Engine of Growth?

The Caribbean Private Sector Needs More than an Oil Change

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Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Ruprah, Inder.
An engine of growth?: the Caribbean private sector needs more than an oil change / Inder Ruprah, Ricardo Sierra.

p. cm. — (IDB Monograph ; 491)
Includes bibliographic references.

1. Economic development-Caribbean Area. 2. Business enterprises-Caribbean Area. 3. Caribbean Area-Economic conditions. 4. Caribbean Area-Economic policy. I. Sierra, Ricardo. II. Inter-American Development Bank. Country Department Caribbean Group. III. Title. IV. Series.
IDB-MG-491

JEL Codes: D01, E24, F10, F43, H4, I25, G2, J2, J6, O3
Keywords: Private sector, growth, productivity, FDI, international trade, energy, innovation, public policy, access to finance, gender, crime, education

Inter-American Development Bank
1300 New York Avenue, NW
Washington, DC 20577

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Foreword

Facing so many economic challenges, Caribbean governments have been looking to the private sector as a reliable partner to boost economic value added and labour growth. However, this expectation has never been grounded in fact, as there is no empirical study of the Caribbean private sector. Therefore, this study is ground-breaking because it provides a comprehensive empirical analysis of the Caribbean business sector.

The report revisits the theme of low Caribbean growth, viewed through a macroeconomic lens in our previous report (*Is there a Caribbean Sclerosis?*), but takes a microeconomic perspective by using firm-level data.

The performance of the private sector is crucial for a country's economic growth and employment generation. As such, the results of the analysis are not comforting. In terms of sales growth, employment growth, efficiency, and total factor productivity, the Caribbean underperforms the rest of the small economies of the world. The gap is larger for commodity-dependent economies (Guyana, Suriname, and Trinidad and Tobago) than for tourism-dependent economies (Barbados, Jamaica, and The Bahamas). Thus, the existing Caribbean business sector is not up to the challenge to increase the region's economic growth and employment and hence, to increase public resources and improve the welfare of citizens in the region.

Why? The report uses multiple approaches to identify the constraints to the private sector, constraints include the role of firm characteristics and constraints, including international trade and foreign direct investment, financing, crime, inadequate labour, electricity issues, lack of innovation, gender disparity, and government policies that are not good for business. The study estimates the contribution to the performance gap of the region's existing endowments (i.e., the characteristics and constraints of the firms) as well as the returns to those characteristics and constraints. It finds that the returns contribute more to the gap than do characteristics and constraints themselves.

It turns out that fine-tuning the engine that is the private sector, as it were, will take more than an oil change. The Caribbean private sector is falling behind because

its policy environment hinders rather than promotes dynamic, innovative, and export-oriented businesses. Structural policies that target overall improvements in the environment in which firms operate may have greater returns than just firm- or sector-level policy interventions in improving the performance of the private sector, and hence overall economic growth. This may be counterintuitive for many Caribbean policymakers and commentators who often focus on the needs of existing large firms (foreign or domestically owned) and discuss which sector or industry should be promoted next given the stagnation of the existing sectors.

For vibrant economies, we need a vibrant private sector. It is time for change in the Caribbean. The study's estimates suggest that an increase in sales growth from an improvement in a given constraint would be, from highest to lowest, in the areas of gender, crime, electricity, and trade in commodity-dependent countries, and electricity, crime, trade, and finance in tourism-dependent countries. This report is the seminal piece that should at last guide policymakers and businesspersons to transform the Caribbean private sector to an engine of growth.

Therese Turner-Jones
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Caribbean Country Department
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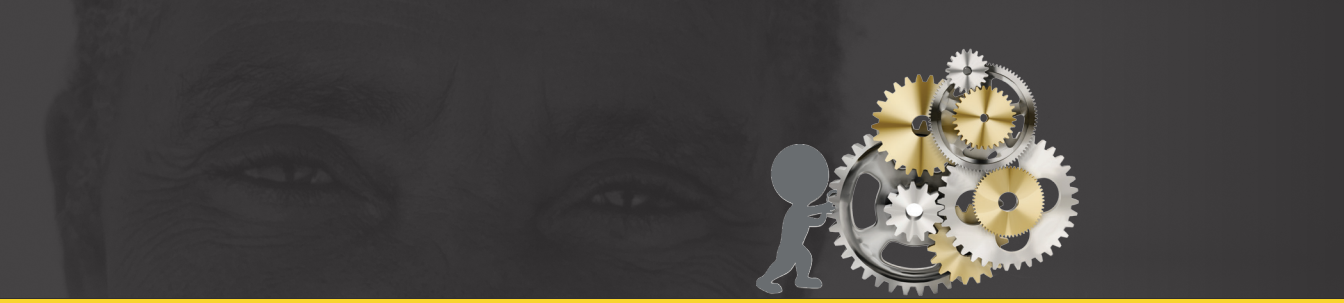


Acknowledgments

This report was prepared by members of the Caribbean Economics Team of the Caribbean Country Department of the Inter-American Development Bank. The authors wish to thank the members of the team for their inputs: Diether Beuermann, Sarosh Khan, Jeetendra Khadan, and Camilo Pecha.

An earlier version of this report was reviewed by Carlos Elias and Jose Saavedra. Further, this study would not have been possible without Sylvia Dohnert de Lascurain, the head of Compete Caribbean, which financed the two enterprise surveys used in this report. These are the first and only comprehensive firm level data comparable across countries in the Caribbean. Musheer Kamau coordinated the design and execution of the Productivity, Technology and Innovation (PROTEQIN) (2014) Survey.

We would also like to acknowledge Dana Payne, who coordinated the production of this report, David Einhorn who edited the manuscript, and the Word Express, Inc. that provided the typesetting and production services. The cover was created by Katherine Lee.

1

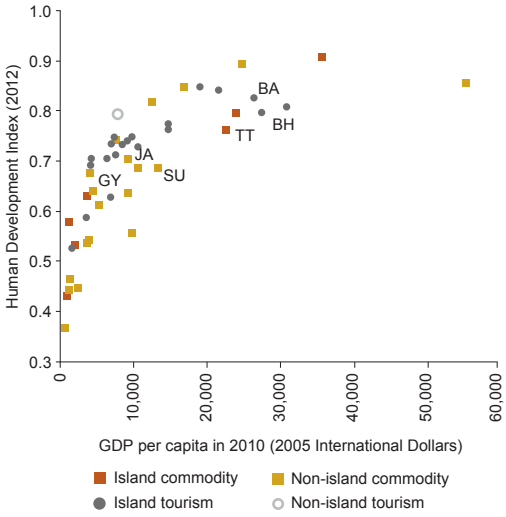
Introduction: Caribbean Economic Growth and the Private Sector

Our previous report on stagnating economic growth in the Caribbean concluded that a "sclerosis" afflicts the region.[1] That conclusion has prompted us to look more deeply at the performance of the Caribbean private sector and its relation to the region's low economic growth (Ruprah, Melgarejo, and Sierra 2014). Specifically, the sclerosis hypothesis concludes that special interest groups devote their resources to unproductive rent-seeking to redistribute social wealth (Dookeran 2012). By enlarging their slice of the pie (i.e., real GDP), these interest groups reduce the enlargement (i.e., economic growth) of the total pie, which in turn reduces total social gains. This happens by influencing policy. Small and politically stable societies like those in the Caribbean foster the development and institutionalization of growth-retarding special interest groups, which are then better able to influence policy to redistribute resources in their favour. Large discretionary tax expenditures (i.e., the waiver of taxes), often used under the banner of industrial policy, could be interpreted as the extraction of unproductive rents to these groups. Such a political-policy-regulatory framework, which is the environment in which firms operate, obviously affects the structure and performance of the private sector.

The performance of the private sector is crucial for a country's economic growth. Thus, this report revisits the theme of low Caribbean growth, viewed through a macroeconomic lens in the previous "Sclerosis" report, but focuses on a microeconomic perspective: Why is the business sector not functioning well as the engine of that growth? We argue that fine-tuning that engine, as it were, will take more than an oil change. The central hypothesis is that the Caribbean private sector is falling behind because its policy environment hinders rather than promotes dynamic, innovative, and

[1] "Euro sclerosis" was a term coined in the 1970s to describe stagnant integration, high unemployment, and slow job creation in Europe relative to the United States. Since then, the term has been used more generally to refer to overall economic stagnation.

Figure 1.1: Key Features of Small Economies



Source: Penn World Table 7.1; and United Nations Development Program.

export-oriented businesses. Structural policies that target overall improvements in the environment in which firms operate may have greater returns than just firm- or sector-level interventions in improving the performance of the private sector, and hence overall economic growth. This is counterintuitive for many Caribbean policymakers and commentators who often focus on the needs of existing large firms (foreign or domestically owned) and discuss which sector or industry should be promoted next given the stagnation of the existing sectors.

This report is organised around three main questions:

1. What is the performance gap between firms in the Caribbean and those in comparable small economies, differentiating between commodity- and tourism-dependent countries?
2. What accounts for the firms' performance gap? What can be attributed to differences in the characteristics (endowments) of the private sector, and what can be attributed to the relative returns associated with those characteristics?
3. What would be the strategic policy actions to foster improved performance and obtain a dynamic private sector?

The comparators used for the Caribbean private sector are firms in the rest of the small economies (ROSE) of the world, with "small" in this case defined as countries with populations of less than three million people. We further disaggregate Caribbean and ROSE into tourism- and commodity-dependent countries for a more refined comparison.[2] Figure 1.1 shows the range of the values of the UN's Human Development

[2] For the Caribbean, tourism-dependent countries include Antigua and Barbuda, The Bahamas, Barbados, Dominica, Grenada, Jamaica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. Caribbean commodity-dependent countries include Guyana, Suriname, and Trinidad and Tobago. The ROSE comparators for tourism-dependent countries include Cape Verde, Cyprus, Fiji, Luxembourg, Maldives, Malta, Mauritius, Montenegro, Samoa, São Tomé and Príncipe, Seychelles, Tonga, and Vanuatu. The ROSE comparators for commodity-dependent countries include Bahrain, Belize, Bhutan, Botswana, Brunei Darussalam, Comoros,

Index and real GDP per capita of small economies separated into island-non island and commodity and tourism based countries.

The rationale for using ROSE as comparators is that small economies, particularly island ones, and hence the firms that operate within them, face particular burdens that large economies do not (Alesina and Spolaore 2003). These burdens can be traced back to the combination of diseconomies of scale and indivisible fixed costs (IMF 2013). Therefore, comparison with ROSE will better illuminate the specificities of the Caribbean over and above the common problems faced by firms in small economies. The disadvantage of following this approach is that the performance problems of private sectors due to the small size of the economies in which they operate are not developed in this report.

In answering the aforementioned main questions of this report, we draw on diverse data sources. The main data used are from the World Bank's 2010 Enterprise Surveys and the 2014 Productivity, Technology and Innovation (PROTEqIN) Survey,[3] as well as the special 2012 Survey on Finance and Gender Issues in the Caribbean (FINGEN). Although these are the first set of comparable data for the region, they do have some limitations. First, they only cover formal firms, so there is no information on the informal sector. This exclusion of possibly the vast majority of micro and small enterprises that are typically informal results in a "truncation" of the data, limiting the analysis of firm dynamics. Second, the Enterprise Surveys also do not cover financial institutions and state-owned enterprises, which are often the largest firms in small economies, a truncation at the upper level that also limits the analysis. Third, these sources are essentially cross-section data, so the creation-destruction dynamics of firms typical of market economies cannot be analysed. The surveys are complemented with the opinion surveys conducted in 2014 by the World Economic Forum and by the World Bank's *Doing Business 2015* report. Macroeconomic fundamentals and projections are taken from the October 2015 edition of the International Monetary Fund's *World Economic Outlook.*

The methods we employ draw on international experiences, including world-wide literature on the performance of firms, descriptions of bilateral relations, and estimates of the statistical association between performance and explanatory variables. Further, we employ the Oaxaca decomposition to analyse the differences between the performances of the Caribbean and ROSE private sectors.[4] We separate out differences

Djibouti, Equatorial Guinea, Estonia, Gabon, The Gambia, Guinea-Bissau, Iceland, Kiribati, Latvia, Lesotho, FYR Macedonia, Mongolia, Namibia, Qatar, Slovenia, Solomon Islands, Swaziland, Democratic Republic of Timor-Leste, and Tuvalu. While this is the extensive list of countries, the set of comparators change depending on data availability.

[3] Information on the World Bank's 2010 Enterprise Surveys and the 2014 PROTEqIN Survey is available on the Compete Caribbean Program's website at http://competecaribbean.org.

[4] See Jann (2008) and Castany, Lopes-Buzo, and Moreno (2007) for an application of the Oaxaca decomposition to firms.

due to characteristics or profiles (values of the variables) from those of their associated returns (the estimated coefficients).[5] The differences in returns help address the hypothesis that the system in which firms operate accounts for their relatively poor performance. The Oaxaca decomposition also allows for the ordering of policy areas into a hierarchy of highest to lowest returns in terms of sales and employment growth from potential policy areas with respect to closing performance gaps. However, in some cases the Caribbean is similar to ROSE, reflecting common problems of small economies, hence we simulate just for the Caribbean the effect on performance of changes in that case. One note of caution is that the empirical analysis presented in this book is a statistical association that does not say anything about causality of the relation (Angrist and Pischke 2015) or about causality methods applied to firm-level data (Hayakawa, Kimura, and Machikita 2010). Nor do we use a case study approach.[6]

Chapter 2 of this book addresses the question of the size of the performance gap between firms in the Caribbean and ROSE, distinguishing between commodity- and tourism-dependent countries. We determine the size of the gaps in growth in sales, employment, and efficiency (sales to employment), and then estimate gaps in total factor productivity. Chapter 3 explores what accounts for the performance gap, distinguishing that which can be attributed to differences in the characteristics of the private sector and that which is attributable to the relative returns associated with those characteristics. Specifically, we review, describe, and estimate the extent to which differences in the profile (standard firm variables such as size, age, ownership, engagement in trade, and economic sector) and their returns explain those gaps. We also examine to what extent sales growth could be increased if the Caribbean's profile and returns were similar to those of ROSE. Chapter 4 searches for additional factors that could account for the gaps by exploring the laments of businesspersons. Chapters 5 to 12 discuss in more detail the role of customs and international trade, foreign direct investment and backward and forward linkages, access to finance, crime, labour, electricity, innovation, and gender. We then begin to bring our analysis to a close by addressing the question of whether government is good for businesses (Chapter 13) and examining policy priority areas and strategic options (Chapter 14). The final chapter summarises the main conclusions of the study.

[5] The statistical analysis mainly uses the 2010 Enterprise Surveys for purposes of comparison with ROSE, as very few surveys were carried out in 2014 in ROSE countries, making a comparison with ROSE firms impossible for that year.

[6] For a case study approach to the Caribbean see Garvey and Shirley (2015).

2

Performance of the Caribbean Private Sector

A dynamic, innovating, and exporting private sector is a major driver of a country's economic growth. Firms play a key role in the development process by making investments, engaging in trade, creating jobs, increasing productivity, and providing a wide range of goods and services needed to improve living standards. Through taxes, they contribute towards the provision of public goods.

The degree to which the private sector is up to the challenge of playing a dynamic role in the Caribbean economy can be ascertained, to a large extent, from its past performance. Thus, the key question tackled in this chapter is what the performance gap is between firms in the Caribbean and comparable small economies, differentiating between commodity- and tourism-dependent countries**.** These comparisons will show the size of the performance gap that we then try to explain in the subsequent chapters of the book.

Measuring firm performance requires addressing five issues: (1) the indicator of performance, for which we mainly use sales complemented with employment, efficiency (sales to employment), and, where possible, total factor productivity (TFP); (2) the measurement of changes in performance, which involves measuring growth either through absolute and relative numbers (we use relative numbers);[1] (3) the time period studied (we use averages in periods of three years—2007–2009, 2011–2013, and 2010–2013—that are denominated here as the

[1] The formula used to calculate growth rates for all performance indicators (*X*) is given by

$$X_growth=\frac{\left(\frac{(X2009-X2007)}{(X2009+X2007)/2}\right)}{2}.$$

See Haltiwanger, Jarmin, and Miranda (2013). The advantage of this approach is that using average sales rather than initial sales controls for those cases where growth is large only because the initial base is small, a problem when including small firms in the analysis.

LACES (2011);[2] Enterprise Survey 2013; and PROductivity, TEchnology and INnovation (PROTEqIN) Survey, respectively; (4) whether the underlying process of changes in performance is organic or acquired growth (i.e., through mergers and new acquisitions)—as does most of the literature, we use total growth (i.e., the sum of organic and acquired growth) due to lack of data that could untangle the two processes; and (5) facilitating international comparisons, which we do by converting country-level values into purchasing-power-adjusted U.S. dollars for variables that are measured in monetary values.[3]

2.1. Context

To give context to the firm-level analysis, we will first compare country-level gross capital formation and real GDP growth in Caribbean countries to that of the rest of the small economies (ROSE) of the world. A standard approximation to measure the relative weight of the private sector in an economy and its performance at the macroeconomic level would have been to measure the employment, sectoral value added, and investment of the private sector vis-à-vis that of the public sector. Unfortunately, employment and GDP data disaggregated by the public and private sector were not available for most of the countries included in the study. Therefore, we will use gross capital formation as a substitute. Generally, the higher an economy's level of capital formation, the faster the economy can grow its aggregate income. This is because increasing an economy's capital stock also increases its capacity to produce more goods and services, which can lead to an increase in GDP. The first two columns in Table 2.1 show the relative size of private sector investment for 2007–2009 and 2010–2013, and the last two columns show private investment over total investment.

The numbers show that private investment as a percentage of GDP and private investment as a percentage of total investment have been systematically lower in the Caribbean than in ROSE. During 2007–2009, Caribbean private investment over GDP was 15.71 percent and that of ROSE was 19.58 percent; and during 2010–2013, Caribbean private investment over GDP was 14.47 percent and that of ROSE was 17.61 percent. The most notable gap is that between commodity-dependent countries, where during 2007–2009, the Caribbean had a share of 3.62 percent while ROSE had a share of 19.27 percent. The gap was less, however, during 2010–2013: 6.69 percent for the Caribbean and 17.8 percent for ROSE. For private investment

[2] Or Caribbean Enterprise survey (CES 2011).

[3] Note that this correction is not always done. See, for example, the chapters in Grazzi and Pietrobelli (2016) where international comparisons are made without PPP correction.

Table 2.1: Gross Capital Formation in the Caribbean and the Rest of the Small Economies of the World (percent)

	Private Investment/GDP (average 2007–09)	Private Investment/GDP (average 2010–13)	Private Investment/Total Investment (average 2007–09)	Private Investment/Total Investment (average 2010–13)
Caribbean	15.71	14.47	57.26	62.14
Caribbean-C	3.62	6.69	20.17	40.82
Caribbean-T	19.17	16.69	67.85	68.24
ROSE	19.58	17.61	64.17	63.79
ROSE-C	19.27	17.80	62.19	62.76
ROSE-T	20.24	18.18	69.82	65.89

Source: IMF (2015).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

as a percentage of total investment, ROSE had a higher participation of the private sector for both periods, but private sector investment as a percentage of total investment grew significantly in Caribbean commodity-dependent countries during 2007 to 2009 and 2010 to 2013, thereby reducing the gap. The slight reduction of private investment (as a percent of GDP) in the Caribbean from 2007–2009 to 2010–2013 was mainly driven by St. Kitts and Nevis, where average private investment fell from 35 to 21.3 percent. The countries for which private investment increased between these periods were Guyana, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago (Table 2.2). Private investment increased significantly in Guyana (from 33 to 42 percent of total investment) and Trinidad and Tobago (from 7 to 39 percent) during this period.

The Caribbean grew at a lower rate in both sub-periods: the growth rate averaged only 1 percent during 2007–2009 and fell to an average of 0.8 percent during 2010–2013**.** In terms of country-level economic growth, the 2007–2009 period was particularly problematic as a result of the global financial crisis. ROSE grew by an average of 3.4 percent during that period and by 3.6 percent during 2010–2013 (Table 2.3).[4] A comparison of tourism-based and commodity-based countries shows that that the former grew at a slower pace than the latter during both periods. However, Caribbean tourism-dependent countries suffered a significant hit, growing at 0.36 percent during 2007–2009 and experiencing negative growth of –0.07 percent during 2010–2013.

[4] See Ruprah, Melgarejo, and Sierra (2014) for the macroeconomic factors contributing to lower growth rates in the Caribbean relative to ROSE.

Table 2.2: Gross Capital Formation in Individual Caribbean Countries (percent)

	Private Investment/ GDP (average 2007–09)	Private Investment/ GDP (average 2010–13)	Private Investment/ Total Investment (average 2007–09)	Private Investment/ Total Investment (average 2010–13)
Antigua and Barbuda	n.a.	n.a.	n.a.	n.a.
The Bahamas	24.66	24.82	95.84	95.89
Barbados	11.28	11.18	66.09	78.67
Dominica	7.63	5.81	37.52	29.24
Grenada	20.76	15.50	68.85	68.86
Guyana	6.32	7.95	33.34	42.78
Jamaica	n.a.	n.a.	n.a.	n.a.
St. Kitts and Nevis	34.90	21.30	82.95	73.04
St. Lucia	21.59	23.13	74.31	71.42
St. Vincent and the Grenadines	13.35	15.07	49.43	60.54
Suriname	n.a.	n.a.	n.a.	n.a.
Trinidad and Tobago	0.93	5.43	7.00	38.85

Source: WEO. October, 2015.

Table 2.3: Economic Growth in the Caribbean and the Rest of the Small Economies of the World (percent)

	Real GDP Growth Rate (average 2007–2009)	Real GDP Growth Rate (average 2010–2013)
Caribbean	1.06	0.75
Caribbean-C	3.15	3.23
Caribbean-T	0.36	–0.07
ROSE	3.36	3.58
ROSE-C	3.64	4.30
ROSE-T	2.91	2.38

Source: IMF (2015).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

In general terms, most Caribbean countries had a poor economic performance, but some differences are worth mentioning. Commodity-dependent countries grew more than tourism-dependent economies due largely to the international super commodity boom. Most notable were Guyana and Suriname, commodity exporters that grew on average by over 4 percent in both periods, and Antigua and Barbuda and Jamaica,

Table 2.4: Economic Growth of Individual Caribbean Countries (percent)

	Real GDP Growth Rate (average 2007–2009)	Real GDP Growth Rate (average 2010–2013)
Antigua and Barbuda	–0.68	–1.24
The Bahamas	–1.68	1.08
Barbados	–0.71	0.18
Dominica	4.21	0.26
Grenada	0.15	–0.02
Guyana	4.11	4.96
Jamaica	–0.93	–0.08
St. Kitts and Nevis	1.49	–0.69
St. Lucia	1.23	–0.61
St. Vincent and the Grenadines	0.17	0.45
Suriname	4.09	4.60
Trinidad and Tobago	1.25	0.12

Source: IMF (2015).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

tourism economies that had negative economic growth for both periods. Barbados, a tourism-dependent economy, had negative growth of –0.9 percent during 2007–2009 and marginal positive growth of 0.2 percent during 2010–2013 (Table 2.4).

2.2. Performance of Firms

The performance of the Caribbean business sector has been relatively poor compared to that of ROSE. In order to determine the level of performance of Caribbean firms with respect to their ROSE comparators, we calculated the average growth rate of Caribbean firms for 2007–2009 as a percentage of the average growth rate of ROSE firms in the same period. Therefore, if the performance of Caribbean and ROSE is equal, average growth of Caribbean firms to ROSE firms will be 100 percent; if average growth is below 100 percent, it means that Caribbean firms are underperforming; and if average growth is above 100 percent, it means that Caribbean firms are overperforming those of ROSE countries. The results can be seen in Table 2.5. During 2007–2009, the average sales growth of Caribbean firms was only 40 percent of the average sales growth of ROSE comparators, and average employment growth was 66 percent of ROSE comparators. However, when adjusting prices with the relevant purchasing power parity (PPP) conversion factor, Caribbean sales growth represent only 6 percent of the

Table 2.5: Performance of Caribbean Firms Relative to the Rest of the Small Economies of the World

Absolute Performance Metrics						
	Caribbean	**Caribbean-C**	**Caribbean-T**	**ROSE**	**ROSE-C**	**ROSE-T**
Sales growth	7.04	9.41	5.13	17.54	18.87	10.06
Labour growth	5.08	6.78	3.56	7.70	8.32	5.00
Relative Performance						
	Caribbean	**Caribbean-C**	**Caribbean-T**			
Sales growth	40%	50%	51%			
Labour growth	66%	81%	71%			
PPP-adjusted						
Absolute Performance Metrics						
	Caribbean	**Caribbean-C**	**Caribbean-T**	**ROSE**	**ROSE-C**	**ROSE-T**
Sales growth	0.88	2.52	–0.44	15.33	16.81	7.06
Labour growth	4.10	5.08	3.67	9.67	10.44	7.94
Relative Performance						
	Caribbean	**Caribbean-C**	**Caribbean-T**			
Sales growth	6%	15%	–6%			
Labour growth	42%	49%	46%			

Source: World Bank, Enterprise Surveys, 2010.
Note: Average growth rate of Caribbean firms for the period as a percentage of the average growth rate of ROSE firms over 2007–2009. Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent. PPP = purchasing power parity.

average sales growth in ROSE, and employment growth is only 42 percent of ROSE. This shows how the performance gap is widened due to marked differences in PPP for the years 2007 and 2009.

However, as noted above, during 2007–2010, the Caribbean grew at a much lower rate than ROSE, Adjusting for different country-level real GDP growth, the firm performance gaps remain, but they are of smaller in size. It could be argued that the observed Caribbean underperformance of firms was in part due to the lower economic growth of the Caribbean region during 2007–2010. Taking the risk of subjecting our calculations to circular reasoning, we adjust firm performance for differential levels of country economic growth rates and still find that Caribbean firms underperform, although by a reduced margin. Even with the adjusted parameters correcting for the systemic stagnation of the Caribbean, average sales growth of Caribbean firms was

Table 2.6: Caribbean Private Sector Performance (percent)

	2010		2014	
	Growth In			
	Sales	Labour	Sales	Labour
The Bahamas	2.01	4.90	3.65	–1.53
Barbados	2.94	3.99	2.89	1.76
Guyana	4.72	5.71	5.67	6.32
Jamaica	–6.71	2.51	2.44	1.66
Suriname	–0.44	4.45	3.16	5.70
Trinidad and Tobago	2.59	6.95	5.57	–1.87
Antigua and Barbuda	–1.20	4.46	5.52	–1.70
Dominica	0.55	2.10	1.97	–1.37
Grenada	3.86	4.92	6.01	–1.34
St. Kitts and Nevis	3.44	6.16	0.28	–1.59
St. Lucia	3.83	2.60	2.70	–0.33
St. Vincent and the Grenadines	1.91	3.82	2.54	–1.72
Simple average	**1.46**	**4.38**	**3.53**	**0.33**

Sources: World Bank, Enterprise Surveys, 2010; and the PROTEqIN Survey, 2014.
Note: Average growth during 2007–2009 and 2010–2013 expressed in percentages.

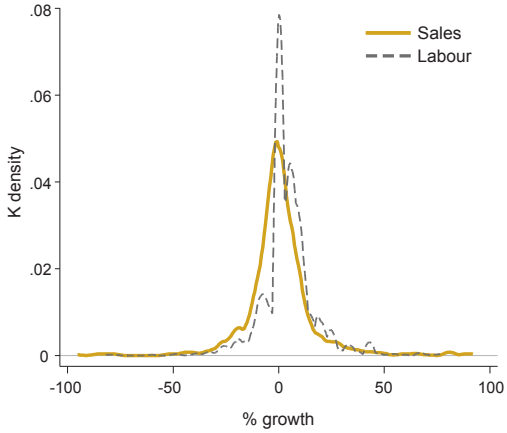
only 86 percent of the average sales growth of ROSE comparators, average employment growth was 87 percent of ROSE comparators, and average efficiency was only 84 percent of the average efficiency of ROSE comparators.

There is wide heterogeneity in the performance indicators of Caribbean firms, but even the best performers are below the average performance of ROSE firms. As can be seen in Table 2.6, average growth in sales for 2007–2009 was 1.46 percent, with some notable outliers. Sales in Trinidad and Tobago grew by 2.6 percent, in Guyana by 4.72 percent, and in Barbados by 2.94 percent, while Dominica's sales grew by only 0.55 percent and Antigua and Barbuda saw negative growth in sales of –1.2 percent. The country with the lowest PPP-adjusted sales growth is Jamaica, at –6.7 percent. In any case, sales growth during the period was way below that of ROSE.

Average growth in employment in the Caribbean during 2007–2009 was 4.38 percent, with some notable outliers. Employment in Trinidad and Tobago grew by 6.95 percent, in St. Kitts and Nevis by 6.16 percent, and in Guyana by 5.71 percent, while employment in Dominica grew by only 2.1 percent. In any case, growth in employment in the Caribbean during the period was way below that of ROSE countries, which was 7.7 percent.

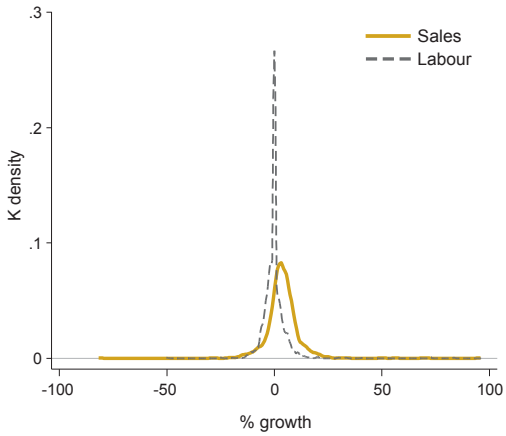
The performance of Caribbean firms has worsened over time in terms of employment. More recent information can be obtained from the follow-up Productivity, Technology

Figure 2.1: Performance Metrics for Caribbean Firms, 2010



Sources: World Bank, Enterprise Surveys, 2010; and the PROTEqIN Survey 2014.

Figure 2.2: Performance Metrics for Caribbean Firms, 2014



Sources: World Bank, Enterprise Surveys, 2010; and the PROTEqIN Survey 2014.

and Innovation (PROTEqIN) Survey conducted in the Caribbean in 2014. Unfortunately, only five ROSE countries completed Enterprise Surveys during that year. Nevertheless, it is possible to calculate the same performance indicators for a sub-set of Caribbean firms that were re-surveyed. As shown in Table 2.6, performance indicators were relatively weaker in terms of employment growth during 2007–2009 than during 2010–2013. Average sales growth, however, increased slightly for the 2010–2013 period.

There are significant outliers. Sales in Grenada grew by 6 percent, in Antigua and Barbuda by 5.5 percent, and in Guyana by 5.67 percent, while sales in St. Kitts and Nevis grew by 0.28 percent. Sales in Jamaica grew by only 2.44 percent, significantly higher than the –6.71 percent observed during 2007–2009, which was mainly driven by the parity adjustment. More striking is the impact on employment. Average growth in employment during 2010 to 2013 was 0.33 percent. Employment decreased in 8 of the 12 Caribbean countries covered in this study. Only Barbados, Guyana, Jamaica, and Suriname showed growth in employment, at 1.7, 6.3, 1.6, and 5.7 percent, respectively, while in Barbados and Jamaica employment increased by 1.66 percent and 1.73 percent, respectively. During this period, growth in Caribbean sales and employment was also outperformed by ROSE comparators.

A more detailed picture can be obtained by classifying firms according to their performance metrics as expanding, stagnant, or contracting, using the framework developed by Daunfeldt, Elert, and Johansson (2014). Since performance metrics are highly concentrated around a close-to-zero mean (Figures 2.1 and 2.2), the cut-off points used for

Table 2.7: Expanding, Stagnating, and Declining Firms in the Caribbean and the Rest of the Small Economies of the World (percent)

	Sales	Labour	Sales	Labour
Indicator	**2010**		**2014**	
Caribbean				
Declining	14.8	7.0	2.8	1.4
Stagnant	70.4	68.2	86.7	96.2
Expanding	14.8	24.8	11.3	2.4
ROSE				
Declining	16.1	10.7		
Stagnant	29.1	42.6		
Expanding	56.1	46.7		

Sources: World Bank, Enterprise Surveys, 2010; and the PROTEqIN Survey 2014.
Note: ROSE = rest of the small economies of the world.

the classification of firms with respect to performance were as follows: [–100, –10] for declining firms, [–10, 10] for stagnant firms, and [10, 100] for expanding firms.[5]

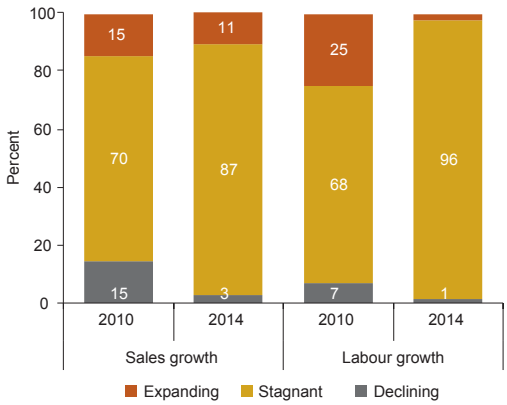
Applying this methodology, 84 percent of Caribbean firms versus 45 percent of ROSE firms had declining or stagnant sales from 2007 to 2009. Labour growth differences between the two regions were narrower, but the differences are still substantial. Only a quarter of Caribbean firms are classified as expanding in terms of labour growth, compared to 46 percent of ROSE firms (Table 2.7).

There was a higher concentration of stagnant firms in the Caribbean in 2014 than in 2010. While during 2007–2009 around 70 percent of Caribbean firms were classified as having stagnant sales or employment, the share of firms with stagnant performance metrics increased to 86 and 96 percent, respectively. The transition to this stagnant state came at a cost of a lower share of expanding firms (Figure 2.3). Only 10 percent of Caribbean firms experienced growth in sales during 2012–2013, and only 2 percent had significant employment growth rates. As a result, it could be argued that the typical Caribbean firm is stagnant and that, exceptionally, only 1 in every 10 firms actually grows.

Although the growth of the sales-to-employment ratio is used to gauge the efficiency of firms, a better indicator of efficiency is total factor productivity. TFP is the main driver of long-run economic growth of an economy, and firm- and country-level TFP growth is perhaps the single most important indicator of an economy's and a firm's health—it drives real incomes, inflation, interest rates, profits, and stock prices. It is a better gauge of an economy's and a firm's use of resources because it captures the efficiency with which inputs of capital and labour are used. Another virtue

[5] For a review of the literature on high-growth firms, see Daunfeldt, Elert, and Johansson (2014).

Figure 2.3: Caribbean Performance Classification Over Time (percent)

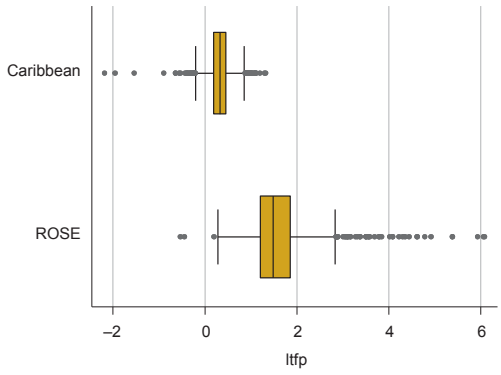


Sources: World Bank, Enterprise Surveys, 2010; and the PROTEqIN Survey 2014.

of TFP is that it is a better proxy for the return on capital of firms and the economy. The 2014 PROTEQIN Survey allows us to estimate TFP for more Caribbean firms than in 2010 because the cost of intermediate goods is captured for firms in the retail sector.

TFP is lower in the Caribbean (based on a comparison with only five ROSE countries). To estimate TFP, we used a Cobb-Douglas production function with three factors of production: capital (K), labour (L), and intermediate goods (M). Output is measured by firm sales; capital is measured by the replacement value of machinery, vehicles, and equipment; labour is measured by the total income of workers, including wages, salaries, and bonuses; and intermediate goods are determined by the cost of raw materials and intermediate materials (or the cost of finished goods and materials purchased for sale by retail sector firms). TFP is estimated as the residual term in the production function. The estimated numbers are given in Figure 2.4: the median log of TFP (horizontal line) is 1 in the Caribbean and 1.8 in ROSE, a significant difference.

Figure 2.4: Total Factor Productivity in the Caribbean and the ROSE



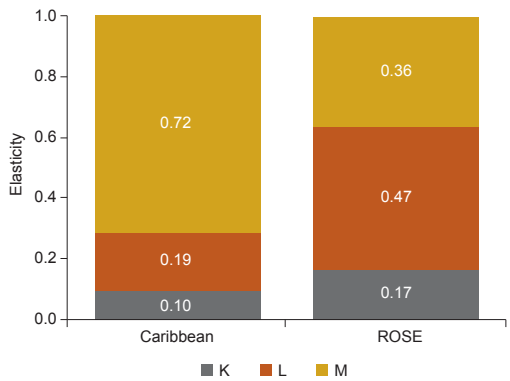
Source: Authors' calculations based on the PROTEqIN Survey 2014.
Note: In Figure 2.4, the horizontal line is the median value, and the upper and lower limit is the 75th percentile and 25th percentile hinges, respectively. The extension lines are the upper and lower adjacent values. The dots are outside values. ROSE = rest of the small economies of the world; K = capital; L = labour; M = intermediate goods.

The input factor elasticities (output-capital and output-employment) are lower for the Caribbean than for ROSE (Figure 2.5). The coefficients obtained from the estimation using a Cobb-Douglas production function can be interpreted as input factor elasticities. They show the responsiveness of sales to changes in the levels of each input factor used in production. An increase in capital

of 10 percent is associated with an increase in output of 0.10 of a percentage point in the Caribbean but 0.17 of a percentage point in ROSE, while a 10 percent increase in employment increases output by 0.19 of a percentage point in the Caribbean and 0.47 of a percentage point in ROSE.

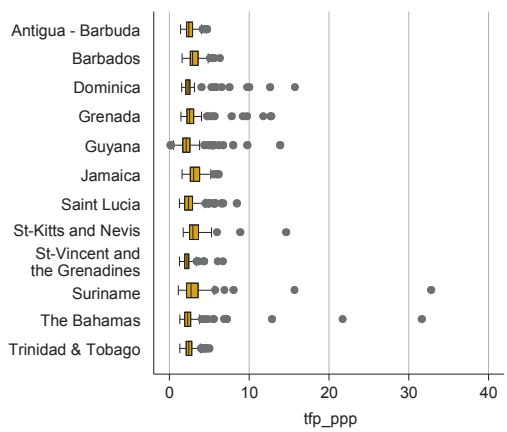
Within the Caribbean there is wide dispersion in TFP and output elasticities (Figures 2.6 and 2.7). The ratio of highest TFP (St. Kitts and Nevis) to lowest TFP (St. Vincent and the Grenadines) is 1.4. The three countries with the lowest TFP are St. Vincent and the Grenadines, Antigua and Barbuda, and Trinidad and Tobago. The three countries with the highest TFP are Jamaica, Suriname, and St. Kitts and Nevis. There is heterogeneity within the Caribbean in the estimated elasticities values. The ratio of the highest output-to-capital elasticity (Dominica, 0.59) to the lowest (Suriname, 0.025) is 20 percent. The dispersion of productivity is such that a 10 percent increase in capital would result in an increase of output of 2 percent in Suriname, 3 percent in St. Lucia, and 6 percent in Trinidad and Tobago (the three countries with the lowest capital-output elasticities). The same 10 percent increase in capital would result in an increase in output of 23 percent in St. Kitts and Nevis, 43 percent in The Bahamas, and 59 percent in Dominica. Finally, among the 12 Caribbean countries, Grenada has the highest labour-to-capital elasticity (0.83), and St. Lucia has the lowest (0.01).

Figure 2.5: **Factor Elasticities in the Caribbean and ROSE**



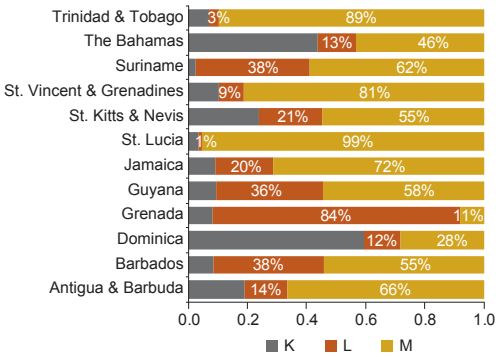
Source: Authors' calculations based on the PROTEqIN Survey 2014.
Note: In Figure 2.4, the horizontal line is the median value and the upper and lower limit is the 75th percentile and 25th percentile hinges, respectively. The extension lines are the upper and lower adjacent values. The dots are outside values. ROSE = rest of the small economies of the world; K = capital; L = labour; M = intermediate goods.

Figure 2.6: **Total Factor Productivity In Caribbean Countries**



Source: Authors' calculations based on the PROTEqIN Survey 2014.

Figure 2.7: Factor Elasticities in Caribbean Countries



Source: Authors' calculations based on the PROTEqIN Survey 2014.

2.3. Conclusion

There is a Caribbean underperformance gap, and the private sector is, *ceteris paribus*, not up to being the engine of economic growth. The Caribbean private sector invests less as a proportion of GDP and total investment than its ROSE counterpart. The private sector investment gap is larger for commodity-dependent economies. If performance is gauged by growth in sales, employment, efficiency, and the level of total factor productivity, Caribbean firms perform worse in all four dimensions relative to the ROSE benchmark. Using nominal exchange rates, the Caribbean sales growth was 40 percent of ROSE growth. If purchasing power parity corrections are made, the Caribbean private sector's sales growth performance is a small fraction (6 percent) of ROSE sales growth, indicating a real exchange problem for Caribbean firms. Further, Caribbean firms' performance has worsened over time, and most firms can be classified as stagnant, with the number of stagnating firms having increased from 50 percent in 2010 to 87 percent in 2014. An increase in capital and labour increases sales in ROSE twice as much as it does in the Caribbean. Thus, *ceteris paribus*, the existing Caribbean business sector, is not up to the challenge of increasing Caribbean economic growth and employment and, hence, of improving the welfare of Caribbean citizens. The subsequent chapters of this book attempt to explain why—in considering only micro-firm level factors—there is such a performance gap and what can be done about it.

3 Profiles of the Private Sector in the Caribbean and the Rest of the Small Economies of the World

The relatively poor performance of Caribbean enterprises, discussed in the previous chapter, could be due to differences in the business sector's profile. This includes such characteristics as business size, age, sector of operation, and legal form. These characteristics are often the variables used to explain firm performance in the literature. Thus, this chapter explores the extent to which the profiles of the private sector in the Caribbean differ from those in the rest of the small economies (ROSE) of the world. It then examines what proportion of the performance gap can be attributed to the difference in profiles.

The chapter first details salient difference in the profiles, then discusses the relationship between the individual elements of the profiles and performance in terms of growth of sales, employment, and efficiency. Finally, we estimate the proportion of the performance gaps that can be explained by the differences in the profiles and their returns and how performance could improve.

3.1. Profile

The profile of Caribbean firms—be they located in tourism-dependent or commodity-dependent countries—differs from that of firms in ROSE (Figure 3.1). The average Caribbean firm is smaller and older than its ROSE counterpart. Caribbean firms are highly concentrated in the tourism and retail sectors in medium-sized localities, and ownership is predominantly local.

