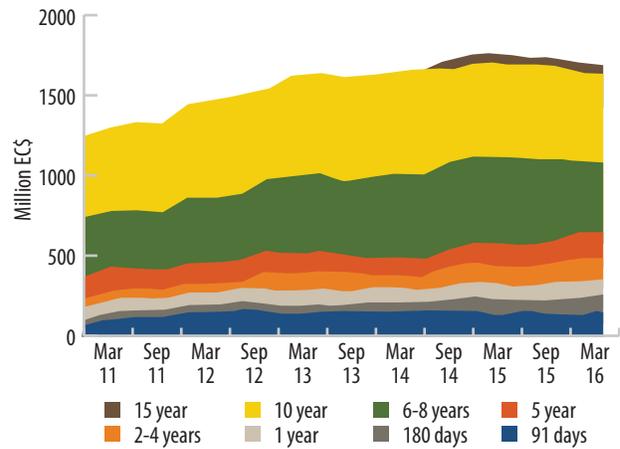
29 Araujo, Ferreira and Funchal (2012), Gamboa-Cavazos and Schneider (2007), Armour, Hsu and Walters, (2012), Gine and Love (2010) and Frisby (2007).

Figure 3.15 RGSM Outstanding by Tenor (2002-2015)



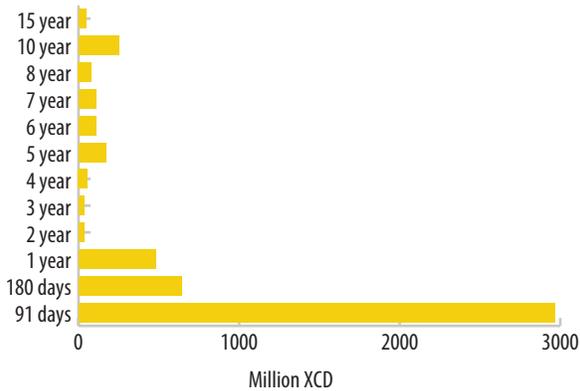
Source: RGSM.

Figure 3.16 RGSM Outstanding by Tenor (last five years)



Source: RGSM.

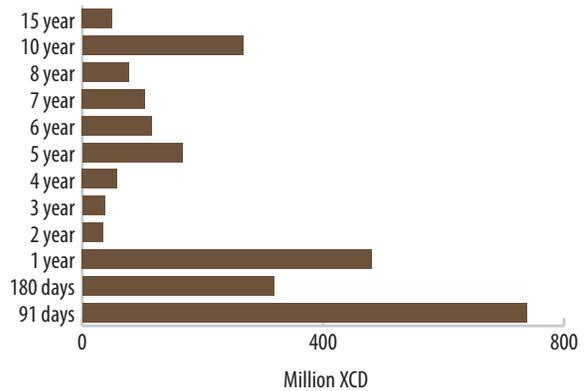
Figure 3.17 Amounts Issued 2011-2016



180 day securities and 1 year maturities). Even adjusting the offering amounts to recognize the rollover nature of the shorter-term offerings it is still clear that there are a few medium- to long-term securities being created. The 'inventory' of longer-term government securities is not growing appreciably.

Ignoring, for the sake of the argument, that some of the offerings of 2-year to 10-year bonds were to roll over previous longer-term debt, the total amount issued between 2011 through 2016 for these tenors has been EC\$ 925 million. This compares to EC\$ 5.1 billion in idle funds within the banks themselves, or 18%. It is clear that, even under the most generous analytical terms, the amount of offerings of longer-term government securities cannot be expected to absorb the

Figure 3.18 Amounts Issued Adjusted for Short-Term Rollovers 2011-2016



excess liquidity in the banking system alone. This also ignores the investable instrument needs of the credit unions, insurance companies, and pension funds (both Pillars I and II, and the private schemes).

This impression of a short supply of longer-term securities is borne out by a comparison of the secondary trading in OECS government securities compared to the available amount outstanding. In a developed capital market, short-term securities are known as "buy and die paper". This means that the investor purchases the securities for investment, holds until maturity, and then perhaps purchases again in the rollover issuance. One does not expect much if any secondary market trading in T-Bills (91 days to 1 year). The opposite is true for longer term maturities. It is expected that there is

a positive correlation between the time left to maturity for any given security and the level of secondary trading in that security. In other words, the longer the remaining maturity the more secondary trading expected.

Deviating from this norm, the secondary market for OECS government securities shows almost no turnover in government securities for all tenors. Again, while this might be expected for T-Bills, it is contrary to the normal market dynamic for longer term bonds. The investors buying T-Bonds intend (at least today) to buy and hold. The turnover rates for T-Bonds are extremely low compared to standard expectations; and thus the data reinforce the idea that longer-term government securities are in high demand / short supply for the financial sector's needs. Once acquired they are not traded out again in the secondary market.

Therefore, reversing the recent trend towards issuing shorter term securities and further developing the secondary market will have material effects on the efficacy of fiscal policy. Public debt markets have a range of policy levers and comprise of many stakeholders. Nevertheless exploring options that will lengthen the yield curve across the Member States and also lower interest rate profiles can provide enhanced stability to both the private and public sectors. With more predictable estimates of the cost of public debt, policy makers will be able to secure cheaper financing (in present value terms) and be better able to plan medium to long term public financing needs.

Conclusions

This chapter began by identifying the economic weaknesses that emanate from a large and frail financial sector. With banking assets at 166 percent of the region's GDP, the banking sector is indeed large. Insurance assets, the number of insurers as well as the size and number of credit unions also point to a large non-banking sector as well. Further, the aftermath of the 2008 financial crisis has put a strain on the banking sector. Asset quality has deteriorated and as a result bank profitability as well as credit growth have suffered. It would be remiss to conclude that, given the size of the sector, that further more comprehensive financial development is not warranted.

Through the exploration of a multidimensional measure of financial sector development, the results found in the literature of a non-linear relationship for financial sector development with growth and volatility were confirmed by adding the OECS countries. Following the approach in Sahay et al. (2015) it was shown that each of the OECS countries lies below the inflection point for economic growth and for volatility. This implies that reorienting financial sector development to be more comprehensive can contribute to reducing volatility, enhancing economic growth and facilitating more effective fiscal policy. This is particularly salient in the context of the currency board that anchors the exchange rate, the limited fiscal space as well as the service-based economies and implies that the financial sector is critical for continued economic growth and the enhanced management of risks.

Finally, the chapter identified policy options that could help reorient financial development. Improving savings instruments, strengthening the regional supervision of insurance, and establishing deposit insurance could all help economic agents better manage volatility. Restoring banking stability can reduce the systemic volatility that has emanated from the heightened stress that the banking sector has experienced over the past five years. The new Banking Act that has been passed provides the foundation for improved banking supervision and future consolidation. Developing long term finance for infrastructure and more housing in addition to developing tools for more effective SME finance against the backdrop of improvements to the enabling environment and credit infrastructure are critical for enhancing economic growth. Finally, this chapter highlighted the importance of reversing the short-termism in sovereign debt markets in the OECS and striving for a more active secondary market as a way to improve the efficacy of fiscal policy in the OECS.

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Chapter 4.

The Effects of Volatility, Fiscal Policy Cyclicalities, and Financial Development on Growth

Introduction

This chapter assesses empirically the impacts of terms of trade volatility, fiscal policy (pro) cyclicalities, and financial development on growth in the Eastern Caribbean. By considering the effects of the interaction between terms of trade volatility and fiscal pro-cyclicalities we intend to gauge (i) whether fiscal pro-cyclicalities exacerbates the negative growth effect of terms of trade volatility; and (ii) whether the mediating role of fiscal policy cyclicalities is particularly pronounced in the OECS as compared to other countries. This is an important policy discussion for a region that adopts a strong peg against the U.S. dollar since this arrangement limits considerably their ability to respond to shocks.

The main message from the analysis is that a more counter-cyclical fiscal policy stance and further financial development can mitigate the adverse growth effects of terms of trade volatility in the OECS region. We were able to arrive at this conclusion by using complementary empirical modeling strategies. First, in section 2, we follow Brueckner and Carneiro (2015) and estimate an econometric model using panel data on GDP per capita, financial development, and government spending for a sample of 175 countries over the period 1980-2010. These data are available from the Penn World Tables and the World Development Indicators. With this modeling strategy, we were able to benchmark the behavior of OECS economies against other countries in the world. Second, in section 3, following Carneiro and Hnakovska (2016), we used the results of a structural

model of the business cycle in the OECS to simulate the impacts of fiscal policy pro-cyclicalities and financial frictions on growth and other relevant macroeconomic aggregates for the region. Section 3 summarizes our results and discusses some directions for policy.