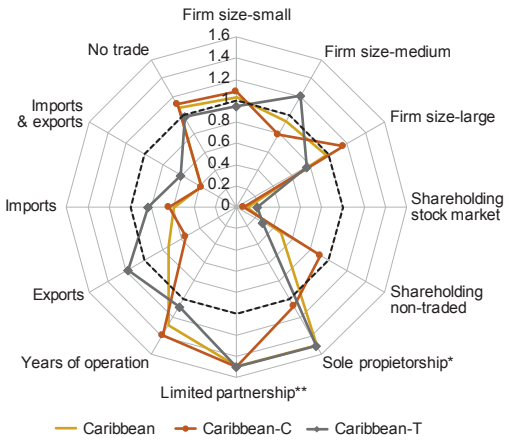
The following characteristics of Caribbean firms stand out:

- **Caribbean firms are smaller.** 69 percent of Caribbean firms are small (i.e., less than 20 permanent full-time employees) compared to 66 percent in ROSE. Of firms in commodity-dependent Caribbean countries (Caribbean-C) 71 percent are small,

compared to 66 percent in commodity-dependent ROSE countries (ROSE-C). However, while 67 percent of firms in Caribbean tourism-dependent countries (Caribbean-T) are small, 70 percent of firms in tourism-dependent ROSE countries (ROSE-T) are classified as small.

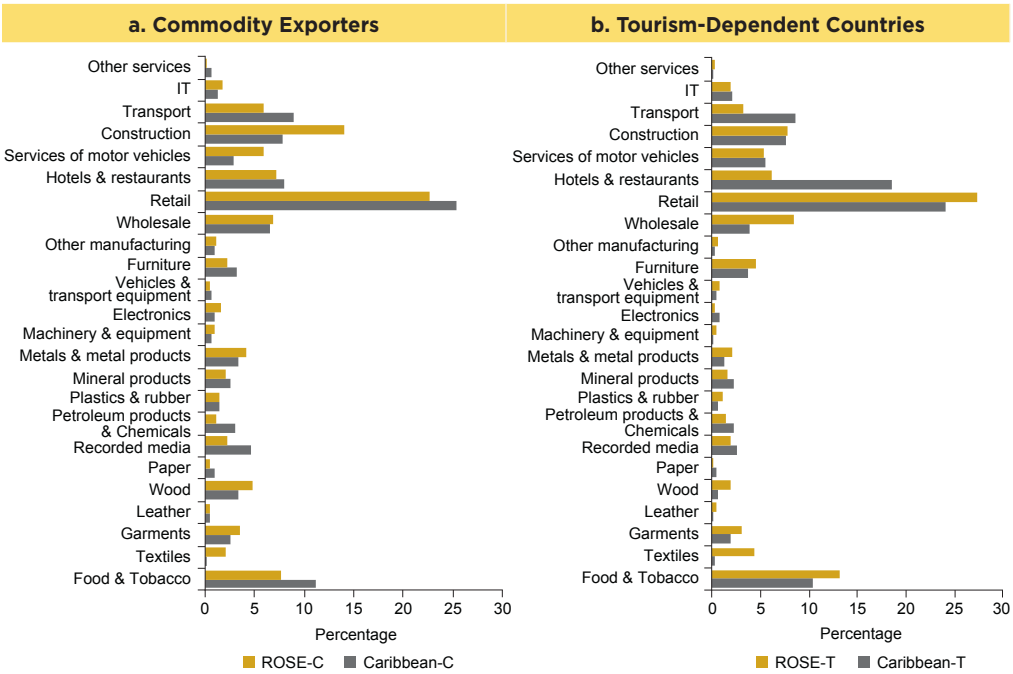
- **Caribbean firms are older.** The average age of Caribbean firms is 19.7 years and of ROSE firms is 15.4 years. The average age in Caribbean-T is 19.2 years and in Caribbean-C is 20.9 years. The average firm in ROSE-T and ROSE-C has operated 17.8 and 14.9 years, respectively.
- **Caribbean firms are highly concentrated in the retail and tourism sectors.** Among Caribbean firms, 31 percent operate in the retail sector compared to 22.4 percent in ROSE. The gap is wider among firms in commodity-exporting countries: 33 percent in Caribbean-C compared to 20 percent in ROSE-C. Among Caribbean-T firms, 23.2 percent operate in the tourism industry while only 6.7 percent of ROSE-T firms belong to the tourism sector.
- **Caribbean firms have relatively larger proportions of limited partnerships and sole proprietorships.** Of Caribbean firms, 41 percent are legally registered as a sole proprietorship compared to only 19 percent in ROSE. Limited partnerships account for just 2 percent of firms in ROSE, while Caribbean limited partnerships account for 16 percent of firms.
- **Three-quarters of Caribbean firms operate within seven industrial sectors: retail (24 percent), hotels and restaurants (15 percent), food and tobacco (10.7 percent), transport (8.7 percent), construction (7.6 percent), services of motor vehicles (4.7 percent), and wholesale (4.7 percent).** The composition is similar in ROSE except for notable differences in textiles and wood sectors and a higher share of wholesale in ROSE (7.4 percent) than in the Caribbean. However, the distribution of firms across sectors is different between commodity-dependent (Figure 3.2a) and tourism-dependent countries (Figure 3.2b). While the distribution of firms in the metals and mineral products sectors (2 and 4 percent of the total, respectively) is higher in Caribbean-C, the retail, wholesale, and construction sectors

Figure 3.1: Private Sector Profile



Source: World Bank, Enterprise Surveys, 2010.
Note: A ratio greater than unity implies higher value in the Caribbean relative to ROSE. Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries. *Figure is 3.3 for Caribbean-T and 2.1 for Caribbean.**Figure is 6.8 for Caribbean-C and 16 for Caribbean-T, and 8 for Caribbean.

Figure 3.2: Distribution of Firms by Sector (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

account for 43 percent of total firms. As expected, the hotel and restaurant industry represents a larger share of firms among tourism-dependent countries: 18.7 percent in Caribbean-T compared to only 6.2 percent in ROSE-T.

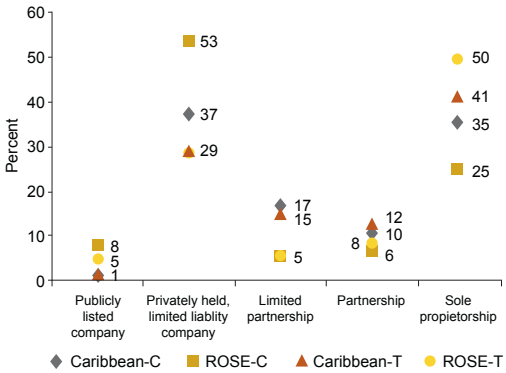
3.1.1. Legal Form

There are five legal forms of firms: shareholding companies with shares traded in the stock market, shareholding companies with non-traded (or privately-traded) shares, limited partnerships, partnerships, and sole proprietorships. Two legal forms dominate in both the Caribbean and ROSE: sole proprietorships and shareholding companies with non-traded shares (Figure 3.3).

3.1.2. Size and Age

As one would expect, publicly listed companies are, on average, larger and have been operating for longer, while sole proprietorships are small in size and relatively young. Publicly listed companies in Caribbean-C have 486 full-time employees, on average, compared to 242 in ROSE-C. This difference carries over to tourism-dependent countries

Figure 3.3: Legal Form of Firms (percentage composition)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

as well (281 in Caribbean-T versus 98 in ROSE-T), as can be seen in Table 3.1.

3.2. Profile and Growth Performance

The above characteristics of the private sector affect performance in different ways. This section reviews these bilateral relationships with a focus on size, age, sector, and the legal form of firms.

3.2.1. Size and Performance

The size and growth of firms matters because the growth of firms affects a country's economic growth, and differential growth by size has implications regarding trends towards increasing/decreasing concentration. However, size should not matter regarding concentration trends, according to Gibrat's Law (the law of proportionate effects), which asserts that a firm's growth rate is independent of its size. The empirical evidence regarding the relationship between firm size and growth is mixed. Ayyagari, Demirgüç-Kunt, and Maksimovic (2011) present comprehensive

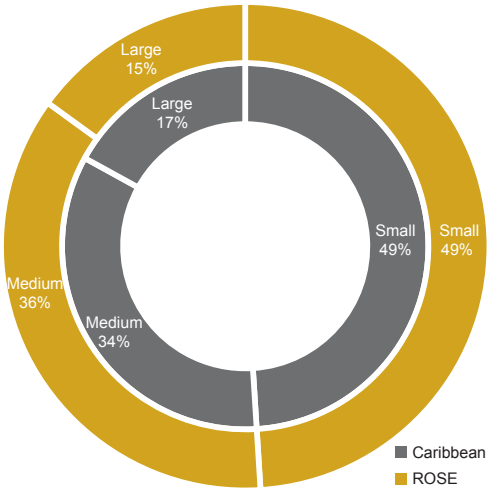
Table 3.1: Legal Form and Size and Age of Firms

	Size (full-time employees)				Age (years)			
	Caribbean-C	ROSE-C	Caribbean-T	ROSE-T	Caribbean-C	ROSE-C	Caribbean-T	ROSE-T
Publicly listed company	486	242	281	98	45	30	50	24
Privately held, limited liablity company	86	97	70	86	25	16	24	24
Limited partnership	45	97	73	29	24	16	27	20
Partnership	58	40	49	39	23	15	20	15
Sole propietorship	42	39	20	28	22	13	18	16

Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

statistics on the contribution of small and medium-sized enterprises (SMEs)[1] to total employment, job creation, and growth in the formal sector for 104 developing countries. The authors find that SMEs are the smallest contributors to employment across countries but that their contribution to job creation is comparable to that of large firms. In modelling over 7,000 publicly held firms in the United States from 1987 to 2006 in a dynamic panel data setting, Lee (2009) provides evidence that profit rates are positively correlated with firm size (non-linearly), holding firm and industry-specific characteristics constant. Dogan (2013) finds a positive relationship between size indicators (sales and number of employees) and profitability (measured by the return on assets) for a sample of 200 companies active on the Istanbul Stock Exchange between 2008 and 2011. Using census data from India, Coad, and Tamvada (2008) find that size (and age) have a negative impact on (gross) output growth. In defining the size of a firm, we follow the World Bank's Enterprise Surveys to classify firms as small (5–20 employees), medium-sized (20–99 employees), and large (100+ employees). This classification is the one used for the stratification of the sample, along with business sector and geographic region within a country. The proportion of small, medium-sized, and large firms for the Caribbean and ROSE is shown in Figure 3.4.

Figure 3.4: Size (Employment) Classification (percent)

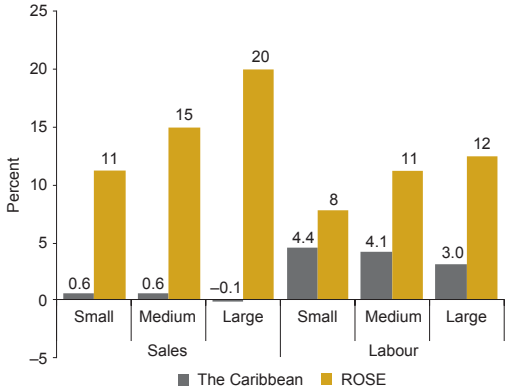


Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

A positive relationship between firm size and performance—that is, the larger the firm, the higher the sales growth—is clear for ROSE enterprises (Figure 3.5) but not for the Caribbean. The ratio of sales growth of large to small firms in ROSE is 1.8, while in the Caribbean, large firms exhibit negative sales growth (adjusted for purchasing power parity). In addition, in the Caribbean employment growth diminishes with size, i.e., employment growth of small firms is greater than that of medium-sized and large firms. Thus, the employment-growth ratio of large to small firms is 0.68 in the Caribbean but 1.6 in ROSE. Figure 3.5 also shows the underperformance in both performance indicators for all three sizes of firms in the Caribbean compared to ROSE, where the degree of

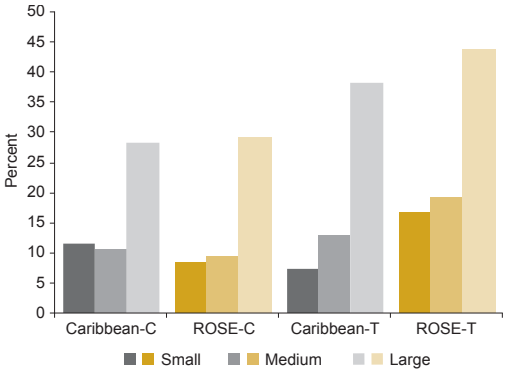
[1] Defined by the authors as firms with fewer than 100 employees.

Figure 3.5: Private Firms' Sales Growth and Size (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 3.6: Firms That Are Part of Larger Firms, and Their Size (percent)



Source: World Bank, Enterprise Surveys.

underperformance increases with firm size for sales growth and employment growth.

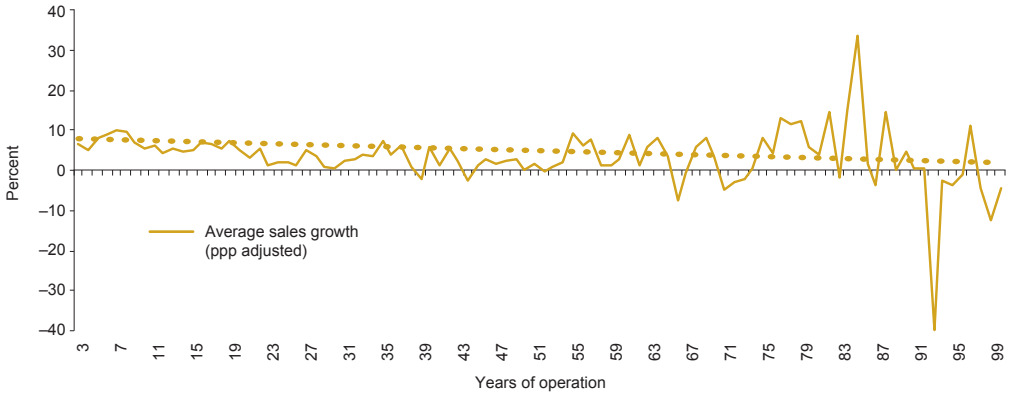
As expected, most firms that are part of a greater corporation are large. There are no significant differences between private enterprises operating in commodity-dependent countries. However, there is a higher share of firms that are part of a larger corporation in ROSE-T than in Caribbean-T. This difference is more pronounced in small firms (7 percent in Caribbean-T and 16.5 percent in ROSE-T) and diminishes as firm size increases (Figure 3.6).

3.2.2. Age and Performance

Although much attention has focused on the size and growth relationship, there has also been attention given to the age-growth relation. There is a large body of literature (theoretical and empirical) focusing on whether older firms outperform younger ones. However, the relationship between age and performance is not as clear as the one between size and performance.

Majumdar (1997) uses an extensive dataset on Indian firms to analyse the effect of firm size and age on efficiency and profitability. The author concludes that older firms are more productive and less profitable. However, there is a stream of research showing that older firms tend to be less flexible and prone to inertia. Old firms are unable to make rapid adjustments in an evolving environment and are likely to be outperformed by younger, more agile firms. More recently, Loderer and Waelchli (2010) find a highly significant negative relation between firm age and profitability. Their result stems from organisational rigidities. Consistent with this result, they find that older firms are less efficient compared to their industry peers, as manifested

Figure 3.7: Caribbean Firms' Performance and Years of Operation (percent)

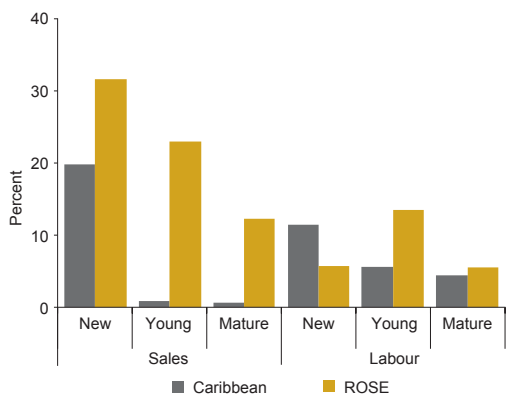


Source: World Bank, Enterprise Surveys, 2010.
Note: PPP = purchasing power parity; ROSE = small economies in the rest of the world.

by higher costs, slower growth, increased overhead expenses, and reduced investment in research and development.

Focusing on simple three-year growth rates of Caribbean firms, Figure 3.7 shows how sales growth decreases, on average, with a firm's age. The evidence is weaker with a more refined classification of age[2]—upper bounded at 100 years of operation—and using average annual growth rates. While average sales diminish with firm age, average employment and efficiency (by construction) behave differently in the Caribbean. Average sales growth is relatively higher for new firms in ROSE as well. Employment growth follows a similar pattern in the Caribbean: decreasing with years of operation. However, in ROSE, young firms have higher employment growth rates than the newly formed ones (Figure 3.8).

Figure 3.8: Firms that are Part of Larger Firms, and Their Size (percent)

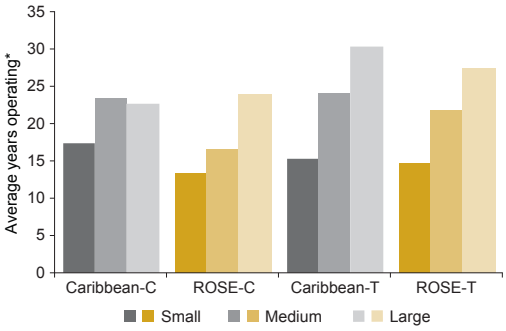


Source: World Bank, Enterprise Surveys (2010).

Size and age are themselves correlated positively (Figure 3.9). Caribbean-C small firms have been operating for 16 years on average, compared to 13.4 years for ROSE-C small firms. The difference is more substantial for medium-sized firms in commodity-dependent countries (23 years for Caribbean-C and 16.4 years for ROSE-C). Overall, it is clear that large

[2] Firms are classified as new (less than three years in operation), young (4–10 years), and mature (10–100 years).

Figure 3.9: Firm Size and Years of Operation



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent. *Sample of firms operating for less than 100 years

firms stay in the market for longer periods, both in the Caribbean and in ROSE. This is especially true in tourism-dependent economies, where large firms' average age is 30 and 27 years in the Caribbean and ROSE, respectively.

Analysing age, size, and performance in terms of sales simultaneously reinforces previous evidence found on the bilateral relations of size and sheds light on market entry characteristics during 2007–2010. New Caribbean firms had, on average, higher sales growth than their older counterparts. While this behaviour seems more pronounced among large Caribbean firms (Table 3.2), it is worth noting that it represents only one firm in The Bahamas. Since the period analysed overlaps with the global financial crisis, it is no surprise that there are also no new large firms in ROSE.

3.2.3. Firm Sector and Performance

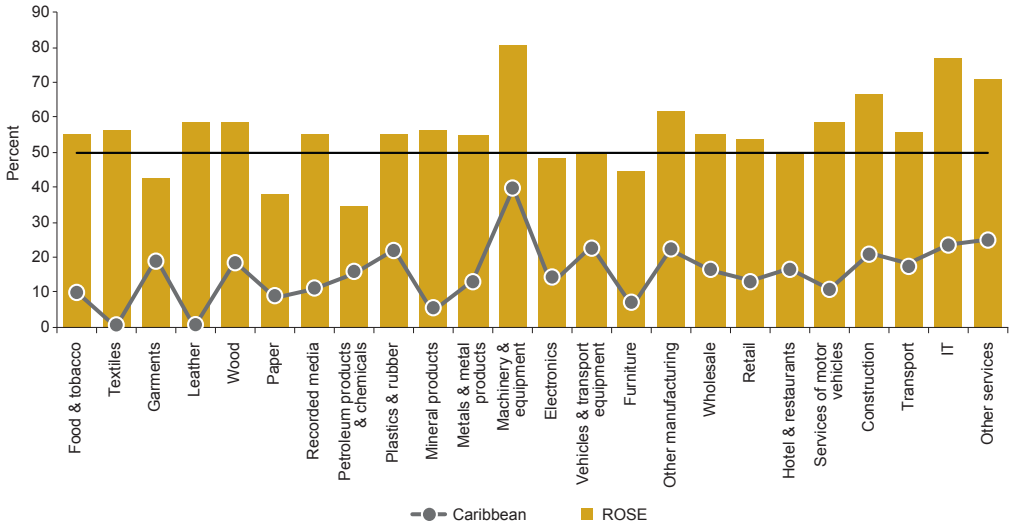
The sectoral distribution of performance in terms of annual sales growth is very different in the Caribbean and ROSE when measured by two mutually exclusive categories of performance (expanding versus non-expanding). The overall performance gap is quite heterogeneous in terms of industry sectors. While the share of firms with expanding sales growth is higher than 50 percent for all industry sectors in ROSE, no industry sector in the Caribbean reaches the 50 percent level (Figure 3.10).

Table 3.2: Average Sales Growth and Firm Size and Age (percent)

	New	Young	Mature
Caribbean			
Small	19.36	0.35	–0.39
Medium	23.58	2.97	1.63
Large	58.44*	1.87	1.87
ROSE			
Small	35.61	21.08	8.08
Medium	15.64	27.02	17.63
Large	n.a.	35.59	21.83

Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = small economies in the rest of the world. * Represents one observation.

Figure 3.10: Industrial Sector and Performance (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = small economies in the rest of the world.

Half of Caribbean firms are concentrated within three sectors: retail, hotels and restaurants, and food and tobacco. The share of firms operating in these industries in ROSE is 40.3 percent. Furthermore, as Figure 3.10 suggests, the percentage of Caribbean firms with expanding sales within these sectors is relatively low. The pattern is the same for most industry sectors except for machinery and equipment, where 40 percent of the firms have expanding sales. However, this sector represents only 0.27 percent of all Caribbean firms and 1.4 percent of firms in ROSE (Table 3.3), so its relatively good performance is counteracted by its low overall market share.

Following the overall pattern of the Caribbean, most industry sectors in commodity-dependent countries have below-average sales growth. The only sectors for which there are more than 50 percent of firms with expanding sales are machinery and equipment and IT (Figure 3.11a). Leather, paper, recorded media, and other manufacturing are the only industrial sectors in Caribbean-T for which more than half of firms reported expanding sales (Figure 3.11b).

3.2.4. Firms' Legal Status and Performance

The legal form of a firm matters.[3] Limited partnerships in Caribbean-C are associated with better performance metrics (sales and employment growth), in contrast

[3] The data do not allow us to identify family-owned businesses. See Nicholson and Lashley (2006) for an analysis of family-owned firms in the Caribbean.

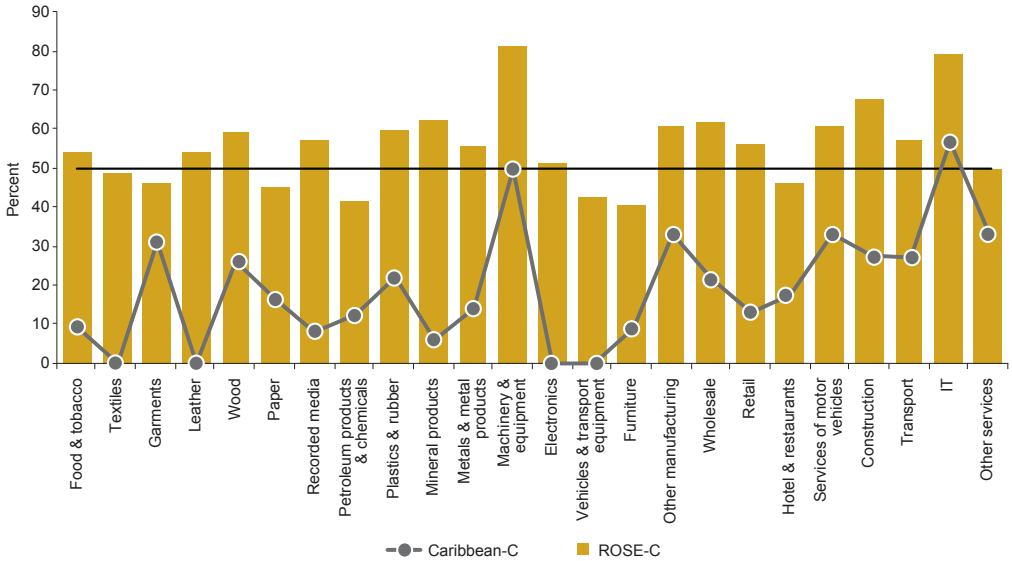
Table 3.3: Industrial Sector and Firm Performance (percent)

	Retail	Hotel & Restaurants	Food & Tobacco	Transport	Construction	Services of Motor Vehicles	Wholesale	Furniture	Recorded Media	Petroleum Products & Chemicals	Mineral products	Garments
Expanding	17.5%	5.0%	6.7%	3.5%	6.8%	3.5%	5.1%	2.7%	1.6%	1.4%	1.5%	2.6%
Declining/ stagnant	20.4%	5.0%	8.4%	4.4%	13.6%	4.9%	6.4%	2.2%	1.9%	0.8%	1.9%	1.9%
ROSE	37.9%	10.0%	15.1%	8.0%	20.4%	8.4%	11.5%	4.8%	3.5%	2.2%	3.4%	4.5%
Expanding	21.3%	12.9%	9.4%	7.4%	6.4%	3.9%	3.6%	3.4%	2.7%	2.1%	2.2%	1.8%
Declining/ stagnant	3.3%	2.6%	1.1%	1.6%	1.7%	0.5%	0.7%	0.2%	0.3%	0.4%	0.1%	0.4%
Caribbean	24.6%	15.5%	10.5%	9.0%	8.1%	4.4%	4.3%	3.6%	3.0%	2.5%	2.3%	2.2%
	Metals & Metal Products	**IT**	**Wood**	**Plastics & Rubber**	**Electronics**	**Vehicles & Transport Eqpmt.**	**Paper**	**Other Manufacturing**	**Textiles**	**Machinery & Eqpmt.**	**Other Services**	**Leather**
Expanding	2.4%	0.6%	2.4%	1.1%	1.0%	0.4%	0.4%	0.6%	1.9%	0.3%	0.1%	0.4%
Declining/ stagnant	2.9%	2.2%	3.4%	1.4%	1.0%	0.4%	0.3%	1.0%	2.4%	1.1%	0.3%	0.5%
ROSE	5.3%	2.8%	5.8%	2.5%	2.0%	0.8%	0.7%	1.6%	4.3%	1.4%	0.4%	0.9%
Expanding	1.8%	1.4%	1.2%	0.8%	0.8%	0.5%	0.6%	0.4%	0.3%	0.2%	0.2%	0.1%
Declining/ stagnant	0.3%	0.4%	0.3%	0.2%	0.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%
Caribbean	2.1%	1.8%	1.5%	1.0%	0.9%	0.7%	0.6%	0.5%	0.3%	0.3%	0.2%	0.1%
Expanding	17.47	4.98	6.71	3.52	6.81	3.46	5.08	2.65	1.57	1.41	1.46	2.60
Declining/ stagnant	20.39	4.98	8.44	4.43	13.63	4.92	6.38	2.16	1.95	0.76	1.89	1.95

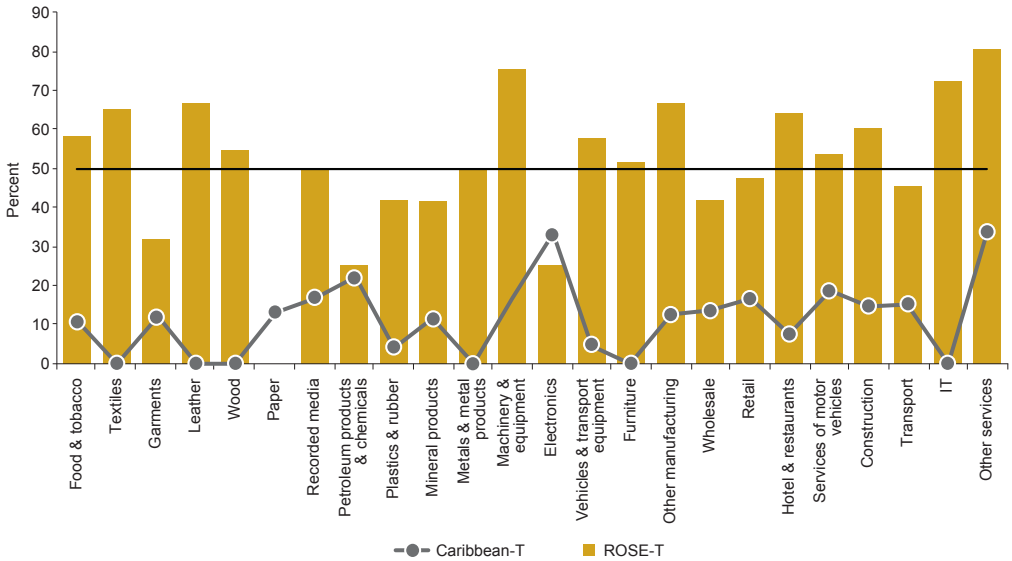
Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: ROSE = small economies in the rest of the world.

Figure 3.11: Sectorial Composition in Commodity- and Tourism-dependent Countries (percent)

a. Commodity Exporters



b. Tourism-dependent Countries



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

to sole proprietorships, which have the best performance in Caribbean-T (Table 3.4). Sales growth of limited liability companies in Caribbean-C represents one-third that in ROSE-C, accounting for the largest gap. The performance gap between limited liability companies is even wider among tourism-dependent countries: 2.9 percent sales growth in Caribbean-T compared to 14.6 percent in ROSE-T.

3.4. Conclusion

The resulting profile of the Caribbean private sector is not encouraging: firms are smaller, older, less open to international trade, have relatively larger proportions of limited partnerships and sole proprietorships, and are concentrated in the retail and tourism sectors. With the hypothesis discussed in this chapter, the relatively poor performance of the Caribbean private sector—given the literature on that profile and performance—is therefore no surprise. However, the key takeaway from the analysis is that other factors need to be considered to explain the performance gaps. To answer that question, the next chapter examines the laments of businesspersons in the Caribbean in order to better define the constraints faced by firms in the region.

Table 3.4: Legal Status and Performance (percent)

	Sales Growth				Employment Growth			
	Caribbean-C	ROSE-C	Caribbean-T	ROSE-T	Caribbean-C	ROSE-C	Caribbean-T	ROSE-T
Publicly listed company	1.5	13.1	−4.4	−2.7	4.7	5.0	−0.4	7.2
Privately held, limited liability company	1.8	18.4	−0.2	11.3	4.6	9.7	2.2	7.4
Sole proprietorship	2.0	13.5	1.1	12.2	5.2	14.0	5.0	9.3
Partnership	4.7	14.2	−1.8	7.0	4.5	11.5	4.0	6.5
Limited partnership	4.7	8.9	−4.2	1.4	6.4	6.4	3.1	0.9

Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

4

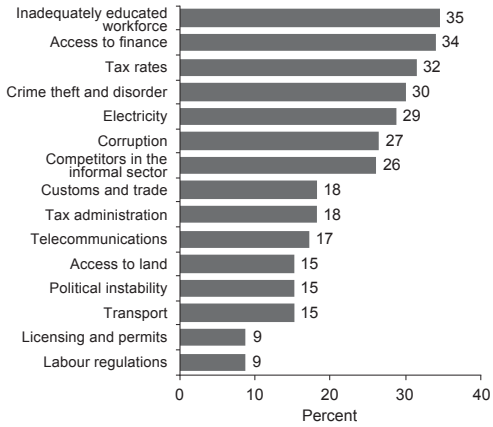
The Laments of Caribbean Businesspersons

Business owners and managers face many challenges in their daily operations. Some of these challenges involve particular areas of the business climate that limit their performance and growth potential, while others might be more general issues. Opinion surveys, like those conducted for the World Economic Forum's *Global Competitiveness Report* and the World Bank's Enterprise Surveys, help voice private sector concerns about the business climate.

This chapter reviews the results of opinion surveys and checks the extent to which these subjective valuations are correlated with objective indicators. The comparison is relevant because it may be that complaints reflect fixed effects, that is, non-random characteristics of countries in the Caribbean that are independent of their small size. Finally, to the extent there is a high correlation between subjective and objective indicators, subsequent chapters will analyse variables considered to explain the Caribbean private sector's relatively poor performance.

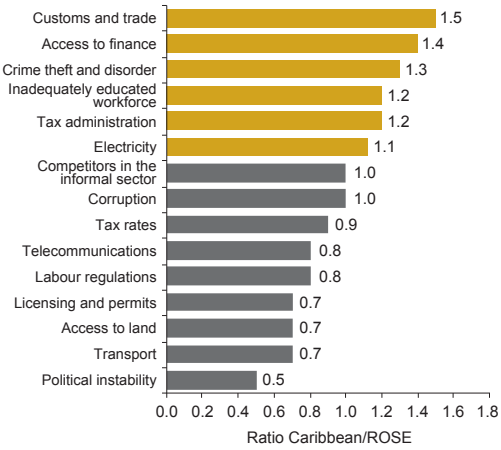
One of the questions asked of executives is to rank the most problematic factors for doing business in the country. But how can we tell if these complaints are real? The debate on the reliability of subjective indicators used to make policy recommendations remains unsettled. Nonetheless, qualitative rankings have become very popular among policymakers and private sector stakeholders. One approach to shed some light on the veracity of qualitative surveys is to correlate them with responses to opinion surveys, such as the Executive Opinion Survey, and with quantitative data collected on similar or related factors (Hallward-Driemeir and Aterido 2009). For example, a survey may ask a question about the provision of electricity as a problem for business growth, and data may be collected on the number of outages in a month or the duration of these outages. The correlation between these two measures, one qualitative and the other quantitative, could be used to offer a general assessment of how fair the complaints are.

Figure 4.1.a: Ranking the Most Problematic Factors for Doing Business in Caribbean Countries (percent)



Source: World Bank, Enterprise Surveys, 2010.

Figure 4.1b: Ranking of Caribbean Complaints Relative to the Rest of the Small Economies in the World



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

When ranking the most problematic factors for doing business in Caribbean countries, the following nine problems are at the top of the list: an inadequately educated labour force; access to finance; tax rates; crime, theft, and disorder; electricity; corruption; competition of the informal sector; customs and trade regulations; and tax administration (Figure 4.1a).

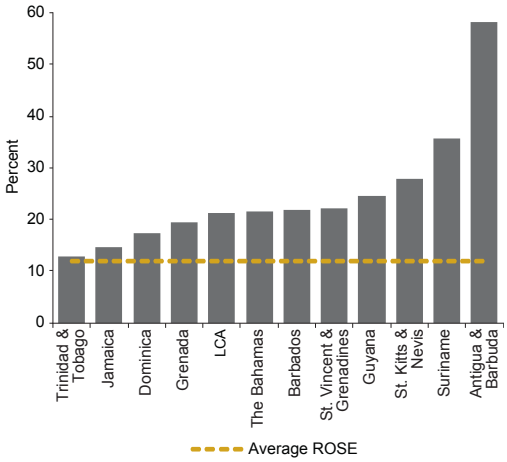
However, for this study, our main interest is the importance of Caribbean private sector complaints relative to complaints of the private sector in the rest of the small economies (ROSE) of the world. Figure 4.1b shows the Caribbean's problematic factors for doing business relative to those of ROSE. By making this comparison, we can determine the relative importance of a factor recognized as problematic in the Caribbean vis-à-vis its relative importance in ROSE. The ordering of relative complaints changes when normalised by the opinions of ROSE businesspersons compared to the rankings in absolute terms. For example, Caribbean businesspersons' perception of customs and trade as being a major constraint is 1.5 times greater than the perception of the same problem in ROSE, and the Caribbean perception of political instability as a major problem for doing business is half that of ROSE. We will analyse the top six factors, which have a ratio above 1, coloured in red in Figure 4.1b.

The predominant relative complaints are customs and trade regulations, access to finance, crime, theft, and disorder, an inadequately educated labour force, tax administration and tax rates, and electricity. The remainder of the chapter will analyse the results, fact-checking the fairness or validity of the complaints against objective data.

4.1. Customs and Trade Regulations

Among Caribbean businesspersons, 18 percent believe customs and trade regulations represent a major obstacle to their operations. Even though this is not the most pressing concern among Caribbean firms, it is the one with the greatest difference with respect to ROSE (1.5 times higher). The extent to which firms are able to sell their products abroad is not only dependent on their value added and trade orientation, but also on the environment in which the firms must transport their products to other countries. This is particularly important for small island economies that rely on having good connectivity and logistics to reach lucrative niches in external markets.

Figure 4.2: Perceptions of Customs and Trade Regulations (percent)



Source: World Bank, Enterprise Surveys, 2010; World Bank (2014).
Note: ROSE = rest of the small economies of the world.

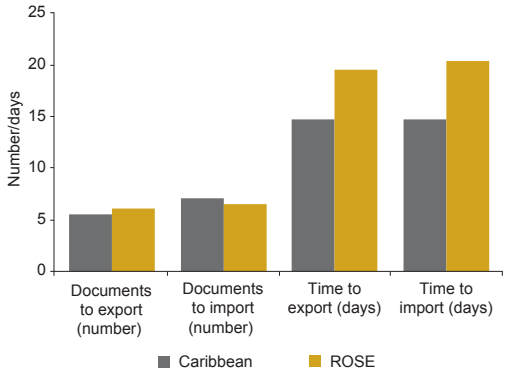
The proportion of firms that perceive customs and trade regulations as a constraint is higher in all Caribbean countries than the average proportion in ROSE (Figure 4.2). Antigua and Barbuda has the most negative perception of the regulations (58 percent) and Trinidad and Tobago the least (13 percent). Jamaica, which has the lowest share of exporting firms[1] in the Caribbean (6 percent), does not have a high share of businesspersons complaining about this particular issue.

The relatively worse perception of customs and trade regulations is not necessarily due to the number of documents required or the time it takes to export. The pillar on trading across borders in the World Bank's Doing Business Index shows no significant differences between the Caribbean and ROSE (Figure 4.2). On average, in the Caribbean, the number of required documents to export is 5.5 and to import 7.1, while in ROSE the number of required documents to export is 6.2 and to import 6.6.

A priori, it is not evident that the institutional environment for trade in the Caribbean is more adverse than in ROSE. In terms of time, it takes an average of 14.8 days for merchandise to be exported and imported in the Caribbean, while in ROSE it takes 19.6 days to export and 20.4 days to import (Figure 4.3). Import costs are lower in the Caribbean: the average cost to import (deflated U.S. dollars per container) in the Caribbean is $977, compared to $1,214 in ROSE. Conversely, costs to export are

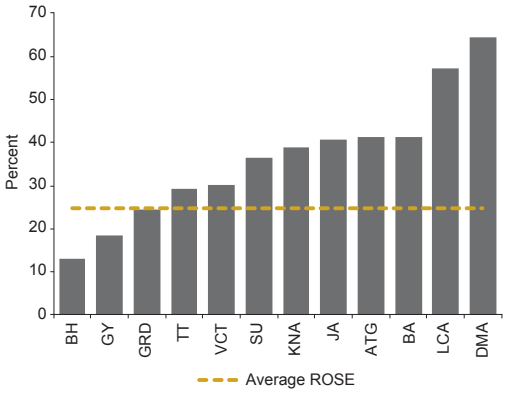
[1] This refers to what is classified as "only exporters" in Chapter 5.

Figure 4.3: Doing Business: Trading across Borders



Source: World Bank, Enterprise Surveys, 2010; World Bank (2014).
Note: ROSE = rest of the small economies of the world.

Figure 4.4: Perceptions of Access to Finance (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

40 percent higher in the Caribbean at $1,695 versus only $1,295 in ROSE. Chapter 5 provides an in-depth analysis of trade and its relationship to firm performance.

4.2. Access to Finance

Except for firms in The Bahamas and Guyana, the perception of Caribbean businesspersons that access to finance is a major obstacle is above the ROSE average (Figure 4.4). Complaints about access to finance is ranked second in relative terms when compared to ROSE but ranked first in absolute terms for the Caribbean. Among Caribbean firms, 34 percent perceive access to finance as a major constraint, whereas only 24.7 percent do so in ROSE. Firms in The Bahamas and Guyana have a less harsh perception on the matter, whereas more than half of the businesspersons interviewed in Dominica and St. Lucia complain about the lack of access to financial resources. The determinants of access to finance and the existing gap with respect to ROSE are discussed in Chapter 7.

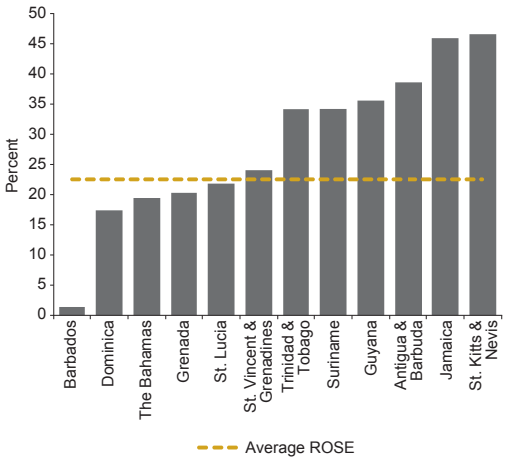
4.3. Crime, Theft, and Disorder

Among Caribbean businesspersons, 30 percent perceive crime as a major or severe business obstacle, 8 percentage points higher than the ROSE average. Complaints about crime is ranked third in relative terms when compared to ROSE and also ranked third in absolute terms for the Caribbean. The perception that crime is a major hindrance for business development is widespread throughout the region, with Barbados being the most notable exception (at less than 2 percent) and The Bahamas, Dominica, and Grenada

with indicators below the regional average (Figure 4.5a). It is not surprising that firms in Jamaica—a country with high levels of crime and violence—have the worst opinions regarding crime, theft, and disorder at 46 percent. Other countries with negative perceptions include St. Kitts and Nevis, also with 46 percent, and Guyana, Suriname, Trinidad and Tobago, and Dominica with approximately 30 percent.

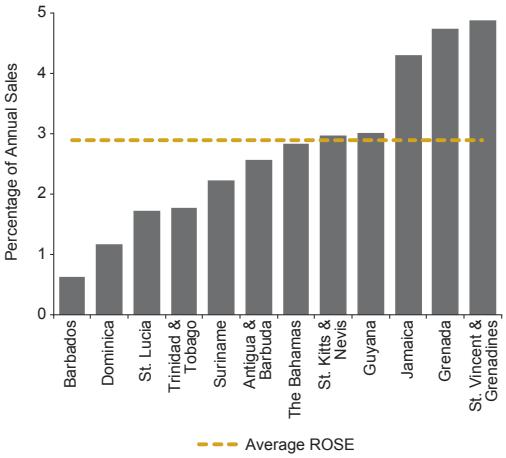
Objective measures, such as losses resulting from crime (as a percentage of total annual sales), do not necessarily reflect the results of the opinion surveys. Losses resulting from crime are 2.5 percent of total annual sales in the Caribbean and 2.9 percent in ROSE. Only three Caribbean countries report losses above the average for ROSE: Jamaica, Grenada, and St. Vincent and the Grenadines (Figure 4.5b). The perception of crime is positively correlated with the losses due to crime and is negatively correlated with the country's rule of law indicator (Table 4.1). The relationship between crime and its associated costs with firm performance is presented in Chapter 8.Source: World Bank, Enterprise Surveys, 2010.

Figure 4.5a: Perception of Crime as a Major Constraint (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 4.5b: Firm Losses due to Crime (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Table 4.1: Correlation between Subjective and Objective Measures: Crime

	Subjective Crime	Losses Due to Crime	Rule of Lw
Subjective Crime	1.000		
Losses Due to Crime	0.1492***	1.000	
Rule of Law	-0.0400***	-0.1148***	1.000

Source: World Bank, Enterprise Surveys, 2010.
Note: *p<0.05, ** p<0.01, *** p<0.001.

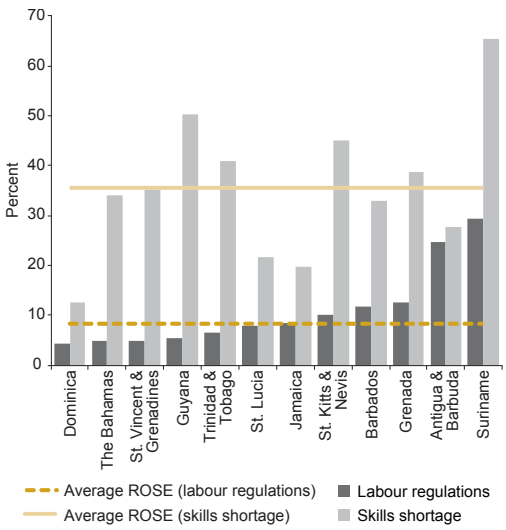
4.4. Inadequately Educated Labour Force and Quality of Labour Regulations

A well-educated and appropriately skilled labour force is fundamental for productivity and business development. Among Caribbean businesspersons, 35 percent perceive that the inadequate education of the labour force is a major obstacle to doing business, compared to 29 percent in ROSE. Beyond the six percentage point difference, there are three cases worth highlighting: 66 percent of businesspersons in Suriname, 50 percent in Guyana, and 45 percent in St. Kitts and Nevis identify inadequate education of the labour force as a fundamental factor limiting business performance and growth.

The complaint about the education of the labour force is ranked fifth in relative terms when compared to ROSE and ninth in absolute terms for the Caribbean, while labour regulations are ranked 11th in relative terms and 15th in absolute terms for the Caribbean. Only 9 percent of Caribbean firms consider labour regulations to be a major obstacle for their operations, similar to the 10.5 percent average for ROSE firms. However, Suriname and Antigua and Barbuda are notable exceptions, with 29.6 percent and 24.7 percent of firms perceiving labour regulations as a major constraint, respectively (Figure 4.6).

Regarding concerns among Caribbean firms about skill shortages, evidence shows that the lower the expected years of education, the worse the private sector's perception of workforce skills, and the more training firms need to provide for their permanent full-time employees (Table 4.2).[2] There is a negative and significant correlation between the perception of a skill shortage and the objective indicator of expected years of education. The expected average years of education (net of repetition), however, is higher for the Caribbean (9.43 years) than for ROSE (8.87 years), as shown in Figure 4.7. Nonetheless, Caribbean businesspersons consider the issue of skills to be a more substantial problem. When we introduce training provided by firms into the analysis, the correlations indicate that firms find ways to compensate for the lack of skills and

Figure 4.6: Perceptions about Skills and Labour Regulations (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

[2] Chapter 9 provides an in-depth analysis of skills and the labour force.

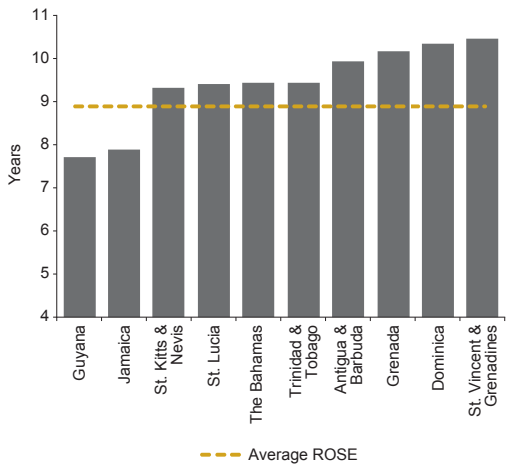
Table 4.2: Correlation Between Perceived and Objective Measures: Skill Shortages

	Subjective: Skills Shortage	Expected Years of Schooling	Training Provided by Firm
Subjective: Skills Shortage	1.0000		
Expected Years of Schooling	–0.0180***	1.0000	
Training Provided by Firm	0.0669***	0.0495***	1.0

Source: World Bank, Enterprise Surveys, 2010.
*p<0.05, ** p<0.01, *** p<0.001.

that they will adjust and make provisions to tackle these constraints. These results are consistent with the findings of Gelb et al. (2007), who examined 5,000 firms across 26 African countries. Chapter 9 provides further information about skill mismatches in the Caribbean and how the skill shortage is correlated with sales growth.

Figure 4.7: Expected Years of Education (net of repetition)



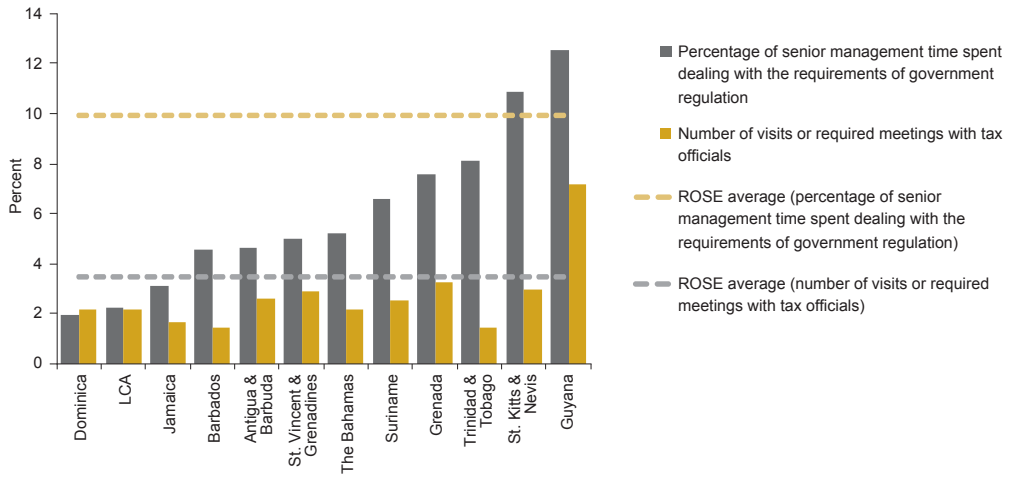
Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

4.5. Tax Administration and Tax Rates

Among Caribbean businesspersons, 17.9 percent perceive that tax administration is a major burden to doing business, compared to 14.9 percent in ROSE. Tax administration as a constraint to business development is ranked fifth in relative terms when compared to ROSE and ninth in absolute terms for the Caribbean.

When we review detailed data about the burden of tax administration on Caribbean firms as compared to data on ROSE, the results do not support the complaint. As shown in Figure 4.8, Caribbean senior managers spend an average of 6.1 percent of their time in a typical week dealing with the requirements imposed by government regulations (e.g., taxes, customs, labour regulations, licensing, and registration, including dealings with officials and completing forms) as opposed to 9.9 percent of the time of senior managers in ROSE. Caribbean firms are subject to an average of 2.7 visits or required meetings with tax officials per year, while their ROSE counterparts are subject to 3.4 meetings or visits. Only Guyana has indicators above both ROSE averages. The World Bank's *Doing Business 2015* report confirms this result, stating that on average, Caribbean firms spend 184 hours per year filing taxes as opposed to ROSE businesses, which spend 198 hours per year.

Figure 4.8: Burden of Tax Administration



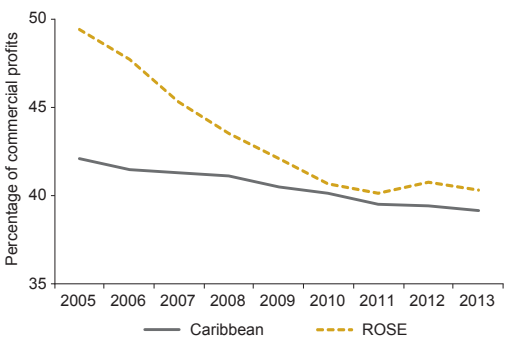
Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

In terms of tax rates, they represent a major obstacle to doing business for 31.5 percent of Caribbean firms. This figure is five percentage points lower than the 36.3 percent average for firms in ROSE. However, there are important differences among Caribbean countries. If we calculate the average for economies in the Organisation of Eastern Caribbean States (OECS), the number jumps to 44.3 percent of firms that perceive taxes as a major obstacle to business development.

Firms in Antigua and Barbuda and Jamaica seem the most uneasy when it comes to fiscal matters in the Caribbean: 73.5 percent and 72.9 percent of businesses in those countries, respectively, consider tax rates to be a factor that negatively affects their operations. This figure is comparable only to firms operating in St. Kitts and Nevis (66.3 percent) and Guyana (50.6 percent). The proportion of firms that perceive tax rates to be a binding constraint is low in Trinidad and Tobago, The Bahamas, and Dominica, at 12.3, 15.1, and 22.7 percent, respectively.

Over 2005–2013, total tax rates were lower in the Caribbean, averaging 40.5 percent, than in ROSE, where they averaged 48 percent (Figure 4.9). While the gap has narrowed since 2005, the percentage of commercial profits paid by Caribbean firms does not seem to be the target of their complaints.

Figure 4.9: Total Tax Rates, 2005–2013 (percent)



Source: World Bank, World Development Indicators.
Note: ROSE = rest of the small economies of the world.

Table 4.3: Correlation Between Perceptions and Objective Measures: Tax Administration

	Subjective: Tax Administration	Tax Time (Hours Per Year)	Time Spent on Regulations
Subjective Tax Administration	1.0000		
Tax Time (Hours Per Year)	0.2396***	1.0000	
Time Spent on Regulations	0.1438***	0.1097***	1.0

Source: World Bank, Enterprise Surveys, 2010.
*p<0.05, ** p<0.01, *** p<0.001.

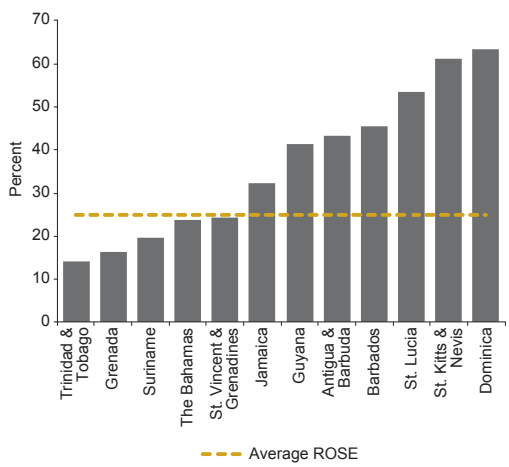
In sum, when comparing Caribbean results with those of ROSE, it appears that the relative ranking of tax administration and tax rates as a major burden is more a lament than a central concern. Table 4.3 shows the correlations between the perception of the problems imposed by tax administration on business development and the quantitative measures of the time it takes to file taxes or comply with tax regulations. The correlations are positive and statistically significant: more time spent on filing taxes or complying with tax regulations is positively correlated with the perception of tax administration as a constraint to business development.

4.6. Electricity

Among Caribbean businesspersons, 38 percent perceive electricity as a major obstacle to doing business, 12 percentage points higher than the ROSE average of 26 percent. Complaints in the Caribbean about electricity are ranked sixth in relative terms when compared to ROSE and fourth in absolute terms for the Caribbean.

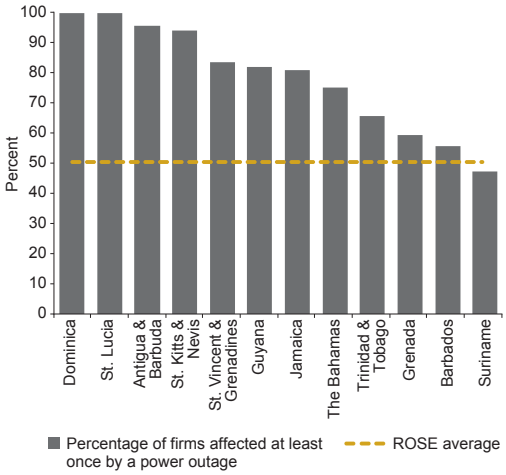
Figure 4.10 shows the percentage of firms that perceive electricity as a major or severe obstacle in the Caribbean, compared to the average ROSE country. In the Caribbean, Trinidad and Tobago has the lowest percentage of firms complaining about electricity (15 percent), followed by Grenada (17 percent) and Suriname (26 percent). The Bahamas (25 percent) and St. Vincent and the Grenadines (25 percent) also lie below the ROSE average. At the other extreme, in Dominica (66 percent), St. Kitts and Nevis (64 percent), and St. Lucia

Figure 4.10: Perceptions about Electricity as a Major Constraint to Business Operations (percent)



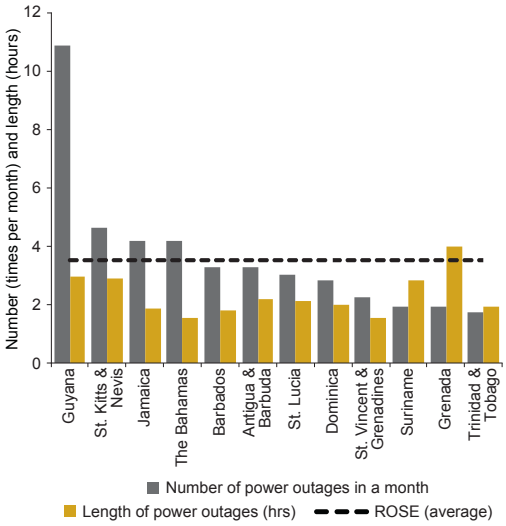
Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 4.11: Incidence of Power Outages (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 4.12: Number and Length of Power Outages



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

(56 percent) over half of firms consider electricity as a major constraint to their operations. When aggregated at the OECS level, the average is considerably higher at 45.6 percent.

Quantitative indicators regarding the provision of electricity give us a deeper understanding of the complaints. Figure 4.11 shows the incidence of power outages by reporting the percentage of firms affected at least once, and Figure 4.12 shows the number of power outages in a month and the length of these outages, expressed in number of hours.

Firms in almost all Caribbean countries experience power outages significantly above the ROSE average of 51 percent. Dominica and St. Lucia are extreme cases, where 100 percent of firms have been affected by a power outage at least once during the year, followed closely by Antigua and Barbuda (95 percent), St. Kitts and Nevis (94 percent), St. Vincent and the Grenadines (83 percent), Guyana (82 percent), and Jamaica (81 percent).

The average number of power outages experienced by firms in the Caribbean (3.7) is not very different than the average for ROSE (3.6), with one noticeable example, Guyana, where firms experience more than 10 power outages per month.

The average duration of power outages in the Caribbean is 2.3 hours, versus 3.6 hours in ROSE. Except for Grenadian firms, which experience power outages that last four hours on average, all Caribbean countries are below the ROSE average. The evidence shows that the number and length of outages are not very different between the Caribbean and ROSE, but the indicator

Table 4.4: Correlation Between Subjective and Objective Measures: Electricity

	Power Outages	Electricity Consumption	Subjective: Electricity
Power Outages	1.0000		
Electricity Consumption	−0.1899***	1.0000	
Subjective Electricity	0.1661***	−0.3256***	1.0

Source: World Bank, Enterprise Surveys, 2010.
Note: *p<0.05, ** p<0.01, *** p<0.001.

that explains why electricity supply is a major concern is the incidence of firms being affected by power outages in the Caribbean.

Table 4.4 shows that perceptions are highly correlated with quantitative measurements, as seen in the Enterprise Survey and other (country-level) data sources.[3] Electricity consumption is negatively correlated with the country average incidence of power outages, while the perception about electricity is highly correlated with objective measurements, at the firm and country levels. Chapter 10 explores the electricity markets in the Caribbean and provides a benchmarking exercise with firm-level data.

4.7. Perceptions and Firm Characteristics

Do perceptions of a constraint vary systematically by firm characteristics? Intuitively, smaller firms could report more limited access to finance and be more susceptible to criminal activities on their premises. Table 4.5 provides evidence that favours a hypothesis wherein smaller and more vulnerable Caribbean firms face a harsher business environment in terms of electricity, tax rates, labour regulations, crime, and access to finance. While the table only summarizes the subjective measurements of different indicators, the results provided in this chapter in terms of correlations suggest that such firms are relatively more constrained.

Large Caribbean firms complain the most about the shortage of skills among the labour force: 37 percent compared to 34.8 percent among small firms. Corruption and tax administration are the other business constraints for which large firms have a worse perception than small ones. Furthermore, firms with contracting or stagnant sales complain more than firms performing better in terms of sales. Tax rates and access to finance are the only topics regarding which a relatively larger share of expanding firms complained.

[3] Electricity consumption (kWh per capita) in 2010 was imported from the World Bank's World Development Indicators database for 59 countries.

Table 4.5: Complaints by Firm Size and Performance among Caribbean Firms (percent)

		Size			Performance (sales)	
	Overall	Small	Medium	Large	Expanding	Contracting or Stagnant
Electricity	28.9	29.1	27.6	28.6	37.3	30.4
Tax rates	31.5	31.4	33.3	23.9	17.2	32.4
Tax administration	17.9	17.6	18.1	19.6	11.2	19.6
Labour regulations	8.7	9.3	7.3	6.6	4.1	10.7
Skills shortage	34.6	34.8	33.0	36.9	21.7	37.2
Crime	30.1	31.3	28.4	29.0	21.9	30.5
Corruption	26.6	27.0	26.3	29.3	20.6	29.3
Access to finance	34.1	36.8	27.9	26.3	34.8	33.1

Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.

4.8. Conclusion

Greater percentages of Caribbean businesspersons than their ROSE counterparts state that they have problems in a number of areas. Ranked from most to least, the problems are customs and trade, access to finance, crime, tax administration, an inadequately educated labour force, electricity, competitors in the informal sector, and corruption. These complaints are highly correlated with objective indicators. The chapters that follow further analyse the relative importance of these constraints in explaining Caribbean performance gaps.

5

Customs and International Trade

Trade is important to all economies, but it is crucial for the Caribbean. The small size, geography, and location of the Caribbean nations result in economic systems that cannot develop the capacity to produce the multitude of goods and services demanded by citizens and businesses in a modern society—food, manufactured goods, machinery, cars and buses, and high-tech equipment, among others. Even the market for agricultural goods has evolved into a complex and highly specialized set of high-quality and highly differentiated goods that are increasingly demanded by Caribbean citizens and needed by the tourism sector, with a significant impact on the region's competitiveness.

There appears to be substantial empirical evidence that international trade positively affects economic growth by facilitating capital accumulation, upgrades to industrial structure, technological progress, and advancement in institutions. Specifically, increased imports of capital and intermediate products that are not available in the domestic market result in a rise in manufacturing productivity (Lee 1995; Keller 2001). More active participation in the international market by promoting exports leads to more intense competition and improvement in terms of productivity (Wagner 2007). Learning-by-doing may be more rapid in export industries thanks to knowledge and technology spillover effects. Balassa (1986) and Dollar (1992) argued that outward-oriented developing economies indeed achieve much more rapid growth than inward-oriented ones.

Customs and trade regulations were ranked as the seventh (in absolute terms) most binding constraint to private sector operations by Caribbean businesspersons (see Chapter 4). However, this constraint has the highest relative number of complaints when compared to the rest of the small economies (ROSE) of the world (1.5 times higher). If complaints regarding trade regulations and customs procedures have grounds in an inefficient system that discourages trade, Caribbean policymakers should implement trade facilitation policies aimed at preventing bottlenecks and improving efficiency in clearing customs.

This chapter presents an overview of trade efforts in the region. The chapter first offers a glimpse into international trade activity at the macroeconomic level to give context, and then looks at trade at the firm level.

5.1. Context

Engagement in international trade has been associated with faster growth through enhanced competitiveness (Rodrik 1995). Self-selection of the most efficient producers of a good or service plays a key role in entry into either importing or exporting markets (Seker 2009a). The use of foreign inputs typically increases profits because of their higher quality or by making the final products more competitive in terms of prices due to lower input costs. Regulatory reforms in trade logistics (such as port efficiency improvements) have an impact not only on reducing shipping times but also on lowering overall transaction costs.

Regulatory and customs costs in terms of the number of documents needed, the time it takes to clear customs, and the average cost per container are shown in Table 5.1. One of the most salient features is that, on average, Caribbean countries do not face greater transaction costs in international trade than ROSE. There are fewer required documents (except for commodity-dependent Caribbean countries), less time is needed to export, costs to export are lower (in U.S. dollars per container) except in tourism-dependent countries, and the number of documents required to import is higher (less time is required, but the cost deflated by U.S. dollars per container is higher, except for commodity-dependent Caribbean countries).

Table 5.1: World Bank's Doing Business Indicators 2014—Pillar: Trading across Borders

	Rank	Distance to Frontier	Documents to Export (number)	Time to Export (days)	Cost to Export (U.S. dollars per container)	Documents to Import (number)	Time to Import (days)	Cost to Import (U.S. dollars per container)
Caribbean	78.50	75.09	5.50	14.75	976.9	7.08	14.75	1,695.4
Caribbean-C	88.00	73.20	6.33	17.33	874.3	7.67	18.33	1,056.7
Caribbean-T	75.33	75.72	5.22	13.89	1,011.1	6.89	13.56	1,908.3
ROSE	88.32	71.60	6.16	19.65	1,213.9	6.59	20.38	1,294.9
ROSE-C	96.42	69.22	6.25	21.29	1,361.7	6.71	21.83	1,488.4
ROSE-T	73.38	75.99	6.00	16.62	941.2	6.38	17.69	937.7

Source: World Bank (2014).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = the rest of the countries of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

At the country level, the Caribbean's openness to international trade has fallen while in ROSE it has risen. Figures 5.1a and 5.1b show the evolution of exports and imports since 1985 as a percentage of GDP for commodity-dependent Caribbean countries (Caribbean-C) versus commodity-dependent ROSE (ROSE-C), and for tourism-dependent Caribbean countries (Caribbean-T) versus tourism-dependent ROSE (ROSE-T). While Caribbean-C used to have an advantage in terms of the region's exports with respect to ROSE-C (Figure 5.1a, upper panel), this advantage had practically vanished by 2015. As for Caribbean-T countries, the evolution of exports has followed a declining trend since 1990, while ROSE-T has seen its exports grow constantly, resulting in a widening gap between the regions (Figure 5.1a, lower panel). By 2014, ROSE-T exported the equivalent of 71 percent of GDP, while Caribbean-T

Figure 5.1a: Evolution of Exports (percent of GDP)

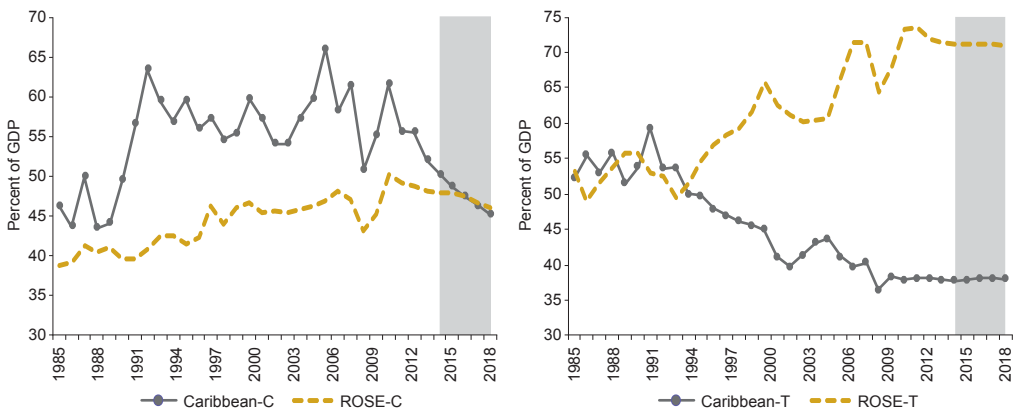
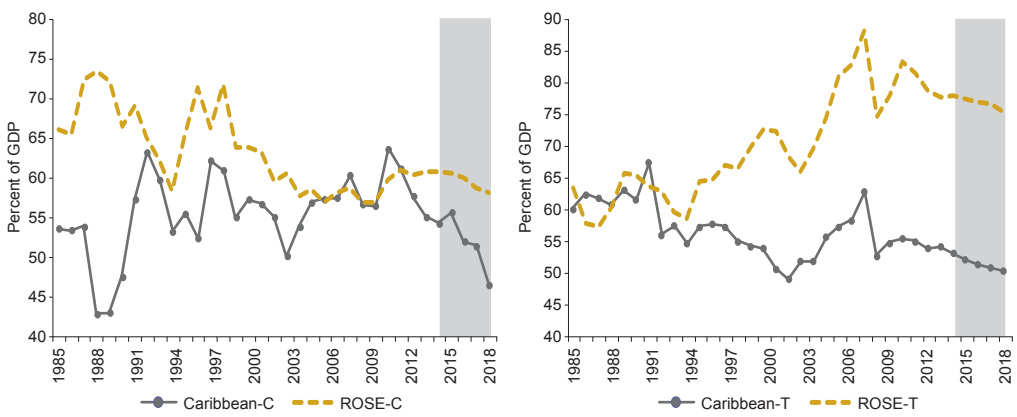


Figure 5.1b: Evolution of Imports (percent of GDP)



Source: IMF (2015).
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent. Gray area is projected.

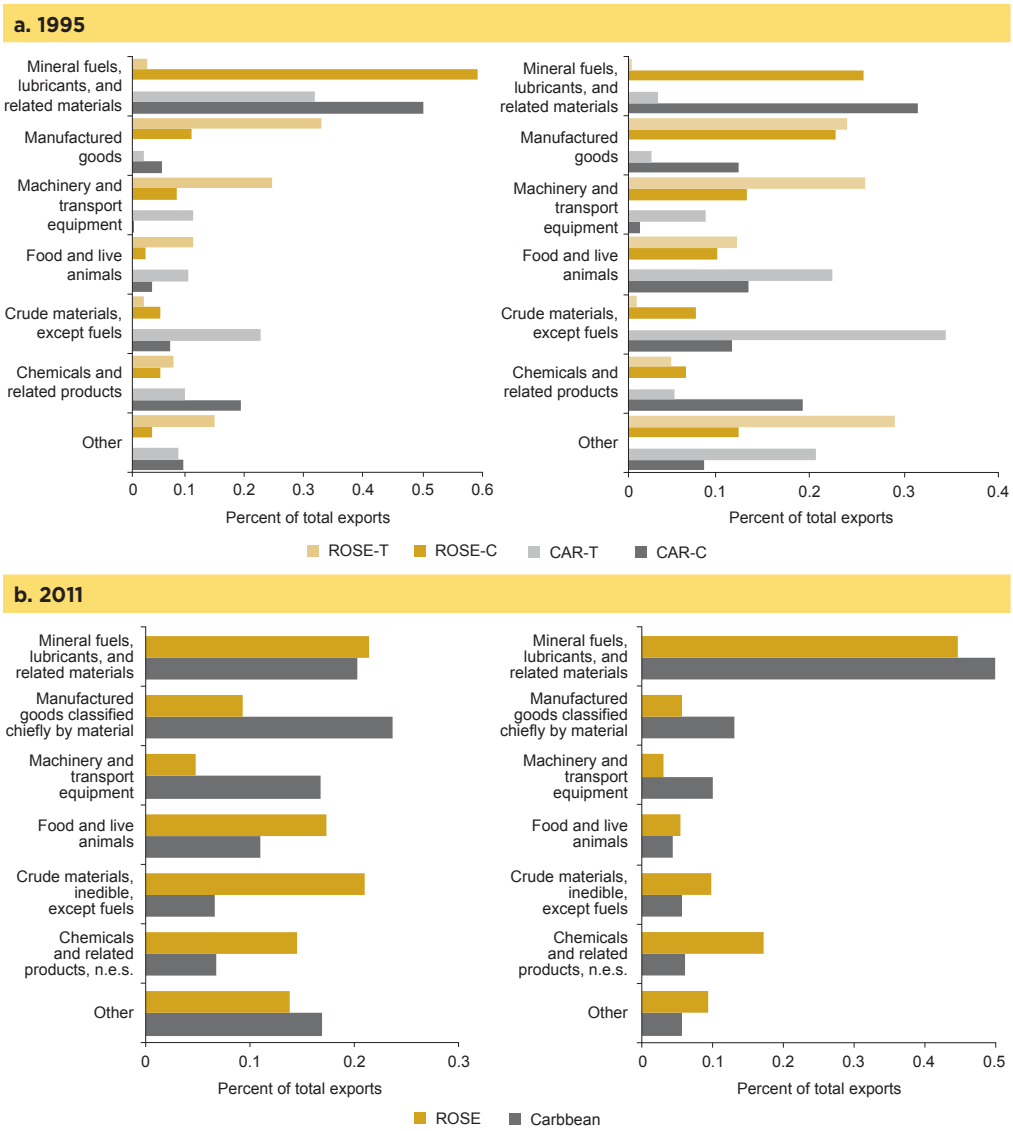
exports accounted for only 37 percent of GDP. In 1994, imports in Caribbean-C and ROSE-C were similar and have since co-moved, but Caribbean-C has a projected decline for the coming five years. ROSE-T experienced a boost in imports starting in the mid-1990s, and levels have stayed above 75 percent of GDP since 2005 (Figure 5.1b, upper panel), while Caribbean-T imports steadily declined to a minimum of 49 percent of GDP in 2002 and then recovered to 62 percent by 2009. Thereafter, imports as a percentage of GDP have been declining in Caribbean-T, producing a gap with respect to ROSE-T.

Export composition has changed. We use as the baseline the export composition of the Caribbean in 1995, the year when exports as a percent of GDP was very similar to that in the average ROSE. Figure 5.2 shows the export portfolio for the Caribbean (in light blue and blue) and ROSE (in pink and red). The groups of goods are classified according to the Standard International Trade Classification (SITC, Rev 3). The Caribbean export portfolio was strongly biased towards mineral fuels (21 percent), crude materials (except fuels) (20 percent), and food and livestock (17 percent) in 1995. ROSE, on the other hand, was exporting manufactured goods (23 percent), minerals (19 percent), and machinery and transport equipment (16.5 percent). This shows how the Caribbean's secondary sector was not well developed; countries were focusing mainly on extracting raw materials for international trade, while ROSE had a more diversified portfolio that used the industrial sector to create finished products. After an impulse of export-led growth in most economies, there was a substantial change in the portfolio of Caribbean exports, as suggested by both panels of Figure 5.2. It is clear that a process of specialization occurred during this 15-year period, both in the Caribbean and in ROSE. Both regions focused on exporting mineral fuels, lubricants, and related materials.[1] While the drastic change in the export composition could be the result of the discovery of natural resources rather than specialization and productivity gains in the primary sector, it shows how Caribbean-C became highly dependent on their mineral and chemical resources and crude materials.

A useful measure of the diversity and complexity of a given country's export portfolio is the Economic Complexity Index (ECI), developed by Hausmann and Hidalgo (2010). The index is calculated as the limit of a measure based on how many products a country exports and how many other exporters there are for each product. Countries improve their ranking on the index by increasing the number of different activities they can successfully engage in and by moving towards activities that are more complex. Since the ECI reflects the amount of knowledge that is embedded in the productive structure of an economy, it is no surprise that this measure is highly correlated with income per capita.

[1] This category encompasses coal, petroleum, petroleum products, natural gas and electricity.

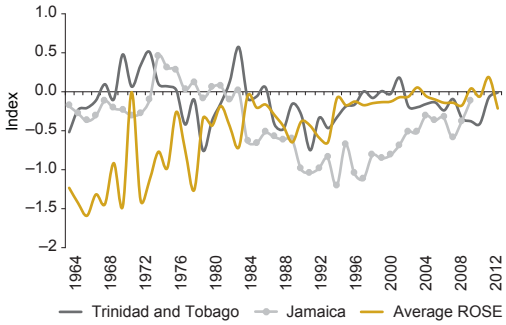
Figure 5.2: Export Composition (percent of total exports)



Source: United Nations Conference on Trade and Development, UNCTADstat database (http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx).
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent; n.e.s = not elsewhere specified

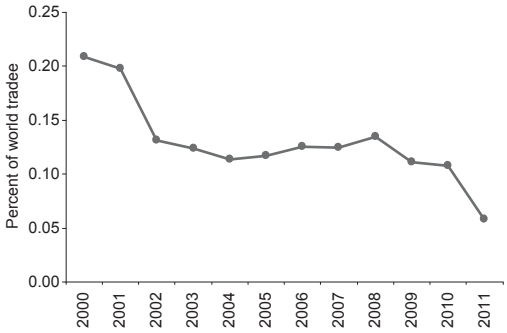
Figure 5.3 shows the evolution of the ECI for the two Caribbean countries with the most data: Jamaica and Trinidad and Tobago. These are compared with the average ECI obtained from ROSE for the period from 1964 to 2012. While the overall trend is positive for ROSE, the performance of Jamaica and Trinidad and Tobago has been lacking, especially after the 1980s. Three different periods can be clearly identified: 1964–1980,

Figure 5.3: Economic Complexity Index



Source: Observatory of Economic Complexity database.
Note: ROSE = rest of the small economies of the world.

Figure 5.4: Caribbean Export Market Share Compared to ROSE



Source: United Nations Conference on Trade and Development, UNCTADstat database (http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx).
Note: ROSE = rest of the small economies of the world.

when both Jamaica and Trinidad and Tobago had relatively higher ECI values; 1980–1990, when the ECI stagnated for ROSE and the Caribbean countries as well; and 1990–2012, when ROSE gained ground in terms of economic complexity, Jamaica recovered to reach pre-1980 levels, and Trinidad and Tobago experienced a stagnant ECI ranging around zero.

Once the composition of Caribbean exports and its evolution since 1995 is analysed, we assess whether the export sector has kept pace with ROSE during the worldwide trade liberalization process. This is done by simply calculating the market share for Caribbean and ROSE exports of goods for the 2000–2011 period using annual data from the United Nations Conference on Trade and Development (UNCTAD)[2] and information on overall tourist arrivals in Caribbean-T as a share of the world's total arrivals. Figure 5.4 shows not only that Caribbean exports have been historically lower than ROSE (ratio below unity), but that they have become relatively less significant over time. The difference between the Caribbean and ROSE has become more pronounced. Caribbean exports represented only 5 percent of total exports by ROSE in 2011 (this ratio was 20 percent in 2000). The previous result shows how the Caribbean is losing ground on the export market with respect to ROSE. Furthermore, tourist arrivals in Caribbean-T (as a percentage of the world's total arrivals) have also been steadily decreasing over time (Figure 5.5).

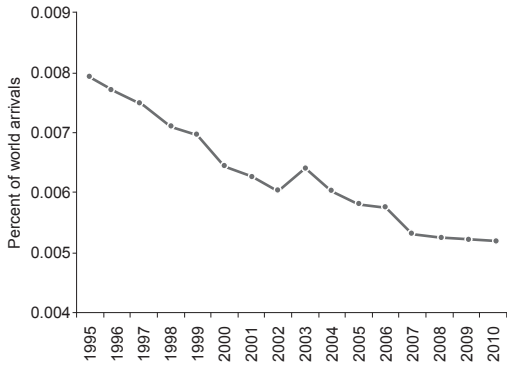
It could be argued that the value of exports in the Caribbean stayed at a good pace but fluctuations in the exchange rate made it less competitive, as UNCTAD values on goods exports are expressed in U.S. dollars. To complement the previous partial finding, we use value and volume indices calculated by UNCTAD. Export and import value

[2] See the UNCTADstat database at http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx.

indices are expressed as the current value of exports (free on board) converted to U.S. dollars and expressed as a percentage of the average for the base year (2000), while volume indices are the ratio of the export value index to the corresponding unit value index.[3] Figure 5.6 reinforces the hypothesis of a widening gap in the exports of the Caribbean and ROSE. Both value and volume export indices declined relatively for the 2000–2010 period.

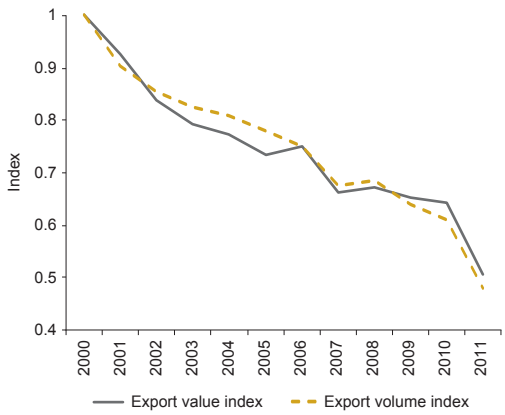
Two possible explanations for the declining Caribbean market shares in terms of exporting goods or attracting tourists are that (1) the Caribbean is not trading with dynamic partners, and (2) the region is losing competitiveness due to overvalued exchange rates. While Caribbean exports are highly dependent on the United States (37 percent), ROSE exports have a more diversified customer base (Figure 5.7), and most of ROSE's economic partners were not as affected as the United States by the financial crisis and have better growth prospects (China and India). Therefore, Caribbean exports are highly concentrated in goods from the primary sector (mineral products, specifically) and directed to trading partners that have been growing at relatively lower rates than the economic partners of ROSE. As shown in Figure 5.8, the Caribbean's economic neighbours (the two most important destinations of goods exports) grow on average less and have greater relative volatility than ROSE.

Figure 5.5: Tourist Arrivals in Tourism-dependent Caribbean Countries



Source: United Nations Conference on Trade and Development, UNCTADstat database (http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx).
Note: ROSE = rest of the small economies of the world.

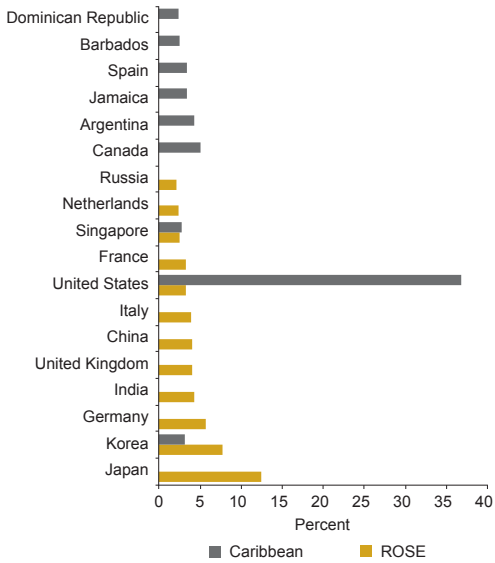
Figure 5.6: Export Values and Volume Indices: Caribbean Relative to ROSE



Source: United Nations Conference on Trade and Development, UNCTADstat database (http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx).

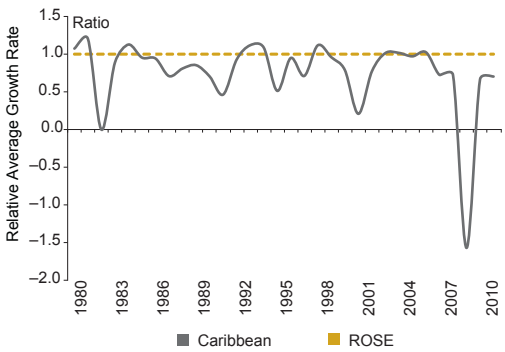
[3] At the country level, unit value indices were calculated using the previous year's trade values at the Standard International Trade Classification (SITC) three-digit level, available in the table on "Merchandise trade matrix, exports, annual" as weights.

Figure 5.7: Export Recipients (percent)



Source: United Nations Conference on Trade and Development, UNCTADstat database (http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx).
ROSE = rest of the small economies of the world.

Figure 5.8: Economic Neighbour's (Goods) Relative Average Growth Rate (percent)



Source: IMF (2015).
Note: ROSE = rest of the small economies of the world.

The lack of competitiveness is evident in the Caribbean. With overvalued exchange rates and current account deficits, the Caribbean has not been able to generate enough revenue to enhance its competitiveness (Figure 5.9).[4] Furthermore, Caribbean-T countries have only been able to produce an equivalent to that of ROSE-T in terms of their infrastructure for tourism, but lag behind in terms of their travel and tourism policies, cultural and natural resources, and enabling environment for boosting tourism (Figure 5.10).

5.2. Firm-level Analysis

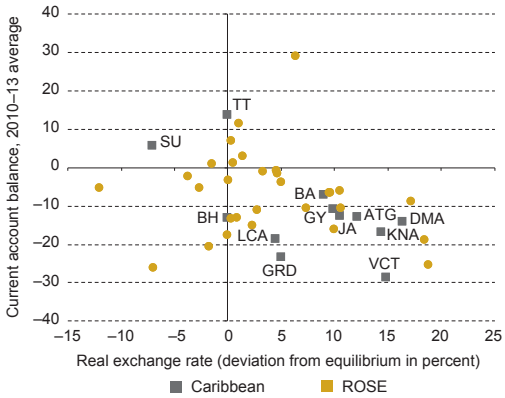
Neither states nor economic sectors trade. It is firms that trade. Thus, we turn to firm-level information to provide micro-fundamentals for the diagnosis derived from country-level data. The empirical literature using firm-level data has produced several findings. First, exporting is very rare (see Bernard et al., 2007, for a review). Second, there is an exporter's premium. Exporters are different from non -exporters : they are larger, have higher sales, have a larger product mix, are more productive, use factors differently (i.e., are more capital-intensive), are more skill-intensive, and pay higher wages. Both export and import productivity premiums

[4] As noted in the IMF's *World Economic Outlook* (2012, Box 1.2), "the significance of population is not solely driven by Caribbean islands, which have large deficits and very small populations—but it suggests that these countries do run larger deficits than others, after their size and level of development are controlled for. The intensity of their oil dependence is clearly a factor explaining their deficits...[S]ubstituting the oil balance for the oil exporter dummy reduces the economic and statistical significance of the Caribbean dummy."

increase as the number of markets and the number of products traded increase, respectively (Anderson, Johansson, and Loof 2007). Exporting firms are expected to be more productive than non-exporting firms because of learning-by-exporting (Bernard and Jensen 1999; Bernard and Wagner 1997). Knowledge flows from international buyers and exporters, as they are exposed more to competition and must improve faster than firms that only sell their products domestically.

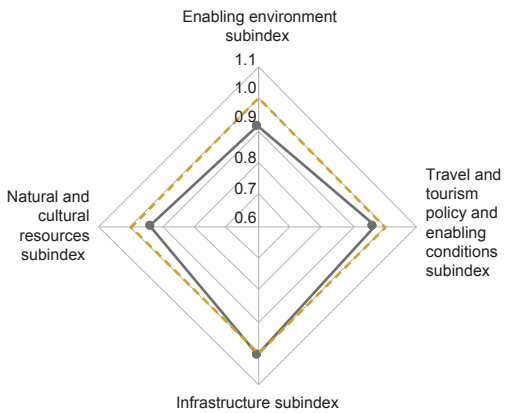
However, there are caveats. There is evidence of self-selection, that is, evidence that exporters were different prior to beginning to export (i.e., better performers), with little to no evidence of a learning-by-exporting effect (i.e., the evidence suggests success leads to export, not that export leads to success). In a survey of firm-level evidence, exporters are more productive than non-exporters, and the more productive firms self-select into export markets, while exporting does not necessarily improve productivity (Wagner 2013). However, our data (cross- sectional rather than longitudinal) do not allow us to test whether today's export starters were more productive than today's non-exporters several years back when they did not export.

Figure 5.9: Export Recipients



Source: IMF (2015); and recent International Monetary Fund Article IV documents.
Note: ROSE = rest of the small economies of the world.

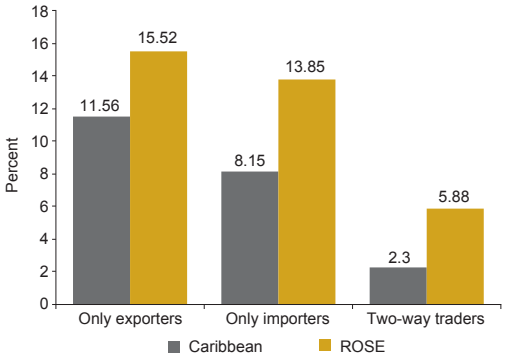
Figure 5.10: Travel and Tourism Competitiveness Caribbean Relative to ROSE



Source: WEF (2015a).

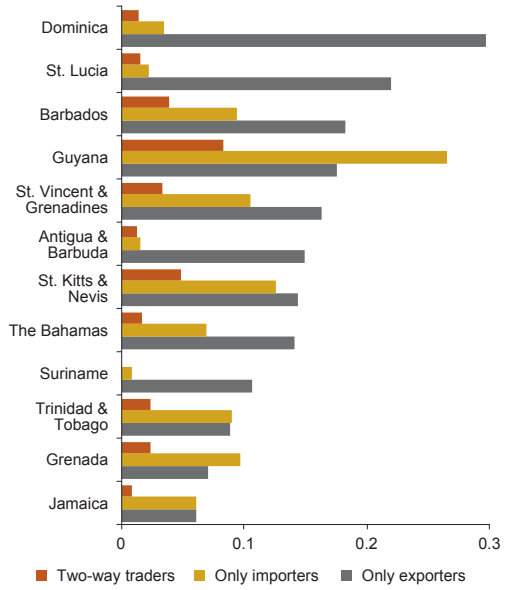
We follow Seker (2009a), who uses manufacturing data from 40 developing countries across different regions and classifies firms into four groups: firms that import intermediate goods and export (two-way traders), firms than only import (only-importers), firms that only export (only-exporters), and firms that do not engage in international trade (non-traders). Seker's analysis shows that firms with exposure to foreign markets through trade relations create, on average, three-quarters more jobs and are as twice as productive as non-trading firms. The same classification was adopted for the Caribbean and

Figure 5.11: Trade Orientation of Firms (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 5.12: Trade in the Caribbean



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

ROSE sample of firms (both from manufacturing and services industries).