Empirical Approach

Our results are derived from a simple econometric model that represents the behavior of our variables of interest on growth. Our working hypotheses are that: (i) an increase in terms of trade volatility results in lower GDP growth; (ii) the negative impact of volatility on growth is more pronounced in less financially developed countries; and (iii) in countries where fiscal policy is more pro-cyclical. The econometric model for testing hypotheses (i)-(iii) is:

$$\text{Growth}_{it} = a_i + b_t + \alpha \text{Volatility}_{it} + \beta (\text{Volatility}_{it} * \text{FD}_i) + \gamma (\text{Volatility}_{it} * \text{ProCyclicalities}_i) + \phi \ln \text{GDP}_{it-1} + \epsilon_{it}$$

where Growth is the change in the natural logarithm of real GDP per capita in country i between period t and $t-1$. Volatility is the country-specific standard deviation of external economic. Following Rodrik (1998), we will use the standard deviation of countries' terms of trade as the measure of externally induced economic volatility. FD is a measure of financial development. Following the finance literature, our main measure of financial development is the GDP share of domestic credit to the private sector. Further, the chapter will present estimates where FD is instrumented by legal origin.³⁰

30 The law and finance literature, see, for example, La Porta

In our empirical approach, Procyclicality is a measure of the extent to which government spending responds to business-cycle variation in GDP. Formally $G_{it} = \theta_i G_{DPcyc_{lit}}$. The parameter θ captures the pro-cyclicality of government spending. That is, if θ is positive, then government spending increases when the cyclical component of GDP is positive (meaning, when GDP is above trend). We obtain data on θ from Frankel et al. (2013). Frankel et al. (2013) provide values of θ for a sample of 93 countries; we will use this data in the estimation of equation (1). In order to maximize coverage of countries when estimating equation (1), we apply the methodology of Frankel et al. and Carneiro and Garrido (2015) to generate values of θ for countries not covered by Frankel et al. (2013).³¹

In order to estimate the model and test our working hypotheses, we need to modify the original equation slightly. Differentiating equation (1) with respect to volatility yields:

(2) $d(\text{Growth})/d(\text{Volatility}) = \alpha + \beta * \text{FDi} + \gamma * \text{Procyclicality}_i$

In practical terms, this modification implies that for hypotheses (i)-(iii) to hold then the three coefficients in equation (2) will be negative, or $\alpha < 0, \beta < 0, \gamma < 0$.

In addition, in order to examine whether the coefficients $\alpha, \beta,$ and γ differ for the Eastern Caribbean, we need to augment the econometric model:

(3) $\text{Growth}_{it} = a_i + b_t + \alpha_1 \text{Volatility}_{it} + \beta_1 (\text{Volatility}_{it} * \text{FDi}) + \gamma_1 (\text{Volatility}_{it} * \text{Procyclicality}_i) + (\alpha_2 \text{Volatility}_{it} + \beta_2 (\text{Volatility}_{it} * \text{FDi}) + \gamma_2 (\text{Volatility}_{it} * \text{Procyclicality}_i)) * \text{OECS}_i + \phi_1 \ln \text{GDP}_{it-1} + e_{1it}$

where OECS is an indicator variable that is unity if countries are part of the Organization of Eastern Caribbean States. Note that $\alpha_2, \beta_2,$ and γ_2 capture the differences in effects that the variables of interest have on economic growth in OECS countries. This can be seen from differentiating equation (3) with respect to volatility:

(4) $d(\text{Growth})/d(\text{Volatility}) = \alpha_1 + \beta_1 * \text{FDi} + \gamma_1 * \text{Procyclicality}_i + (\alpha_2 + \beta_2 * \text{FDi} + \gamma_2 * \text{Procyclicality}_i) * \text{OECS}_i$

(5) $d(d(\text{Growth})/d(\text{Volatility}))/d\text{OECS}_i = \alpha_2 + \beta_2 * \text{FDi} + \gamma_2 * \text{Procyclicality}_i$

Table 4.1 provides a list of the variables used in the econometric analysis and their data sources. Table 4.2 shows bi-variate correlations. Summary statistics of the variables' first and second moments can be found in Table 4.3.

Graphical Analysis

A graphical examination of the data shows a negative relationship between volatility and economic growth.

Figure 4.1 plots on the y-axis countries' average GDP per capita growth (over five years); on the x-axis is the standard deviation of the terms of trade growth rate (also computed over a five year period). We see from Panel A in Figure 4.1 that for a sample of 175 countries terms of trade volatility has a negative average effect on economic growth. The coefficient from a bivariate regression that corresponds to the plot in Panel A of Figure 4.1 is -0.31; this coefficient is significant at the 1 percent level (p-value 0.007). Panel B shows that a negative relationship between terms of trade volatility and economic growth is visible also within the sub-sample of OECS countries. The coefficient from a bivariate regression that corresponds to the plot in Panel B of Figure 4.1 is -0.36; thus it is quantitatively very close to the slope coefficient that emerges in Panel A. Statistically, we cannot reject the hypothesis that the slope coefficient in Panel A is equal to the slope coefficient in Panel B (t-value 0.91).

Regression Results

The econometric results suggest that countries with lower terms of trade volatility tend to have systematically higher GDP per capita growth. Table 4.1 reports estimates of the average effect that terms of trade volatility has on economic growth, based on a static panel

et al. (1998), has documented that countries' legal origin is an important determinant of cross-country differences in financial development. La Porta et al. argued that common law ensures a greater protection of private property (relative to civil law). Protection of private property is paramount for investment and the development of the financial sector. La Porta et al. document for a cross-section of countries that financial development is significantly higher in countries with common law.

³¹ The econometric model includes country fixed effects, a_i . These fixed effects capture time-invariant country characteristics that affect economic growth, i.e. variables related to history and geography. Note that the country fixed effects account for the linear effect that FDi and Procyclicality have on economic growth. The time fixed effects, b_t , capture common shocks that affect countries' GDP per capita growth in a given time period.

Taming Volatility

Figure 4.1 Economic Growth and Volatility (Cross-Country Relationship)

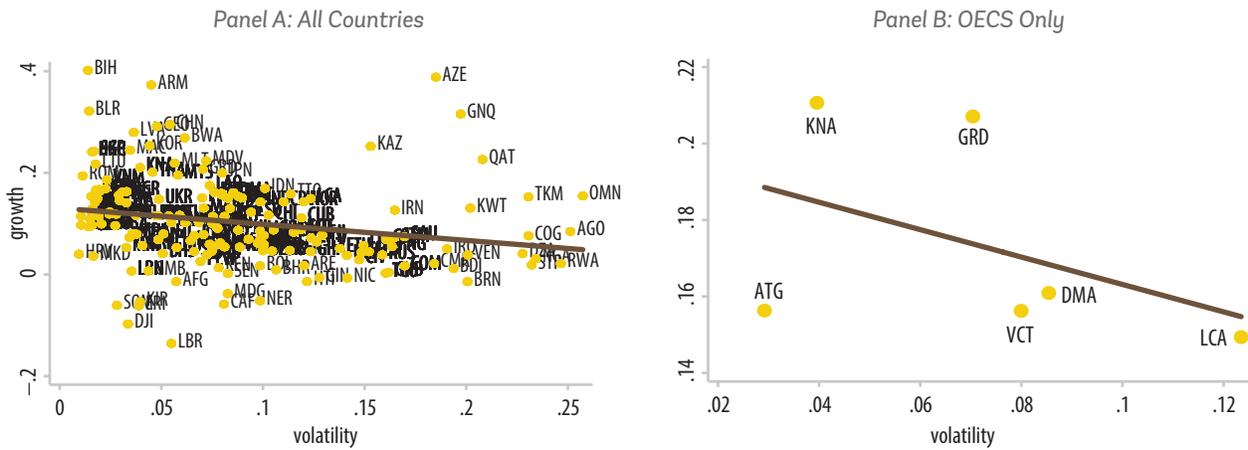


Table 4.1: Economic Growth and Volatility (Average Effect, Static Model)

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility	-0.44*** (0.08)	-0.34*** (0.08)	-0.10 (0.10)	-0.01 (0.09)	-0.05 (0.09)
Terms of Trade Growth					0.11*** (0.03)
R-Squared	0.06	0.15	0.06	0.12	0.15
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table 4.2: Economic Growth and Volatility (Average Effect, Dynamic Model)

Dependent Variable is:	GDP per capita Growth					
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS	(6) SYS-GMM
Terms of Trade Volatility	-0.39*** (0.08)	-0.33*** (0.09)	-0.10 (0.09)	0.04 (0.09)	0.00 (0.09)	-0.02 (0.07)
Terms of Trade Growth					0.10*** (0.03)	0.08*** (0.02)
R-Squared	0.01**	0.00	-0.05	-0.15***	-0.15***	-0.17
Lagged GDP per capita	(0.01)	(0.01)	(0.04)	(0.05)	(0.05)	(0.11)
Country Fixed Effects	No	No	Yes	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

data model. Column (1) reports unconditional estimates; column (2) adds to the regression time fixed effects; column (3) includes in the econometric model country fixed effects; and column (4) shows estimates based on an econometric model that includes both time and country fixed effects. Model specifications that do not include country fixed effects, i.e. columns (1) and (2), show a significant negative average relationship between terms of trade volatility and economic growth. The coefficient of -0.34 suggests that the cross-country relationship between terms of trade volatility and economic growth is sizable. For example, the model predicts that economic growth is lower by around 0.6 percentage points per annum when taking a country from the 25th percentile (0.034) of terms of trade volatility to the 75th percentile (0.125).