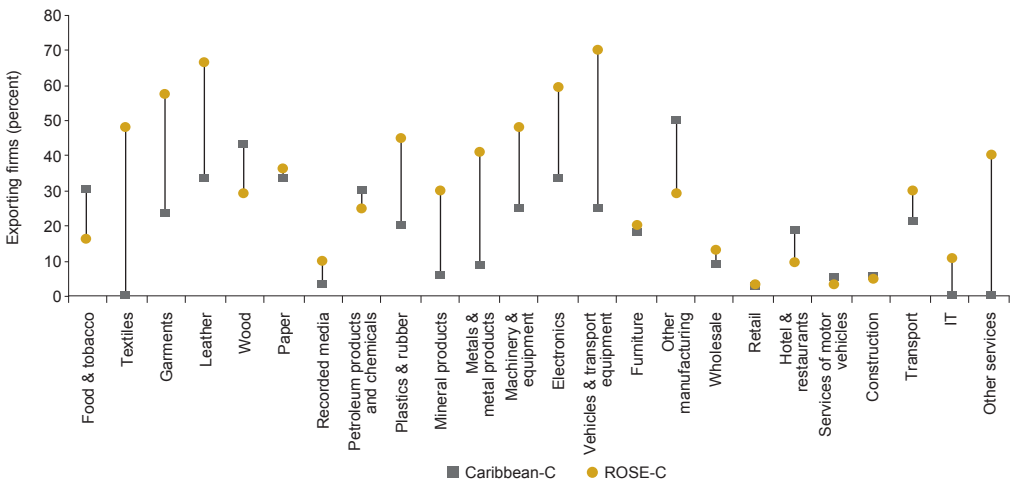
Caribbean firms are less open to trade than ROSE. Figure 5.11 summarizes the share of only-exporters, only-importers, and two-way traders in the Caribbean and ROSE. Clearly, considering that among its total number of firms only 11 percent are exporting firms, 8 percent only-importers, and 2.3 percent two-way traders, the vast majority of Caribbean firms are not engaged in international trade. In fact, 82.5 percent of Caribbean firms produce only for the domestic market, compared to 76 percent of ROSE firms.

Overall, engagement in international trade is relatively low in the Caribbean. However, exporting seems to be more common than importing. This particular feature diverges from Seker (2009a), who found that only-importers are even more common than non-traders in Latin America in 2006. There is substantial heterogeneity across Caribbean countries in terms of the above-mentioned classification. Figure 5.12 shows the proportions of two-way traders, only-exporters, and only-importers for the 12 Caribbean countries. Dominica's private sector seems to be open to external trade, with 30 percent of firms exporting, followed by St. Lucia (21 percent), Barbados (18 percent), and Guyana (17.5 percent). While Dominica has the highest share of only-exporting firms, it also stands out as having one of the lowest proportions of importing firms. Guyana, on the other hand, has the highest proportion of importing-only firms in the region (26 percent, followed by St. Kitts and Nevis with only 12 percent). This, along with the fact that Guyana has a share of importing-only firms above the regional mean, makes this Caribbean country the most engaged in international trade, with 8 percent of its firms two-way traders.

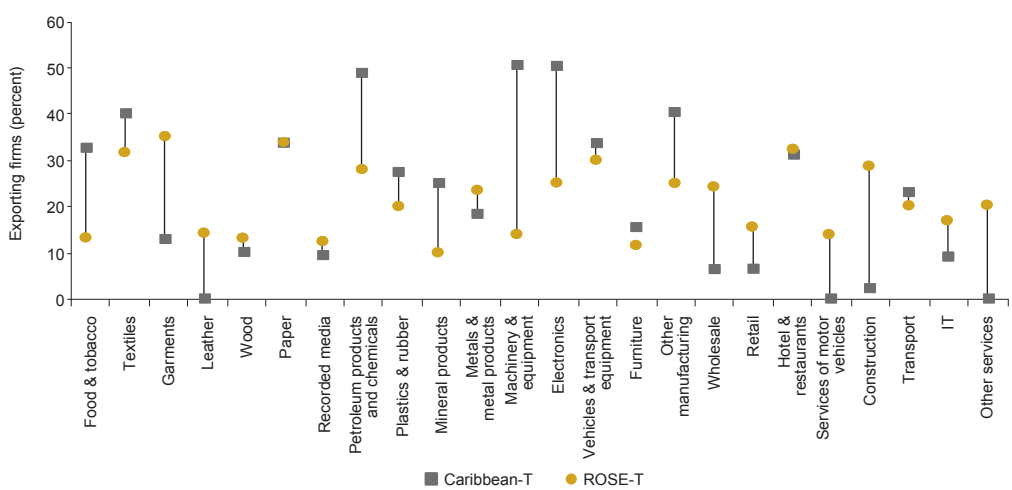
It is clear that sectors matter. The sectors with the highest shares of exporting firms in Caribbean-C are wood and other manufacturing, with 43 and 50 percent, respectively. However, the only other sector with a share of exporting firms higher than ROSE-C is the hotel and restaurants sector. The rest of the sectors lag behind in terms of their capacity to generate revenue by exporting products or services (Figure 5.13a). As for tourist-dependent countries, there are more sectors in which the Caribbean has more exporting firms than in ROSE (Figure 5.13b). The only sectors for which ROSE-T has a significantly larger

Figure 5.13: Exports and Industrial Sectors (percent)

a. Commodity-dependent Countries



b. Tourism-dependent Countries



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

share of exporting firms than in Caribbean-T are garments, wholesale, construction, and other services.

Sectors with a higher share of exporting firms are not more productive in the Caribbean. In the wood sector in Caribbean-C, 43 percent of firms are exporting firms, but they have lowest average total factor productivity (TFP) among exporters. Similarly, the electronics sector in Caribbean-C has a 50 percent share of exporters but an average TFP of 0.711 (well below the average TFP among exporting firms in the Caribbean, which is 1.10). In the case of ROSE-C, the hypothesis that exporting firms are more productive holds. For example, 70 percent of firms in the vehicles and transport equipment sector export their products internationally, and this specific sector has one of the highest TFP levels among exporting firms (Table 5.2). In the table columns for each country category, colours range from red "bad" through yellow to green "good" performance. While the sample size for calculating TFP for exporting firms in ROSE-C is small, the garments sector has the highest percentage of exporting firms and a TFP that is close to the average. Hence, there is evidence that ROSE exporting firms are more productive, but that does not necessarily hold in the Caribbean.

Exporters are larger, and engagement in international trade is correlated positively with firm size. The observed trend towards local markets could be the result of intrinsic scale characteristics that constrain firms from engaging in international trade. Small Caribbean firms usually focus on sectors with limited market reach, making it difficult to exploit scale economies. If we consider a broader trade classification encompassing firms that engage in trade (either exports or imports) and those already classified as non-traders, we can see how engagement in trade is clearly correlated with firm size.

Exporters, mainly large firms, grow faster. Figure 5.14 shows the proportion of small, medium-sized, and large firms engaged in trade in the Caribbean and ROSE. Being small clearly affects trading possibilities in both the Caribbean and ROSE, and almost 90 percent of small firms do not engage in trade at all. However, as firms grow in size, trade (especially in the form of exports) increases. The trade gap between ROSE and the Caribbean widens as well, and we can see that half of ROSE's large firms are involved in international trade compared to only 37 percent in the Caribbean. Figure 5.15 shows how firms engaged in international trade—which are mostly medium-sized and large, as shown previously are typically concentrated around a higher performance measurement. While differences in productivity (sales/worker) between trading and non-trading firms are not drastic (Figure 5.15, bottom panel), the shifted density using the (log) sales measurement is clear (upper panel).

Skill intensity does not differ drastically between exporters and non-exporters (Figure 5.16) in either Caribbean-C, Caribbean-T, or ROSE-T. ROSE-C is the only category

Table 5.2: Trade and Productivity by Sector

Sector	Caribbean-C			ROSE-C			Caribbean-T			ROSE-T		
	Exports %	TFP	TFP Exporters	Exports %	TFP	TFP Exporters	Exports %	TFP	TFP Exporters	Exports %	TFP	TFP Exporters
Food & tobacco	30.3	2.480	2.433	16.3	12.341	18.291	32.3	2.791	2.350	13.1	17.094	3.802
Textiles	0.0	3.019	n.a.	48.1	7.384	6.119	40.0	2.570	2.865	31.5	11.363	15.147
Garments	23.5	2.431	2.470	57.6	6.832	6.272	12.5	2.670	2.616	35.1	7.318	9.030
Leather	33.3	n.a.	n.a.	66.7	5.003	4.826	0.0	4.797	n.a.	14.3	7.229	n.a.
Wood	43.5	2.350	1.775	29.1	5.302	5.938	10.0	2.774	1.837	12.5	9.408	15.043
Paper	33.3	n.a.	n.a.	36.4	6.862	13.355	33.3	2.312	2.466	33.3	238.362	n.a.
Recorded media	3.1	2.295	2.089	9.8	9.042	11.747	9.5	2.650	2.934	12.0	n.a.	n.a.
Petroleum products & chemicals	30.0	2.128	1.992	25.0	4.663	5.596	48.6	2.490	2.415	27.8	5.403	5.392
Plastics & rubber	20.0	n.a.	n.a.	44.7	8.648	4.267	27.3	2.806	2.244	20.0	4.557	5.514
Mineral products	5.9	2.344	n.a.	29.8	9.769	8.895	25.0	2.562	2.995	10.0	7.006	n.a.
Metals & metal products	8.7	2.451	2.666	41.1	12.495	16.124	18.2	2.565	1.877	23.1	6.751	8.197
Machinery & equipment	25.0	2.340	n.a.	48.0	32.050	48.172	50.0	1.767	1.696	14.3	5.876	n.a.
Electronics	33.3	2.415	2.638	59.5	7.087	6.056	50.0	3.031	3.505	25.0	n.a.	n.a.
Vehicles & transport equipment	25.0	1.931	n.a.	70.0	10.679	10.679	33.3	2.321	2.471	30.0	6.243	6.243

(continued on next page)

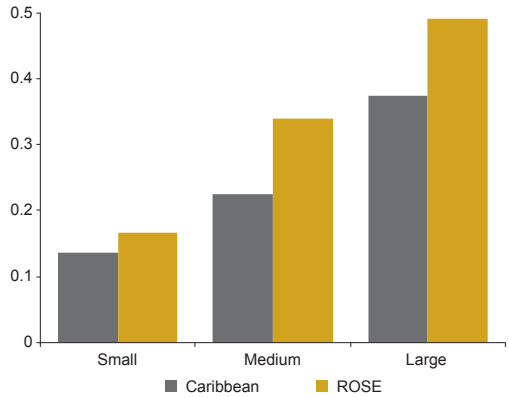
Table 5.2: Trade and Productivity by Sector *(continued)*

Sector	Caribbean-C			ROSE-C			Caribbean-T			ROSE-T		
	Exports %	TFP	TFP Exporters	Exports %	TFP	TFP Exporters	Exports %	TFP	TFP Exporters	Exports %	TFP	TFP Exporters
Furniture	18.2	2.748	n.a.	20.0	9.955	26.087	11.9	2.966	3.075	10.9	20.680	12.806
Other manufacturing	50.0	2.518	2.581	29.0	4.945	n.a.	40.0	3.418	3.959	25.0	1.961	1.961
Wholesale	8.9	2.890	3.063	13.0	n.a.	n.a.	6.3	3.272	2.648	24.0	n.a.	n.a.
Retail	2.9	3.004	n.a.	3.0	5.777	n.a.	6.5	2.941	3.071	15.4	4.699	n.a.
Hotel & restaurants	18.5	2.739	2.828	9.3	n.a.	n.a.	31.4	2.988	3.073	32.0	n.a.	n.a.
Services of Motor Vehicles	5.3	2.654	n.a.	3.2	4.594	n.a.	0.0	3.247	n.a.	13.8	n.a.	n.a.
Construction	5.7	2.830	1.963	4.5	5.977	n.a.	2.5	3.027	1.785	28.4	n.a.	n.a.
Transport	21.3	3.939	4.905	29.9	n.a.	n.a.	22.6	2.800	2.643	20.5	n.a.	n.a.
IT	0.0	2.532	n.a.	10.4	4.659	n.a.	9.1	2.734	1.912	16.7	n.a.	n.a.
Other services	0.0	4.250	n.a.	40.0	n.a.	n.a.	0.0	n.a.	n.a.	20.0	n.a.	n.a.

Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: In the table columns for each country category, colours range from red "bad" through yellow to green "good" performance. Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent; TFP = total factor productivity.

for which exporting firms require relatively more skilled production workers, but the difference is not significant. Furthermore, using data from the 2014 Productivity, Technology, and Innovation (PROTEQIN) Survey, we cannot confirm the hypothesis that exporting firms pay higher wages than firms that do not engage in trade at all (Table 5.3).

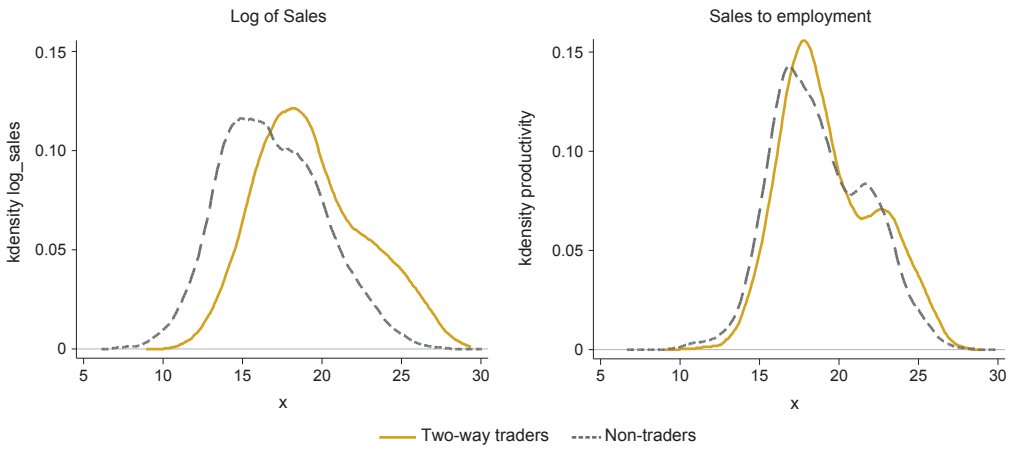
Figure 5.14: Exports and Firm Size (proportion)



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world. K (kernel) density refers to all firms in the sample.

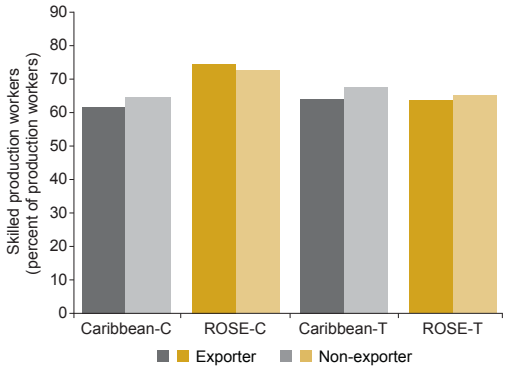
While Caribbean exporters perform better in terms of sales growth than non-exporters, they do not do so in terms of employment growth or TFP. In ROSE, however, the hypothesis that exporting firms perform better than their non-exporting peers is clearly confirmed. Sales growth in ROSE-C exporting firms averaged 27 percent, compared to only 14.8 percent for non-exporters. Employment growth in ROSE-T for exporting firms was 12 percent and only 6.5 percent for non-exporting firms, and TFP was also higher among exporting firms in ROSE-C (Table 5.4). The negative relationship between TFP and exporting in the Caribbean is further confirmed when plotting export intensity (direct exports as a percentage of sales) against TFP for the Caribbean sample (Figure 5.17).

Figure 5.15: Trade and Firm Performance



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world. K (kernel) density refers to all firms in the sample.

Figure 5.16: Skill Intensity and Exports (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

However, better performance of exporters may be due to self-selection of the more productive firms into export markets. Cross-section differences between exporters and non-exporters may in part be explained by *ex ante* differences between firms, where higher-productivity firms become exporters because they can incorporate the extra costs (transportation, distribution or marketing, personnel with skills to manage foreign networks, or production costs to modify current domestic products for foreign consumption).

5.3. Conclusion

Customs and trade regulations were ranked by Caribbean businesspersons as seventh in absolute terms but first in relative terms as a binding constraint to private sector operations. However, on average, Caribbean countries do not face greater transaction costs in international trade than ROSE. At the country level, the Caribbean's openness to international trade has fallen while in ROSE it has risen. The Caribbean's loss in world market share in commodities and tourism relative to ROSE appears driven by a loss of competitiveness and relatively stagnant export and tourism source countries.

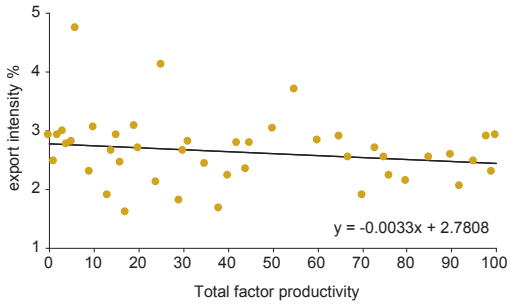
Table 5.3: Average Wages and Trade Orientation (U.S. dollars)

Job type	Exports	Imports	Exports and Imports	No Trade
Managers	2,274.6	1,366.0	1,752.8	4,265.5
Professionals	1,347.8	818.5	930.3	2,387.1
Technicians and associate professionals	1,544.9	1,301.7	1,150.2	2,856.6
Clerical support workers	1,284.0	799.9	940.8	2,308.2
Service and sales workers	977.4	588.5	655.4	2,166.6
Skilled agricultural, forestry, and fishery workers	304.1	214.8	310.2	336.8
Craft and related trades workers	718.6	300.6	487.4	1,146.9
Plant and machine operators, and assemblers	1,265.7	1,152.9	1,044.9	1,421.6
Elementary occupations	460.6	289.8	353.0	972.2
Average	1,130.9	759.2	847.2	1,984.6

Source: PROTEQIN Survey 2014.

Caribbean firms are less engaged in international trade: 82.5 percent of Caribbean firms only produce for the domestic market, compared to 76 percent of ROSE firms. Exporters are larger in size than non-exporters; however, half of large firms in ROSE are involved in international trade compared to only 37 percent in the Caribbean. Skill intensity does not differ drastically between exporters and non-exporters. While Caribbean exporters perform better in terms of sales growth than non-exporters, they do not do so in terms of employment growth or total factor productivity, while ROSE exporters do. Economic sectors with a higher share of exporters are not more productive in the Caribbean while in ROSE they are. There is a negative relation between total factor productivity and exporting that is also confirmed in the relation between export intensity (percentage of exports to total sales) and productivity.

Figure 5.17: **Total Factor Productivity and Dependence on Exports (Caribbean only)**



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent. TFP = total factor productivity.

Table 5.4: **Trade and Performance (percent)**

	Sales Growth		Employment Growth		TFP	
	Exporters	Non-exporters	Exporters	Non-exporters	Exporters	Non-exporters
Caribbean-C	11.44	1.53	3.52	7.12	2.92	2.76
ROSE-C	27.00	14.80	11.33	7.74	13.68	8.20
Caribbean-T	2.28	–0.83	3.27	3.60	3.02	3.09
ROSE-T	12.03	6.53	11.53	4.37	9.08	13.79

Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent. TFP = total factor productivity.

6 Foreign Direct Investment and Backward and Forward Linkages

This chapter analyses issues surrounding foreign investment (FDI) and the backward and forward linkages derived from such investment. Much good is associated with FDI. At the macro-economic level it contributes to a country's external financing, but without the volatility of other sources (portfolio and debt), and it boosts economic growth by increasing—directly and indirectly—productivity and competitiveness. Particular emphasis is placed by policymakers on the contribution of FDI to improving the productivity and competitiveness of domestic industry through technology transfer and knowledge spillovers that benefit domestic firms. These spillovers depend on the type of FDI, that is, whether it comes in the form of wholly owned or joint ventures, and whether it is horizontal (meeting domestic demand) or vertical (using the country to export), and hence on differences in spillovers between backward and forward linkages.

6.1. Context

From the macroeconomic perspective, FDI is preferred among other capital flows because it helps finance the current account of balance of payments gaps, and it is long term in nature. It is less volatile than other forms of private capital flows such as portfolio equity and debt flows, and particularly short-term flows that are subject to large reversals (Dadush, Dasgupta, and Ratha 2000; and Lipsey 2001).

However, although machines are more difficult to move out on short notice, financial transactions can be used for a reversal of FDI. One mechanism is that the foreign subsidiary can borrow against its collateral domestically and then lend the money back to the parent company abroad. Another is that, given that a significant portion of FDI is inter-company debt, the parent company can recall it. However, these options are limited to the extent that there are capital outflow restrictions.

The motivation behind FDI matters. Relevant to our categorisation of countries into tourism- and commodity-dependent, Walsh (2010) distinguishes between sectors. He finds that primary sector FDI has no strong relation with either macroeconomic

stability or institutional quality. FDI decisions are determined by the location of those resources, and by whether both equipment and labour are easily transferable across borders. However, FDI in services is affected by macroeconomic conditions. Tertiary FDI flows are also higher in more rapidly growing and more open economies. Similar differences between secondary and tertiary FDI obtain for the qualitative and institutional variables analysed here. More flexible labour markets and deeper financial markets attract more secondary FDI, while better infrastructure and a more independent judiciary attract more tertiary FDI.

FDI is potentially a powerful growth and development tool for boosting general economic performance. Many studies conclude that FDI is a vital determinant for long-run growth (Grossman and Helpman 1991; Lucas 1988; Romer 1986; Solow 1956; and Swan 1956). Recent growth models identify four different channels of transmission: (1) overcoming capital shortages, both physical and human (Todaro and Smith 2006), (2) boosting foreign exchange inflows and thereby enhancing the ability to import without putting pressure on the exchange rate, (3) enhancing revenue collection by broadening the tax base (Todaro and Smith 2006), and (4) directly increasing the productivity of the host country through technology transfer, knowledge diffusion, and overall improvement in the level of technology (Wan 2010).

Empirical studies show mixed results, but there are benefits from FDI if certain preconditions exist, particularly regarding absorptive capacity. Generally, FDI can be a powerful performance booster for countries where economic performance has been good and institutions are strong. For example, using cross-sectional data for 50 countries over the 1980s and 1990s, Olofsdotter (1998) finds that an increase in the stock of FDI has a stronger positive impact on growth in host countries with high-quality institutions, such as those involved with property rights. Similarly, while Blonigen and Wang (2004) use ordinary least squares on a panel dataset to conclude that there is no association between FDI and growth for developed countries, they find a positive relationship for developing countries that is conditional on an adequate level of human capital.

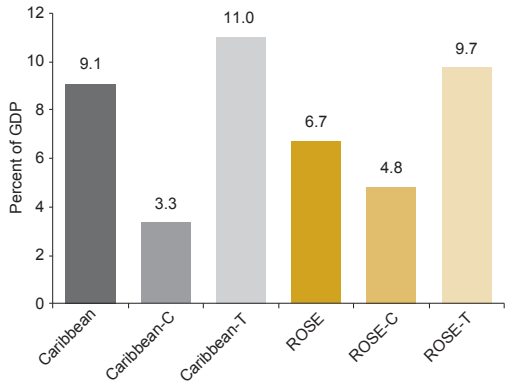
But correlation does not imply causality. Correlations could reflect FDI increasing for higher-growth economies or FDI increasing economic growth. Applying Granger causality tests to 11 developing countries in East Asia and Latin America from 1960–1997, Zhang (2001) finds that FDI positively affected growth in five countries where conditions such as the trade regime and macro-economic stability were strong. In addition, Choe (2003) using a vector auto-regression (VAR) panel model for 80 countries from 1971–1995, finds that the causal direction runs both ways, thus fast-growing countries tend to attract higher FDI flows.

The Caribbean has attracted more FDI than the rest of the small economies (ROSE) of the world. Caribbean countries' FDI accounted for 9 percent of GDP, on average, over 2007–2013, compared to 6.7 percent for ROSE. Overall, tourism-dependent

countries show higher FDI levels than commodity-dependent countries (as shown in Figure 6.1): 11 percent of GDP in tourism-dependent Caribbean countries (Caribbean-T) and 9.7 percent in tourism-dependent ROSE (ROSE-T) compared to 3.3 percent in commodity-dependent Caribbean countries (Caribbean-C) and 4.8 percent in commodity-dependent ROSE countries (ROSE-C).

Not only has the Caribbean attracted more FDI, its inward capital flows are also more stable. Table 6.1 shows the relative stability of FDI compared to other types of flows for the Caribbean versus ROSE (overall, commodity, and tourism). The analysis suggests two findings. First, FDI is

Figure 6.1: **Foreign Direct Investment, Average over 2007–2013 (percent of GDP)**



Source: IMF (2015).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Table 6.1: **Relative Stability of Investment Flows by Type, 1991–2013**

Region	Stability Metric (<1 implies relative stability)	
Caribbean	Direct/portfolio	0.05
	Direct/other	0.06
ROSE	Direct/portfolio	0.25
	Direct/other	0.53
Caribbean-C	Direct/portfolio	0.26
	Direct/other	0.20
ROSE-C	Direct/portfolio	0.32
	Direct/other	0.45
Caribbean-T	Direct/portfolio	0.06
	Direct/other	0.06
ROSE-T	Direct/portfolio	0.16
	Direct/other	0.56

Source: IMF (2015).
Note: Relative stability is calculated as the ratio of average trailing three-year standard deviation of year-on-year growth of each flow. Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

more stable than other kinds of flows. The overall standard deviation of year-on-year growth in investment flows is lowest for FDI for both the Caribbean and ROSE. This finding remains robust to an alternative stability metric, which is the average three-year trailing standard deviation in year-on-year growth. Second, net FDI flows to the Caribbean are more stable than those to ROSE. This holds for both tourism-dependent economies as well as commodity-dependent ones. However, tourism economies have slightly more stable FDI flows and also have relatively more stable portfolio flows than commodity exporters.

Interestingly, these relatively higher capital flows occur with capital controls in place, as shown in Table 6.2. With the exception of Guyana, all the listed countries have capital

Table 6.2: Capital Controls in the Caribbean

	Bahamas	Barbados	Guyana	Jamaica	Suriname	Trinidad and Tobago
Exchange rate system	**Conventional Peg**	**Conventional Peg**	**Stabilized Arrangement**	**Crawl-like Arrangement**	**Stabilized Arrangement**	**Stabilized Arrangement**
Direct investment controls	√	√		√	√	√
Inward controls	√	√		√	√	√
Outward controls	√	√			√	
Liquidation of direct investment		√		√	√	
Memorandum:						
Controls on...						
Capital and money market instruments	√	√		√	√	√
Derivatives and other instruments	√	√		√	√	
Credit operations	√	√	√	√	√	
Real estate transactions	√	√		√	√	√
Personal capital transactions	√	√		√	√	

Source: IMF (2014).
Note: FDI = foreign direct investment; Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

controls. Of these countries, Jamaica is the only one that does not have any capital outflow controls, while all five, including Jamaica, have inflow controls. Given the relatively fixed exchange rates, this implies some degree of tension between choosing an independent execution of monetary policy and managing pressures on the exchange rate.

Macro-evidence cross-section regression reveals that FDI stock does have a positive effect on economic growth (Table 6.3). However, the effect is reduced in the Caribbean. The negative effect is of higher magnitude among Caribbean-T countries. The quality of institutions matters for economic growth, but macroeconomic stability and infrastructure do not. Schooling has a negative and significant effect.

Table 6.3: Economic Growth Effects of Foreign Direct Investment

	Y = real GDP Growth
FDI	0.0241
	[0.0203]
FDI * Caribbean-C	−0.151**
	[0.0665]
FDI * Caribbean-T	−0.497***
	[0.167]
FDI * ROSE-C	0.0496
	[0.0542]
FDI * ROSE-T	0.0467
	[0.107]
Institutions	0.745*
	[0.411]
Schooling	−0.507***
	[0.148]
Infrastructure	0.255
	[0.831]
Macro	0.189
	[0.377]
Constant	2.394
	[1.469]

Source: IMF (2014).
Note: FDI = foreign direct investment; Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.
*p<0.05, ** p<0.01, *** p<0.001.

6.2. Firm-level Evidence

Policymakers are not only interested in FDI as a source for financing the current account of the balance of payments, but also because it brings new technologies, management skills, marketing techniques, and knowledge spillovers that benefit domestic firms by increasing productivity and competitiveness throughout the economy. Both the theoretical and empirical literature highlight a series of channels of spillover effects through which FDI can influence productivity and, indirectly, economic growth. However, the motivations for FDI vary, implying that not all types of FDI may be equally beneficial for the host economy or create the same potential for spillovers. FDI can be classified as horizontal, i.e., meeting domestic demand in the host country; vertical, i.e., using the host country as a platform for exporting; and as a special case of vertical strategic-asset acquisition for raw materials. Therefore, the type of FDI may explain the low growth effect found at the macroeconomic level.

Much of the earlier literature focused on intra-industry spillovers. The empirical results showed that there was little to none or even a negative effect of spillovers, particularly for developing countries. In other words, there was no evidence that the presence of foreign firms in a sector affected the productivity of domestic firms in that sector.

Spillovers have been examined by looking at the differences between horizontal and backward linkages where horizontal FDI (i.e., domestic-market-oriented foreign firms) is more likely to purchase inputs locally than vertical FDI (Altenburg 2000), and hence has higher spillovers (Blalock and Gertler 2008; Farole and Winkler 2012; Javorcik 2004) because it has more backward linkages. Backward linkages are defined as the percentage of domestic inputs bought by a foreign-owned company. Little to no evidence has been found for forward linkages (Javorick 2004). Thus, there should be a negative relation between the percentage of inputs of domestic origin and the percentage of sales exported.

Foreign companies with joint ventures (less foreign ownership) are expected to buy more locally and hence have more backward linkages, as local partners are expected to have more knowledge of local markets. Vertical FDI is expected to have more forward linkages (proxied by the percentage of indirect exports, following Sanchez-Martin, Arce, and Escribano 2014). Thus, there should be a negative relation or no relation between backward and forward linkages.

There is a higher percentage of foreign-owned firms in ROSE than in the Caribbean, but there is a higher share of joint ventures among foreign firms in the Caribbean. In fact, 16.4 percent of Caribbean firms are classified as foreign,[1] compared to 19.5 percent in

Table 6.4: Foreign Ownership (percent)

Region	Foreign Ownership	Foreign Ownership (full)	Joint Ventures
Caribbean	16.4	44.4	55.6
Caribbean-C	14.4	31.3	68.7
Caribbean-T	17.2	49.1	50.9
ROSE	19.5	59.7	40.3
ROSE-C	21.2	62.3	37.7
ROSE-T	15.6	51.8	48.2

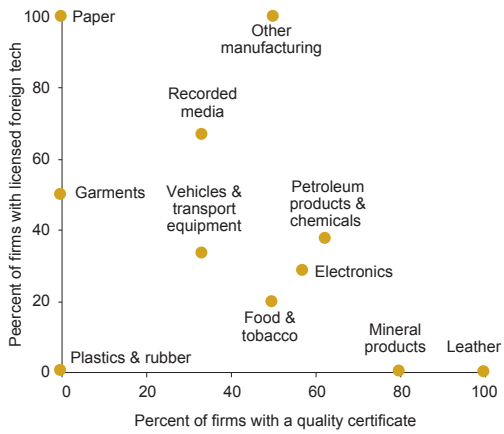
Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

[1] A firm was classified as foreign-owned if private foreign individuals/companies had at least 10 percent of the firm's total ownership. Among foreign-owned firms, a further classification was made of full ownership (100 percent) and joint ventures (ownership between 10 and 99 percent).

ROSE (Table 6.4). Foreign ownership is more pronounced in Caribbean-T (17.2 percent) than in ROSE-T (15.6 percent). And there is a greater presence of foreign owned firms in ROSE-C than in Caribbean-C.

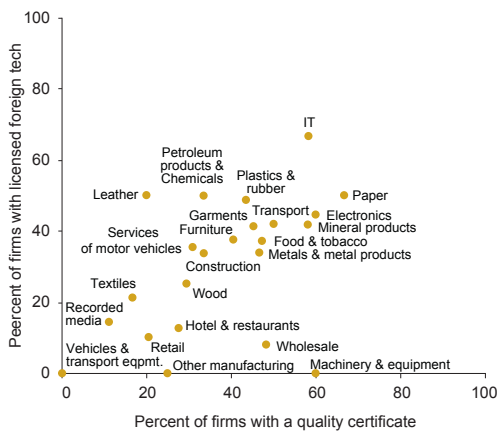
Finally, weak technology transfer, a proxy for knowledge spillovers (as shown by Sanchez-Martin, Arce, and Escribano 2014) refers to the reliance of foreign-owned subsidiaries on quality certificates and foreign-licensed technologies. The use of quality certificates is more prevalent in sectors with high technological content, as shown in the Organisation for Economic Co-operation and Development's Technology Intensity Index (OECD 2011). This suggests that, *a priori*, the quality certificate and foreign-licensed technology variables in the Enterprise Surveys could be suitable proxies for measuring the potential for knowledge spillovers. Figure 6.2a shows this relationship (averages by sector) for the Caribbean. The paper sector stands out for all firms having licensed foreign technologies but no quality certificates, while in the leather sector all firms have quality certificates but no foreign-licensed technologies. In contrast, the higher the share of firms with licensed technologies in ROSE, the higher the propensity to have a quality certificate (Figure 6.2b).

Figure 6.2a: Licensed Technologies in the Caribbean (percent)



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

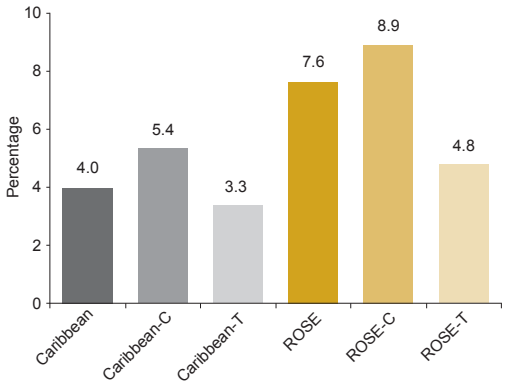
Figure 6.2b: Licensed Technologies in ROSE (percent)



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

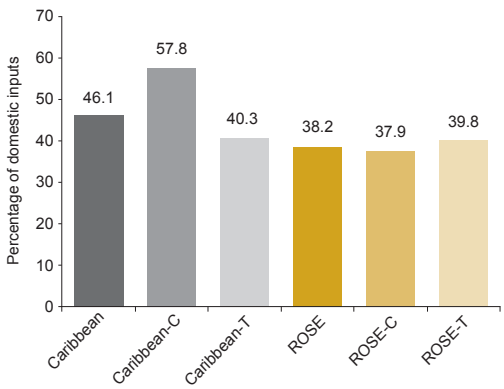
Is there a positive relation between licenses and quality certificates? FDI with foreign technology licences has a negative effect on the scope for backward linkages. A comparison between Figures 6.2 a and 6.2.b shows that while ROSE exhibits the expected linear relationship between the percentage of firms with a quality certificate and those with a licensed technology, the Caribbean does not exhibit such a relationship.

Figure 6.3a: Backward Linkages: Presence (in percent)



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 6.3b: Backward Linkages: Intensity (in percent)



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

The lack of a strong relationship between quality-certificate holders and firms with foreign-licensed technologies suggests that Caribbean firms are not benefiting from knowledge spillovers in the same way as ROSE. Foreign-owned companies often rely on licensed technologies to get quality certificates, which serves as an indicator of spillover externalities associated with FDI.

The percentage of firms with a positive share of material inputs and supplies of domestic origin is lower in the Caribbean than in ROSE (Figure 6.3a). However, those fewer firms in the Caribbean engaging in backward-linkage activities do so with more intensity than their ROSE counterparts. On average, Caribbean foreign firms supply 46 percent of their total inputs from domestic markets, compared to 38 percent in ROSE (Figure 6.3b). As with backward linkages, there is also a higher intensity in Caribbean-C than in Caribbean-T countries.

There is a negative relationship between backward linkages and forward linkages, both in the Caribbean and ROSE. The values for alpha and beta in a simple linear regression for firm in sector for the Caribbean and ROSE are presented in Table 6.5. The negative relationship holds among firms in commodity-exporting countries but is zero for foreign firms operating in tourism-dependent countries. The higher values of observed in the Caribbean are consistent with the higher averages in intensity showed in Figure 6.3b. The relation

between backward linkages and direct exports is negative for all categories except Caribbean -C where it is zero (Table 6.6).

The sectoral composition of a country will influence the mix of backward and forward linkages. Echoing Walsh's (2010) argument that the reasons for FDI will differ depending on whether it goes into the primary, secondary, or tertiary sectors, Sanchez-Martin, Arce, and Escribano (2014) argue that backward linkages will differ across sectors. Foreign companies in the food and wood sectors will rely on local inputs to a greater extent, whereas companies in the retail, leather and garment sector, which need to import fabric from abroad, have less scope for backward linkages. Services and hotels and restaurants would be sectors with intermediate levels of backward and forward linkages.

Foreign firms with backward linkages in ROSE are distributed across all industrial sectors, while there are sectors for which there are no backward linkages in the Caribbean. The information technology (IT) sector represents 1.8 percent of firms in both regions. While 90 percent of IT firms in ROSE expanded sales between 2007 and 2010, only 50 percent of Caribbean IT firms expanded sales. The fact that foreign IT firms in the Caribbean (representing 14 percent of that particular sector) do not produce any backward linkages sheds light on the lack of strategic inflows of FDI. Another example is the electronics sector, which relies heavily on foreign firms (40 percent foreign-owned in the Caribbean and 30 percent in ROSE). The presence of foreign-owned firms in this sector has also translated into more backward linkages in ROSE than in the Caribbean (Figure 6.4).

Table 6.5: Relationship between Backward and Forward Linkages

Region	α	β	Std. Error
Caribbean	60.0	−0.201***	0.097
Caribbean-C	65.1	−0.376***	0.145
Caribbean-T	57.0	−0.101	0.127
ROSE	48.7	−0.161***	0.065
ROSE-C	47.4	−0.191***	0.078
ROSE-T	52.6	−0.096	0.123

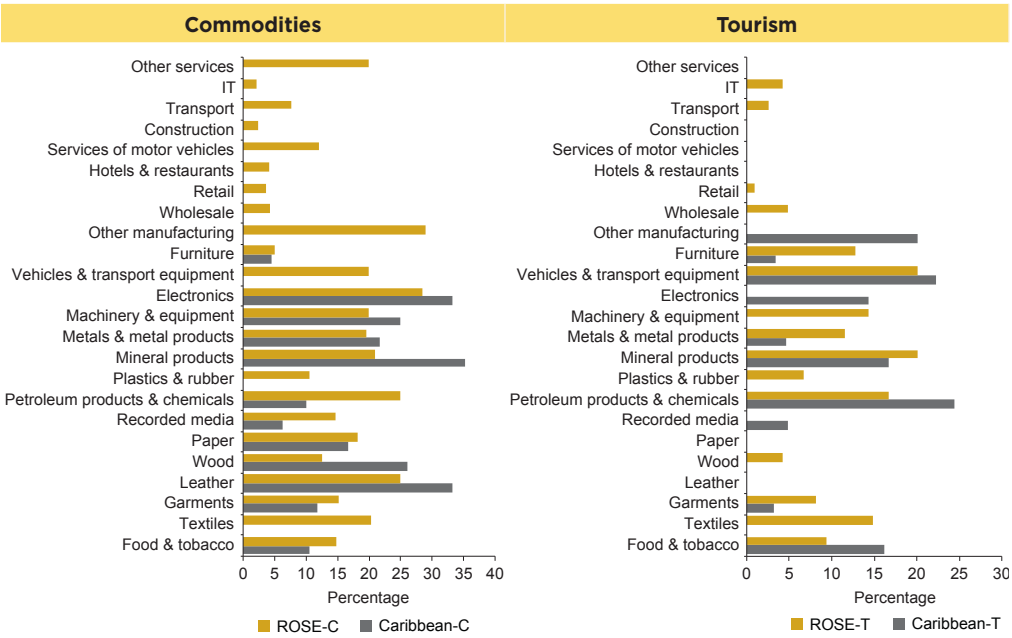
Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.
*p<0.05, ** p<0.01, *** p<0.001.

Table 6.6: Relationship between Backward Linkages and Direct Exports

Region	α	β	Std. Error
Caribbean	62.5	−0.274***	0.055
Caribbean-C	64.5	−0.062	0.093
Caribbean-T	61.1	−0.359***	0.068
ROSE	50.6	−0.163***	0.030
ROSE-C	49.4	−0.160***	0.034
ROSE-T	54.0	−0.155***	0.072

Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.
*p<0.05, ** p<0.01, *** p<0.001.

Figure 6.4: Sectoral Composition of Backward Linkages: Presence (percent)



Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

6.3. Foreign Ownership and Firm Performance

Comparing performance metrics in sales and employment growth for foreign versus domestic firms reveals that foreign firms in the Caribbean are underperforming while the opposite holds for those located in ROSE. However, the degree of foreign ownership matters (Table 6.7). Given that foreign-owned firms have access to more resources and better technology, it is reasonable to expect foreign affiliates to have higher performance metrics than domestic ones. When looking at these data from the Enterprise Surveys, this is indeed what we find for ROSE in aggregate and for sub-samples of tourism-dependent and commodity-exporting countries. Using sales as well as employment, (fully) foreign affiliates in ROSE have higher growth rates than their domestic counterparts. Sales growth for foreign affiliates stands at 18 percent, while for domestic firms it is 15 percent. Similarly, employment growth stands at 9.6 percent for foreign affiliates compared to 7.6 percent for domestic firms. Differences are larger in ROSE-T.

We observe mixed results for the Caribbean. Foreign-affiliated firms underperform their domestic counterparts in terms of employment growth but perform better in terms of sales. At 2.2 percent, employment growth for joint ventures with foreign

Table 6.7: Foreign Ownership and Performance (percent)

	Sales Growth			Employment Growth			TFP		
		Foreign			Foreign			Foreign	
	Local	Joint Ventures	Total Foreign	Local	Joint Ventures	Total Foreign	Local	Joint Ventures	Total Foreign
Caribbean	1.08	–3.01	2.59	5.34	2.28	3.69	3.05	2.77	3.30
Caribbean-C	2.49	3.79	1.45	7.05	4.85	3.92	2.83	2.50	2.43
Caribbean-T	–0.07	–7.72	3.49	3.80	0.52	3.48	3.07	2.83	3.34
ROSE	15.46	8.51	18.15	7.64	6.02	9.62	10.75	8.06	8.92
ROSE-C	17.13	10.58	16.70	8.40	4.41	9.83	10.50	7.71	9.29
ROSE-T	6.10	–1.71	26.78	4.38	13.65	8.42	13.23	29.85	5.94

Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent; TFP = total factor productivity.

capital is considerably lower than the 5.3 percent for domestic firms. However, sales growth for (totally) foreign affiliates, standing at 2.6 percent, is higher than for domestic firms (1.08 percent) and significantly better than sales growth for joint ventures, which is –3 percent.

The highest values of total factor productivity (TFP) among foreign-owned firms are observed among firms with no backward linkages in Caribbean-T and ROSE-T. Overall, the presence of backward or forward linkages in the Caribbean is associated with lower TFP values. This is not the case in ROSE-C, where firms with forward linkages have higher TFP values than firms with no forward linkages (Table 6.8).

Table 6.8: Linkages (Presence) and Total Factor Productivity

	Average TFP			
	No BL	BL	No FL	FL
Caribbean	3.057	2.561	3.057	2.576
Caribbean-C	2.792	2.408	2.784	2.674
Caribbean-T	3.083	2.594	3.082	2.551
ROSE	10.676	8.522	10.468	11.375
ROSE-C	10.435	8.411	10.215	11.860
ROSE-T	13.036	10.218	13.008	4.441

Source: World Bank, Enterprise Surveys, 2010.
Note: BL =backward linkages; FL = forward linkages; Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent; TFP = total factor productivity.

Comparing TFP by sector, Table 6.9 shows that no sector has higher TFP in the Caribbean relative to counterparts in ROSE.

6.4. Conclusion

Country-level figures show that the Caribbean has attracted more foreign direct investment than ROSE. In addition, inward capital flows to the Caribbean are more stable than in ROSE. Interestingly, these relatively higher flows occur with capital controls in place. Although FDI has a positive effect on a country's economic growth, such an

Table 6.9: Total Factor Productivity by Sector

Sector	Caribbean-C	ROSE-C	Caribbean-T	ROSE-T
Food & tobacco	2.48	12.34	2.79	17.09
Textiles	3.02	7.38	2.57	11.36
Garments	2.43	6.83	2.67	7.32
Leather	n.a.	5.00	4.80	7.23
Wood	2.35	5.30	2.77	9.41
Paper	n.a.	6.86	2.31	238.36
Recorded media	2.29	9.04	2.65	n.a.
Petroleum products & chemicals	2.13	4.66	2.49	5.40
Plastics & rubber	n.a.	8.65	2.81	4.56
Mineral products	2.34	9.77	2.56	7.01
Metals & metal products	2.45	12.50	2.57	6.75
Machinery & equipment	2.34	32.05	1.77	5.88
Electronics	2.41	7.09	3.03	n.a.
Vehicles & transport equipment	1.93	10.68	2.32	6.24
Furniture	2.75	9.96	2.97	20.68
Other manufacturing	2.52	4.94	3.42	1.96
Wholesale	2.89	n.a.	3.27	n.a.
Retail	3.00	5.78	2.94	4.70
Hotels & restaurants	2.74	n.a.	2.99	n.a.
Services of motor vehicles	2.65	4.59	3.25	n.a.
Construction	2.83	5.98	3.03	n.a.
Transport	3.94	n.a.	2.80	n.a.
IT	2.53	4.66	2.73	n.a.
Other services	4.25	n.a.	n.a.	n.a.

Source: World Bank, Enterprise Surveys, 2010; and the PROTEQIN Survey 2014.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

effect is reduced in the Caribbean relative to ROSE. Comparing sales and employment growth performance metrics for foreign versus domestic firms reveals that foreign firms in the Caribbean are underperforming, while the opposite holds for those located in ROSE. However, the degree of foreign ownership matters. Firm-level data show that there is a lower percentage of foreign-owned firms in the Caribbean, but a higher share of joint ventures in the Caribbean. Foreign-affiliated firms underperform their domestic counterparts in terms of employment growth but perform better in terms of sales. The percentage of firms with a positive share of material inputs and supplies of domestic origin (backward linkages) is lower in the Caribbean than in ROSE, hence there is a lower probability of spillovers in the Caribbean.

7

Access to Finance

Lack of adequate access to finance was identified by Caribbean businesspersons as the most important constraint they face, and as the second most important constraint compared to those cited by their counterparts in the rest of the small economies (ROSE) of the world (see Chapter 4). Generally, inadequate finance has been consistently cited as one of the main obstacles to firm growth and performance (Ayyagari, Demirgüç-Kunt, and Maksimovic 2012; OECD and ECLAC 2013; Stallings 2006). Indeed, empirical evidence has shown that inadequate access to finance impairs firm productivity growth (Banerjee and Duflo 2012; De Mel, McKenzie, and Woodruff 2008).

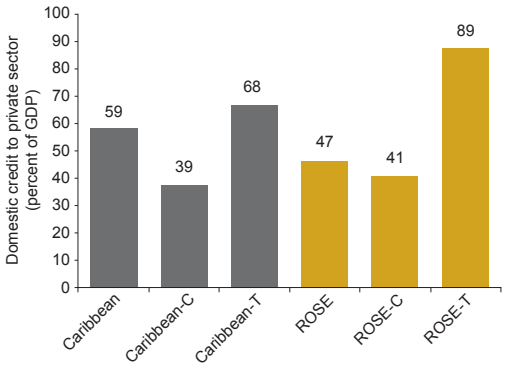
This chapter first looks in greater detail at the incidence of the problem of firms' access to finance. This is followed by a discussion of the determinants of finance, distinguishing between asymmetric information, banks' market concentration and penetration, and the rule of law. Finally the chapter presents estimates of the role of access to finance in explaining performance gaps.

7.1. Context

Before discussing the firm-level evidence, we first turn to the context of finance at the macroeconomic level. We consider two standard measures regarding banking performance: credit to the private sector, and lending interest rates.

Domestic credit to the private sector refers to financial resources provided to the private sector by financial firms. These resources can be through loans, purchases of non-equity securities, and trade credits—all of which establish a claim for repayment. The financial firms include commercial deposit-taking banks as well as other financial corporations (finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies). As shown in Figure 7.1, credit to the private sector as a percent of GDP in Caribbean commodity-dependent countries is 2 percentage points less than that provided to their counterparts in ROSE. However, credit to the

Figure 7.1: Domestic Credit to the Private Sector in the Caribbean and ROSE, Average over 2007–2013 (percent of GDP)



Source: World Bank, World Development Indicators.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Table 7.1: Domestic Credit to the Private Sector in the Caribbean, Average over 2007–2013 (percent of GDP)

Caribbean Countries	Domestic Credit to Private Sector (Percent of GDP)
Antigua and Barbuda	74
Bahamas, The	82
Barbados	64
Belize	60
Dominica	53
Grenada	81
Guyana	39
Jamaica	28
St. Kitts and Nevis	66
St. Lucia	110
St. Vincent and the Grenadines	53
Suriname	25
Trinidad and Tobago	33

Source: World Development Indicators.

private sector in Caribbean tourist-dependent countries is 21 percentage points less than ROSE tourist-dependent countries. Within the Caribbean, however, as shown in Table 7.1, there is a wide dispersion that ranges from highs of 110 percent of GDP in St. Lucia followed by 81 percent of GDP in Grenada, to lows of 28 percent in Jamaica and 25 percent in Suriname.

The picture regarding lending rates is mixed. Lending rates are the average percentage lending rate based on rates that are typically differentiated according to the creditworthiness of borrowers and the objectives of financing. However, the terms and conditions attached to these rates differ by country, limiting their comparability. As shown in Figure 7.2., Caribbean commodity-dependent countries face lending rates higher than their counterparts in ROSE. The opposite holds for tourist-dependent Caribbean countries. Within the Caribbean region, lending interest rates range from a high of 19 percent in Jamaica to a low of 5 percent in the Bahamas.

In sum, at the macroeconomic indicator level, access to finance in terms of quantity and price does not appear to be markedly different when comparing the Caribbean with ROSE. The next section looks at the firm-level evidence.

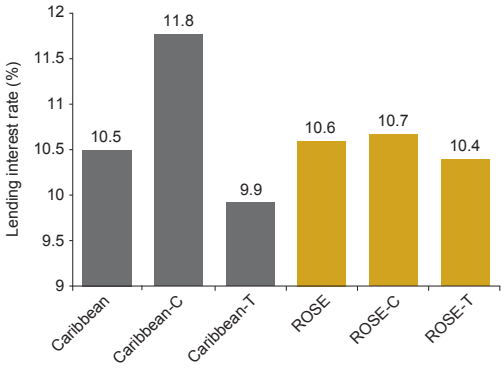
7.2. Firm-level Evidence

The obstacle of access to finance—as defined using firm-level

data—is relatively more pronounced in the Caribbean than in ROSE and particularly harsher for small and medium-sized enterprises (SMEs).[1] Figure 7.3 shows the share of entrepreneurs who consider access to finance to be a major or severe obstacle to their firms' operations broken down by firm size. The findings suggest access to finance is a relatively more serious constraint among SMEs in the Caribbean than among their ROSE counterparts. Differentiating financial constraints by firm size is important given that aggregate figures could mask this heterogeneity. However, after differentiating by size, it can be seen that for SMEs, entrepreneurs consider access to finance to be a bigger hurdle than do large firms, when compared with ROSE.

Following Presbitero and Rabellotti (2014), we define five specific indicators to analyse demand for credit. First, we quantify credit demand as the proportion of firms that applied for a loan or line of credit. Second, we identify firms that did not apply for a loan because they did not need it, as they report having sufficient capital. Third, we classify as "discouraged firms" those firms that did not apply for a loan because application procedures were considered complex, interest rates were not favourable, collateral requirements were too high, the size

Figure 7.2: Lending Interest Rates in the Caribbean and ROSE, Average from 2007 to 2013 (percent)



Source: World Bank, World Development Indicators.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

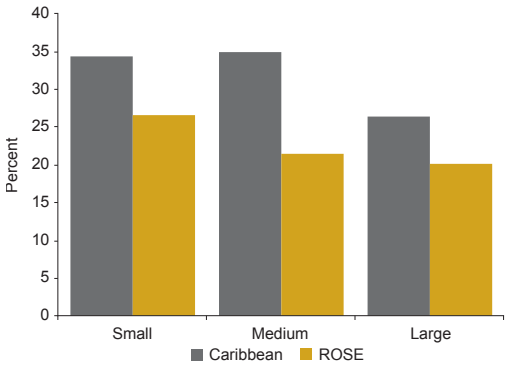
Table 7.2: Lending Interest Rates in Caribbean Countries, Average over 2007–2013 (percent)

Caribbean Countries	Lending Interest Rate (percent)
Antigua and Barbuda	10
Bahamas, The	5
Barbados	9
Belize	12
Dominica	9
Grenada	10
Guyana	14
Jamaica	19
St. Kitts and Nevis	9
St. Lucia	10
St. Vincent and the Grenadines	9
Suriname	12
Trinidad and Tobago	6

Source: World Development Indicators.

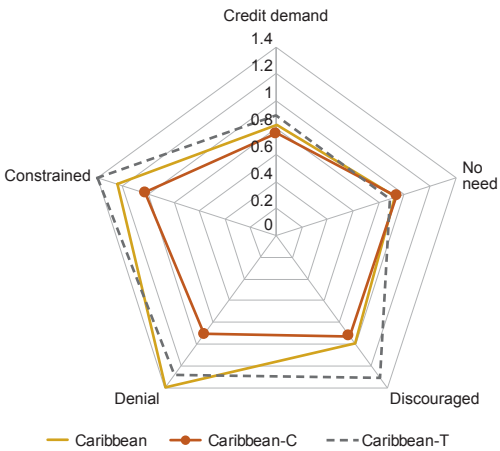
[1] Small firms are defined as those with fewer than 20 employees, medium-sized firms as those with between 20 and 99 employees, and large firms as those with 100 employees and higher.

Figure 7.3: Access to Finance and Firm Size (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 7.4: Demand for Credit: Small and Medium-sized Enterprises: Caribbean Relative to ROSE



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries.

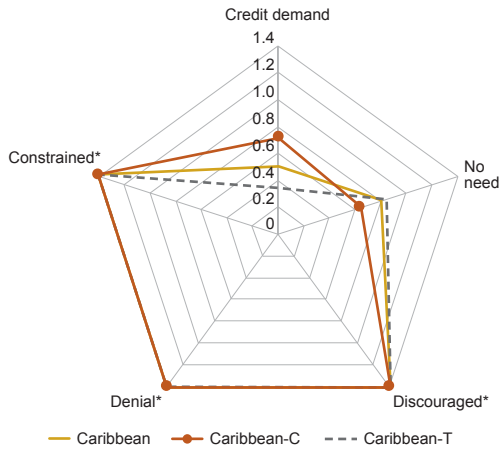
of loan and maturity were insufficient, or in general, they believed that the loan would not be approved. Fourth, we identify firms that applied for a loan but whose request was rejected. Fifth, we classify as "constrained firms" those firms whose loan application was denied and those that did not apply because interest rates and collateral requirements were too high, the size of the loan and the maturity were insufficient, or in general they believed that the loan would not be approved.

This analysis reveals a similar demand for credit between Caribbean and ROSE SMEs in general and also when distinguishing between commodity-dependent and tourism-dependent countries. Figure 7.4 shows the degree to which these indicators differ between SMEs in the Caribbean and those in ROSE. As a reference point, a similar situation is present when analysing firms that do not need credit. However, the share of discouraged, denied, and constrained SMEs is larger for Caribbean tourism-dependent countries, while SMEs in Caribbean commodity-dependent countries do not differ from their ROSE counterparts regarding access to credit.

For large firms, the differences are even more pronounced. Figure 7.5 shows that large firms in the Caribbean have lower demand for credit than their ROSE counterparts. Notably, in the Caribbean, discouraged, denied, and constrained firms represent a significantly higher proportion of large firms when compared with their ROSE counterparts. In terms of credit demand, Caribbean tourism-dependent countries show significantly lower demand for credit when compared to their ROSE counterparts. However, Caribbean

commodity-dependent countries have less need for credit, while tourism-dependent countries are comparable to ROSE counterparts.

Figure 7.5: Demand for Credit, Large Firms: Caribbean Relative to ROSE

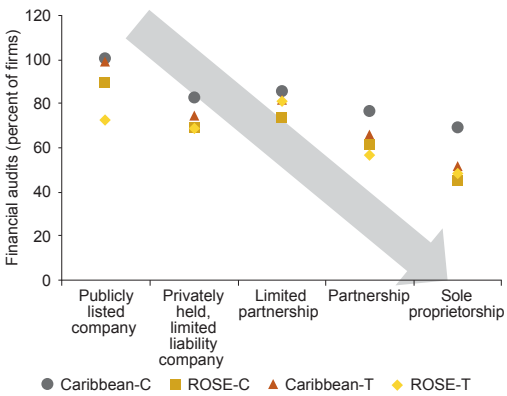


Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; * = values exceeded 1.4.

7.3. Legal Status and Access to Finance

A firm's legal status is intrinsically related to the level of transparency and accountability to which it is exposed and, therefore, to the possibility of overcoming hurdles related to access to credit. Publicly listed companies are usually subject to more regulations and to financial audits, while sole proprietorships (on the opposite side of the spectrum) generally are not required to comply with strict accountability measures imposed by the government or regulatory bodies. Figure 7.6a shows how the percentage of firms that have their annual financial statements checked or certified by an external auditor decreases as the firms' legal status changes from the one requiring the most transparency (publicly listed companies) to the one requiring the least transparency (sole proprietorships). Thus, a greater amount of transparency is translated into a lower probability of being financially constrained. Figure 7.6b shows how greater transparency is associated with lower shares of financially constrained firms.

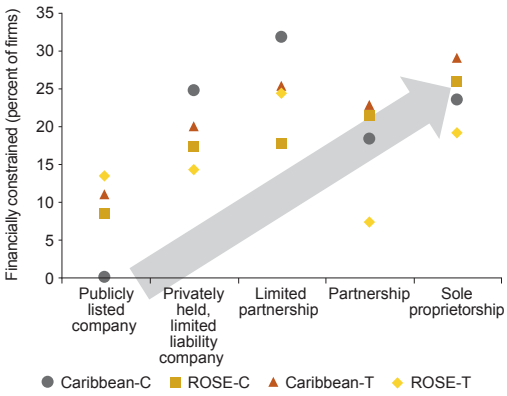
Figure 7.6a: Legal Status and Financial Audits (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Overall, the evidence suggests that access to finance is a relatively more serious problem in the Caribbean than in ROSE. The share of firms that report being credit-constrained and discouraged from applying for credit, and that have experienced

Figure 7.6b: Legal Status and Financing Constraints (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

credit application denials, is significantly higher in the Caribbean than in ROSE. This is consistent with the views of Caribbean entrepreneurs, who consistently report relatively worse perceptions regarding credit access than their ROSE counterparts.

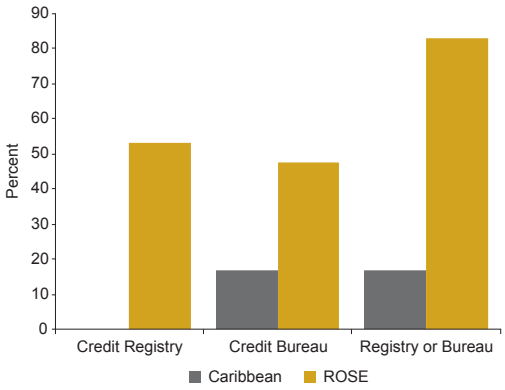
The identification of specific determinants of access to finance is of great relevance for policymakers. Country-specific, market-level factors have been found to account for around 40 percent of the variation in access to credit, as compared to only 3 to 4 percent explained by observable firm-level characteristics such as labour productivity, size, whether the firm exports, age of the firm, foreign ownership, female ownership, and whether the firm has a quality certification (Presbitero and Rabellotti 2014). It is also important to note that while the country and market factors can be addressed by policy, it is harder to influence market factors from a regulatory perspective at the country level. Accordingly, we focus on the role of market-level determinants of financing in the Caribbean by benchmarking key determinants between the Caribbean and ROSE.

One of the key features of any credit market is asymmetric information between borrowers and lenders. Borrowers know more about their behaviour and intentions than creditors. As a result, credit rationing emerges as an equilibrium outcome (Jaffee and Russell 1976; Stiglitz and Weiss 1981). Additional information in the form of business plans, accounting records, and the like become relevant for credit decisions both as actual information and as signals of a positive future performance. Thus, firms that lack adequate accounting practices or financial and operational information are expected to be financially constrained because they are unable to communicate their creditworthiness to creditors. In the case of the Caribbean, for instance, according to the World Bank's 2010 Enterprise Surveys, only 65 percent of SMEs report having their annual financial statements audited, while 85 percent of large firms report doing so. This gap between SMEs and large firms is consistent with the former having more difficulties in accessing financing. However, this situation is similar in ROSE.

The asymmetric information problem is further exacerbated by the absence of credit registries in the Caribbean. As defined by the World Bank's Doing Business Project,

a credit registry is a publically owned entity that collects information on borrowers and shares it with regulated financial institutions. As shown in Figure 7.7, the Caribbean does not have these institutions at all, while 53 percent of ROSE have such institutions. This is particularly striking because relatively small country size makes it easier to put such institutions in place. However, one key feature needed to do so is a culture of openness and transparency for sharing firm-level information publicly, something that apparently is lacking in the Caribbean.

Figure 7.7: Credit Registries and Bureaus (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Consistent with the theoretical prediction that an institutional setting that facilitates information-sharing can ease access to finance, empirical evidence suggests that the presence of credit registries is associated with higher demand for credit and lower financing constraints (Presbitero and Rabellotti 2014).

The problem of asymmetric information is somewhat mitigated in two Caribbean countries (Jamaica and Trinidad and Tobago) by the presence of credit bureaus. Credit bureaus are privately owned entities that collect information on borrowers in the financial system and facilitate the exchange of credit information among lenders. The key distinction between a registry and a bureau is that the existence of a registry makes it mandatory to report loans, whereas participation in a credit bureau is voluntary. Therefore, bureaus might not convey complete information about all borrowers in the economy. Nonetheless, credit bureaus constitute a good alternative to decreasing asymmetric information in the absence of credit registries.

Evidence suggests that credit market concentration is positively associated with financing obstacles, especially in developing countries (Beck, Demirgüç-Kunt, and Maksimovic 2004). A large presence of foreign banks with credit registries facilitating information-sharing could mitigate this problem. As suggested by Rajan and Petersen (1995), a certain degree of market power might be necessary for banks to invest in lending relationships, especially with informationally opaque firms. Indeed, recent evidence confirms this by showing a negative association between a discouraging credit decision and a bank's market power (Presbitero and Rabellotti 2014).

The presence of foreign-owned banks acts as a double-edged sword in facilitating access to credit. It is associated with easier access to credit in a competitive business environment where the informational asymmetry issues are not as pronounced, but it

can negatively affect access where information-sharing is limited. Generally, it is argued that foreign banks have a comparative advantage in offering a wider range of products and services through the use of new technologies, business models, and risk management systems. Their presence is thus expected to be associated with a reduction in firms' financing constraints (De la Torre, Martínez Pería, and Schmukler 2010). Further, foreign bank presence might force domestic banks to re-orient their lending activities towards informationally opaque borrowers, regarding which they might have a relative advantage (Dell'Ariccia and Marquez 2004). Interestingly, however, empirical evidence provided by Presbitero and Rabellotti (2014) shows that the presence of foreign banks eases credit constraints when credit markets are more competitive, there is a higher number of bank branches (a measure of bank penetration), and credit registries are in place. By contrast, foreign banks are associated with negative effects on access to credit when markets are more concentrated, there is lower bank penetration, and credit registries do not exist.

While the share of foreign-owned banks is similar between the Caribbean and ROSE, the share of assets held by foreign-owned banks is particularly larger for Caribbean tourism-dependent economies than their ROSE counterparts. Figure 7.8 shows the degree to which different indicators of credit market concentration and the presence of foreign banks vary between Caribbean countries and ROSE. It can be seen that the share of assets held by the top three banks is similar between Caribbean countries and ROSE. This similarity is maintained when we differentiate between commodity- and tourism-dependent economies. The bank competition index suggests that Caribbean commodity-dependent economies have a similar degree of banking competition as ROSE.[2] However, Caribbean tourism-dependent economies show lower levels of banking competition when compared with ROSE counterparts. Caribbean commodity-dependent economies and their ROSE counterparts have similar levels of bank concentration, competition, and presence of foreign-owned banks (although the Caribbean nations have lower levels of assets held by foreign-owned banks). Therefore, these characteristics are unlikely to explain financial access differentials for commodity-dependent economies.

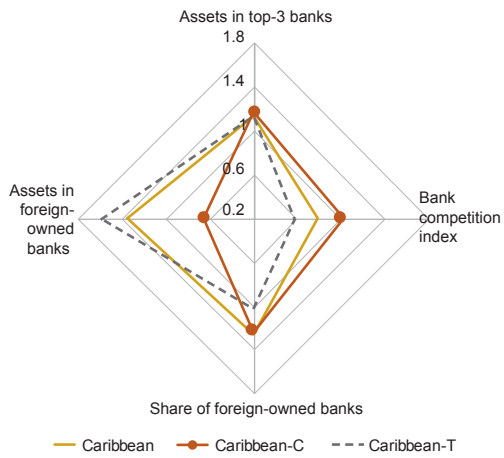
On the other hand, Caribbean tourism-dependent economies show relatively lower levels of bank competition and higher asset concentration in foreign-owned banks when compared with ROSE counterparts. Therefore, based on the recent empirical

[2] This index is the H-statistic, which measures the degree of competition in the banking market. It measures the elasticity of bank revenues relative to input prices. Under perfect competition, an increase in input prices raises both marginal costs and total revenues by the same amount, and hence the H-statistic equals 1. Under a monopoly, an increase in input prices results in a rise in marginal costs, a fall in output, and a decline in revenues, leading to an H-statistic less than or equal to 0. When the H-statistic is between 0 and 1, the system operates under monopolistic competition. However, it is possible for the H-statistic to be greater than 1 in some oligopolistic markets. See the World Bank factsheet on banking competition at http://www.worldbank.org/en/publication/gfdr/background/banking-competition.

evidence, this combination of lower bank competition and a higher foreign-owned bank presence within a setting of inexistent credit registries could be adversely affecting access to credit for Caribbean tourism-dependent economies. This evidence points again to the need to implement credit registries, as their presence has been shown to induce a virtuous relation between foreign-bank presence and financial access.

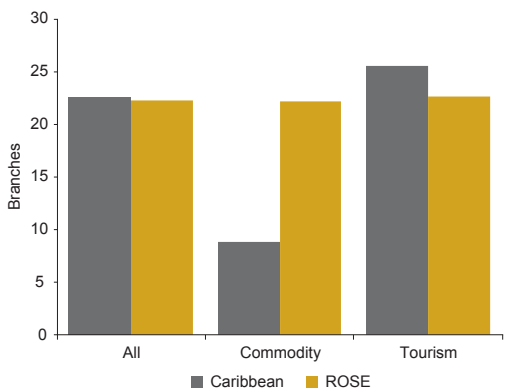
In part, the inadequate access to finance in Caribbean commodity-dependent economies is indeed explained by relatively lower bank penetration. Controlling for the degree of concentration and competition in the banking sector, it is reasonable to expect that more branches per capita will reduce the distance between firms and banks. When the distance between potential borrowers and lenders is reduced, we also expect informational asymmetries between them to diminish. Therefore, access to finance for potential borrowers, including the currently credit-constrained SME principals, could increase. Figure 7.9 compares bank penetration via the number of bank branches per 100,000 adults for the Caribbean and ROSE. It shows that, overall, Caribbean countries have similar levels of bank penetration when compared to ROSE. However, when the analysis is differentiated by commodity- and tourism-dependent countries, an unfavourable gap for Caribbean commodity-dependent countries emerges.

Figure 7.8: Credit Market Concentration and Foreign-Owned Banks: Caribbean Relative to ROSE



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent Caribbean countries; Caribbean-T = tourism-dependent Caribbean countries.

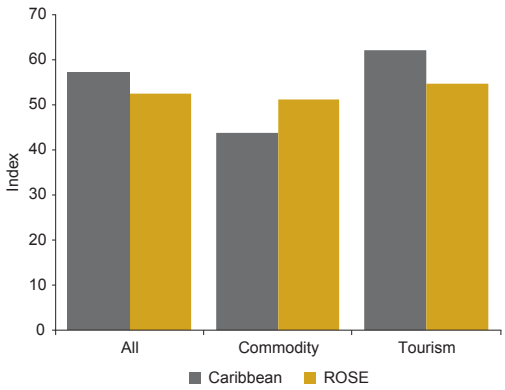
Figure 7.9: Bank Branches per 100,000 Adults



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

With the advent of information and communications technologies and increasing mobile phone coverage across countries, access to banking services could also be increased by employing various innovations such as mobile banking and payments

Figure 7.10: Rule of Law (index)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

facilitated by biometric identification. Such innovations have been shown to reduce credit constraints, increase repayment rates, and smooth consumption during adverse economic shocks (Gine, Goldberg, and Yang 2012; Jack and Suri 2014).

Differences in the rule of law between the Caribbean and ROSE are marginal, and do not add much in explaining the lower level of access to finance in the Caribbean. In general, evidence provided by Beck et al. (2006) and Presbitero and Rabellotti (2014) suggests that contract enforcement, property rights, and the quality of courts are associated with stronger demand for bank credit and with lower shares of discouraged borrowers. We explore the relative strength of these institutions between the Caribbean and ROSE by using the rule of law indicator extracted from the World Bank's Worldwide Governance Indicators (Kaufman, Kraay, and Mastruzzi 2010).[3] Figure 7.10 shows that the Caribbean and ROSE share similar levels with respect to the rule of law.

7.4. Conclusion

Although country-level data do not indicate higher financing constraints, firm-level data reveal that Caribbean firms are relatively more credit constrained and discouraged from credit markets than firms in comparable ROSE. Several market-level determinants that have been found to affect access to finance were benchmarked between Caribbean countries and ROSE. This analysis leads to several main findings. Credit registries appear to be the most relevant institution to be absent in the Caribbean. This is especially important, as previous evidence consistently shows that the presence of these institutions significantly fosters access to finance. Moreover, given the relatively large presence of foreign-owned banks in the Caribbean, the emergence of credit registries would be especially relevant in light of recent evidence showing positive benefits of foreign-owned banks within settings where credit registries are in place. The analyses also found a relatively low level of bank penetration for Caribbean commodity-dependent countries.

[3] Specifically, the rule of law index captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts. It also captures the likelihood of crime and violence.

8 Crime

In opinion surveys, the problem of crime was the third-most-pressing problem identified by Caribbean businesspersons relative to those identified by businesspersons in the rest of the small economies (ROSE) of the world. Crime was the fourth-most-pressing problem in absolute terms (see Chapter 4). Although the estimation of the incidence and social cost of crime has become an important field of study (Czabanski 2008), its detrimental effect on legal economic activity and the costs it imposes on the performance of the private business sector have been relatively neglected. This is especially true for the Caribbean, a region that is often identified as having exceptionally high levels of crime (WHO 2014). Thus, to fill this gap, this chapter estimates the incidence, direct costs, and total costs of crime for firms in the Caribbean and in ROSE.

For the most part, the economic consequences of crime and violence at the firm level have yet to be studied extensively. Nonetheless, crime potentially has a negative impact on the investment climate and could deter or delay both domestic and foreign investment, and hence dampen economic growth. It can lead to higher costs of doing business because of the need to employ different forms of security, hence diverting investment away from business expansion and productivity improvement. Business losses can range from looting to arson, theft, extortion, and fraud. Crime can lead to the loss of output because of reduced hours of operation (including avoiding night shifts), loss of workdays arising from outbreaks of violence, or the avoidance of some types of economic activity. Output can also be reduced because of the temporary (from injury) or permanent (from murder) exit of individuals from the labour force. In the latter case, the loss is not just current output, but output foregone from the remaining years of the individual's working life. Finally, crime can cause a permanent shut-down of firms or their relocation to less crime-prone countries.

8.1. Context

Before analysing the incidence of crime and the cost it imposes on businesses, we first contextualise the issue by reviewing crime in general in the Caribbean and ROSE. Research has noted the negative impact of crime on country-level economic growth. A study by the World Bank and the United Nations Office on Drugs and Crime (2007) based on data from 43 countries over 1975–2000 suggests a strong negative effect of crime on growth even after controlling for variables that are casually linked to crime (i.e., human capital accumulation and income inequality). Cárdenas (2007) also finds a significantly negative association between crime and per capita output growth in a panel of 65 countries using homicide data for 1971–1999 and a country fixed-effects specification. Gaviria and Pages (2002) also find a negative relation. However, Chatterjee and Ray (2009), based on a large cross-country data set for 1991–2005 and controlling for human capital and institutional quality, find no strong evidence of a uniformly negative association between crime and economic growth, and this applies both to total crime and to subcategories of crime.

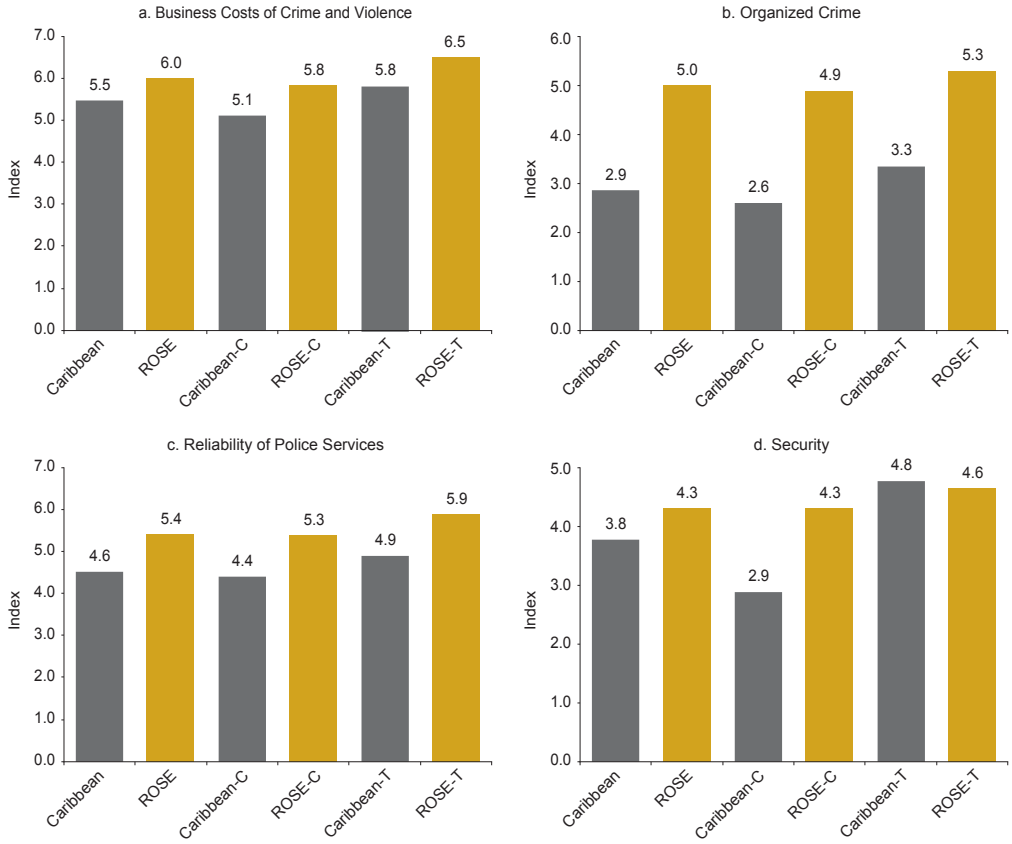
What are the stylized facts for the Caribbean and ROSE? For country-level information we use three data sources: the World Economic Forum (WEF), the United Nations Office on Drugs and Crime (UNODC), and the Latin American Public Opinion Project (LAPOP).

The WEF considers crime in its perception survey used to calculate the Global Competitiveness Index (using values ranging from 1–7 in which 7 represents the best possible outcome). According to this index, crime is a bigger problem in ROSE than in the Caribbean (Figure 8.1). The three questions in the survey regarding crime are (1) To what extent does the incidence of crime and violence impose costs on businesses? (2) To what extent does organized crime (mafia-oriented racketeering, extortion) impose costs on businesses? (3) To what extent can police services be relied upon to enforce law and order? and associated issue of the value of the WEF's overall security pillar. As can be seen in Figure 8.1, the value of the index for each variable is lower for the Caribbean than for ROSE, both overall and for the commodity-dependent and tourist-dependent subsamples.

In terms of crime against private property, the UNODC provides statistics based on police-recorded offences. In those statistics, the Caribbean exceeded ROSE in three of eight indicators: theft of motor vehicle (34 percent more in the Caribbean than in ROSE), theft of cars (26 percent more), and robbery (64 percent more). The numbers are shown in Figure 8.2. Thus, compared to the figures in the International Monetary Fund's World Economic Outlook database (not shown), these figures suggest a more mixed picture, where some crimes are higher in the Caribbean.

LAPOP is another source of information that includes some of the Caribbean countries. It is a regularly conducted set of surveys on democratic values and behaviours in the Americas. The surveys cover trust in institutions, civil society participation,

Figure 8.1: World Economic Forum Indicators, 2009–2010

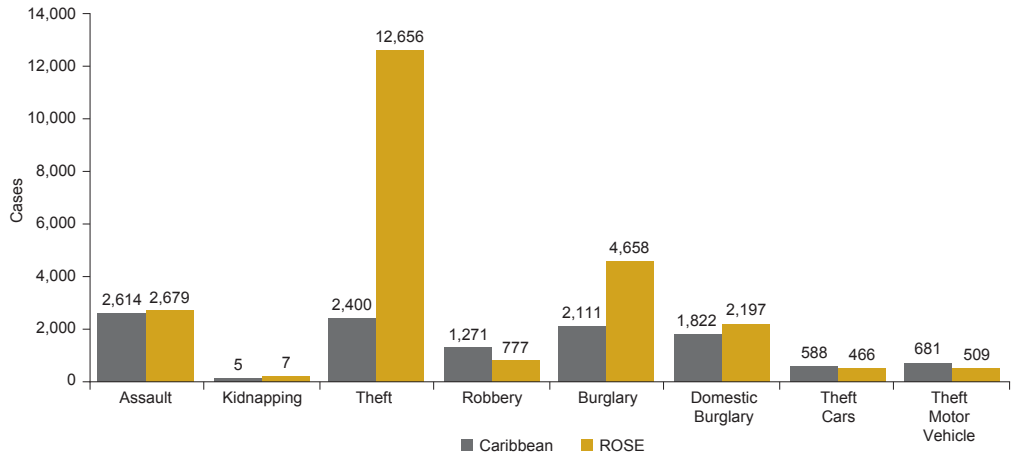


Source: WEF (2015).
Note: The World Economic Forum index cited here uses values ranging from 1–7 in which 7 represents the best possible outcome. Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

electoral behaviour, evaluations of the economy, political legitimacy, and corruption and crime victimization. LAPOP data are available for only six Caribbean countries: The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago. Pooling the 2014 data for these countries yields a mean value of crime incidence of 0.13 (standard deviation: 0.33).[1] Figure 8.3 shows prevalence by country and by large urban areas. A victim is defined as a person who has been subject to any of the following: auto theft, burglary, robbery, theft, assault, or threat. The only exception is Jamaica, where the national-level survey does not collect information for auto theft and burglary.

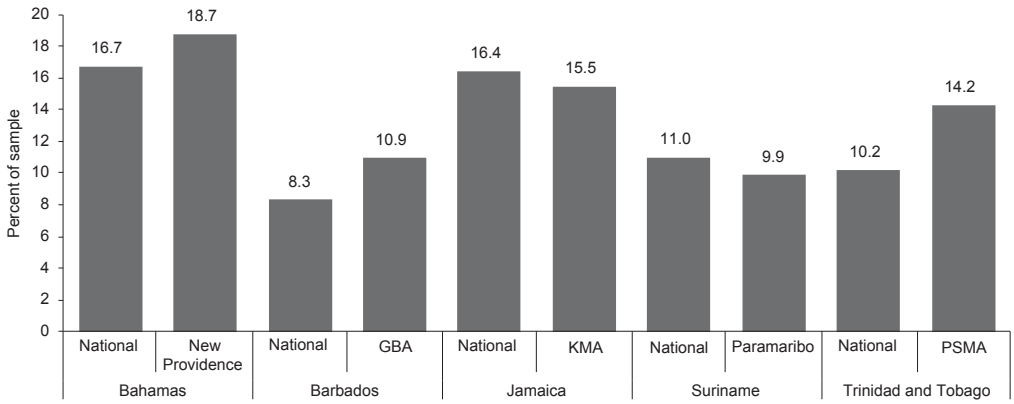
[1] Pooling the survey data for these countries produces a dataset with 6,063 observations, with roughly 1,500 observations per country.

Figure 8.2: United Nations Office on Drugs and Crime Indicators, 2009–2010



Source: United Nations Office on Drugs and Crime.
Note: ROSE = rest of the small economies of the world.

Figure 8.3: Latin American Public Opinion Project Household Survey (LAPOP) on Prevalence of Crime in the Caribbean (percent)



Source: Latin American Public Opinion Project (LAPOP), 2014.
Note: GBA = Greater Bridgetown area; KMA = Kingston metropolitan area; PSMA = Port of Spain metropolitan area.

Another feature related to crime in the Caribbean is the low level of trust that citizens have in the police.[2] As summarised in Table 8.1, according to the LAPOP survey, not only is there little to no trust in the police, but a significant percent of crimes also do not get reported to the police. The average level of little to no trust in the police in

[2] Trust has six categories of possible answers in the LAPOP survey, ranging from a low of "none" to a high of "a lot." We use the lowest three categories to define little or no trust.

the Caribbean is 39 percent, reaching a high of 61 percent in Jamaica and a low of 20 percent in Suriname. The Caribbean average for reported crimes is 59 percent, with a high of 70 percent in Trinidad and Tobago and a low of 53 percent in Jamaica and Barbados.

Table 8.1: Trust in the Police and Crimes Reported to the Police (percent)

	Little or No Trust in Police	Crimes Reported
Jamaica	61.4	53.3
Guyana	56.9	n.a.
Trinidad and Tobago	55.0	69.6
Suriname	19.7	54.4
Bahamas	24.1	56.8
Barbados	32.7	53.3
Caribbean	38.7	58.9

Source: Latin American Public Opinion Project (LAPOP), 2014.
Note: n.a. = not available.

8.2. Firm-level Evidence

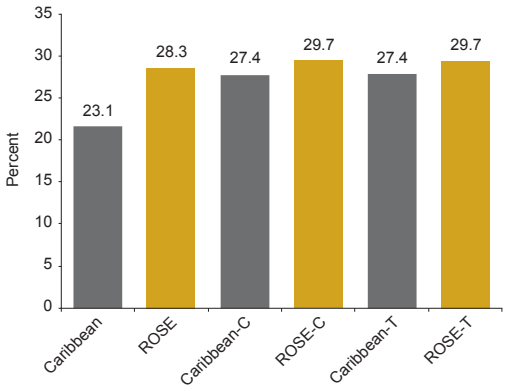
The empirical literature documents the high direct and indirect costs of crime on businesses. The costs that firms face in conducting daily operations are affected by the business environment in which they operate. Operational costs are usually higher in environments with weak infrastructure services, corruption, a weak regulatory framework, and high crime levels. Investment levels in a given industry are negatively affected by higher costs, as is the overall development of the private sector (Amin 2010). Using a sample of 6,000 manufacturing firms in 14 Latin American countries, Amin (2010) finds that large firms are more likely to experience an incident of crime than small firms in a given year. However, the burden measured by the losses due to crime as a percentage of a firm's annual sales is heavier on smaller firms. Oguzoglu and Ranasinghe (2015) find that a high expectation of crime at the firm level is strongly associated with lower sales, labour, and capital investment, and is most evident among medium-sized firms. Krkoska and Robeck (2009) investigate different aspects of victimization at the firm level in Europe and Asia, pointing out the effect of size, sector, sales growth, and business conduct as significant determinants of the likelihood of being targeted from both street and organized crime. Another finding is that firms that spend a higher share of their sales on security services reinvest a lower share in their products, suggesting that both direct (spending on security services) and indirect effects (perception of crime) negatively affect investment at the firm level.

Gaviria (2002) finds that corruption and crime substantially reduce competitiveness. The study examines the impact of perceived crime and corruption on sales and investment growth.

Because of the key role that tourism plays in many Caribbean countries, the effects of crime on tourist arrivals are particularly important in the region. Alleyne and Boxil (2003) examine the relationship between tourist arrivals and changes in the crime rate in Jamaica for the period from 1962–1999. Using a transfer function to account

Figure 8.4: Incidence of Crime among Businesses (percent)

a. Victimization in Caribbean and ROSE



b. Victimization by Caribbean Country

Country	Share of Firms that Have Been Victims of Crime
Dominica	2.1
Barbados	6.0
St. Lucia	6.3
Jamaica	10.7
Suriname	15.6
Antigua and Barbuda	18.2
Trinidad and Tobago	24.3
St. Vincent and the Grenadines	26.7
Grenada	32.6
The Bahamas	33.7
Guyana	39.0
St. Kitts and Nevis	47.6

Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

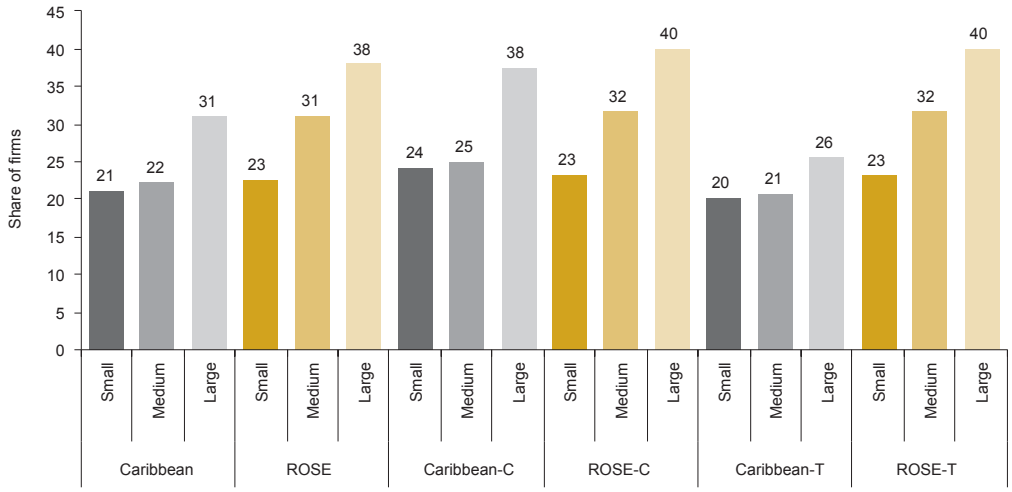
for variations in total arrivals owing to changes in the crime rate, they conclude that crime has a negative impact on tourism arrivals, especially from the European market.