The average negative relationship between economic growth and terms of trade volatility holds for different specifications of the econometric model. Table 4.2 shows that a dynamic model yields similar results to the static model that was estimated in Table 4.1. The dynamic panel model includes the lag of GDP per capita on the right-hand side of the estimating equation; a negative coefficient on lagged GDP per capita means that there is a convergence. In columns (1) and (2) we see that the coefficient on lagged GDP per capita is not significant. Hence, there is no cross-country convergence in GDP per capita; this is a well-known result (see, for example, Mankiw et al., 1992). Columns (3) and (4) show that there is significant convergence of GDP per capita to country-specific steady states. This can be seen from the negative coefficient on GDP per capita in the model specifications that include country fixed effects. The estimated coefficient on lagged GDP per capita in model specifications with country fixed effects suggests that the per annum convergence rate to country-specific steady state is around 3 percent.

The results for the OECS region follow the same pattern as the results for the rest of the world. In order to explore whether the average relationship between terms of trade volatility and economic growth is different for the OECS region the econometric model is augmented to include an interaction term between terms of trade volatility and a dummy that is unity for countries that belong to the OECS. Table 6 reports the estimation results from this augmented econometric model. The main finding is that there is no evidence that the average relationship between terms of trade volatility and

economic growth is significantly different for the OECS region. This is true regardless of whether or not country fixed effects are included in the econometric model.³²

Additional estimates show that the negative effect of terms of trade volatility on growth is mediated by cross-country differences in financial development.

Table 4.4 reports estimates from an econometric model that includes an interaction term between terms of trade volatility and the GDP share of domestic credit to the private sector. Following the finance literature (La Porta et al., 1998), we use variation in the GDP share of domestic credit to the private sector that is predicted by British legal origin. As an additional variable we use distance to the equator in order to generate variation in the GDP share of domestic credit that is exogenous to economic growth.³³ From columns (1) and (2) of Table 4.4 we see that the coefficient on terms trade volatility is around -0.7 and significant at the 1 percent level; the interaction term between terms of trade volatility and the GDP share of domestic credit to the private sector is around 1.6 and significant at the 5 percent level. These values imply that at median levels of financial development (GDP share of domestic credit to the private sector equal to 35 percent), terms of trade volatility has a significant negative effect on economic growth; however at higher values of financial development the effect loses significance.³⁴

Financial development has a positive effect on economic growth on average. This can be seen from the coefficient on the GDP share of domestic credit to the private sector. The relevant coefficient is around 0.2 and is significantly different from zero at the 1 percent level, see columns (1) and (2). This is in accordance with the finance literature where it is found that a greater GDP share of domestic credit to the private sector is on average growth enhancing. Sahay et al. (2015) present evidence that the growth effect of financial development may be non-linear. Indeed, we see from columns (1) and

32 Note that in columns (3)-(5) the model does not explicitly include the OECS dummy; this is because the country fixed effects fully take into account the average growth of OECS countries.

33 Both British legal origin and distance to the equator have a highly significant positive effect on the GDP share of domestic credit to the private sector. The F-statistic on the joint test that British legal origin and distance to the equator have no significant effect on the GDP share of domestic credit to the private sector is 34.77; British legal origin and distance to the equator explain about one-quarter of the variation in the sample of countries' average GDP shares of domestic credit to the private sector.

34 The interquartile range of the GDP share of domestic credit to the private sector predicted by British legal origin and distance to the equator is [0.25, 0.46].

Table 4.3: Economic Growth and Volatility (Is the Effect Different in the OECS?)

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility	-0.44*** (0.08)	-0.34*** (0.08)	-0.10 (0.10)	-0.01 (0.09)	-0.05 (0.09)
Terms of Trade Volatility*OECS	0.48 (0.39)	0.34 (0.32)	0.19 (0.73)	-0.05 (0.37)	-0.16 (0.42)
OECS	-0.02 (0.03)	-0.04* (0.02)			
Terms of Trade Growth					0.11*** (0.03)
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table 4.4: Economic Growth, Financial Development, and Volatility

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility [A]	-0.68*** (0.17)	-0.71*** (0.16)	-0.33 (0.25)	-0.30 (0.20)	-0.38* (0.19)
Terms of Trade Volatility*Credit-to-GDP ratio [B]	1.60** (0.63)	2.17*** (0.58)	0.69 (0.96)	1.28 (0.89)	0.89 (0.66)
Credit-to-GDP ratio	0.26*** (0.06)	0.23*** (0.06)			
Terms of Trade Growth					0.08*** (0.02)
Test [A]=[B]=0, p-value	0.00	0.00	0.16	0.33	0.12
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

(2) of Appendix Table 1 that the relationship between GDP p.c. growth and the GDP share of domestic credit to the private sector is an inverted U-shaped. The average marginal effect of financial development on economic growth remains, however, positive and significant. Further, we have explored using the index of financial development developed in Sahay et al. (2015); this yields results similar to those presented in Table 7, see Appendix Table 2.³⁵

³⁵ The index of financial development developed in Sahay et al. (2015) measures depth (size and liquidity of markets), access

Terms of trade volatility has a particularly large negative effect on economic growth in countries where fiscal policy is procyclical. This is shown in Tables 4.5 and 4.6. Table 4.5 reports estimates from an econometric model that includes an interaction term between the standard deviation of the terms of trade growth rate and the country-specific coefficients that measure the

(ability of individuals to access financial services), and efficiency of financial markets and institutions (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets).

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response of government spending to the business cycle. Table 4.6 reports estimates from an econometric model that includes in addition to the interaction between terms of trade volatility and fiscal procyclicality an interaction term between terms of trade volatility and financial development. The coefficient on the interaction

between terms of trade volatility is negative in all specifications. In Table 4.5, it is significantly different from zero in specifications that include country fixed effects (columns (3)-(5)). If country fixed effects are excluded, see columns (1) and (2), the interaction between terms of trade volatility and fiscal procyclicality is individually

Table 4.5: Economic Growth, Fiscal Procyclicality, and Volatility

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility [A]	-0.46*** (0.08)	-0.38*** (0.08)	-0.12 (0.09)	-0.02 (0.09)	-0.03 (0.09)
Terms of Trade Volatility*Fiscal Procyclicality [B]	-0.31 (0.28)	-0.32 (0.23)	-0.75** (0.30)	-0.68** (0.27)	-0.66** (0.28)
Fiscal Procyclicality	-0.00 (0.03)	0.01 (0.03)			
Terms of Trade Growth					0.10*** (0.03)
Test [A]=[B]=0, p-value	0.00	0.00	0.04	0.04	0.06
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table 4.6: Economic Growth, Financial Development, Fiscal Procyclicality, and Volatility

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility	-0.46*** (0.08)	-0.37*** (0.18)	-0.38* (0.21)	-0.06 (0.21)	0.05 (0.22)
Terms of Trade Volatility*Fiscal Procyclicality	-0.52* (0.24)	-0.41* (0.21)	-0.70** (0.29)	-0.67** (0.27)	-0.67** (0.27)
Terms of Trade Volatility*Credit-to-GDP ratio	0.55 (0.56)	0.37 (0.51)	0.98 (0.65)	0.16 (0.61)	-0.30 (0.66)
Fiscal Procyclicality	0.04 (0.04)	0.01 (0.01)			
Credit-to-GDP ratio	0.27*** (0.05)	0.20*** (0.05)			
Terms of Trade Growth					0.10*** (0.03)
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

not significantly different from zero; however, the F-test rejects the null hypothesis that the interaction term is jointly equal to zero with the linear effect that terms of trade volatility has on economic growth. In Table 4.6, we see that the interaction between terms of trade volatility and fiscal procyclicality is significantly different from zero in all specifications.

The difference in effect of terms of trade volatility on economic growth across differences in countries' fiscal procyclicality is sizable. For example, according to the estimates in column (5) of Table 4.6, for a country at the 25th percentile of fiscal procyclicality the implied marginal effect (standard error) of terms of trade volatility on economic growth is 0.04 (0.20); for a country at the 75th percentile the corresponding marginal effect (standard error) is -0.36 (0.21).

Finally, the OECS region shows a strong negative interaction between terms of trade volatility and fis-

cal policy pro-cyclicality. The estimates reported in Table 4.7 speak to the question of whether the mediating role that fiscal (counter-)cyclicality and financial development have with regard to the effect of terms of trade volatility on economic growth differ for the OECS region. Specifically, Table 4.7 reports estimates from an econometric model that includes, in addition to the variables in Table 4.6, two further interaction terms: one interaction term is constructed as the interaction between terms of trade volatility, fiscal procyclicality, and the OECS indicator; and another interaction term that is constructed as the interaction between terms of trade volatility, financial development, and the OECS indicator. The coefficient on the first (second) interaction term gives the difference in the mediating role of fiscal procyclicality (financial development) for the OECS region. Table 4.7 shows that the coefficient on the interaction between terms of trade volatility, fiscal procyclicality, and the OECS indicator is significantly negative. Further, the interaction between terms of trade

Table 4.7. Economic Growth, Financial Development, Fiscal Procyclicality, and Volatility: Heterogeneity OECS

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility	-0.46*** (0.19)	-0.37*** (0.18)	-0.38* (0.21)	-0.07 (0.20)	0.03 (0.22)
Terms of Trade Volatility*Fiscal Procyclicality	-0.43* (0.25)	-0.42* (0.21)	-0.70** (0.29)	-0.67** (0.27)	-0.60** (0.27)
Terms of Trade Volatility*Fiscal Procyclicality*OECS	-1.95** (0.77)	-2.22*** (0.64)	-72.01* (42.04)	-78.00*** (15.37)	-73.01*** (26.31)
Terms of Trade Volatility*Credit-to-GDP ratio	0.55 (0.56)	0.36 (0.51)	0.99 (0.65)	0.17 (0.61)	-0.08 (0.64)
Terms of Trade Volatility*Credit-to-GDP ratio *OECS	1.76** (0.86)	2.07*** (0.62)	9.07 (10.56)	15.08*** (4.05)	12.66* (6.73)
Fiscal Procyclicality	0.04 (0.04)	0.04 (0.03)			
Credit-to-GDP ratio	0.27*** (0.06)	0.20*** (0.06)			
OECS	0.03* (0.01)	0.01 (0.01)			
Terms of Trade Growth					0.12*** (0.03)
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

volatility and fiscal procyclicality is also negative and significantly different from zero.

These results suggest that: (i) fiscal procyclicality exacerbates the negative growth effect of terms of trade volatility – for the OECS region and for other regions; and (ii) the mediating role of fiscal cyclicality is particularly pronounced in the OECS region. It is also noteworthy that the coefficient on the interaction between terms of trade volatility, financial development, and the OECS indicator is significantly positive. The interaction between terms of trade volatility and fiscal procyclicality is not significantly different from zero. The results in Table 4.7 thus suggest that counter-cyclical fiscal policy and financial development can mitigate the adverse growth effects of terms of trade volatility in the OECS region.

Impulse Response Analysis

We have also investigated the role played by financial frictions and different fiscal policy stances for the transmission of shocks to economic activity in the OECS region by means of a structural model of business cycles. By using a complementary modeling approach, we have looked at the impacts of different types of shocks to fiscal policy in the presence of financial frictions on the economic performance of the region. The analysis is based on a theoretical structural model developed by Carneiro and Hnatkovska (2016) as a background paper for this report. The details of the model are omitted here for simplicity, but we highlight its two key features. The first is that domestic financial markets are subject to a friction – firms have to pay a share of the bill for the factors of production before production takes place and revenues are realized. This creates a need for working capital by firms. The second key feature of the model is the presence of a fiscal authority. It levies lump-sum taxes and uses the tax revenues to provide public consumption/investment. In the model, public expenditures have different cyclical properties. These two features of the model generate transmission channels through which real interest rates and fiscal policy shocks affect the level of economic activity.

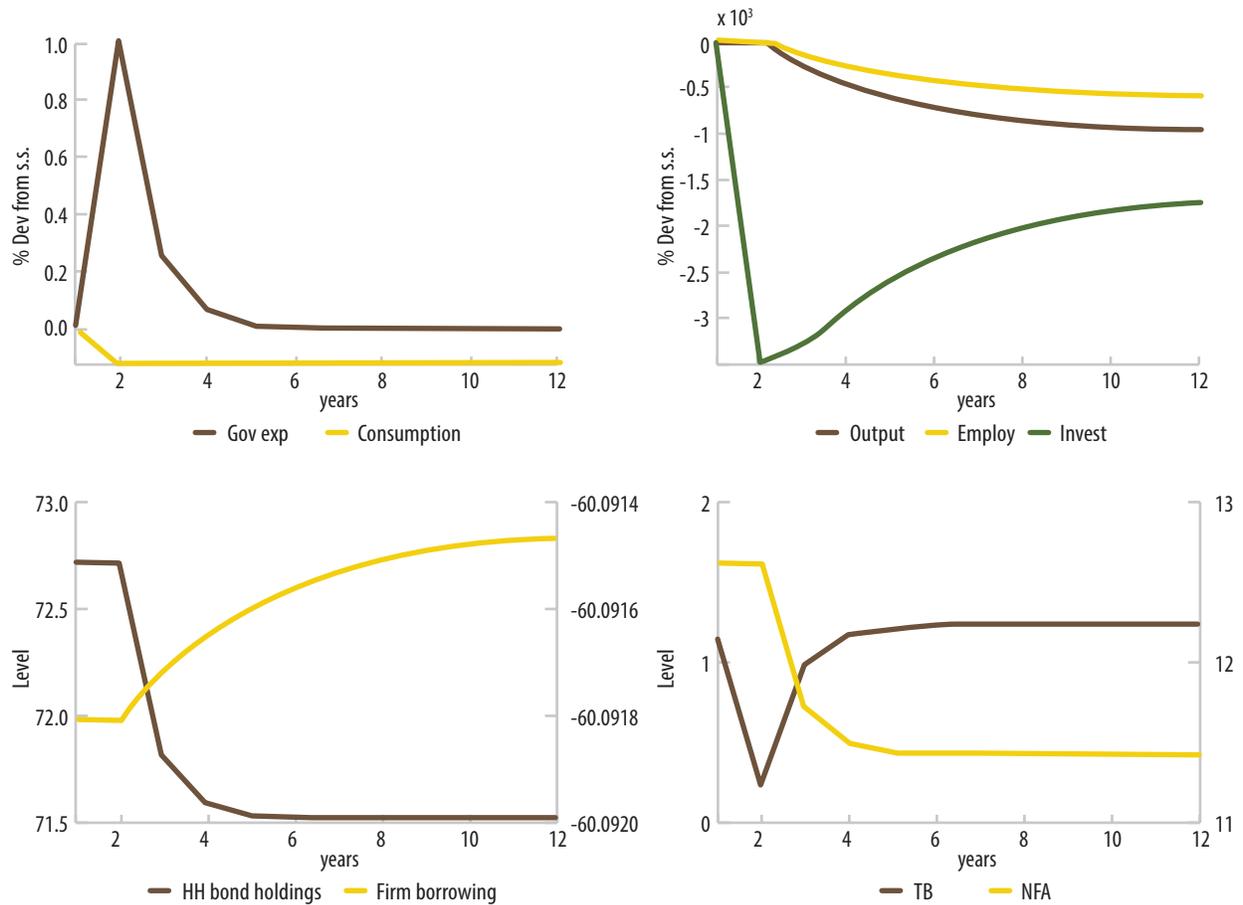
Our objective is to evaluate the expected impact of different fiscal policy stances on macroeconomic aggregates. We start with the case in which fiscal policy is a-cyclical. That is, where government expenditures are independent of the fundamental state of the economy.

In this case we allow for both independent country risk and induced country risks, i.e. country risk that arises endogenously in response to changes in fundamentals. In the second case, we study the effects of the fiscal policy that is procyclical to the economic conditions. Here we are again interested in the possible interaction between fiscal policy and country risk, so we consider both independent and induced country risk scenarios. In what follows, we use impulse response analysis to understand the linkages in the model and the effects of various model features. In particular, we study how the key macroeconomic aggregates respond to one-time shocks to productivity, government expenditures and risk-premium.