The incidence of crime among businesses varies considerably among Caribbean countries (Figure 8.4), with levels ranging from 2 percent in Dominica to 47 percent in St. Kitts and Nevis.[3] Contrary to the general pattern observed in victimization or public opinion surveys, Jamaica's victimization rate (10.7 percent) is among the lowest in the region, while Guyana and St. Kitts and Nevis have the highest incidence in the region, with 39 percent and 47.6 percent, respectively. It is important to bear in mind that the scope of the present analysis is restricted to the formal private sector of the economy, and the specific question used to create the incidence indicator explicitly points to any crime that happened on the firm's premises.

Larger firms suffer a higher incidence of crime. In an effort to draw a profile of crime victims in the private sector, we now disaggregate incidence rates by firm size. Figure 8.5 shows the figures for the three firm-size categories. The incidence of crime in the Caribbean is 21 percent for small firms, 22 percent for medium-sized

[3] We use a dichotomous variable to construct the "incidence of crime" indicator using firm-level data. This is a dummy variable equal to 1 if a firm experienced losses as a result of crime during the year prior to the survey, and 0 otherwise.

Figure 8.5: Crime Incidence and Firm Size (percent)



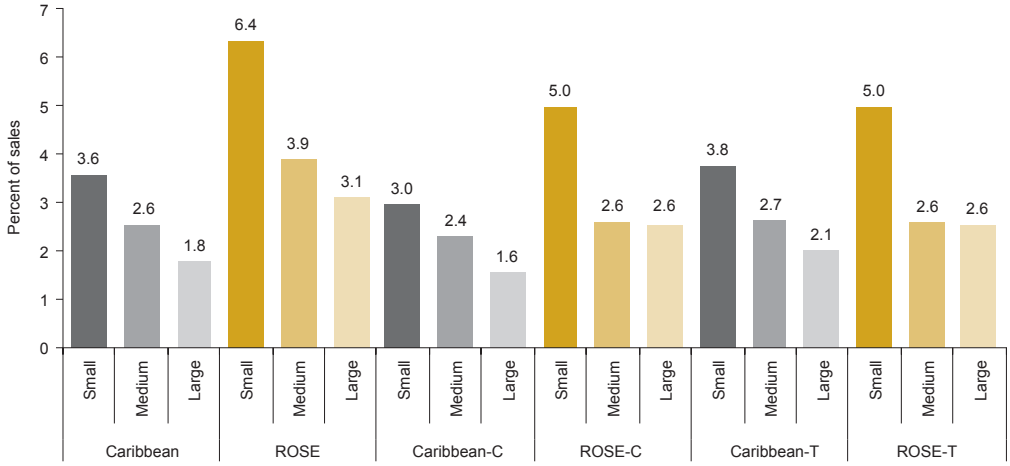
Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

firms, and 31 percent for large firms. Similar patterns are found for ROSE, although medium-sized firms behave differently. Hence, large firms are more likely to be victims of crime than small firms. This finding provides support to the hypothesis about the rationale behind crime and the selection of targets: larger firms (with usually higher sales), once identified by criminals, could be targeted because of higher potential returns.

The direct cost of crime does not follow as clear a pattern as that of incidence and firm size. The costs of security in the Caribbean are close to 2 percent of total annual sales, regardless of firm size (Figure 8.6). In ROSE, small firms incur relatively higher costs (5 percent compared to 2.6 percent for larger firms).

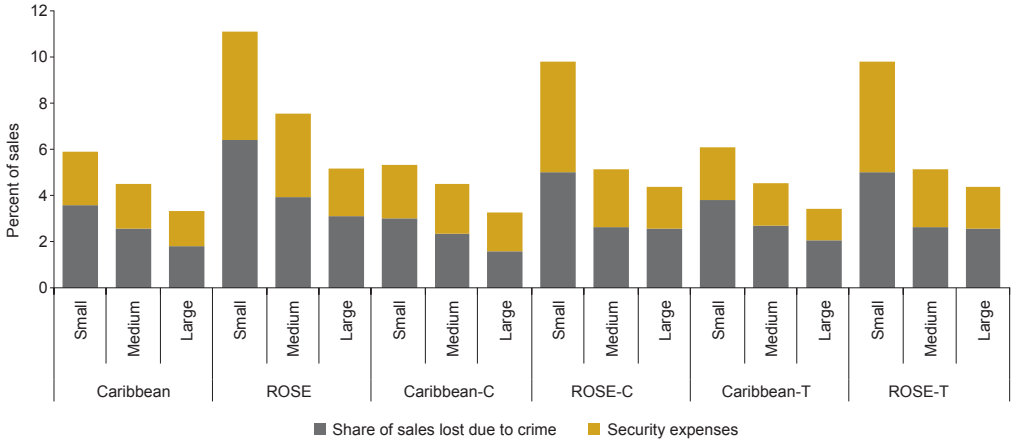
Crime against firms can pose a burden not only in terms of the well-being of the workforce, but also in terms of financial losses. The World Bank's Enterprise Surveys provide useful information regarding the costs associated with crime. These surveys collect information about two channels by which firms see their net sales affected by crime: (1) the direct losses a firm incurs due to crime; and (2) the total annual costs of security. Figure 8.7 shows both costs as a percentage of total annual sales, and Table 8.2 shows the same but for individual countries. Taking into account the sub-set of firms that were victims of crime during the previous fiscal year, the average cost of crime in the Caribbean represents 4.3 percent of total annual sales. If costs are computed independently of victimization, this figure stands at 2.67 percent, which is still higher than the 1.4 percent reported in Amin (2010) for 29 countries in Europe and Central Asia.

Figure 8.6: Security Costs and Firm Size (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 8.7: Crime-related Costs (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

On average, firms from small economies see their annual sales reduced by 6 percent due to crime. The values are roughly the same for Jamaica or The Bahamas (6.1 percent and 6.5 percent, respectively).[4] However, overall, firms in the Caribbean do not

[4] Computed by adding losses due to crime and security expenses, the two categories in Table 8.2.

seem to be incurring high crime-related costs compared to ROSE. To get a sense of the magnitude of these costs, it is useful to compare them with the percentage of annual sales devoted to research and development (R&D) activities. Average expenditure on R&D by Caribbean firms represents 3.17 percent of total sales, which is lower than the 4.37 percent reported for crime-related costs.[5] It is clear that an environment in which firms devote practically the same amount of financial resources to R&D that they devote to crime prevention or to direct losses to crime is not favourable for business.

Table 8.2: Crime-related Costs by Caribbean Country (percent)

Country	Losses Due to Crime	Security Expenses
Barbados	0.6	1.2
Dominica	1.2	1.9
Trinidad and Tobago	1.8	1.7
St. Lucia	1.7	1.8
Suriname	2.2	2.0
Antigua and Barbuda	2.6	1.8
St. Kitts and Nevis	3.0	1.8
Jamaica	4.3	1.8
The Bahamas	2.9	3.4
Guyana	3.0	3.5
St. Vincent and the Grenadines	4.9	1.7
Grenada	4.8	3.1

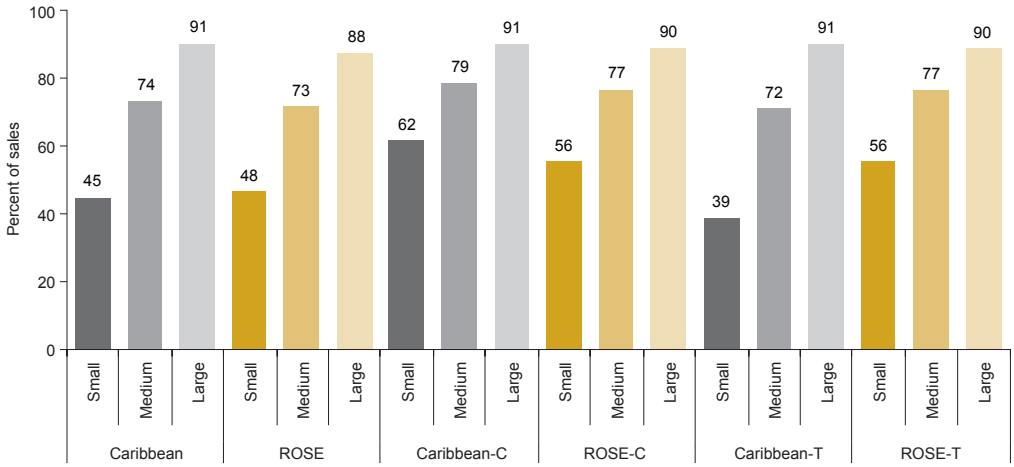
Source: World Bank, Enterprise Surveys, 2010.

Although security expenses are lower than losses due to crime, the amount firms pay for security, even for prevention, is a good proxy for the perception of safety regarding a firm's location. It would be expected that firms operating in a very safe environment would allocate resources away from security, while firms located in neighbourhoods with high crime rates would be forced to incur higher security costs. The percentage of firms paying for security could be related to the perception of security by businesspersons. In the Caribbean, 59 percent of firms paid for security (equipment, personnel, or professional security services) in 2010, compared to 64.3 percent in ROSE (Figure 8.8).[6] The percentage of firms paying for security in Guyana is very high, and is comparable to that observed in Kosovo or Botswana. There is a clear difference between members of the Organisation of Eastern Caribbean States (OECS) and the rest of the Caribbean. While only 41 percent of firms pay for security in the six OECS states, 63 percent do so in the rest of the Caribbean. It is worth noting that while Jamaica and Trinidad and Tobago stood out as having relatively a low incidence of crime, the percentage of firms paying for private security in these countries is above the regional

[5] The figure of 4.37 percent for crime-related costs includes 2.5 percent computed as losses due to crime and 1.8 percent as security expenses. This is the average for the Caribbean (not shown in the table).

[6] These cumulative figures for the region are the averages of the percentages shown for small, medium-sized, and large firms in Figure 8.8.

Figure 8.8: Firms Paying for Security, 2010 (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

average (Table 8.3), suggesting that there is a perception that crime is worse than it actually is in these two countries.

The 2014 Enterprise Survey allows us to further explore crimes against firms. Table 8.4 details the types of crime, their frequency, and whether they occurred within or outside working hours. The three most frequent types of crime are theft, vandalism, and robbery, with frequencies of 2.8, 2.2, and 1.6, respectively. Theft and robbery occur more frequently during working hours, while vandalism occurs more frequently outside of working hours.

The 2014 Enterprise Survey also allows for understanding the types of weapons used and the perpetrators involved in crimes against firms (Table 8.5). Firearms are mostly used in robbery, burglary, assaults, and threats. Robbery and burglary are mostly committed by groups of criminals or gangs.

Table 8.3: Share of Firms that Paid for Security in the Caribbean (percent)

Country	Share of Firms that Paid for Security
St. Lucia	24.9
Barbados	33.9
Dominica	37.6
St. Vincent and the Grenadines	40.8
Grenada	45.7
Suriname	49.2
Antigua and Barbuda	49.7
The Bahamas	55.1
Jamaica	59.9
St. Kitts and Nevis	61.8
Trinidad and Tobago	72.5
Guyana	85.6

Source: World Bank, Enterprise Surveys, 2010.

Table 8.4: Types of Crime and their Timing in the Caribbean

	Category of Incident	How Many Times	When Did the Crime Occur?	
			During Working Hours	Outside Working Hours
	Percent of Firms	Average Number of Events	Percent of Firms	Percent of Firms
Burglary	45	1.4	15	85
Attempted burglary	48	1.4	14	86
Robbery	44	1.6	70	30
Attempted robbery	55	1.4	73	27
Deliberate damage/ vandalism	63	2.2	32	68
Theft	65	2.8	51	49
Assaults and threats	34	1.5	49	51

Source: PROTEQIN Survey 2014.

8.4. Conclusion

Country-level indicators are mixed regarding the problem of crime in the Caribbean relative to ROSE. According to World Economic Forum indices, crime is a bigger problem in ROSE than in the Caribbean. However, according to the United Nations Office on Drugs and Crime, using police-recorded offences, the Caribbean exceeded ROSE in terms of crime against private property in three out of eight indicators: theft of a motor vehicle (34 percent more in Caribbean than in ROSE), theft of cars (26 percent more), and robbery (64 percent more). The Latin American Public Opinion Project survey provides another insight: the low level of trust that citizens have in the police. In the Caribbean, there is little to no trust in the police, and a significant percentage of crimes do not get reported to the police: the average level of little to no trust is 39 percent, and the average amount of crimes reported to the police is 59 percent.

Firm-level data indicate that the incidence of crime is relatively lower in the Caribbean than in ROSE, although cross-country heterogeneity calls attention to countries such as Guyana and St. Kitts and Nevis. Furthermore, Caribbean firms are affected disproportionally by crime depending on their size. Large firms are more prone to be victims of crime. However, this is not translated into a higher burden on them, since crime-related direct costs are proportionately similar regardless of firm size. Alarmingly, Caribbean firms spend more on security than research and development.

Table 8.5: Use of Weapons and Type of Perpetuator in the Caribbean (percent)

	Use of Weapons				Who Was/Were the Perpetrator(s)?							
	Knife	Firearm/ Gun	Baseball Bat	Other	Group of Criminals	Gang-related	Someone Working Alone	A Fellow Employee	A Customer	A Supplier	A Former Employee	Other
	Percent of Firms				Percent of Firms							
Burglary	12	53	8	20	24	44	6	9	6	3	6	3
Attempted burglary	21	26	27	21	16	41	13	8	9	4	6	2
Robbery	16	57	6	20	21	41	4	9	4	2	2	17
Attempted robbery	25	37	8	29	16	38	6	5	7	3	3	21
Deliberate damage/ vandalism	30	16	7	45	15	22	5	3	3	0	2	49
Theft	28	39	10	15	27	37	3	13	4	1	4	12
Assaults and threats	32	40	14	13	24	38	7	4	5	n.a.	3	19

Source: PROTEQIN Survey 2014.
Note: n.a. = not available.

9

Labour

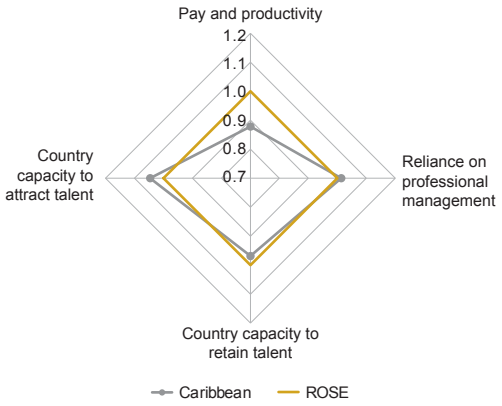
Economic theory and evidence suggest that investments in human capital have positive effects on productivity and hence growth. A country's capacity to invest in human capital accumulation should focus not only on access to education and training, but also on high-quality skill acquisition to foster employability in a productive environment.

9.1. Context

Overall, the perception in the Caribbean regarding the efficient use of talent does not differ significantly from that of the rest of the small economies (ROSE) of the world. In both regions, senior management positions are perceived as being held by professional managers chosen by merit and qualifications, and both regions are similar in terms of their capacity to retain and attract talent (Figure 9.1a).[1] However, pay vis-à-vis employee productivity is perceived to be relatively less in the Caribbean than in ROSE. Finally, average years of total schooling for Guyana (8.7 years), Barbados (9.4), Jamaica

Figure 9.1: Labour Market Efficiency and Schooling

a. Efficient Use of Talent



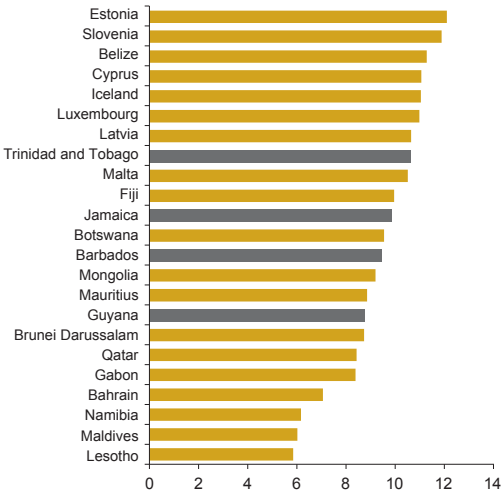
Source: World Economic Forum, *Global Competitiveness Report.*

(continued on next page)

[1] However, this chapter provides evidence against the Caribbean countries' capacity to retain talent, based on emigration rates of highly educated individuals.

Figure 9.1: Labour Market Efficiency and Schooling *(continued)*

b. Average Years of Total Schooling



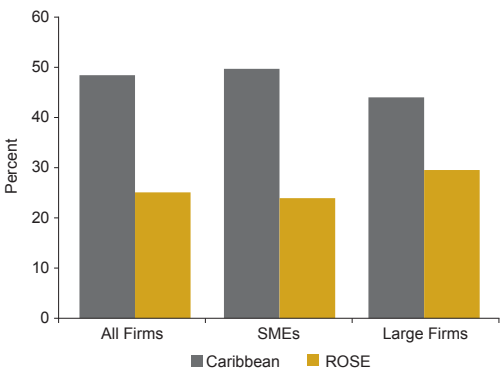
Source: World Bank education statistics.

(9.8), and Trinidad and Tobago (10.6) stand around the average for small economies, suggesting that lack of education is not a major constraint in the Caribbean (Figure 9.1b).

9.2. Entrepreneurs Unable to Find Adequately Educated Workers

Although evidence at the country level shows that the availability of scientists and engineers is somewhat the same in the Caribbean and ROSE, firm-level data show that the education of the workforce is an issue of more concern to Caribbean firms than their ROSE counterparts. Figure 9.2 compares the two regions in terms of the proportion of firms that report an inadequately educated workforce to be a major obstacle for their operations. It shows that 48.4 percent of Caribbean firms consider an inadequately educated workforce to be a major obstacle, compared with only 25 percent of ROSE firms. This gap is greater for small and medium-sized enterprises (SMEs): 50 percent of Caribbean SMEs consider this issue a major obstacle compared to only 23 percent of ROSE SMEs. The gap is narrower but still statistically significant when comparing large enterprises: 44 percent of large firms in the Caribbean versus 30 percent in ROSE.

Figure 9.2: Perception by Firms that an Inadequately Educated Workforce Is a Major Obstacle (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world; SMEs = small and medium-sized enterprises.

There could be a number of different reasons behind this obstacle reported by Caribbean entrepreneurs, so it is important to explore them in order to identify the policy implications. One possibility is the existence of *skill mismatches*. According to Cappelli (2014), this happens when supply

and demand for skills are not synchronized in either direction, resulting in oversupply or undersupply. This can occur in specific labour markets, although with respect to educational credentials it is usually considered at the country or regional level.

A second possibility is *skill shortages*. This involves an undersupply of specific job-related skills associated with particular occupations, and is indeed a particular type of skill mismatch.

A third possibility has to do with ineffective labour market intermediation systems. This occurs when no effective mechanisms are in place to facilitate, inform, or regulate how workers are matched to firms, how work is accomplished, and how conflicts are resolved (Autor 2009). Under such a scenario, even in the absence of skill mismatches or shortages, labour demand and supply is not clear.

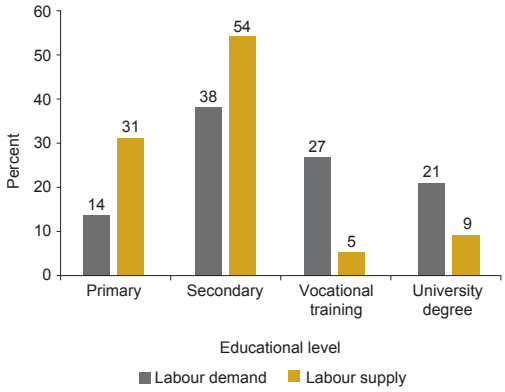
The next sections empirically explore the extent to which these obstacles appear to exist in the Caribbean.

9.3. Skill Mismatches at the Educational Level

Assessing the existence of skill mismatches in terms of education requires objective measures of both labour demand and supply at the country or regional level. In order to quantify labour demand differentiated by the required level of education, we used the 2014 Productivity, Technology and Innovation (PROTEQIN) Survey. The survey asked about the number of employees and vacancies differentiated by the minimum required level of education for each position. As such, we were able to estimate the distribution of labour demand differentiated by the minimum required level of education. On the supply side, we used Labour Force Surveys representative at the country level to estimate the distribution of the existing labour supply differentiated by the maximum level of education attained. However, only four Caribbean countries shared the microdata of their Labour Force Surveys (Barbados, The Bahamas, Jamaica, and Trinidad and Tobago). Therefore, our analysis below is restricted to these four countries.

The evidence suggests the existence of a mismatch of educational skills characterized by an oversupply of workers without tertiary education and an undersupply of workers with tertiary education. Figure 9.3 plots the distributions of both labour demand and supply differentiated by educational level. The evidence is consistent with a local oversupply of labour with lower levels of education (primary and secondary). Indeed, while only 14 percent of positions in the private sector demand persons with primary education, 31 percent of the local labour force has primary education as its highest educational attainment. Similarly, private demand for persons with secondary education accounts for 38 percent of positions, but 54 percent of the local labour force has a secondary education as its highest educational attainment. When we turn to the right tail of the distribution, the opposite situation emerges as firms demand relatively

Figure 9.3: Labour Demand and Supply Differentiated by Educational Level (percent)



Sources: Barbados, The Bahamas, Jamaica, and Trinidad and Tobago 2013 Labour Force Surveys; and the PROTEQIN Survey 2014.

more tertiary-educated workers than what the local labour market offers. Positions requiring workers with completed vocational training and university degrees account for 27 and 21 percent, respectively. By contrast, only 5 percent of the local labour force has completed a vocational training programme and only 9 percent has a university degree.

International migration appears to explain a significant share of the observed undersupply of tertiary- educated workers. In the 2014 PROTEQIN Survey, emigration of educated workers was cited as a very important causal factor for skill shortages by 65 percent of Caribbean firms. This perception is substantiated with evidence from Docquier, Lohest, and Marfouk (2005) and Mishra (2006), who quantify international migration differentiated by educational level using 2000 censuses from member countries of the Organisation for Economic Co-operation and Development (OECD). The authors determined the number of international Caribbean workers located in OECD countries and were able to calculate the share of the local Caribbean labour force working there. Table 9.1 summarizes the findings of these studies. The evidence strongly demonstrates that migration is positively related to educational attainment. Indeed, the Caribbean average shows that only 6 percent of the labour force with a primary education has migrated, while this figure increases to 34 percent for secondary-educated workers, and it jumps significantly to 68 percent for workers with a tertiary education. This "brain drain" constitutes one of the highest emigration rates in the world for skilled workers and is consistent with the observed undersupply of workers with a tertiary education.

Welfare calculations indicate that the costs associated with investments in the education of migrants outweigh the benefits from remittances sent by international workers back to the Caribbean. Most Caribbean countries provide publicly funded primary and secondary education, and some (e.g., Barbados, Jamaica, and Trinidad and Tobago) also invest significant shares of public resources in tertiary education. The rationale for investing public funds in education follows from the future expected social returns to such investments. Education carries private returns reflected in higher productivity and earnings of individuals. Moreover, public investments in education are made with the expectation that such increased productivity will boost country-level

growth and welfare. But if people who have benefited from public education migrate, then there are no corresponding social returns to education investments at the original country level. Indeed, Mishra (2006) shows that although the Caribbean is also the world's largest recipient of remittances, welfare calculations suggest that losses from public investments in education due to migration of high-skilled workers outweigh the benefits of remittances. The last two columns of Table 9.1 summarize these findings, showing that for the Caribbean, the average emigration loss accounts for 10.9 percent of GDP; while incoming remittances account for 5.2 percent.

The high levels of skilled labour force migration coincide with economic incentives related to an existing wage gap between equally educated workers of the same nationality working in their native country and abroad. Some rationale should exist to explain the observed skill-biased migration rates in the Caribbean. A natural possibility relates to possible differential schooling premiums between the Caribbean and abroad. Under this scenario, Caribbean educated workers would prefer to migrate

Table 9.1: International Migration and "Brain Drain" in the Caribbean

	Percentage of Labor Migrated to OECD Countries by Education Level			Emigration Loss Plus Estimated Education Expenditure (percent of GDP)	Remittances (percent of GDP, average 1980–2012)
	Primary	Secondary	Tertiary		
Antigua and Barbuda	3	57	56	13.2	3
The Bahamas	2	10	58	4.4	na
Barbados	10	24	61	18.5	2.3
Belize	4	54	62	6.8	4.7
Dominica	8	56	49	11.5	8.4
Grenada	7	61	75	11	11
Guyana	7	35	80	9.5	1.9
Haiti	2	27	79	9	10.1
Jamaica	5	29	78	20.4	7.4
St. Kitts and Nevis	8	31	65	9.7	6.9
St. Lucia	2	13	53	3.8	4
St. Vincent and the Grenadines	4	23	71	10.7	7.2
Suriname	18	44	90	7.8	0.5
Trinidad and Tobago	3	17	68	16.8	0.3
Average	6	34	68	10.9	5.2

Sources: Docquier, Lohest, and Marfouk (2005); and Mishra (2006).

because their real earnings would be higher abroad than if they stayed in their original country. Alonso-Soto and Ñopo (2015) provide partial evidence supporting this hypothesis by comparing the schooling premiums of immigrants of different nationalities working in the United States who were surveyed in different censuses. Caribbean countries included in the survey were Jamaica and Trinidad and Tobago. For these countries, the evidence suggests that the differential schooling premium for workers with a secondary education is negative, but it turns positive for workers with a tertiary education.

In summary, the evidence is consistent in suggesting the existence of skill mismatches in the Caribbean that appear to be substantially explained by international migration of the educated workforce. This reality constitutes a significant loss of public social investments and hinders the ability of the private sector to satisfy its labour demands. An important issue looking forward pertains to creating adequate incentives for skilled workers to stay in their native countries. If international schooling premiums between the Caribbean and main migrant destination countries like Canada, the United States, and the United Kingdom persist, the observed skill mismatch would be unlikely to improve over time.

9.4. Job-oriented Skills

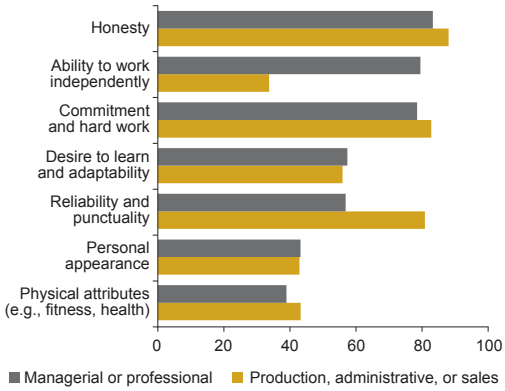
Beyond general educational levels, firms demand a wide range of characteristics and skills from workers. To investigate the relevance of different attributes when hiring personnel, the 2014 PROTEQIN Survey asked entrepreneurs to rate the importance of different workers' characteristics and skills when recruiting personnel. Entrepreneurs gave a rating ranging from 1 (not important) to 5 (critical) to each of the different personal traits to consider when hiring personnel. We then standardized these ratings within a relevance index ranging from 0 (not important) to 100 (critical) for each individual trait. These individual attributes are grouped in three categories: personal characteristics, core skills, and job-related skills.

The relevance of personal characteristics when hiring personnel varies according to the type of vacancy. The relevance of traits during the recruitment process was differentiated between managerial/professional roles and production/administrative roles. Figure 9.4 displays the relevance indexes for all personal characteristics asked about in the survey. Honesty, commitment, and hard work are characteristics highly relevant for both of the different roles considered. However, while ability to work independently is highly relevant for managerial/professional roles, it is relatively irrelevant for production/administrative roles. Conversely, reliability and punctuality are considered very relevant for production/administrative roles, but not so much for managerial/professional roles.

Demand for core skills differs between different work roles, but soft skills like responsibility, reliability, and trustworthiness have significant importance for all of the roles. For managerial/professional roles, several characteristics are considered very relevant (Figure 9.5). These include problem-solving; responsibility, reliability, and trustworthiness; customer care; self-management; and motivation and commitment. However, for production/administrative roles, only two of the core skills considered as very relevant for managerial/professional roles are also considered relevant (responsibility, reliability, and trustworthiness; and motivation and commitment). Conversely, teamwork was considered very relevant for production/administrative roles, but of second-order importance for managerial/professional roles. In short, we observe that while managerial/professional roles demand more technically oriented skills than production/administrative roles, both types of roles strongly demand soft skills like motivation, commitment, responsibility, reliability, and trustworthiness.

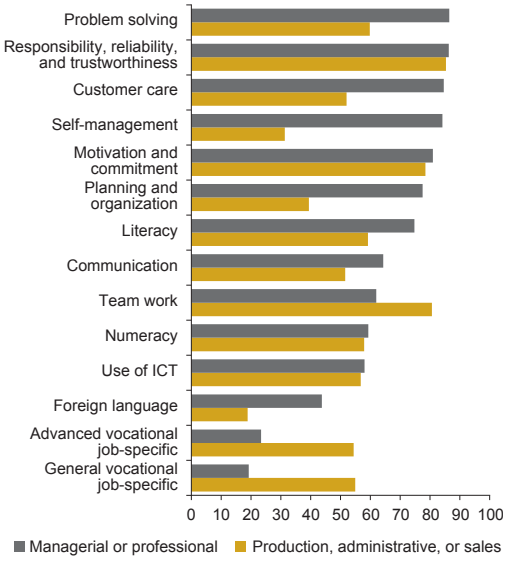
Demand for job-related skills is similar across work roles, with practical knowledge of the job and previous experience in the same field being the most relevant skills. Figure 9.6 shows that the relevance of job-related skills when hiring personnel is generally even across work roles. It is clear that significant emphasis is placed on practicality and relevant work experience for both work roles. By contrast, while foreign tertiary

Figure 9.4: Relevance Index for Personal Characteristics When Hiring Personnel



Source: PROTEqIN Survey 2014.
Note: The index is based on a rating of personal characteristics by entrepreneurs. The scale ranges from 0 (not important) to 100 (critical).

Figure 9.5: Relevance Index for Core Skills When Hiring Personnel

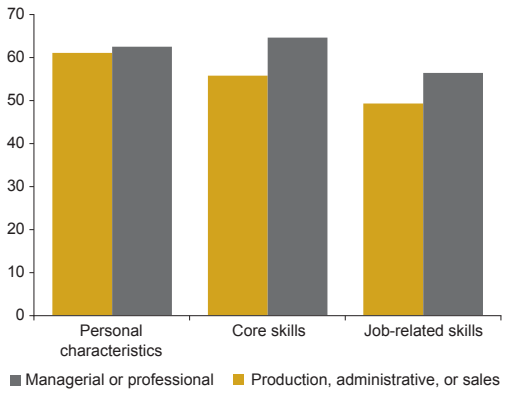


Source: PROTEqIN Survey 2014.
Note: The index is based on a rating of core skills by entrepreneurs. The scale ranges from 0 (not important) to 100 (critical).

Figure 9.6: Relevance Index for Job-related Skills When Hiring Personnel

Source: PROTEqIN Survey 2014.
Note: The index is based on a rating of job-related skills by entrepreneurs. The scale ranges from 0 (not important) to 100 (critical).

Figure 9.7: Aggregated Relevance Indexes for Categories of Skills When Hiring Personnel



Source: PROTEqIN Survey 2014.
Note: The aggregated indexes range from 0 (not important) to 100 (critical).

education is somewhat relevant for managerial/professional roles, it is not relevant for production/administrative roles. Finally, we observe that grades and transcripts as well as previous experience in a different field are not valued for either of the work roles considered. This suggests that job mobility across different fields might be unlikely to happen on a regular basis in the Caribbean.

When aggregating individual relevance indexes into categories, core skills appears to be the most relevant set of traits for managerial/professional roles, while personal characteristics is the most relevant category for production/administrative roles. Figure 9.7 shows aggregated means for each category of characteristics and skills differentiated by work roles. For production/administrative roles, personal characteristics are ranked as the most relevant category, followed by core skills and job-related skills. By contrast, for managerial/professional roles, core skills appear to be the most relevant category, followed by personal characteristics and job-related skills. Therefore, if there were a shortage of skills, the supply of the most relevant skills would theoretically be relatively lower than the demand for them. Unfortunately, we do not have an objective measure of skill supply. However, we approximate it with the difficulty levels that firms report when seeking these skills in the labour market. We turn to this issue next.

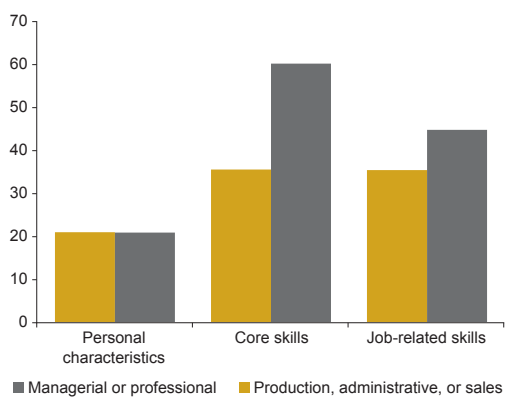
The evidence shows that employers face relatively more difficulty in finding candidates with the demanded core skills for managerial/professional roles, suggesting

a potential skill shortage. The 2014 PROTEQIN Survey asked entrepreneurs to rate the difficulty in finding the desired characteristics and skills when assessing candidates for different work roles. Entrepreneurs gave a rating ranging from 1 (not difficult) to 5 (almost impossible) to each of the following sets: personal characteristics, core skills, and job-related skills. We then standardized these ratings within a difficulty index ranging from 0 (not difficult) to 100 (almost impossible) for each set differentiated by work role. The findings point to several conclusions. First, finding the desired personal characteristics does not appear to be difficult. Second, finding desired core and job-related skills for production/administrative roles is only slightly difficult. Third, finding desired job-related and core skills for managerial/professional roles appears to be difficult and very difficult, respectively (Figure 9.8). This last point is important given that core skills are also the most relevant skills for managerial/professional roles (as evidenced in Figure 9.6). Therefore, the evidence shows that the most relevant skills are also the most difficult to find in the labour market. In short, the evidence is suggestive of probable skill shortages related to managerial/professional roles. However, the probability of this situation being present for production/administrative roles is weak, at best.

Entrepreneurs believe that the main reason behind the inability of Caribbean firms to find workers with adequate skills relates to the quality of local educational institutions. Indeed, 90 percent of Caribbean firms reported the quality of the education and training by local institutions to be a very important factor in causing skill shortages. Similarly, 87 percent of Caribbean firms reported the lack of necessary soft skills in individuals trained by local institutions as another important factor contributing to the shortage of skills.

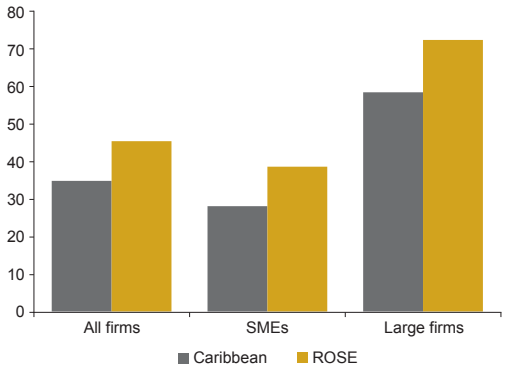
Caribbean firms are less likely to provide formal training for their employees compared to their ROSE counterparts. Figure 9.9 below shows the proportion of firms that provided formal training for their permanent employees. Overall, 35 percent of Caribbean firms engaged in formal employee training, while 46 percent of ROSE counterparts did so (this difference being statistically significant). Another observation is that large firms are more likely to provide training for their employees. However, regardless of firm size, Caribbean

Figure 9.8: Difficulty Indexes for Categories of Skills When Finding Candidates



Source: PROTEqIN Survey 2014.
Note: The indexes range from 0 (not difficult) to 100 (almost impossible).

Figure 9.9: Provision of Formal Training for Permanent Employees (percent)



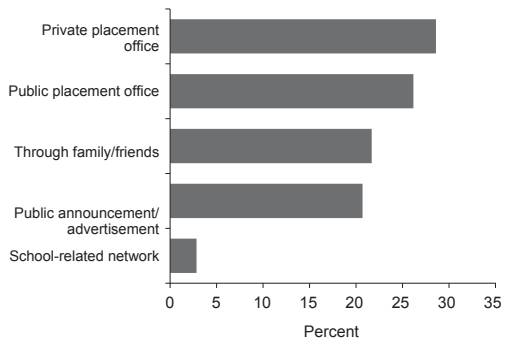
Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world; SMEs = small and medium-sized enterprises.

firms are always significantly less likely to provide employee training than their ROSE counterparts. Therefore, it appears that Caribbean firms are not fully compensating for the probable skill shortage with internal formal training. This situation is consistent with empirical evidence indicating that employers lower skill requirements for given jobs when labour is relatively scarce and raise them when higher-quality applicants are plentiful (Walsh 1977; Brenčič 2010).

9.5. Labour Market Intermediation and Regulations

The mechanisms of labour market intermediation reported by firms are diverse and include formal and informal mechanisms, with a predominance of placement offices. Figure 9.10 shows alternative labour market intermediation mechanisms used by firms regarding their most recently hired employee. Formal intermediation mechanisms like placement offices (private and public) account for 55 percent of filled vacancies. Among these, there is almost an even utilization of private and public placement offices (29 and 26 percent, respectively). Informal mechanisms like family/friends and school networks account for filling 25 percent of vacancies. However, family/friends predominate within the informal mechanisms, filling 22 percent of vacancies. Finally, direct firm search, using public announcements and advertisements, accounts for filling 21 percent of vacancies. Therefore, the observed mix of labour intermediation mechanisms suggests a wide array and availability of alternatives that are actually used for finding personnel. As a result, it does not appear that lack of intermediation mechanisms could explain a great proportion of firms' concerns regarding the scarcity of an adequate workforce.

Figure 9.10: Labour Market Intermediation Mechanisms (percent)

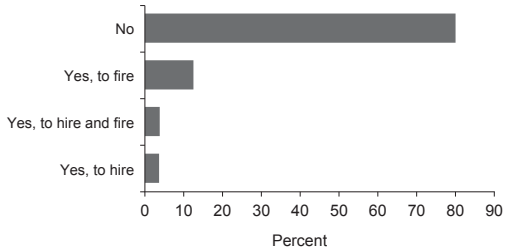


Source: PROTEqIN Survey 2014.

Labour regulations do not appear to introduce frictions in the Caribbean, as the vast majority of firms

are not constrained in their personnel decisions. Figure 9.11 shows that 80 percent of firms were not affected during the 2012/2013 fiscal year in their decisions regarding hiring or firing permanent employees. Only 12 percent reported having been limited in their firing decisions by law, 4 percent were affected in hiring decisions, and 4 percent were affected in both hiring and firing decisions. This is consistent with the fact that only 4.43 percent of firms considered labour protection laws and regulations as very important or critical contributing factors to the skill shortage problem. Therefore, it appears that labour regulations do not play a significant role as a determinant of firms' concerns regarding the scarcity of an adequate labour force.

Figure 9.11: Labour Regulations and Hiring/ Firing Decisions (percent)



Source: PROTEqIN Survey 2014.

9.6. Conclusions

Investments in human capital have positive effects on productivity and hence growth. Results show that the perception in the Caribbean regarding the efficient use of talent does not differ significantly from that of ROSE and that the average years of total schooling in both regions is similar. Thus, why do more Caribbean businesspersons perceive the workforce as not adequately skilled?

Evidence suggests an educational skills mismatch characterized by an oversupply of workers without tertiary education and an undersupply of workers with a tertiary education. Furthermore, calculations indicate that the costs associated with investments in education of citizens who then emigrate outweigh the benefits from remittances from international workers back to the Caribbean, which partly explains the "brain drain" observed in some Caribbean countries. The Caribbean needs an adequate mechanism to match the skills required by the private sector with the skills provided by formal and vocational training. Entrepreneurs believe that the main determinant behind the inability of Caribbean firms to find adequately skilled workers is related to the quality of local educational institutions. However, Caribbean firms are less likely to provide formal training for their employees than their ROSE counterparts. Labour regulations do not appear to introduce frictions in the Caribbean, as the vast majority of firms are not constrained in their personnel decisions.

10 Energy

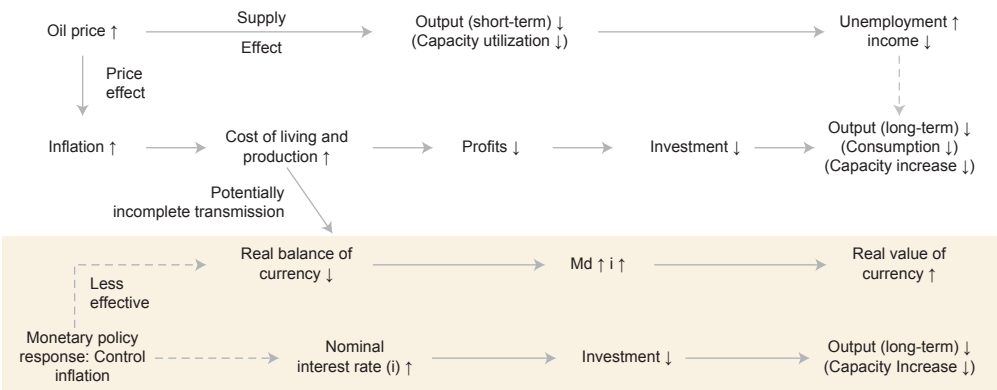
Complaints by Caribbean businesspersons about electricity rank sixth in relative terms and fourth in absolute terms according to the surveys analysed for this report (see Chapter 4). Generally, reliable and cost-efficient energy is a key determinant of the competitiveness of an economy because it enhances the use of available technology for production. Expensive and/or unreliable energy can disrupt production and affect the overall productivity of an economy as a result of assets being held idle. In addition, high energy costs also affect distribution processes by increasing downstream costs of delivery and further hindering productivity, and hence overall growth. This chapter first discusses the macroeconomic context and the electricity sector, then follows up with firm-level analyses of the effect of electricity—in terms of both outages and energy intensity—on firm performance.

10.1. Context

Energy price shocks have an asymmetric effect on economic activity in the Caribbean. While the negative effects of higher and more volatile energy prices have been well documented (Kilian 2008), it is important to note that the effect of price shocks has also been shown to be asymmetric (Rahman and Serletis 2011). For example, Rahman and Serletis show that shocks to the price of oil and price uncertainty have asymmetric effects on output, but also that overall uncertainty about oil prices has a negative effect on output. Interestingly, the negative effect on output persists longer in economies with exchange rate controls than in economies without such controls (Tang, Wu, and Zhang 2010).

Given that the Caribbean is characterized by small and open economies with relatively fixed exchange rates, some parts of the transmission mechanism for oil price shocks in an economy do not fully function there. As illustrated in Figure 10.1, an unexpected increase in the price of oil spreads across a Caribbean economy primarily through two channels: a supply effect and a price effect. The supply effect leads to a reduction in output primarily due to the increased cost of utilizing capacity in the

Figure 10.1: Transmission Mechanism of an Oil Price Shock in the Caribbean



Source: Modified version of mechanism presented in Tang, Wu, and Zhang (2010).

short run. In turn, this causes unemployment, which leads to a reduction in income. Depending on the severity of the shock, this can also lead to a long-run decline in output through reduced consumption. In addition, this creates downward pressure on demand for money. The price effect creates inflationary pressures in the economy, which increases the cost of living and of production. On the supply side, this leads to reduced profits and, in turn, investment, which also depresses output. The short-term monetary policy response is to raise the nominal interest rate with a view to curbing inflation. However, a contractionary monetary response further inhibits investment, thereby negatively affecting long-term output and also reducing the real balances of the domestic currency, thereby creating a real appreciation pressure. Most of the Caribbean countries have capital controls and lean towards fixed exchange rate regimes. As a result, we observe a weak impact of the monetary response to oil price shocks in the Caribbean.

Partly as a result of the inability of monetary policy to respond to the oil price shock, volatility of international oil prices has created problems for economic activity in the Caribbean.

McIntyre et al (2016) have estimated the macroeconomic role of oil prices in the Caribbean. They find:

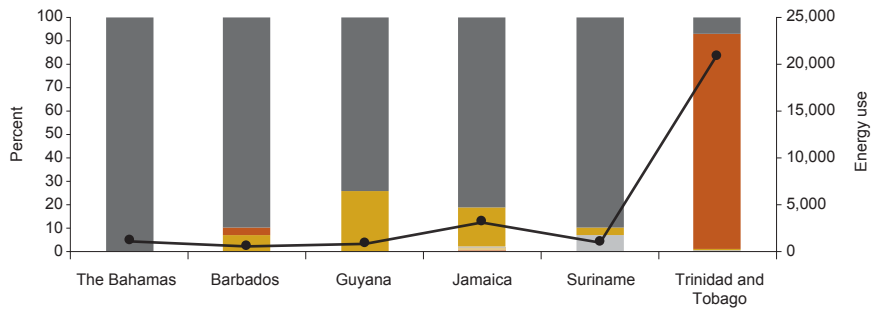
- Real oil price shocks explain on average 7 percent of real GDP growth variation.
- A 10 percent increase in real oil prices reduces real GDP growth by about 0.5 percentage points over five years in tourism-intensive economies and 0.01 percentage point in commodity producers—other than in Trinidad and Tobago (an oil exporter), where the shock raises real GDP growth by 0.8 percentage points in five years.

- A 10 percent increase in oil prices could increase the real effective exchange rate appreciation (i.e., reduced competitiveness) by 2.8 percentage points over five years in tourism-intensive economies and 3.8 percentage points in commodity producers
- Energy consumption and efficiency, play a significant role in determining real GDP per capita over the long run: a 1 percent increase in energy consumption leads to a 0.38 percent increase in long run GDP; and 1 percent increase in energy efficiency leads to a 0.42 percent increase in long run GDP.

Fluctuations in international oil prices thus result in an unfavourable macroeconomic environment for Caribbean firms. The macroeconomic results largely follow from high dependency on imported oil, (except for Trinidad and Tobago). Additional factors are energy intensity, demand and supply mismatch, public ownership of utilities and weak regulatory and institutional framework.

There is a lack of diversification in energy sources in the Caribbean**.** A country-level energy source profile in Figure 10.2 reveals that, with the notable exception of Trinidad and Tobago, all other Caribbean countries primarily use oil.[1] Trinidad and Tobago has a

Figure 10.2: Energy Sources (percent)



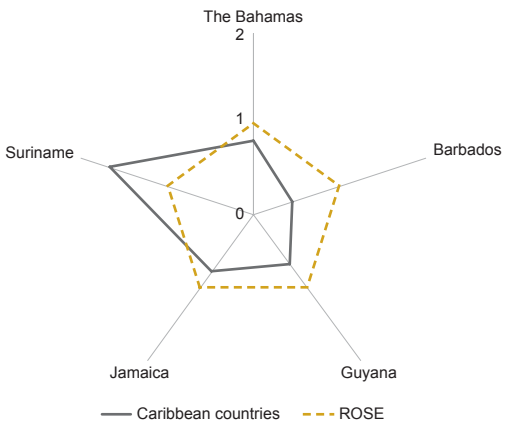
	The Bahamas	Barbados	Guyana	Jamaica	Suriname	Trinidad and Tobago
Total energy use (ktoe)	1,070	487	760	3,066	885	20,918
Nominal GDP (billions of U.S. dollars	9.0	4.5	5.5	24.1	9.2	43.4
Population (millions)	0.36	0.28	0.8	2.8	0.55	1.35

Oil ■ Natural gas ■ Biomass ■ Hydro ■ Coal ■ Other renewables ■ Total energy use (ktoe)

Source: Castalia (2014).
Note: ktoe = kilotons of oil equivalent.

[1] Larger electricity demand is associated with more diverse generation technologies such as biomass, coal, and natural gas in addition to fuel oil. Based on a recent study commissioned by the Inter-American Development Bank, only two of the countries covered—Trinidad and Tobago and the Dominican Republic—use natural gas to generate electricity. As a large producer of natural gas, Trinidad and Tobago can transport it very inexpensively and uses it for 99 percent of electricity generation. While not covered by this report, but as a point of reference, the Dominican Republic has the largest electricity sector in the region, with peak demand (exclusive of unmet demand) of about 1,881 MW in 2011. The country uses diversified sources of electricity generation.

Figure 10.3: Energy Intensity in the Caribbean, 2011



Source: International Energy Statistics, August 2015.
Note: ROSE = rest of the small economies of the world.

relatively large energy usage of 20,918 kilotons of oil equivalent (ktoe). This is followed by Jamaica (3,066 ktoe), The Bahamas (1,070 ktoe), Suriname (885 ktoe), Guyana (760 ktoe), and Barbados (487 ktoe). Natural gas accounts for a very small proportion of energy in Barbados (3.2 percent), and none in the other countries. Biomass accounts for 26 percent of total energy use in Guyana, 17 percent in Jamaica, 7 percent in Barbados, and 3 percent in Suriname. Trinidad and Tobago has a very small share of biomass, while The Bahamas exclusively uses oil as its energy source.

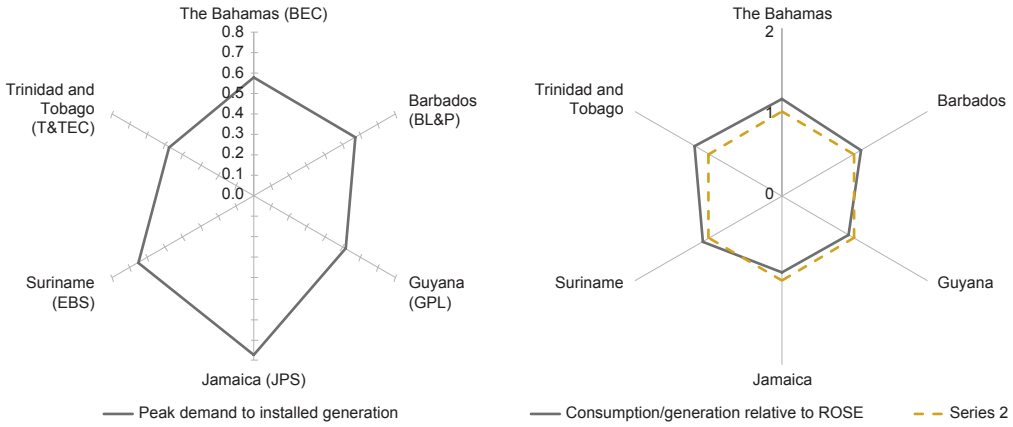
As shown in Figure 10.3, energy intensity (defined as the total primary energy consumed to produce $1 of GDP) for the key Caribbean economies is comparable with that of the rest of the small economies (ROSE) of the world. However, notably, the energy intensity for the two energy producers in the region—Suriname with about twice the intensity of ROSE and Trinidad and Tobago (not shown) with almost 4.5 times that of ROSE—suggests energy-inefficient economies characterized by a high cost of using energy for economic activity.

The current installed energy generation in the Caribbean is just enough to cover demand**.** As seen in the first panel of Figure 10.4, the ratio of peak demand to installed generation capacity by country shows that the Caribbean economies are currently able to meet peak demand. However, as shown in the second panel of the same figure, when comparing the ratio of net consumption of energy to net generation, the Caribbean is close to ROSE.[2] Together with an overall relatively higher energy intensity, this does not bode well for the region in terms of providing reliable and cost-effective energy to the private sector, as will be shown in the firm-level evidence discussed in the next section. Indeed, the energy inefficiency could very well impede new investment and growth.

State-owned utilities, the norm in the Caribbean, tend to perform worse financially than privately owned utilities. Empirical evidence suggests that the ownership structure

[2] Net consumption measured as consumption of electricity computed as generation, plus imports, minus exports, and minus transmission and distribution losses. Net generation of the amount of gross generation less the electrical energy consumed at the generating station(s) for station service or auxiliaries. Electricity required for pumping at pumped-storage plants is regarded as electricity for station service and is deducted from gross generation

Figure 10.4: Energy Demand and Generation in the Caribbean

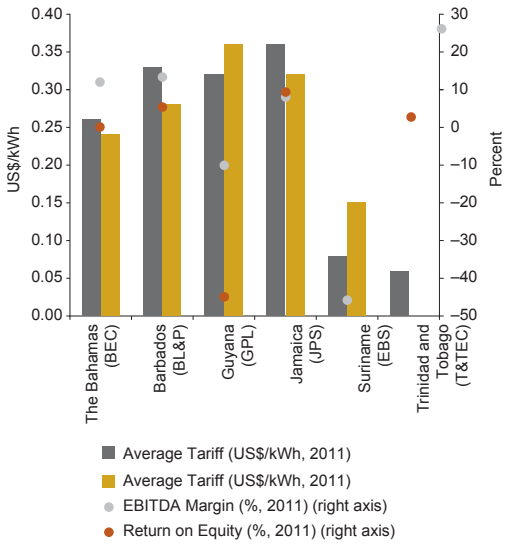


Sources: Castalia (2014); and International Energy Statistics, August 2015.
Note: National utility companies are in parentheses following the country names. ROSE = rest of the small economies of the world.

of utilities matters. Specifically, being privately owned reduces the average cost of production over time and tends to pass on any cost changes to the price more so than is the case with state-owned utilities. Further, according to a report on energy in the Caribbean commissioned by the Inter-American Development Bank (IDB), utilities that perform poorly may have limited financial resources to cover investments in natural gas for electricity generation. Prada et al. (2005) benchmarked the technical, commercial, financial, and organizational performance of Caribbean utilities and assessed their standing against best international practices. They found that differences in the ownership structure are one of the factors that explain the efficiency gap for Caribbean utilities. In most cases, poor performance is largely a function of inefficient management associated with government-owned corporations, as well as with the high operating costs of Caribbean electricity utilities that, in addition to imposing high tariffs, are more likely to require government support. Figure 10.5 shows that of the region's net fuel importers, The Bahamas, Barbados, and Jamaica—which have utilities with significant private ownership—impose higher energy tariffs than their operating expenditure, thereby mitigating the need for potential government support. Further, they also have higher earnings before interest, tax, depreciation, and amortization, thereby yielding a higher return on equity as well.

The institutional structures for the electricity sector are weak in the Caribbean. These institutional structures can be divided into three areas: sector organization, laws, and credibility of the regulator. Sector organization is related to market structures used for generation, transmission, and distribution (GTD). Laws create the legal framework, and are primarily associated either with GTD licensing or the creation of a state-owned utility. Regulation is associated with tariffs, licenses, and standards. As shown in Table 10.1, with the exceptions of The Bahamas (specifically, the island

Figure 10.5: Performance of the Electricity Sector in the Caribbean



Source: Castalia (2014).
Note: National utility companies are in parentheses following the country names. EBITDA = earnings before interest, tax, depreciation and amortization; OPEX = operating expenditure.

of Grand Bahama), Barbados, and Jamaica, which have vertically integrated and privately owned utilities, the organizational model followed in the Caribbean is vertically integrated state ownership. Notably, of the C6,[3] only Suriname buys some electricity from independent power producers. Also of note is the fact that none of the C6 countries follow the vertically unbundled electricity market approach, which has been put in place in the Dominican Republic and is considered to be a superior organizational structure for the energy sector (Castalia 2014).

Laws that are most relevant to energy in the Caribbean are the ones that either license GTD activities or establish the state-owned utility**.** The laws vary across countries. In some

Table 10.1: Organisation of the Electricity Sector in the Caribbean

Country	Utility	Jurisdiction	Government Ownership (%)	Role	IPPs for Power Generation
The Bahamas	BEC	All, except Grand Bahama	100	G | T | D	No
	GBPC	Grand Bahama	0	G | T | D	No
Barbados	BL&P	All, only license, but no monopoly	6.30	G | T | D	No
Guyana	GPL	All	100	G | T | D	Yes
Jamaica	JPS	All	19.90	G | T | D	Yes
Suriname	EBS	All, except 2 mines and rural areas	100	G | T | D	Yes
Trinidad and Tobago	T&TEC	All, not exclusive	100	G | T | D	Yes

Source: Castalia (2014).
Note: G | T | D = generation, transmission, and distribution; IPPs = independent power producers.

[3] The C6 are The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

cases, there is a single GTD license that may or may not be exclusive. This license is often granted to a vertically integrated utility, as in Barbados. In other cases, the license is granted to a state-owned utility, as in the case of Guyana. In a few countries, the GTD functions are unbundled and separate licenses are granted for the three GTD activities.[4] In the C6, this exists only in Jamaica.

Regulation exists in Caribbean electricity sectors, but it has been developed to different levels in different countries and has shown a mixed performance. As shown in Table 10.2, regulatory entities have varying degrees of responsibility over setting tariffs, granting licenses, and setting and enforcing service standards. In some cases, the regulators are credible and function well and in accordance with clear guidelines established by law. The Office of Utilities Regulation in Jamaica and the Fair Trading Commission in Barbados, for example, are both multisector regulators with well-developed processes for tariff setting. However, other regulators in the region have set tariffs below the cost of service, which has endangered the financial viability of the utility and affected its credibility. In addition, even in some countries with credible regulatory structures, utilities do not often have incentives to invest in least-cost technology for electricity generation. Many regulatory structures guarantee the utility a return on its investment in generation assets, without requiring or encouraging the utility to consider other sources. As such, utilities have no incentive to invest in new generation technology, and resort to expanding generation based on oil, despite renewable and

Table 10.2: Regulation of the Electricity Sector in the Caribbean

Country	Utility	Electricity Regulator	Tariffs Adjusted for Cost	Fuel Adjustment	Incumbent has Exclusive Right to Generate	IPPs Allowed	Capacity Expansion Decisionmaker
The Bahamas	BEC	Government	No	Yes	Yes	Yes	Government/ utility
Barbados	BL&P	FTC	Yes	Yes	Yes	Yes	Utility
Guyana	GPL	PUC	No	Yes	No	Yes	Utility
Jamaica	JPS	OUR	Yes	Yes	No	Yes	OUR
Suriname	EBS	EBS, but limited	No	No	No	Yes	EBD/MNH
Trinidad and Tobago	T&TEC	RIC	Yes	Yes	No	Yes	Utility

Source: Castalia (2014).
Note: IPPs = independent power producers.

[4] Companies with licenses in these unbundled structures could be state-owned or privately owned.

other fossil fuel options potentially costing less. This is the case, for example, in Barbados, where the regulatory framework functions well otherwise.

10.2. Firm-level Evidence

There is limited evidence using firm-level data on the effects of electricity on firm performance, as most studies focus on the impact on households. Only recently has the literature started paying attention to the relation between power outages and energy intensity and firm performance.

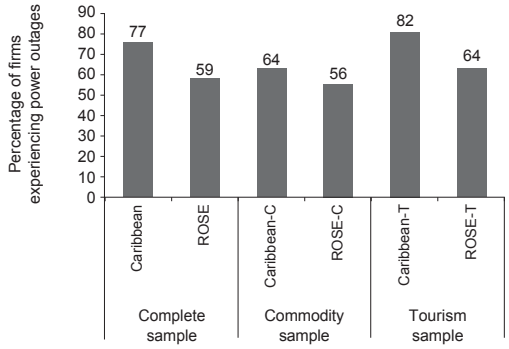
The literature shows that power outages have a negative effect on firm productivity. An unreliable power supply can cause disruptions in the production process that have adverse effects on firm performance and profitability (Fosu, Mlambo, and Oshikoya 2001). In a study of Indian textile firms, Allcott, Collard-Wexler, and O'Connell (2014) found that power outages reduce output by 5 percent. Firms without a generator and small firms experienced higher losses. Also using data on Indian firms, Alam (2013) found evidence that power outages negatively affect firm performance, but the effect is disproportionate across industries depending on the frequency of power outages and the firm's energy intensity (see also Moyo 2012). Further evidence by Cissokho and Seck (2013) also indicates that the duration and frequency of power outages have a negative effect on scale efficiency. Given that power outages lower productivity and performance, firms have an incentive to purchase generators or use alternative sources of power. However, using a generator leads to an increase in electricity cost, which enters the profit function as an output tax. Allcott, Collard-Wexler, and O'Connell (2014) note that even if it has a generator, a firm's productivity will be lower due to an input variation effect. On the other hand, firms without a generator experience a shutdown effect, which not only reduces output but also their demand for non-storable inputs.

What is the relative importance of electricity shortages between the Caribbean and ROSE? One potential prior is that because electricity is an essential input—most factories cannot produce anything without electricity for lights, motors, and machines—shortages could significantly reduce output. On the other hand, many firms might insure themselves against outages by purchasing generators or otherwise substituting away from grid electricity precisely because the potential losses are so large. So the second question is, what is the relative importance to firms of substituting away from dependence on the public grid in the form of more ownership of power generators?

More firms in the Caribbean than in ROSE have been affected by power outages. In fact, 77 percent of Caribbean firms have reported power outages, on average, compared to 59 percent of firms in ROSE. This finding holds true for firms in both commodity- and tourism-dependent countries. However, more tourism-dependent

Caribbean firms (82 percent) have experienced power outages compared to all other country groups, as shown in Figure 10.6 In terms of commodity-dependent Caribbean firms, 64 percent experience power outages compared to 56 percent of such firms in commodity-dependent ROSE countries.

Figure 10.6: Percentage of Firms Experiencing Power Outages

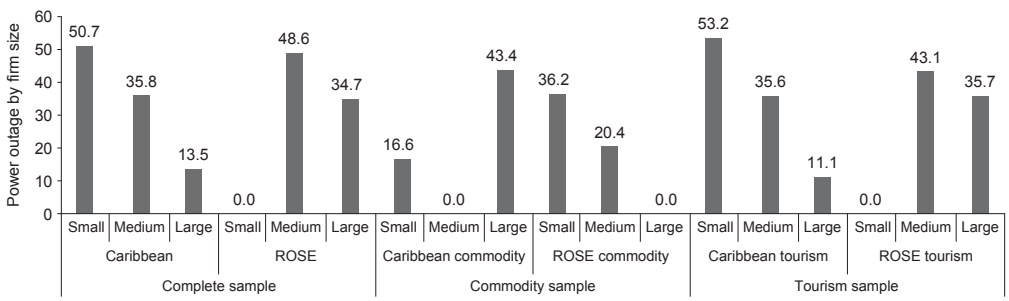


Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Electricity outages deferentially affect small versus large firms in the Caribbean and ROSE (Figure 10.7). More small firms report power outages than medium-size and large firms. The data show that 51 percent of small firms in the Caribbean are affected by power outages, compared to 17 percent of large firms. However, more large firms in commodity-dependent countries report power outages than in tourism-dependent countries. In Caribbean commodity-dependent countries (Caribbean-C), 20 percent of large firms report power outages compared to 21 percent in ROSE commodity-dependent economies (ROSE-C), while only 11 percent of large firms in Caribbean tourism-dependent countries (Caribbean-T) report power outages compared to 8 percent for ROSE tourism-dependent economies (ROSE-T).

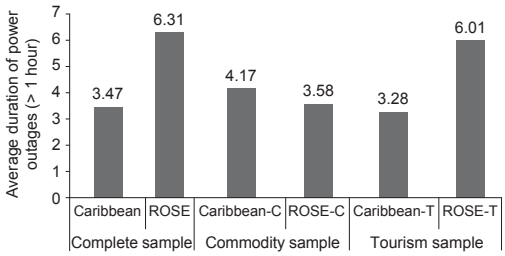
Frederick and Selase (2014) note that the cost of power interruption increases with the duration and frequency of power outages. Longer and more frequent outages, particularly if unplanned, can result in damage to product quality, semi-finished

Figure 10.7: Power Outages by Firm Size (percent)



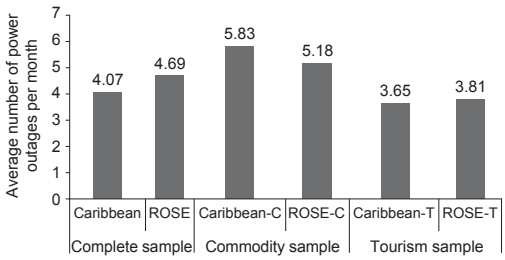
Source: Authors' calculation from the PROTEqIN Survey.
Note: ROSE = rest of the small economies of the world.

Figure 10.8: Average Duration of Power Outages in Hours (> 1 hour)



Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 10.9: Average Number of Power Outages per Month



Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

products, and setbacks in production and delivery schedules, all of which increase the firm's operation and maintenance costs (Wang 2002; Lai, Yik, and Jones 2008). Firms in Caribbean-C countries report a longer duration of outages than their ROSE counterparts, while the opposite holds for tourism-dependent countries (Figure 10.8). Overall, ROSE firms report a greater frequency of outages, but firms in Caribbean-C countries are affected more regularly by outages than firms in ROSE-C. Caribbean-T countries report fewer outages on average than their ROSE counterparts (Figure 10.9).

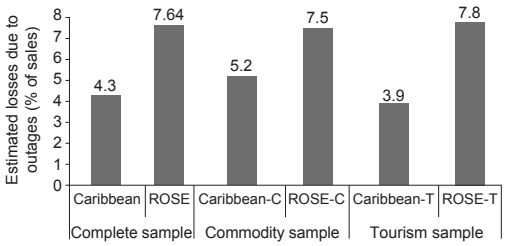
Caribbean firms report relatively lower losses due to power outages, but there is a large performance disparity between firms affected by outages and those that are not in Caribbean-C countries. Caribbean firms report that power outages cost 4.3 percent of annual sales, compared to the ROSE average of 7.6 percent (Figure 10.10). The impact of outages is greater for Caribbean-C firms than Caribbean-T countries. Firms in Caribbean-C countries report losses of 5.2 percent of sales, compared to 3.9 percent for their counterparts in tourism countries (Figure 10.11). In terms of performance (sales growth), firms that do no report outages show better sales growth. Caribbean-C countries that report losses due to outages have average sales growth of 2.7 percent, while those that do not report such losses have much higher sales growth of 8.6 percent. The result for the Caribbean-T countries is the opposite: outages are found to be associated with slightly higher sales growth.

Firms may substitute away from grid electricity when shortages are more severe (Alam 2013; Fisher-Vanden, Mansur, and Wang 2015). Given the importance of energy to the production process, as well as the systemic inefficiencies discussed earlier, it

appears that Caribbean firms have responded to the unreliability of the grid by substituting away towards power generators**.** As shown in Figure 10.12, 31 percent of Caribbean firms report owning a generator, twice as many as ROSE firms. For Caribbean-T countries, of which 37 percent own generators, the difference compared to ROSE-T is six-fold. The Caribbean country with the highest ownership of generators by firms is Guyana (88 percent), followed by The Bahamas (60 percent) and Jamaica (55 percent). In Figure 10.13 is shown generator ownership by firm size. Ownership increases with the size of firms. However, while ratio of largest to smallest is 1.5 in Caribbean-T it is double in ROSE. For tourism countries in the Caribbean the ratio is 3 while for ROSE-T it is 1.5.

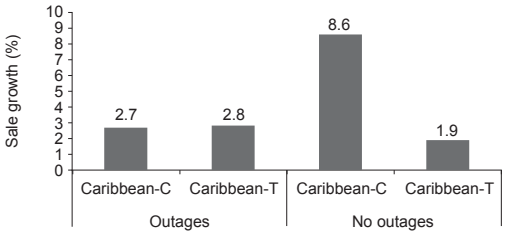
In Caribbean-C countries, firms source almost 25 percent of their electricity from generators, compared to the ROSE-C average of 14.4 percent (Figure 10.14). In Caribbean-T countries, where the estimated losses due to power outages are relatively lower, the share of electricity sourced from a generator is 10 percent, lower than the ROSE-T average of 14 percent. Figure 10.15 reports estimated losses due to outages for firms that obtain a share of electricity from a generator. The results show that firms that obtain electricity from a generator report lower losses due to power outages. Overall, firms in Caribbean-C

Figure 10.10: Estimated Losses due to Electricity Outages (percent of sales)



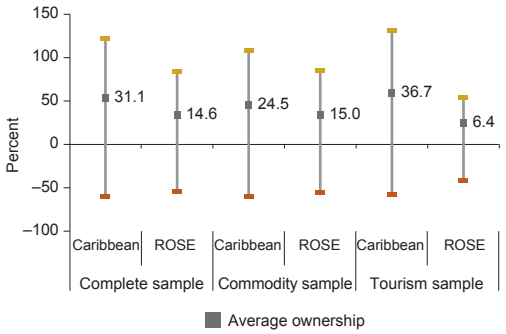
Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 10.11: Electricity Outages and Firm Performance in the Caribbean (percent of sales)



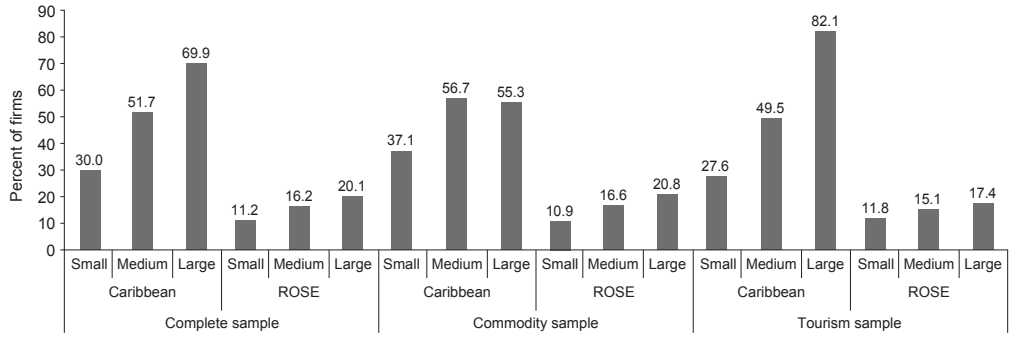
Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 10.12: Generator Ownership (percent of firms)



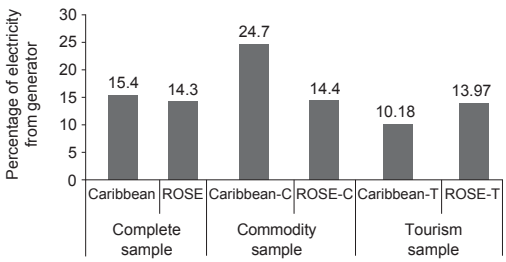
Source: Authors' calculation from the PROTEqIN Survey.
Note: ROSE = rest of the small economies of the world.

Figure 10.13: Generator Ownership by Firm Size (percent)



Source: Authors' calculation from the PROTEqIN Survey.
Note: ROSE = rest of the small economies of the world.

Figure 10.14: Share of Electricity from Generator (percent)



Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

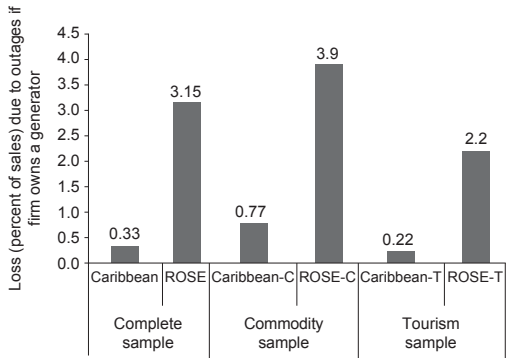
countries report losses due to power outages of 5.2 percent of sales, but among firms that reported power outages and obtained electricity from a generator, reported losses were significantly lower, at less than 1 percent of sales. Therefore, taken together, the lack of responsiveness to electricity prices, which is confirmed by the lower propensity of Caribbean firms to incur losses due to power outages, along with patterns in generator ownership, suggest that Caribbean firms have already responded to the unpredictable and high cost of electricity from the grid by buying generators. As a result, they are now less sensitive to electricity costs than their ROSE counterparts, which have more reliable energy provision with relatively lower costs.

10.3. Energy Intensity

Very few studies focus on energy-intensity analysis at the firm level. Energy intensity is the ratio of power and fuel to sales and is often used as a measure of energy efficiency. Sahu and Narayanan (2011) studied the determinants of energy intensity of Indian manufacturing for cross-sectional data. They found an inverted U-shaped relationship between energy intensity and firm size that suggests smaller firms are more energy efficient than

medium-size firms, which in turn are less efficient than large firms. Further, ownership type was identified as an important determinant of energy intensity where locally owned firms were found to more energy intensive than foreign firms. In a study on China that covered 2,500 medium-size and large firms, Fisher-Vanden, Mansur, and Wang (2004) identified changing energy prices and research and development expenditures as the main drivers of declining energy intensity in China. Other factors such as changes in ownership, region, and industry structure were found to be less important.

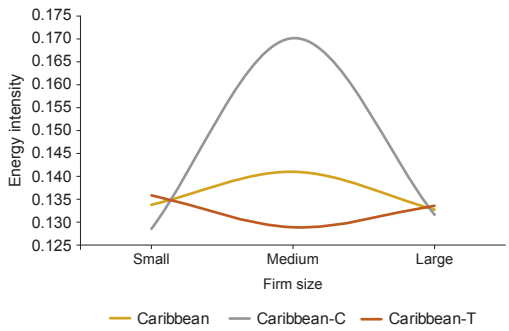
Figure 10.15: Estimated Losses due to Outages if Firms Obtain a Share of Electricity from a Generator (percent of sales)



Source: Authors' calculation from the PROTEqIN Survey.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

The inverted U-shaped relationship between energy intensity and firm size is found for commodity-dependent countries. Energy-intensity estimates, measured by the ratio of expenditure on fuel and power to sales, show that small firms in the Caribbean are on average more energy intensive than medium-size and larger firms. The difference between medium-size and large firms is negligible. The inverted U-shaped relationship between energy intensity and firm size is found for Caribbean-C countries but not for Caribbean-T countries (Figure 10.16). Regression analysis also confirms these results. The hypothesis that foreign-owned firms are less energy intensive than locally owned firms because the former tend to exhibit higher levels of technical efficiency (Sahu and Narayanan 2011) appears not to be true for the Caribbean. With the exception of medium-size firms, foreign-owned firms are more energy intensive than local firms (Figure 10.17).

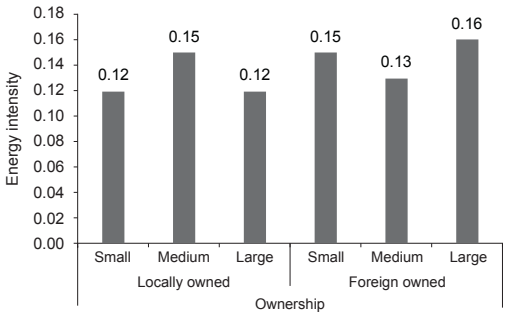
Figure 10.16: Firm Ownership and Energy Intensity in the Caribbean



Source: Authors' calculation from Proteqin.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries.

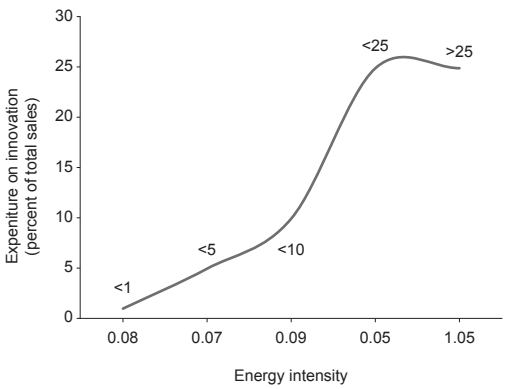
Expenditure on innovation is positively associated with energy intensity in the Caribbean. The literature suggests that innovative firms

Figure 10.17: Energy Intensity in the Caribbean by Firm Size



Source: Authors' calculation from the PROTEqIN Survey.

Figure 10.18: Expenditure on Innovation and Energy Intensity



Source: Authors' calculation from Proteqin.

should be less energy intensive. Cantore (2011) noted that energy efficiency can encourage innovation in developing countries. The author found an inverse relation between innovation and energy intensity in 23 developing countries. However, the evidence was not sufficient to conclude the direction of causality between technological change and energy efficiency. Firm-level data on the Caribbean, on the other hand, indicate an inverse positive association between expenditure on innovation and energy intensity. Figure 10.18 shows that energy intensity increases with expenditure on innovation. The explanation for this unexpected result may reside in the type of innovation in which Caribbean firms engage. However, lack of information prevents further analysis.

10.4. Conclusions

This chapter has explored the reasons why complaints by Caribbean businesspersons about electricity rank sixth in relative terms and fourth in absolute terms. There are two types of drivers of this problem, both related to energy costs and a lack of reliable electricity supply. First, market factors, which include volatility in energy prices, high and increasing demand, and lack of diversified sources, contribute to higher energy costs in the region. Second, the institutional framework within which the energy sector operates leads to an inefficient energy outcome.

Firm-level data reveal that more firms in the Caribbean have been affected by power outages than in ROSE: 77 percent of Caribbean firms have reported power outages compared to 59 percent of firms in ROSE. Electricity outages more often affect small rather than large firms in both the Caribbean and ROSE. However, firms in the Caribbean obtain a larger share of electricity from self-owned generators than from the country's grid. Thus, Caribbean firms report relatively lower losses due to

power outages. Taken together, the lack of responsiveness to electricity prices, which is confirmed by the lower propensity of Caribbean firms to incur losses due to power outages, along with patterns in generator ownership, suggest that Caribbean firms have already responded to the unpredictable and high cost of electricity from the grid by buying generators. As a result, they are now less sensitive to electricity costs than their ROSE counterparts, which have more reliable energy provision with relatively lower costs. The inverted U-shaped relationship between energy intensity and firm size is found for commodity-dependent countries but not for tourism-dependent countries**.** The literature suggests that innovative firms should be less energy intensive, but expenditure on innovation is positively associated with energy intensity in the Caribbean. Contrary to evidence elsewhere, and with the exception of medium-size firms, foreign-owned firms are more energy intensive than local firms.

11 Innovation

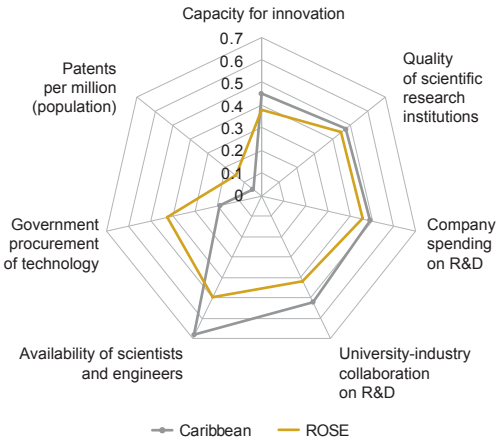
The importance of innovation stems both from its role at the national level in terms of a country's economic growth and its role at the firm level in terms of performance. A higher level of economic growth and favourable terms of trade are assumed to be results stemming from specializing in knowledge-intensive products containing higher value added. Thus, at the macroeconomic level, research and development (R&D) expenditure, innovation, productivity, and per capita GDP are believed to reinforce one another and lead to sustained economic growth (Hall and Jones 1999). At the firm level, innovation—that is, the transformation of ideas into new products, services, and production processes—leads to more efficient use of resources and competitive advantages. This chapter reviews the literature and the stylized facts on innovation and firm performance and then estimates the contribution of innovation to firm performance in the Caribbean and its role in accounting for the performance gap with respect to firms in the rest of the small economies (ROSE) of the world.

11.1. Context

A benchmarking analysis between the Caribbean countries and ROSE uses country-level data to show that the Caribbean is effectively innovating at a lower rate. According to Figure 11.1, which shows the World Economic Forum's country-level indicators on the determinants for innovation, the Caribbean lags behind ROSE in technology adoption by the government, as well as in the number of patents registered per million population. In particular, the Caribbean countries have significantly lower levels of patent registrations than ROSE, with an average of 2.9 patents per million population compared to 9.6 patents per million population in ROSE.

The Caribbean countries do not differ from ROSE in terms of their potential capacity for innovation. The quality of scientific research institutions, corporate R&D spending, and university-industry collaboration is similar between the Caribbean and ROSE, with only statistically insignificant differences. The availability of scientists and engineers

Figure 11.1: Determinants of Innovation



Source: World Economic Forum (2015).
Note: ROSE = rest of the small economies of the world.

is slightly higher in the Caribbean, but the difference with respect to ROSE is also statistically insignificant.

Given that private investment is similar between the Caribbean and ROSE, the low effective level of innovation along with relatively higher potential implies a relatively lower return to innovation. Indeed, for every private dollar invested in R&D, ROSE is able to patent roughly three times the number of patents than the Caribbean. At the same time, the relatively lower demand for technology from Caribbean governments diminishes the incentives of private suppliers of technological products to innovate and patent new products. Ultimately this is reflected in the significantly lower number of patents in the Caribbean.

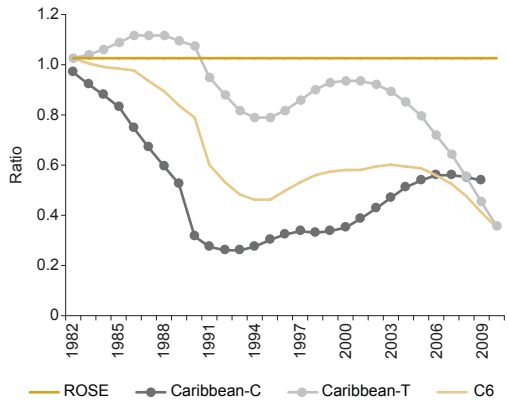
Total factor productivity (TFP) is a measure of how efficiently inputs are used in the production process, and therefore can be interpreted as a measure of an economy's technological dynamism. The efficiency and intensity with which production inputs (labour and capital) are combined to maximize the quantity of output defines an economy's productivity and serves as the cornerstone of its long-run growth. Usually measured as the Solow residual, TFP can be "seen" as the part of production not explained by the amount of inputs used.[1] Differences in TFP can be attributed to differences in the physical technology used by countries, the efficiency with which technologies are used, or a combination of the two (Comin 2006).

The process of innovation is positively linked to changes in TFP. Building on the seminal idea presented by Solow (1956), which links long-run growth in GDP per capita with growth in TFP, subsequent advances in growth literature, notably endogenous growth theory from Romer (1990) and Howitt and Aghion (1998), associate TFP growth with innovation. This literature explains innovation by looking at it as an investment with positive returns that incentivizes profit-seeking firms to innovate. At the aggregate level, it is expected that relatively more innovative economies grow faster.

[1] If we denote y as the growth rate of production, k as the growth rate of capital, l as the growth rate of labour, and α as the share of capital in production, then the Solow residual is defined as $y - \alpha k - (1-\alpha)l$. Measured thusly, the Solow residual accurately measures TFP growth assuming a standard Cobb-Douglas production function, perfect competition in factor markets, and no measurement error (Comin 2006).

Focusing on the Caribbean, we observe that TFP has declined over time with respect to ROSE. Figure 11.2 illustrates the divergence between Caribbean and ROSE TFP between 1982 and 2010. Normalizing the TFP in both the Caribbean and ROSE to 1 in 1982 and keeping ROSE TFP at 1 since then for each year, it can be seen that Caribbean TFP declined to just over 65 percent of ROSE in the mid-1990s before marginally improving in the run-up to the Great Recession, after which it started falling again and stood at 60 percent of ROSE by 2010.

Figure 11.2: Total Factor Productivity in the Caribbean versus ROSE



Source: Authors' calculations.
Note: Does not include countries in the Organisation of Eastern Caribbean States. ROSE = rest of the small economies of the world; Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; C6 = The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

Lack of innovation could be a key determinant behind the relative decline in TFP growth in the Caribbean. Comin and Hobijn (2010) and Comin and Mestieri (2013) combined new direct measures of technology with structural frameworks to identify the contribution of various dimensions of technology adoption to cross-country differences in productivity levels and productivity growth.[2] Within the context of endogenous growth theory, these studies conclude that cross-country differences in innovation and technology adoption explain between 70 and 80 percent of cross-country differences in productivity.

11.2. Firm-level Evidence

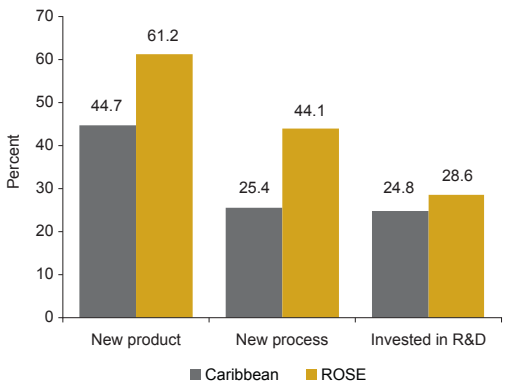
Country-level evidence has provided a coherent diagnosis of the overall environment and of innovation outputs, but it does not allow for identifying possible heterogeneity at the firm level. Therefore, it is necessary to assess micro evidence on innovation at the firm level in an attempt to disentangle whether aggregate differences are concentrated in specific segments of private firms, or spread out over the entire private sector.

[2] These measures are contained in the comprehensive datasets compiled Comin, Hobijn, and Rovito (2008). The datasets cover the diffusion of over 100 technologies in more than 150 countries over the last 200 years.

Investment in R&D is a major determinant of technological innovation. Studies on the impact of R&D on innovation outcomes—mainly in firms in industrialized countries—confirms a positive association. Firms that invest more intensively in R&D are more likely to develop product innovations, process innovation, or patents. Using different indicators of performance (labour productivity, TFP, sales, and profit margins), research has shown that innovation in products or process leads to higher firm performance in European firms (Janz, Loof, and Peters 2004; Van Leeuwen and Klomp 2006; Monhen, Mairesse, and Dagenais 2006). The correlation between product innovation and productivity is often higher for larger firms (Griffith et al. 2006; OECD 2009), and the productivity effect of innovation is larger in the manufacturing sector than in the services sector (OECD 2009). However, evidence of the ability of firms in developing economies to transform R&D into innovation is mixed. A positive association between R&D, innovation, and productivity was found for South Korea (Lee and Kang 2007), Malaysia (Hegde and Shapira 2007), and Taiwan Province of China (Yan, Roberts, and Xu 2008). However, results for Chile (Benavente 2006) and Mexico (Perez, Dutrenit, and Barceinas 2005) do not support this positive correlation.

We determine the relation between R&D, innovation, and performance based on data from the World Bank's 2010 Enterprise Surveys. The surveys provide information on three comparable indicators measuring innovation at the firm level. Furthermore, we use the 2014 Productivity, Technology and Innovation (PROTEQIN) Survey to provide more details of innovative practices among Caribbean firms. We compute three indicators based on the Enterprise Surveys:[3] (1) investment in R&D, (2) the introduction of a new or significantly improved production process within the firm's operations, and (3) the introduction of a new or significantly improved product. Figure 11.3 shows the averages for these indicators separately for firms in the Caribbean and ROSE. The term "product innovation" refers to firms that introduced a new or significantly improved product that is new to the firm or its market in the last three years. "Process innovation" refers to firms that introduced new or

Figure 11.3: Firm-level Innovation Indicators (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

[3] See Mohnen and Hall (2013) for different notions of innovation and their measurement.