We start by considering the effects of government spending shocks under a-cyclical fiscal policy. The simulations in Figure 4.1 show that an increase in government expenditures has a contractionary effect on the economy, with all macroeconomic aggregates declining following the shock. The largest decrease is experienced by private consumption which falls by 0.05 percent after a 1 percent increase in government expenditures. The responses of output, employment and investment, while all negative, are more muted. These dynamics can be understood by looking at how firms and households adjust their borrowing/lending behavior in response to shocks. When government expenditures increase, it causes a decline in household's lifetime income, leading to a fall in consumption. Since consumption decline is smaller than the fall in household's disposable income due to consumption smoothing, savings must fall as households decrease their bond holdings. Firms, faced with lower demand, cut down on employment and investment, and thus borrow less from the international markets. With lower employment, GDP also declines. Due to increased household borrowing, both trade balance and net foreign assets (NFA) deteriorate.

The simulations of shocks in productivity show an overall improvement in the economy. The impulse responses to a 1 percent positive productivity shock under a-cyclical and pro-cyclical fiscal policy stances are shown in Figures 4.3a and 4.3b. We also include impulse responses under the scenario with induced country risk-premium in the figures. Under the procyclical fiscal policy, an increase in productivity triggers a rise in government expenditures. Focusing first on the direct effects of productivity shocks, we see that a rise in productivity that is persistent has relatively standard

Figure 4.2 Impulse Responses to a 1% Positive Shock to Government Expenditures



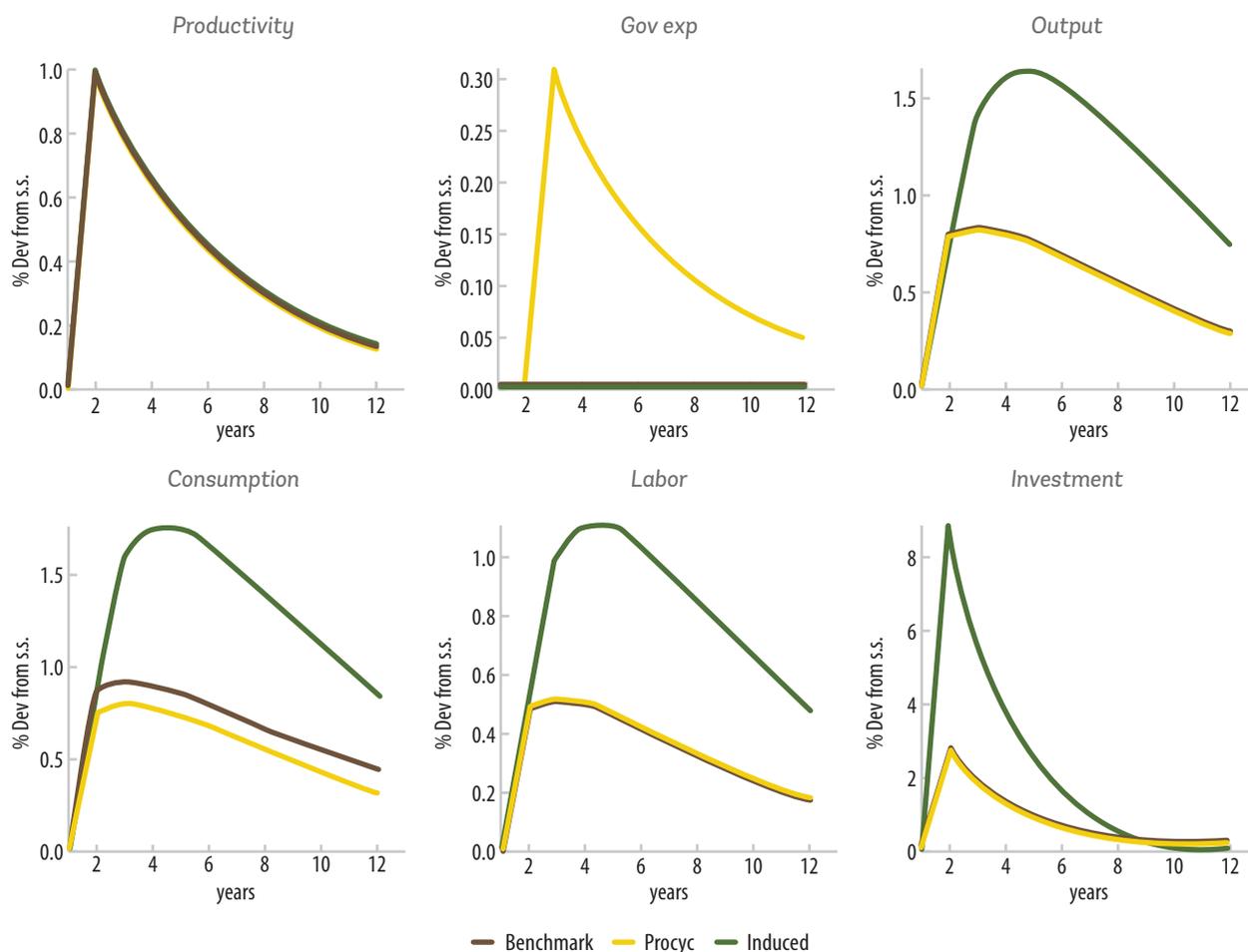
Note: Impulse responses are computed under benchmark parameterization.

effects – it leads to an expansion in the economy with employment, investment, consumption and output all rising. Higher productivity raises the return to capital and labor, so firms want to increase employment and investment. However, to hire more workers, firms must finance a larger working capital, so firms’ borrowing goes up. This can be seen in Figure 2b, which displays impulse responses of agents’ asset holdings/borrowing, trade balance and NFA position. Since returns to investment increase following a positive productivity shock, households reduce their savings in international bonds and invest more in domestic enterprises. The outcome of these adjustments is that the trade balance worsens and NFA position declines.

Under a procyclical fiscal policy, the adjustments of the economy in response to a positive productivity shock are very similar. The key difference lies in the dynamics of consumption, household savings, and trade

balance. When the increase in productivity is accompanied by a rise in government spending (pro-cyclical fiscal policy), the response of household consumption is more muted. This is because an accompanying increase in government expenditures curtails the rise in the disposable income of the households after productivity improvement. This limits the resources available for consumption and investment. As a result, households must lower their savings by more under the procyclical fiscal policy, leading to a larger deterioration in the trade balance and NFA in the economy. Thus, procyclical fiscal policy acts to curtail the effects of productivity shocks on consumption, by amplifying the effects of these shocks on savings, net exports and NFA.

The magnitude of the impact of a positive productivity shock in the economy depends on the follow on impacts on the country risk premium. Next, we turn to the effects of productivity shocks when they also de-

Figure 4.3a Impulse Responses after a 1% Positive Productivity Shock: Macro Aggregates

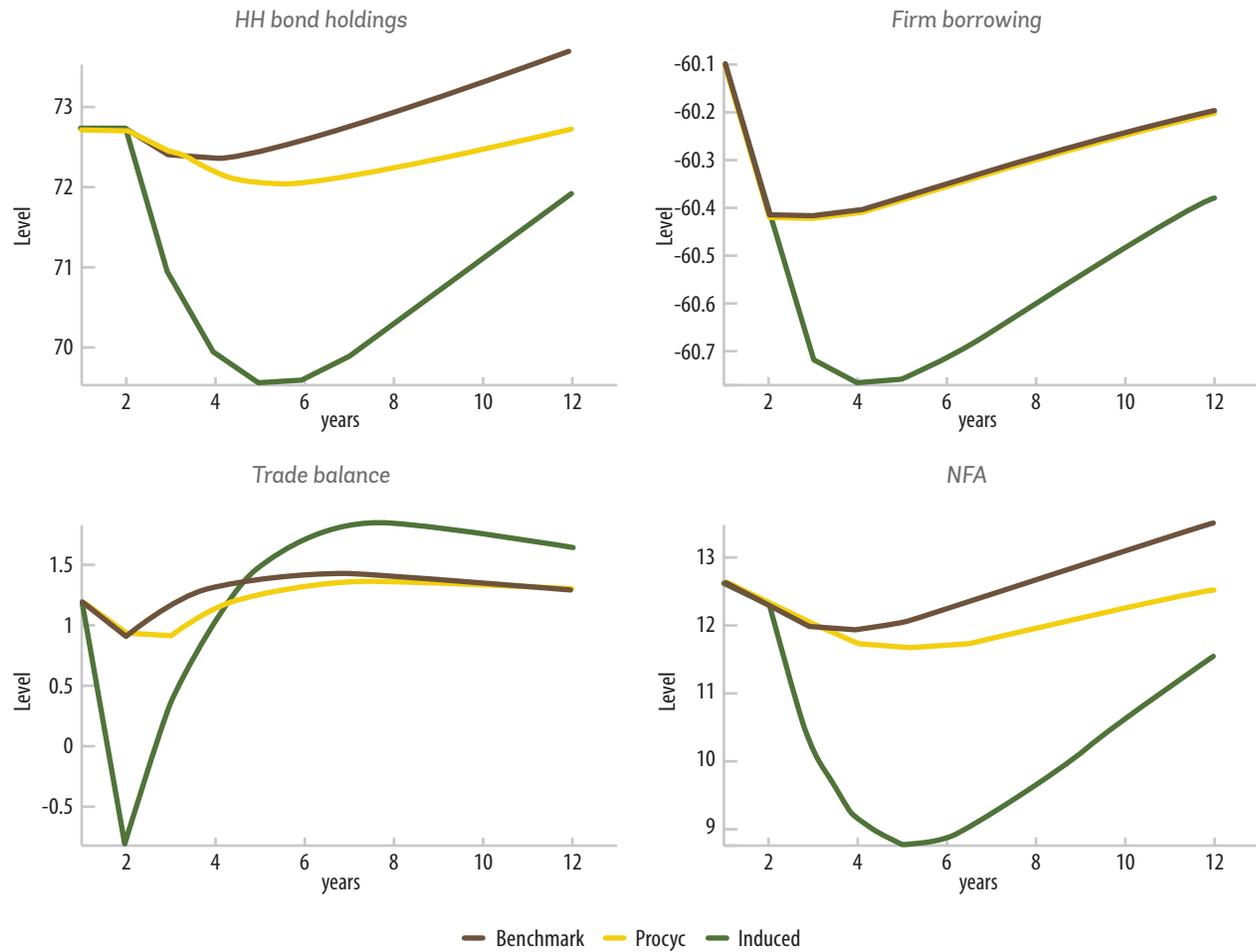
Note: Impulse responses are computed under benchmark parameterization.

terminate the risk-premium in the economy (i.e., induced risk premium). The responses of various variables to a productivity shock in such a case are shown as green dash-dot lines in Figures 4.3a and 4.3b. Under this scenario, an increase in productivity has the same effects as described above, except an increase in productivity also triggers a fall in country risk-premium, which in turn provides an additional boost to the economy. Indeed, with induced risk-premium, all macroeconomic aggregates experience a greater expansion relative to the scenario with independent risk-premium. This occurs because lower risk-premium reduces the interest rate faced by domestic agents, encouraging additional borrowing by firms and a greater reduction in savings (bond holdings) by households. As a result, both employment and investment are scaled up significantly. Not surprisingly, the deterioration in the NFA position and trade balance (in fact, trade balance goes into deficit) is

larger with induced risk-premium. Overall, in the presence of endogenous country risk-premium, the effects of productivity shocks on the economy are amplified.

Lastly, the effects of a shock to domestic interest rate arising as a consequence of a shock to the international interest rate tends to have a contractionary effect on the economy. Figure 4.4 presents the responses of key variables. A rise in the international interest rate triggers an increase in the domestic interest rate which raises the cost of borrowing for working capital for domestic firms. Therefore, they reduce borrowing, cut employment, which in turn lowers output. Consumption also declines and this fall exceeds the drop in output. This is an important result of the model as it shows that fluctuations in the interest rate can help account for the high volatility of consumption in the OECD countries. The increase in interest rates also induces higher

Figure 4.3b Impulse Responses after a 1% Positive Productivity Shock: Financial Variables



Note: Impulse responses are computed under benchmark parameterization.

savings by domestic households, whose bond holdings rise; and discourages investment. As a result, trade balance improves and so does the NFA.

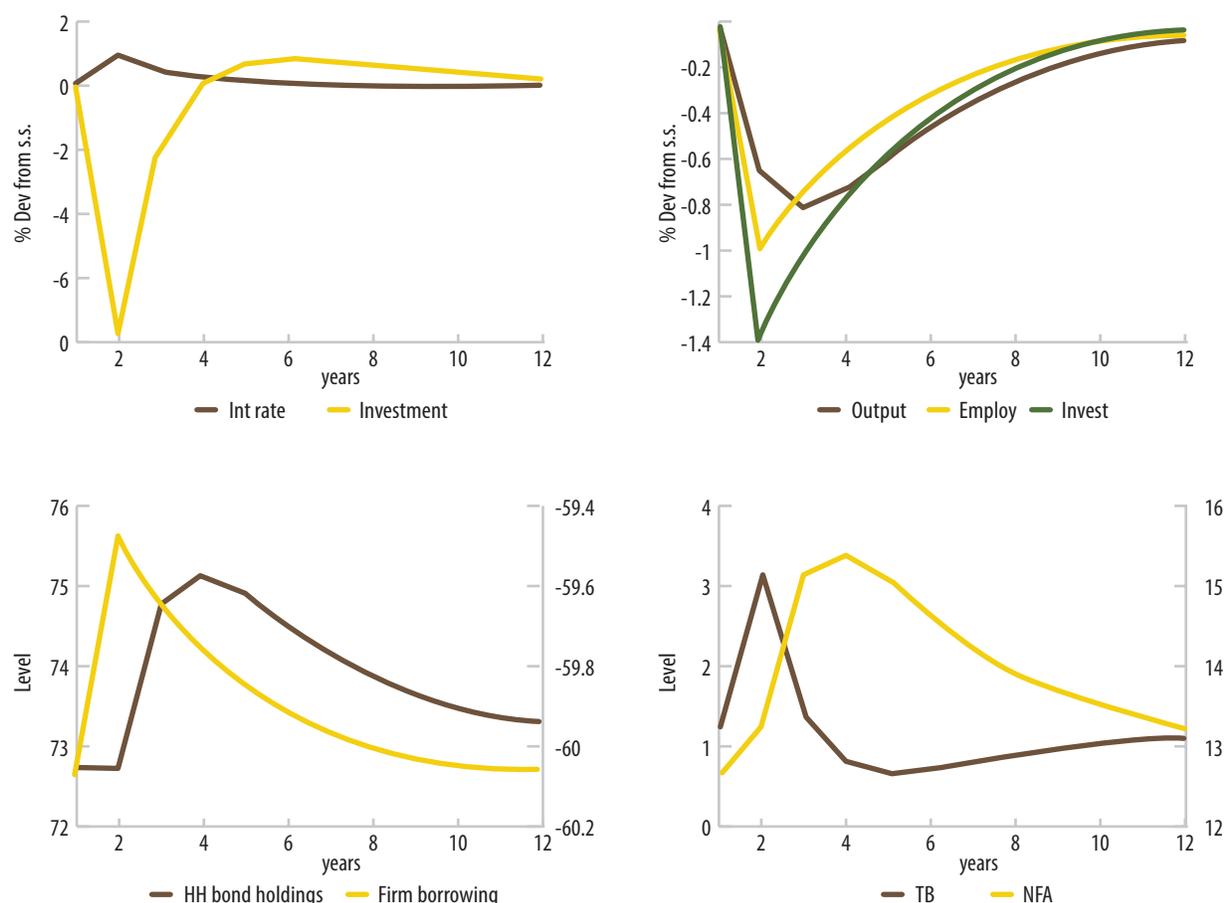
We now turn to the evaluation of the contribution of various shocks, financial frictions and fiscal policy to the business cycles of the OECs countries by means of several numerical experiments. In our first experiment we assume that both fiscal policy and country risk-premium are a-cyclical, or independent of the state of the economy. This version is the benchmark case. In the second experiment we consider the case of independent fiscal policy, but assume that country risk-premium is endogenous to productivity. The third experiment assumes pro-cyclical fiscal policy and independent risk-premium. The last, experiment studies the case where both fiscal policy and country risk-premium respond to productivity changes. In each case, the standard deviation of

productivity innovations, σ , is set so that the volatility of GDP in the model matches the average volatility of GDP in the OECs countries.

In all experiments we simulate the model economy for a random sequence of shocks to productivity, government expenditures, international interest rate and country risk-premium. We then obtain the volatilities and comovements among the key aggregates from this simulated data and contrast them with the actual data and across various versions of the model. When simulating the model, we treat model series in exactly the same way as the data. In particular, we simulate 45 years of data and remove the first 10 years to reduce the effects of initial conditions. This gives us model series of the same length as in the data. All series, except interest rate and trade balance are log-transformed and HP-filtered with a smoothing parameter of 100. Volatility

Taming Volatility

Figure 4.4 Impulse Responses after a 1% Positive Shock to International Interest Rate



Note: Impulse responses are computed under benchmark parameterization.

and comovement statistics are then computed on each model series and averaged across 1000 simulations.

The benchmark model replicates the volatilities of the macro variables in the OECs data quite closely. As it can be seen from panel 1.a in Table 4.3, the model matches the volatilities of GDP, interest rate, investment, and government spending because these moments were targeted in the calibration. But we did not target the volatility of consumption and trade balance: while the model comes very close to replicating the volatility of TB to GDP ratio it under predicts the volatility of consumption in the OECs countries. At the same time, it is important to note that the model yields consumption that is more volatile than GDP, in line with the data facts for the OECs countries (as seen in stylized facts discussed in Chapter 1 of this report). Under a pro-cyclical fiscal policy, the model with all shocks (panel 3.a) predicts lower volatility of trade balance and consumption. The

reason for this lower volatility is the counteracting effect that government expenditures have to productivity changes under the procyclical fiscal policy (see impulse responses in Figure 4.2a).

Next we consider a scenario in which country risk-premium is endogenous to productivity changes. This is shown in Panel 2 in Table 4.3 under the label of “Induced country risk”.

Here, we calibrated the standard deviation of innovations to all shocks such that we replicate the volatility of GDP, interest rate, and government spending. All other parameters are set to their baseline values. We find that with induced risk-premium, the volatility of all non-targeted variables increases relative to the benchmark scenario. For instance, the percentage standard deviation of investment goes up from 4.57 in the benchmark model with independent risk premium to 7.74 under induced risk premium, rising by 70 percent.

Table 4.8: Simulated and Actual Business Cycles in the OECS Countries: Volatilities

	% Standard deviation			% Standard deviation of x % Standard deviation of GDP			
	GDP	TB/GDP	Int rate	Inv	Gov exp	Cons	Employment
OECS data	3.72	5.21	2.69	4.57	2.55	2.66	n/a
Independent fiscal policy							
1. Independent country risk							
(a) all shocks	3.72	4.79	2.69	4.57	2.55	1.40	0.89
(b) no ζ shocks	1.81	4.46	2.69	7.09	5.25	2.03	1.44
(c) no G shocks	3.72	3.89	2.69	4.57	0.00	1.39	0.89
(d) no R*, D shocks	3.20	3.17	0.00	3.20	2.96	1.11	0.62
2. Induced country risk							
(d) no R*, D shocks	1.91	2.89	0.00	3.16	4.97	1.11	0.62
Procyclical fiscal policy							
3. Independent country risk							
(a) all shocks	3.72	4.68	2.69	4.57	2.55	1.31	0.89
(b) no ζ shocks	1.81	4.58	2.69	7.09	5.61	2.03	1.44
(c) no G shocks	3.72	3.89	2.69	4.57	1.02	1.31	0.89
(d) no R*, D shocks	3.20	2.99	0.00	3.20	2.96	0.97	0.62
4. Induced country risk							
(d) no R*, D shocks	1.91	2.89	0.00	3.16	5.15	0.95	0.62

Source: Authors' calculations.

Similarly, employment volatility goes up by 5.2 percent, while the volatility of net exports rises by 37 percent. This is because the effects of productivity shocks on the economy are amplified in the presence of endogenous risk-premium due to the presence of working capital constraint.³⁶

Lastly, we present the cyclical properties of key variables with the real interest rate. An important finding in the OECS countries data was that real interest rates are strongly countercyclical with main macroeconomic aggregates. Table 4.5 shows that the model reproduces this result quite closely. In particular, in the benchmark scenario (panel 1.a), real interest rate commoves negatively with investment, consumption and employment. The correlation with net exports is positive. The signs of the correlations remain unchanged both under a procyclical fiscal policy and with induced country-risk scenario. Also note that the correlation between interest rates

and government expenditures is close to zero both in the data and in the model.

Several important results from this alternative modeling strategy can be emphasized. First, counter cyclical fiscal policy curtails the effects of productivity shocks in the economy, and reduces the volatility of consumption and net exports. Second, if risk-premium responds to the changes in the economy's fundamentals, the effects of productivity shocks on the economy are amplified through the working capital channel, and therefore the volatility of key macro aggregates rises. This amplification effect would disappear if there was no spillover from productivity to country risk-premium or if there was no need for working capital.

We have also isolated the contribution of various shocks to the overall volatility in the economy re-computed volatilities and correlations in the model while sequentially eliminating shocks to productivity, government expenditures, and interest rate shocks (international interest rate and country risk-premi-

³⁶ The increase in volatility due to endogenous risk-premium is similar under the pro-cyclical fiscal policy, with the exception that consumption volatility is affected more.

um). The results are presented in panels b, c, and d of Tables 4.3, 4.4, 4.5. Without productivity shocks (panels b of Table 4.3; 4.4; 4.5), volatilities of several variables are significantly reduced relative to the benchmark case with all shocks. For instance, GDP volatility declines from 3.72 percent when all shocks are present) to 1.81 percent when productivity shocks are switched off, implying that productivity shocks account for about 51 percent of GDP volatility in the Eastern Caribbean economies. Volatility of net exports also declines when productivity shocks are eliminated from the simulations, although the decline is more muted. Specifically, productivity shocks account for about 7 percent of volatility in net exports. In contrast, the volatilities of investment, consumption, employment, all rise when productivity shocks are eliminated. Similarly, the negative correlation between trade balance and GDP, and interest rate and GDP become exaggerated without the productivity shocks. Taken together, these results suggest that these shocks are important in explaining the business cycles in the OECS economies.

Given the importance of productivity shocks in the OECS countries, it becomes necessary to better identify the sources of these shocks. As we argued before, the productivity shocks in the model find a broad correspondence to shocks in the data – these include technology shocks, shocks to the terms of trade, unexpected changes in weather conditions, etc. Panels c) of Tables 4.3, 4.4, 4.5, report the business cycles statistics from simulations where shocks to government expenditures are eliminated. Without government spending shocks, the volatility of trade balance is reduced by 20 percent (from 4.79 percent to 3.89 percent) and the volatility of consumption also decreases. Lastly, we simulate the model without interest rate shocks (both to the international interest rate and country risk-premium) and report the resulting statistics in panels d) of Tables 4.3, 4.4, 4.5. Eliminating shocks to the interest rate lowers the volatility of all variables, except government spending. For instance, the percentage standard deviation of GDP declines from 3.72 percent to 3.20 percent – a 14 percent reduction; consumption volatility declines by 21 percent, while employment and investment volatili-

Table 4.9: Simulated and Actual Business Cycles in the OECS Countries: Comovement with Interest Rate

	Correlation of Interest rate with				
	Inv	Gov exp	Cons	TB/GDP	Employment
OECS data	-0.29	-0.04	-0.33	0.24	-0.36
Independent fiscal policy					
1. Independent country risk					
(a) all shocks	-0.68	-0.01	-0.70	0.61	-0.77
(b) no ζ shocks	-0.87	-0.01	-0.97	0.65	-0.97
(c) no G shocks	-0.68	0.00	-0.70	0.75	-0.77
(d) no R^* , D shocks	-0.01	0.00	0.00	0.00	0.00
2. Induced country risk					
(d) no R^* , D shocks	-0.41	-0.01	-0.81	0.36	-0.84
(d) no R^* , D shocks	-0.02	0.01	-0.02	0.00	-0.02
Procyclical fiscal policy					
3. Independent country risk					
(a) all shocks	-0.68	-0.01	-0.74	0.63	-0.77
(b) no ζ shocks	-0.87	-0.01	-0.97	0.64	-0.97
(c) no G shocks	-0.68	-0.01	-0.74	0.75	-0.77
(d) no R^* , D shocks	-0.01	0.00	0.00	0.00	0.00
4. Induced country risk					
(d) no R^* , D shocks	-0.41	-0.03	-0.83	0.37	-0.84
(d) no R^* , D shocks	-0.01	0.0	-0.00	0.00	-0.00

Source: Authors' calculations.

ty each decline by about 30 percent, and the volatility of trade balance drops by 34 percent. We should note that the majority of this decline in volatilities is accounted for by the absence of risk-premium shocks. For instance, eliminating just the default risk (and allowing for the shocks to the international interest rate) reduces the volatility of GDP by 8 percent, the volatility of consumption by 15 percent and employment volatility by 20 percent.

In the absence of interest rate shocks, the cyclical properties of the key variables in the economy are also affected. That is, the co-movement between GDP and consumption, investment and employment all increase above their data counterparts; the trade balance becomes less countercyclical than in the data; and the negative correlation between the interest rate and GDP, consumption, and investment disappears. We interpret this result as supportive of the importance of interest rate shocks in explaining the OECS business cycles.

The changes in volatilities and correlations are even more pronounced when we consider the scenario with induced country risk-premium. This case is summarized in panels 2.d) and 4.d) of Tables 4.3, 4.4, 4.5. Eliminating interest rate shocks when risk-premium is determined by domestic fundamentals leads to a 49 percent reduction in GDP volatility. Again, the majority of this reduction is accounted for by eliminating the shocks to risk-premium. Similarly, without interest rate shocks, consumption volatility in the OECS countries would decline by 21 percent, employment volatility by 33 percent and investment volatility by 59 percent.

The volatility of GDP declines when either productivity or interest rate shocks are eliminated. In contrast, the volatilities of consumption, investment and employment rise when productivity shocks are absent, while those volatilities decline in the scenario without interest rate shocks. The differences in the behavior of consumption, investment and employment in the two scenarios can be understood through the lens of agents' risk-sharing opportunities in the model. Consider first a productivity shock. In response to such a shock, households and firms can borrow/lend in international markets at a given interest rate, which allows them to smooth out the effects of the shock. The shocks to interest rate are harder to smooth out since they directly affect the cost of borrowing for working capital, and no other mechanisms for risk-sharing are

available to the agents. As a result, these shocks make OECS economies more volatile.

We have assessed how the business cycle is affected by shocks to the financial sector channel. We did this by simulating the effects of a smaller value for the parameter that determines the size of the working capital requirement – parameter φ . Table 4.6 presents the results for volatilities and correlations in the case where only 50% of the labor cost has to be paid in advance ($\varphi=0.5$); and the case in which no labor cost has to be paid in advance ($\varphi=0$). In both cases we keep all other parameters unchanged at their benchmark values given in Table 5. To quantify how the business cycle properties change with φ in Table 4.6 we report the volatility of the key aggregates relative to their respective volatilities under the benchmark model scenario with $\varphi=1$.

In a scenario with independent fiscal policy and a shock to interest rates, the volatility of GDP increases. In panel 1 of Table 4.6, when $\varphi=1$ the model generated volatility of GDP and investment that was very similar to that found in the OECS data. Similarly, it was able to replicate the negative comovement between GDP and trade balance, and between GDP and the interest rate. When the working capital parameter φ is reduced to 0, the volatility of GDP, consumption, employment and government spending, all decline significantly. For instance, GDP volatility is reduced by 14 percent, while that of consumption by 24 percent, and employment – by 30 percent. Similarly, the correlation coefficient between output and interest rate turns from being large and negative to being positive. The same is true for the correlation between consumption and interest rate. Trade balance also becomes much less countercyclical, but its volatility rises (by around 20 percent relative to the benchmark case with $\varphi=1$). This is primarily driven by higher volatility of investment.

In the absence of financial sector shocks, it becomes easier for firms to adjust to productivity shocks. These changes occur because without the working capital requirement, the negative impact of interest rates on labor demand of firms is eliminated. As a result, it becomes easier for firms to adjust employment and investment in response to productivity shocks. This leads to higher volatility of employment, investment and, therefore, trade balance. At the same time, firms' employment decisions become less sensitive to interest rate shocks when $\varphi=0$, which lowers the volatility of

Table 4.10: Sensitivity Analysis: Working Capital Requirement

	% Standard deviation of x						Correlation between			
	% Standard deviation of x, benchmark									
	GDP	TB/ GDP	Inv	Gov exp	Cons	Employ	GDP,R	GDP,TB/ GDP	Cons,R	Inv,R
1. Independent fiscal policy										
$\varphi=0.5$	0.90	1.05	1.36	0.62	0.84	0.80	-0.20	-0.21	-0.44	-0.69
$\varphi=0$	0.86	1.19	1.70	0.36	0.76	0.70	0.06	-0.05	0.05	-0.70
2. Pro-cyclical fiscal policy										
$\varphi=0.5$	0.90	1.07	1.36	0.62	0.84	0.80	-0.20	-0.27	-0.46	-0.69
$\varphi=0$	0.86	1.21	1.70	0.36	0.78	0.70	0.06	-0.07	0.05	-0.70

Note: The table reports the volatility of various aggregates relative to the volatility of the corresponding aggregate under the benchmark parameterization of $\varphi=1$. All other parameters are set to their benchmark values given in Table 5. Source: Authors' calculations.

employment in the model. The second effect dominates and employment volatility is reduced with lower φ . Volatility of investment, however, unambiguously rises.

Conclusions and Directions for Policy

This chapter has assessed the effects of terms of trade volatility on real GDP per capita growth in the OECS and other regions of the world. A key conclusion from the analysis is that counter-cyclical fiscal policy and stable and well developed financial markets and institutions will have particularly high payoffs in terms of reducing the adverse growth effects of terms of trade volatility in the OECS region. As discussed in greater detail in chapter 2, one way of strengthening the region's ability to shift toward a more counter-cyclical fiscal policy stance would be through the adoption of fiscal responsibility laws (FRLs) and/or fiscal rules. These are widely recognized as effective mechanisms that can increase the discipline and credibility of the fiscal authorities. Not only would fiscal rules help in making fiscal policy less pro-cyclical in the OECS, but they would also help the countries in the region to make significant progress in reigning in fiscal expenditures and implementing effective fiscal consolidation programs. The introduction of fiscal rules would need to be supported by expenditure reforms in the context of a medium term fiscal framework to signal the authorities' commitment to fiscal sustainability. Given that natural disasters are common across the region, OECS countries would do well to integrate the likelihood of a disaster in their fiscal programming exercises. Many countries in similar situations have benefitted from the parallel creation

of an independent fiscal council that monitors macroeconomic projections underlying the budgeting process and the compliance with the fiscal rule (see Amo-Yartey et al., 2012). Although it is not an official fiscal council, the member countries of the ECCU have fiscal targets, agreed under the ECCU Eight Point Stabilization and Growth Program in 2009. The problem is, however, that these targets are not binding.

We have also shown that macroeconomic aggregates in OECS are quite volatile, with consumption exhibiting higher volatility than GDP. We also find that in these economies real interest rates are very volatile and strongly countercyclical with GDP and other macroeconomic aggregates. Similarly, fiscal expenditures also show significant volatility, but are pro-cyclical with GDP. In that context, our simulations suggest that eliminating fiscal policy shocks could reduce the volatility of consumption and trade balance, but without the volatility of GDP. Eliminating shocks to interest rates, however, could reduce the volatility of GDP by 14 percent, and the volatility of consumption by 21 percent. We also show that domestic financial markets development plays an important role in buffering the effects of interest rate shocks on the economy. Eliminating the working capital constraint, while keeping all shocks in place, for example, could reduce the volatility of GDP, consumption, employment and government spending significantly. For instance, GDP volatility would be reduced by 14 percent, while that of consumption would decline by 24 percent.

These results suggest a few directions for designing policies to help reduce the volatility experienced by

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the OECS economies. First, greater openness to international financial markets is important as it could help the OECS economies to hedge fluctuations in fundamental shocks, such as shocks to technology, terms of trade, and shocks associated to natural hazards. Second, greater openness must be accompanied by improvements in domestic financial markets and government's efforts to stabilize domestic risk-premium. By reducing the frictions in the domestic financial markets, these economies can cushion the negative effects

of interest rate shocks on domestic economic activity, and achieve lower volatility. Third, if pro-cyclical fiscal policies induce higher country risk-premium in the international markets, governments of the OECS countries can stabilize their country's risk-premium by switching to counter-cyclical policies. Fourth, if government consumption is strongly complementary with private consumption, switching to an independent or counter-cyclical fiscal policy stance can reduce the volatility of consumption in the economy.

APPENDIX

Appendix Table 1. Non-Linear Effects of GDP Share of Domestic Credit to Private Sector

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility	-0.20 (0.17)	-0.19 (0.35)	-0.88 (0.60)	-0.96** (0.45)	-1.05** (0.46)
Terms of Trade Volatility*Credit-to-GDP ratio	-1.29 (2.74)	-0.82 (2.62)	5.05 (4.05)	6.51** (3.22)	6.52* (3.56)
Terms of Trade Volatility*Credit-to-GDP ratio squared	3.63 (4.45)	3.43 (4.45)	-7.61 (5.97)	-9.15* (4.77)	-9.17* (5.59)
Credit-to-GDP ratio	0.69** (0.28)	0.79*** (0.26)			
Credit-to-GDP ratio squared	-0.59 (0.40)	-0.82** (0.40)			
Terms of Trade Growth					0.08*** (0.02)
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Appendix Table 2. Financial Development Index from Sahay et al. (2015)

Dependent Variable is:	GDP per capita Growth				
	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Terms of Trade Volatility	-0.70*** (0.19)	-0.74*** (0.17)	-0.32 (0.27)	-0.30 (0.22)	-0.21 (0.23)
Terms of Trade Volatility*FD Index	2.42** (0.98)	3.29*** (0.93)	0.93 (1.44)	1.81 (1.34)	1.07 (1.31)
FD Index	0.42*** (0.09)	0.36*** (0.26)			
Terms of Trade Growth					0.10*** (0.03)
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes	Yes

Note: The method of estimation is least squares. Huber robust standard errors (shown in parentheses) are clustered at the country level. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

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