Table 11.1: R&D, Innovation, and Performance (percent)

a. Caribbean					
Investment	**Share of Firms**	**Innovation**	**Share of Firms**	**Sales Growth**	**Employment Growth**
R&D	25	Process	8.3	5.5	7.6
		Product	30.6	−0.3	18.7
		Both	40.6	0.3	14.8
		None	20.6	1.5	−29.5
No R&D	75	Process	5.3	0.6	12.6
		Product	24.0	−0.6	14.2
		Both	11.7	−0.1	−1.0
		None	59.0	−0.4	9.1
b. ROSE					
Investment	**Share of Firms**	**Innovation**	**Share of Firms**	**Sales Growth**	**Employment Growth**
R&D	29	Process	0.8	−4.2	−12.8
		Product	75.6	23.3	26.6
		Both	8.9	20.9	14.8
		None	14.7	10.5	7.4
No R&D	71	Process	1.6	7.1	7.0
		Product	44.8	18.3	21.6
		Both	7.0	16.3	0.2
		None	46.6	14.3	5.4

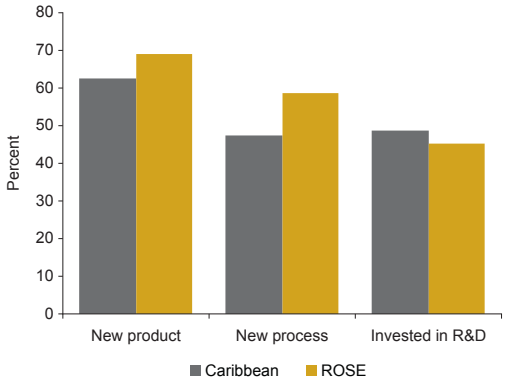
Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

significantly improved processes that are new to the firm or to the industry in the last three years.

Firms located in the Caribbean are slightly less likely to invest in R&D than firms in ROSE (25 percent versus 29 percent) but are considerably less likely to introduce new products or production processes (Table 11.1). Only 44.7 percent of firms in the Caribbean reported the introduction of a new product, while 61.2 percent of firms in ROSE reported doing so, with the difference being statistically significant. Further, only 25.4 percent of Caribbean firms reported the introduction of a new production process, while 44.1 percent of ROSE firms did so (Figure 11.3), which is statistically significant as well. Table 11.1 provides more details on the relation between R&D, the introduction of innovation, and performance.

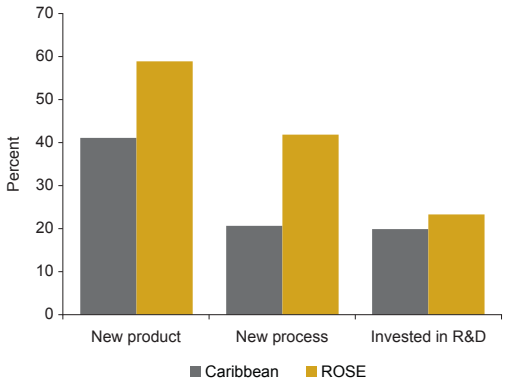
The literature has found that R&D expenditure increases with the size of the firm (Crépon, Duguet, and Mairesse 1998). Looking at these metrics by firm size reveals that the likelihood of large Caribbean enterprises introducing new products or production processes is similar to the likelihood of their ROSE counterparts doing so. Figure 11.4 restricts

Figure 11.4: Firm-level Innovation: Large Enterprises (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 11.5: Firm-level Innovation: Small and Medium-sized Enterprises (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

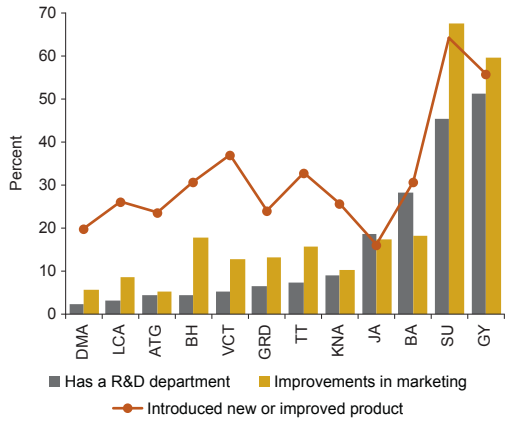
the analysis to large enterprises. Differences between large Caribbean and ROSE firms in terms of innovation or the probability of investing in R&D activities are insignificant. Therefore, this suggests that the previously observed differences between Caribbean and ROSE firms should be concentrated within smaller enterprises.

The generally lower level of return to investments in R&D is concentrated among small and medium-sized enterprises (SMEs). As shown in Figure 11.5, the data clearly suggest significantly lower levels of product and production process innovation among Caribbean SMEs than among ROSE SMEs. Only 41 percent of Caribbean SMEs reported the introduction of a new product, while 59 percent of ROSE SMEs did so. Similarly, only 21 percent of Caribbean SMEs introduced a new production process, while 42 percent of ROSE counterparts did so. By contrast, there are no statistically significant differences in terms of the probability of investment in R&D activities by Caribbean or ROSE SMEs investing in R&D. Both have about a 20 percent probability. This evidence disregards the fact that relatively lower innovation among Caribbean SMEs results from differential investment rates in R&D, pointing rather to shortcomings in the lower innovation-related productivity of investments in R&D as the key cause of that lower innovation among Caribbean SMEs.

The low level of R&D spending among Caribbean firms corresponds to the lack of established within-firm departments dedicated to innovation. Focusing on the 12 Caribbean countries that were re-surveyed in 2014, we see that the proportion of firms with R&D departments is 10 percent, on average. The heterogeneity within Caribbean countries allows for distinguishing between two groups of countries: at least 13 percent of

firms in Jamaica, Barbados, Suriname, and Guyana have a R&D department, while this percentage is 6.5 percent or lower for the rest of the Caribbean countries. However, the proportion of firms that introduced a new or significantly improved good or service to the market during 2011–2014 is higher than the share of R&D departments for all Caribbean countries, except Jamaica (Figure 11.6). Furthermore improvements in marketing are not the exception among Caribbean firms, with 14 percent of firms having introduced improvements in marketing of their goods or services for the reference period. This figure is higher among countries where firms tend to have a specialized R&D department.

Figure 11.6: Research and Development Departments and Innovation in Firms in Caribbean Countries (percent)



Source: PROTEqIN Survey, 2014.

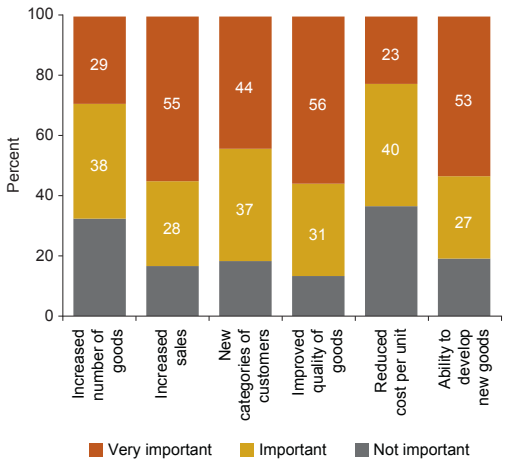
The extent to which these improvements generated benefits for the firms is analysed through subjective measurements collected in the PROTEQIN Survey about the importance of innovation processes in different dimensions. Specifically, the survey measures the importance of the following potential effects of a firm's innovations:

- Increased the number of good/service lines offered to the market
- Increased sales
- Opened access to new categories of customers
- Improved the quality of goods/services
- Reduced the average cost per unit of output
- Improved the ability to develop new goods/services or processes.

According to Caribbean managers, the introduction of innovative measures was very important for improving the quality of existing goods and services. Of the firms that introduced a new or significantly improved good or service, 56 percent considered that it helped improve the quality of an existing product (Figure 11.7).[4] Innovative

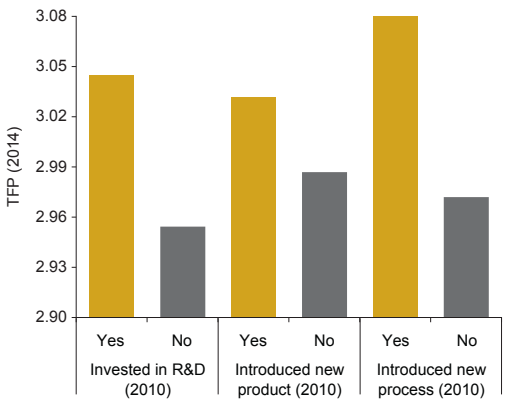
[4] The level of importance of a given innovative action was measured in five categories that were then reclassified into three categories: not important (either *not important* or *slightly important*), important, and very important (either *very important* or *critical*).

Figure 11.7: Subjective Effect of Innovative Measures Introduced by Caribbean Firms (percent)



Source: the PROTEQIN Survey, 2014.

Figure 11.8: Research and Development, Innovation, and Total Factor Productivity among Caribbean Firms



Sources: World Bank, Enterprise Surveys, 2010; and the PROTEqIN Survey, 2014.
Note: R&D = research and development; TFP = total factor productivity.

measures were also considered important in that they increased sales (55 percent) or improved the ability to develop new products (53 percent). Conversely, cost reductions were not perceived as being a result of a firm's innovation efforts. Whether sales did actually increase because of a given innovation is analysed (with respect to ROSE) in the final section of this chapter.

Investing in R&D is associated with higher levels of TFP among Caribbean firms. We mapped firms between the 2010 Enterprise Survey and the follow-up survey in 2014 (PROTEQIN) and computed TFP as the residual of a Cobb-Douglas function with three inputs. Figure 11.8 shows the level of 2014 TFP for firms that invested in R&D, introduced a new product, or introduced a new process (in 2010). The only statistically significant difference observed for firms that introduced a new process in 2010 was that those firms had higher average TFP (3.08) than firms that did not introduce a new process (2.9).[5] For the rest of the firms, TFP differentials are not statistically different from each other.

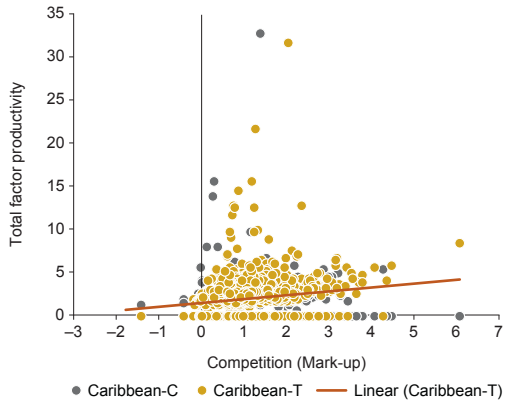
The degree of competition in the product market in which firms operate may play a role in a firm's TFP. Economic theory suggests, and Ospina and Schiffbauer (2010) confirm, that the higher the degree of product

[5] Standard errors were clustered at the industry level.

market competition, the higher a firm's productivity. Product market competition can be measured by the mark-up of a firm and the number of competitors it faces (Figures 11.9 and 11.10), where the mark-up is the ratio of sales over operating costs. The argument is that an increase in the mark-up (decrease in competitiveness) is associated with a decrease in productivity. An increase in competitive pressure (an increasing number of competitors) will be associated with an increase in productivity. The empirical relation in the Caribbean, however, is the opposite in terms of productivity. The relation between TFP and the mark-up appears to be positive while the relation between mark-up and competition appears to be negative.

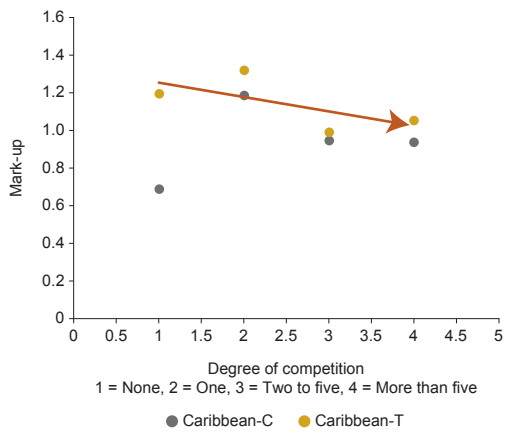
Lower competition is associated with lower TFRP. Using PROTEQIN 2014 data, a regression of TFP regressed on mark-up and controlling for firm size, foreign ownership, power outages, and audits with country and sector fixed effects is statistically significant (at the 5 percent level) for both commodity- and tourist-dependent countries, with a positive 0.08 relation (see Annex). Further, the mark-up is negatively related to increased competition.

Figure 11.9: Total Factor Productivity and the Mark-up



Source: Prepared by the authors using World Bank, Enterprise Surveys, 2010 and the PROTEQIN Survey, 2014.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries.

Figure 11.10: Mark-up and the Degree of Competition



Source: Prepared by the authors using World Bank, Enterprise Surveys, 2010 and the the PROTEQIN Survey, 2014.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries.

11.3. Conclusion

This chapter has demonstrated that the importance of innovation stems both from its role at the national level in terms of a country's economic growth and its role at the firm level in terms of performance. A benchmarking analysis between the Caribbean countries and ROSE using country-level data shows that the Caribbean is effectively innovating at a lower rate. However, the Caribbean countries do not differ from ROSE in terms of their potential capacity for innovation, as the quality of scientific research institutions, corporate R&D spending, and university-industry collaboration is similar. TFP has declined over time with respect to ROSE. TFP is a measure of how efficiently inputs are used in the production process, and therefore can be interpreted as a measure of an economy's technological dynamism. The process of innovation is positively linked to changes in TFP. Lack of innovation could be a key determinant behind the relative decline in TFP growth in the Caribbean.

Investment in R&D is a major determinant of technological innovation. Caribbean firms invest less in R&D, and considerably fewer Caribbean firms introduce innovation in products or processes than their ROSE counterparts. A higher proportion of Caribbean firms with R&D expenditure do not translate that expenditure into the introduction of innovation. This gap in R&D and innovation is mainly due to small firms, as large Caribbean firms are similar to their ROSE counterparts. The low level of R&D spending among smaller Caribbean firms corresponds to the lack of established within-firm departments dedicated to innovation. Finally, the degree of competition in the product market in which firms operate plays a role in a firm's TFP, i.e., lower competition is associated with lower total factor productivity.

12 Gender

The economic empowerment of women is a fundamental feature of inclusive growth. Research has shown that increasing the participation of women in the economy increases economic growth. A report by Woetzel et al. (2015) asserts that if women were to participate in the economy identically with men, such a level of participation would add up to 26 percent to annual global GDP in 2025 compared with a business-as-usual scenario. This chapter analyses the gap between the Caribbean and the rest of the small economies (ROSE) of the world regarding the parity of management between men and women and the impact of gender in management on firm performance.

12.1. Context

The role of gender in management may be based on the degree of a country's overall gender parity. We therefore review country-level indicators of gender parity to contextualise discussions based on firm-level data. The World Economic Forum's Global Gender Gap Index examines the gap between men and women in four sub-indexes:[1] (1) economic participation and opportunity, (2) educational attainment, (3) health and survival, and (4) political empowerment (WEF 2014). The economic participation gap contains information about the participation, remuneration, and advancement gaps. Educational attainment measures gender differences in access to primary, secondary, and tertiary education. The health index measures differences in life expectancy and sex ratios at birth. Political empowerment measures male/female ratios for different levels of political decision-making.

Overall, the Caribbean and ROSE are similar in terms of the Global Gender Gap Index (Table 12.1). Political empowerment is low in both regions, but Suriname stands

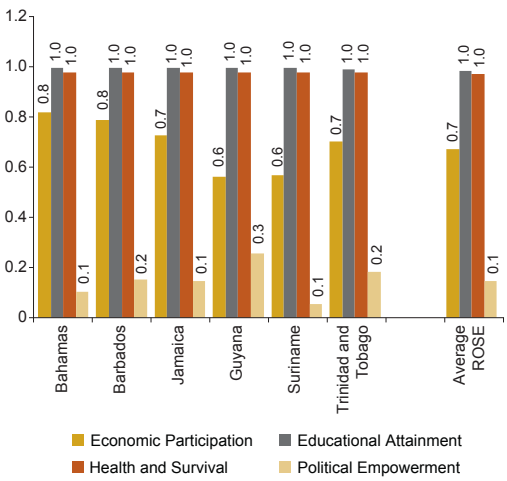
[1] In the index, the higher the value, the smaller is the gap, that is, the closer to parity.

Table 12.1: Global Gender Gap Index Metrics, Aggregated

	Caribbean-C	Caribbean-T	ROSE-C	ROSE-T
Economic participation	0.61	0.78	0.71	0.60
Educational attainment	1.00	1.00	0.99	0.99
Health and survival	0.98	0.98	0.97	0.97
Political empowerment	0.17	0.13	0.15	0.13

Source: WEF (2014).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Figure 12.1: Relative Global Gender Gap Index Metrics



Source: WEF (2014).
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

out as having the lowest score. There are no significant differences between the average in the Caribbean and that in ROSE in terms of economic participation of women, although Guyana and Suriname have a score of 0.56 in economic participation compared to the ROSE average of 0.67. The rest of the Caribbean countries score higher than this average. The gender gap in education and health is very narrow both in the Caribbean and in ROSE (Figure 12.1). Finally, the Caribbean countries with a higher score than ROSE in the gender gap in political empowerment are Jamaica and Trinidad and Tobago.

The above could lead one to conclude that the gender gap is very similar in the Caribbean and ROSE in terms of women in management.[2] However, although these country-level synthetic indicators are useful to represent gender differences in the health, education, economic participation, and political

[2] WEF (2014) shows that 145 countries covered by the index have closed almost 96 percent of the gap in health outcomes and 95 percent of the gap in educational attainment between women and men. However, the gap between women and men in economic participation and political empowerment remains wide: only 59 percent of the economic outcomes gap and 23 percent of the political outcomes gap have been closed.

empowerment dimensions, they do not necessarily map into business practices. Hence, the rest of this chapter focuses on the specific setting of the private sector and analyses how female management could have an impact on firm performance.

12.2. Firm-level Evidence on Features

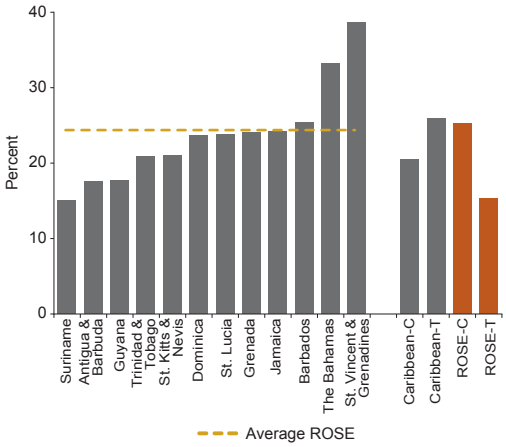
A growing body of literature suggests that female-owned businesses suffer various disadvantages that lead to lower business performance. This is commonly known as the female-owned business underperformance hypothesis (Klapper and Parker 2010). Most studies find significant gender gaps between male- and female-owned companies, but there are also some authors who argue that much of this research is based on inappropriate measures and is thus misleading.

Using World Bank Enterprise Survey data from 2005–2007, Bardasi, Shwetlena, and Terrell (2011) find evidence that shows gender gaps that relate to firm size. They argue that women usually run smaller firms not by choice, but as a natural by-product of industrial sector composition—that is, female-owned firms tend to concentrate in sectors in which firms are smaller and less efficient. This holds for the regions of Europe and Central Asia and sub-Saharan Africa but is less evident in Latin America and the Caribbean. Fairlie and Robb (2009) provide further evidence of gender differentials in business performance for the United States. Using confidential microdata from the U.S. Census Bureau, they find that female-owned businesses are comparatively less successful because they have less start-up capital, less human capital acquired through prior work experience in a similar business, and less prior work experience in a family business. Furthermore, they find that female business owners work fewer hours and may have different preferences regarding the goals of their enterprises. Zolin, Stuetzer, and Watson (2013) challenge the female under-performance hypothesis by replicating a study by Robb and Watson (2012) using data from the Comprehensive Australian Study of Entrepreneurial Emergence on 569 young firms. They find that female-owned new ventures in Australia do not under-perform their male counterparts in terms of closure rates, rate of return on assets, or the Sharp ratio (risk-adjusted returns). With these results in mind, we turn to analysing gender gaps in the Caribbean and ROSE.

The Caribbean private sector seems as open to employing women in top management positions (23.3 percent) as ROSE (24.4 percent). The regional average is mainly driven upward by the high shares of female management in St. Vincent and the Grenadines (38.6 percent) and The Bahamas (33.2 percent).[3] The rest of the Caribbean

[3] It is worth noting that St. Vincent and the Grenadines has the largest proportion of female-managed firms not only among other Caribbean countries but among all countries in the sample.

Figure 12.2: Female Management in the Caribbean (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

countries, except for Barbados, have lower female participation rates than the average in ROSE. Suriname's private sector is mostly male-managed, with only 15 percent of firms having a woman as top manager, followed by Antigua and Guyana, both with 17 percent (Figure 12.2).

Most female-managed private enterprises in the Caribbean are small. Once female-managed firms are identified for each country, the size profile of these firms is drawn and compared to those that are mostly male-managed. Figure 12.3a shows the composition of firm-size categories for female-managed firms in the Caribbean. The only Caribbean country where less than half of the female-managed firms are small is Guyana (8 percent of the 21 percent female-managed firms), while female-managed firms in St. Vincent and the Grenadines are dominated by small (33 percent) and medium-sized (4.7 percent) firms.

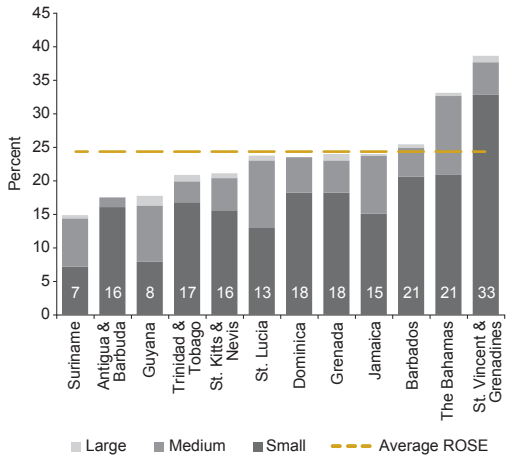
The kernel densities of the number of employees between female- and male-managed firms in the Caribbean are shown in Figure 12.3b. The average male-managed firm employs more resources, which means that the distribution is shifted to the right. There are more medium-sized and large firms managed by males than by females, which is consistent with several studies that find females are usually in charge of small enterprises (typically family-owned). Coleman (2007) finds that on average, U.S. male-owned businesses are twice as large as female-owned businesses in terms of sales and assets. The number of permanent full-time employees in a firm is highly correlated with these indicators.

The size pattern of female-managed firms might be correlated with the industry sector in which they operate. Overall, since Caribbean firms are relatively smaller than those of ROSE, most sectors have a proportion of small firms at 50 percent or more, except for chemicals and pharmaceuticals and the food industry. When focusing on female participation in the Caribbean, the highest share of female managers (51 percent) is in the hotel and restaurants sector. At the same time, the size distribution for this sector clearly leans towards small (65 percent) and medium-sized firms (28 percent).

The same is true for the garment sector, with higher-than-average female participation (29 percent) and a significantly high share of small firms (72 percent). The food sector has one-quarter female management participation and is mostly not driven by small firms (Figure 12.4).

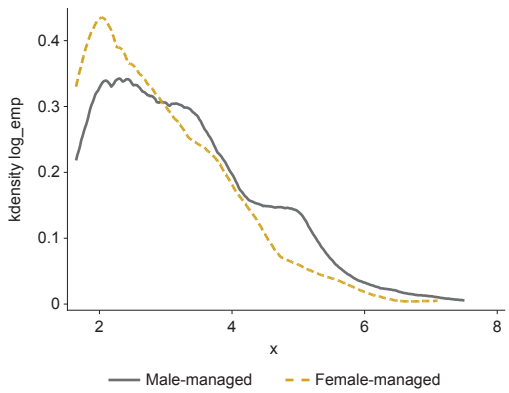
Regarding trade orientation, Chapter 5 showed how Caribbean firms are, on average, less open to trade than ROSE firms, with only 11 percent of Caribbean firms classified as exporters, 8 percent as importers, and 2.3 percent as two-way traders (both exporting and importing). Hence, 82.5 percent of Caribbean firms compete in their limited domestic markets. If the average Caribbean firm is missing out on the benefits of international trade, those that are female-managed are no different. Figure 12.5 shows how the vast majority of firms with women as top managers are not engaged in international trade. Again, Guyana seems to behave differently, having a higher-than-average proportion of importing firms among those female-managed. St. Kitts and Nevis has a significantly higher proportion of either importing or exporting firms, and almost 2 percent of female-managed firms on this island are two-way traders.

Figure 12.3a: Gender and Firm Size (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

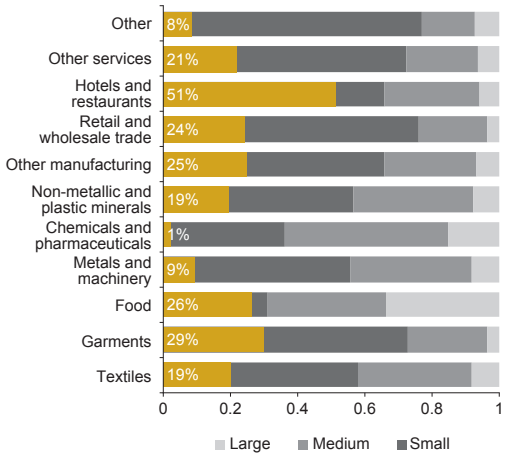
Figure 12.3b: Caribbean: Employment and Gender



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

So far, we have noted that Caribbean firms managed by women tend to be smaller and focused on local markets. These are common features in a setting of diseconomies of scale in the private sector, where small firms specializing in local markets cannot fully exploit scale effects in production and tend to face higher production costs. While limited to only three Caribbean countries (Barbados, Jamaica, and Trinidad and Tobago) the Survey on Finance and Gender Issues in the Caribbean (FINGEN) provides additional information about the impact of female entrepreneurship on firm performance,

Figure 12.4: Industrial Sectors, Firm Size, and Female Management in the Caribbean (percent)

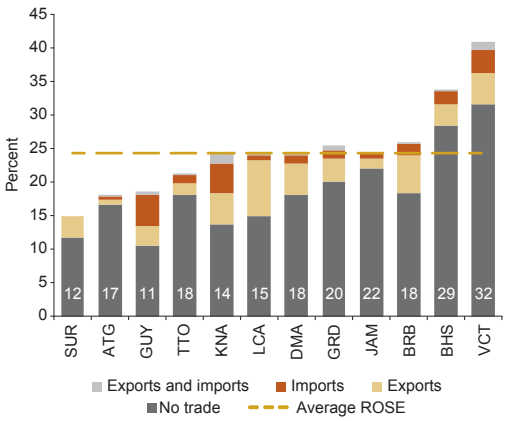


Source: World Bank, Enterprise Surveys, 2010.
Note: Percent female management in grey boxes.

finance, gender of ownership and management, use of productive development programmes, and issues related to management style.

Gender composition of the firms in these countries is biased towards males: 57 percent of the firms are comprised of male-only owners/stakeholders and 14 percent are predominantly male. The remaining 29 percent of firms are divided as follows: 12.5 percent have an equal number of females and males, 6.5 percent are predominantly female-owned, and 10 percent are solely owned by females. While Jamaica has the largest share of female-only ownership, Trinidad and Tobago is more inclusive overall, with 26 percent of firms having gender equality or female predominance in ownership (Figure 12.6). This contrasts with what was shown in Figure 12.1, where the share of female management in Trinidad and Tobago was below average. Gender mismatches between top management and owners/stakeholders seem evident. Since the Enterprise Survey data and the FINGEN follow-up survey data were merged, we can construct a more restrictive indicator on female participation to analyse the role of women in these Caribbean countries. That indicator equals one if the top manager is a female and the gender composition of the management group is dominated by women.

Figure 12.5: Gender and Trade Orientation (percent)

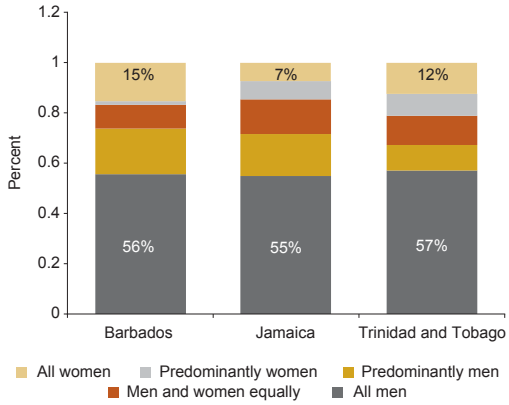


Source: Prepared by the authors based on World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

When analysing the average experience of the country with the largest proportion of female business owners/shareholders, we find that Trinidad and Tobago's private sector is not only gender-inclusive but that female owners/stakeholders have been working in businesses the longest (20 years compared to 18 years

in Jamaica and 14 years in Barbados). Even though the FINGEN sample size is reduced, it can provide useful information regarding attitudes towards gender equality among firms in these three Caribbean countries. Figure 12.7 provides some evidence against the female under-performance hypothesis when using a more restrictive indicator of female participation. The difference in productivity is not statistically significant,[4] but the distribution shows how predominantly female-managed firms are concentrated around the mean.

Figure 12.6: Gender Composition of Owners/ Stakeholders (percent)

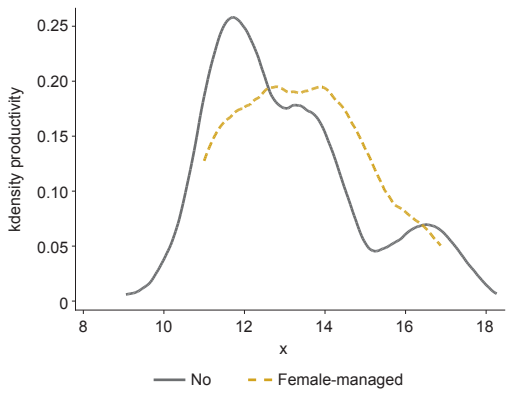


Source: Prepared by the authors using the dataset from the Survey on Finance and Gender Issues in the Caribbean.

The gender composition of a firm's upper management can shape its goals and action plans. When asked to identify the most important criterion by which to define the success of the firm, almost 20 percent of firms with low female participation answered that expanding the customer base is the most important reason for success (15.7 percent in mostly female-managed firms) (Figure 12.8).

The subjective valuations of success associated with wider gender differences are (1) being in business after 10 years (21 percent in female-managed firms against 14 percent in male-managed firms), and (2) providing employment for persons outside the family (18.5 percent in female-managed firms against 13 percent in male-managed firms). This could indicate a personal preference of female owners towards stability and non-favouritism in their firms. To see if such preferences translate into higher employment growth rates, we compare

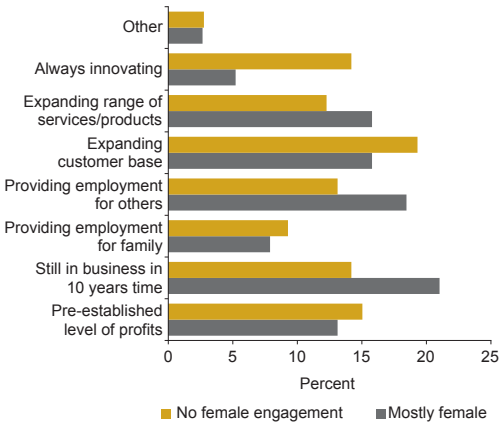
Figure 12.7: Caribbean: Productivity Gap Using a More Restrictive Female Participation Indicator



Source: World Bank, Enterprise Surveys, 2010.

[4] The 95 percent confidence interval for the difference of means is [–1.0856, 0.2359]

Figure 12.8: Perception of Success (percent)



Source: Prepared by the authors using the dataset from the Survey on Finance and Gender Issues in the Caribbean.

the averages between predominantly female- and male-managed firms. We find that female-owned firms have higher (4.5 percent) rates of employment growth than male-managed firms (2.4 percent).[5] These results are consistent with what we observed using the 2010 Enterprise Survey data and provide further evidence that rejects the female under-performance hypothesis.

12.3. Performance

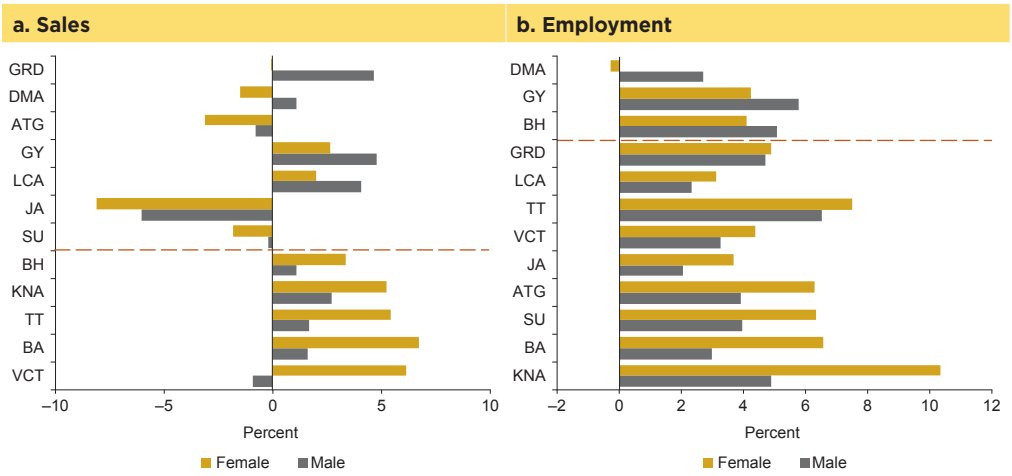
While most Caribbean female-managed firms are small and do not engage in international trade, as shown above, their performance is better than firms managed by males. Female-managed (male-managed) firms in the Caribbean had average sales growth of 2.5 (0.4) percent and employment growth of 6 (4.8) percent. The three Caribbean countries with the largest shares of female management participation (The Bahamas, Barbados, and St. Vincent and the Grenadines) also exhibit significant difference in sales growth in favour of female-managed firms (Figure 12.9). Average sales growth among female-managed firms in The Bahamas is almost double that of male-managed firms, and in St. Vincent and the Grenadines sales growth is seven times higher for female-managed firms. Conversely, sales growth among firms managed by females in Grenada was a quarter of the average sales growth for male-managed firms.

Employment growth is 20 percent lower in Caribbean male-managed firms compared to female-managed firms. Only three of the 12 Caribbean countries analysed show relatively higher employment growth figures: Dominica, Guyana and The Bahamas. The rest of the Caribbean countries show better performance in terms of employment growth among female-managed firms.

Contrary to what happens in Caribbean firms, male-managed firms in ROSE outperform their female counterparts in terms of sales (18 percent vs 14 percent) and employment growth (9 percent vs. 6 percent) (Table 12.2). Female managed firms in

[5] Although the difference is statistically significant at the 95 percent level, caution must be taken in interpreting this result because of the reduced number of observations.

Figure 12.9: Gender and Performance (percent)



Source: World Bank, Enterprise Surveys, 2010.

Table 12.2: Performance Gender Gap in the Caribbean (percent)

	Sales Growth		Employment Growth	
	Male	Female	Male	Female
Caribbean	0.4	2.6	4.8	6.0
ROSE	17.5	13.6	9.3	5.3

*Source:*World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

the Caribbean have a higher sales growth (3 percent vs 0.4 percent and employment growth (6 percent vs. 5 percent).

12.4. Conclusion

Country-level indicators suggest that gender parity is similar between the Caribbean and ROSE. Similarly, the participation of women in management in the Caribbean private sector is close to the average of ROSE. Female participation is particularly high in St. Vincent and the Grenadines and The Bahamas, but low in Guyana and Suriname. The data show that Caribbean firms with female managers are smaller and less open to trade. Contrary to what happens in ROSE, female managed firms in Caribbean outperform their male counterparts in terms of sales (2.6 percent vs. 0.4 percent) and employment growth (6 percent vs 4.8 percent).

13

Are Governments Good for Business?

The environment in which firms operate is largely established by governments through policies, laws, regulations, and the provision of services. This chapter analyses various facets of the government–private enterprise interface, with special emphasis on unproductive rent-seeking and graft and its impact on the performance of firms. Indeed, a key lament of Caribbean businesspersons is the level of corruption in the region.

Corruption can mean many things. It can be taken to mean bribery, whereby government officials demand illicit payments to perform an official task. This meaning focuses on bribery of government officials delivering public services, including licenses and contracts. This definition excludes—and hence may understate—many other forms of corruption. Corruption can also be unproductive rent-seeking whereby bureaucrats and parliamentarians afford preferential treatment to certain private interests as a result of legal or illegal lobbying by those interests that may involve monetary bribes or other exchanges of favours for preferential treatment. This behaviour—manipulating policy formation and shaping the rules of the game to lobbyists' own advantage—is referred to as state capture. This is connected to political patronage and cronyism that may not necessarily involve monetary kickbacks, but rather laws and regulations that favour certain private interests through regulatory capture (Carpenter and Moss 2013). Thus, state capture refers to efforts to influence how laws, rules, and regulations are formed; bribes to parliamentarians to "buy" their votes on critical pieces of legislation; bribes to government officials to enact favourable regulations or decrees; and bribes to judges to influence court decisions.

These are classic examples of how firms can obtain advantages for themselves by way of the basic legal and regulatory structure of an economy. Governments can thus be good for some firms and businesspersons, but not necessarily good for the business of the private sector. Such businesspersons use their influence to obstruct any policy reforms that could reduce or eliminate these advantages, so state capture is thus a fundamental cause of poor governance. Further, to compete successfully,

new and dynamic entrepreneurs have strong incentives to invest their talents in capturing the state rather than in developing innovative products or production methods. In such an environment, rewards are higher from connections than from competence and innovation.

However, there is no empirical consensus that corruption has either a negative effect on the performance of firms (the "sand the wheels" hypothesis) or a positive effect (the "grease the wheels" hypothesis). Corruption can lead to a higher cost of doing business, given the need to give gifts or informal payments to get better services or to "get things done," and hence can divert resources away from expanding businesses and improving productivity. It leads to business losses arising from informal payments and commissions to favour contracts, and possibly to output losses because of a reduced number of employees or the avoidance of certain types of economic activity. It can also cause a permanent shutdown of firms or their relocation to less-corruption-prone countries.

However, there is a counterargument that corruption can have a positive effect on firm performance. This "grease the wheels" hypothesis argues that corruption helps firms circumvent regulatory requirements (Meón 2010). For example, Lui (1985) demonstrated that the size of bribes by different firms reflects different opportunity costs. More efficient firms are more able or willing to "buy" less red tape. In this case, a license or contract awarded on the basis of the size of a bribe may attain Pareto-optimal allocation, as it replicates a competitive auction. Therefore, the grease the wheels hypothesis suggests that corruption may foster growth and efficiency.

13.1. Context

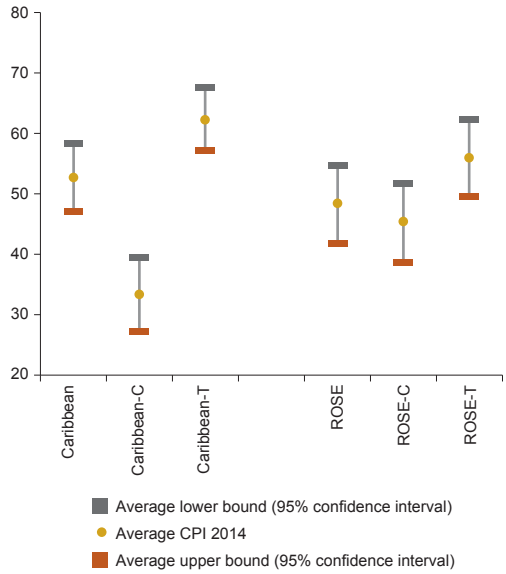
Corruption does not occur in a vacuum, hence it is important to contextualise firm-level corruption into the wider context of each country. However, objective information is scarce given the nature of the problem. Thus, the analysis of corruption traditionally resorts to perceptions. The most prominent among these corruption perception measures used in most empirical studies of the impact of corruption on economic activity are (1) Transparency International's Corruption Perception Index (CPI) and Bribe Payers' Index (BPI); (2) the World Bank Worldwide Governance Indicator (WGI) Project's control of corruption indicator; and (3) a Corruption Index produced by the International Country Risk Guide (ICRG), a private business consulting company. These indices are highly correlated.

The perception of corruption is higher in the Caribbean than in the rest of the small economies (ROSE) of the world. Figure 13.1 shows the mean level of corruption using the 2014 Corruption Perception Index. This holds for the Caribbean tourist-dependent sub-sample but not for the commodity-dependent sub-sample, as corruption in Caribbean

commodity-dependent countries is lower than in ROSE commodity-dependent countries.

These perception surveys have the advantage of good coverage, as it is much easier to ask someone's perceptions of corruption than to actually measure corruption directly. A body of empirical studies using perception indicators has demonstrated that corruption reduces investment (Smarzynska and Wei 2000; Wei 2000) and/or slows growth (Kaufmann, Kraay, and Zoido-Lobaton 1999; Knack and Keefer 1995; Li, Xu, ad Zou 2000; Mauro 1995). However, this finding could be due to a bi-directional relation, hence the evidence does not necessarily imply causality. Further, the effect of corruption could be positive. Rock and Bonnett (2004) find that corruption slows growth and/or reduces investment in most developing countries, particularly small developing countries, but increases growth in the large East Asian newly industrializing economies. The latter finding supports the country case literature of the East Asian paradox—the combination of high corruption and high growth—in terms of stable and mutually beneficial exchanges of government bribes and kickbacks. Thus, Rock and Bonnett (2004, p. 1000) conclude that "...the empirical relationships between corruption, growth and investment are not very robust unless one controls for both country size and regional and/or country differences...."

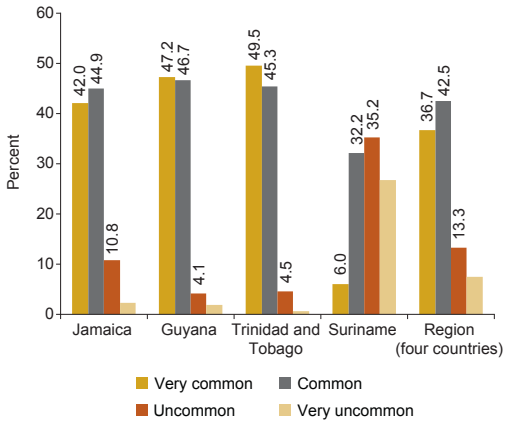
Figure 13.1: Perception of Corruption in the Caribbean and ROSE (percent)



Source: Transparency International, Corruption Perception Index (CPI), 2014.
Note: Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE = rest of the small economies of the world; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

The challenge with perception-based measures is that they may not measure corruption accurately (see Olken, 2009, and Olken and Pande, 2011, for reviews of different measures of corruption). The use of these indices may be subject to perception biases. Further, due to the aggregate nature of the data, they tell us little about the relationship between corruption and individual agents. In addition, macro determinants cannot explain the within-country variation in corruption: firms and individuals dealing with similar institutions and policies may be subject to and pay different amounts in bribes for the same public services received. Perhaps the most direct way of measuring

Figure 13.2: Citizens' Perception of Corruption in the Caribbean (percent)



Source: Latin American Public Opinion Project Survey, 2012.

bribery is through surveys of bribe payers. In most contexts, there is relatively little stigma associated with paying bribes, and so in many cases bribery can be measured using surveys to ask firms or households if they had to pay a bribe.

Almost 79 percent of citizens in a sampling of four Caribbean countries believe that corruption is very common or common and that corruption is justified (Figure 13.2). One source for measuring the incidence of corruption, using household-level data, is the Latin American Public Opinion Project (LAPOP).[1] This survey asks interviewees if they had to pay bribes and in what types of transactions, then asks a normative question about whether bribes are justified. However, these surveys are only conducted in Latin America and the Caribbean, so comparisons with ROSE cannot be made. Figure 13.2 presents responses regarding perceptions of how common corruption is among public officials. Guyana, Jamaica, and Trinidad and Tobago stand out with large shares (47, 42, and 49 percent, respectively) of individuals perceiving corruption as very common in their countries.

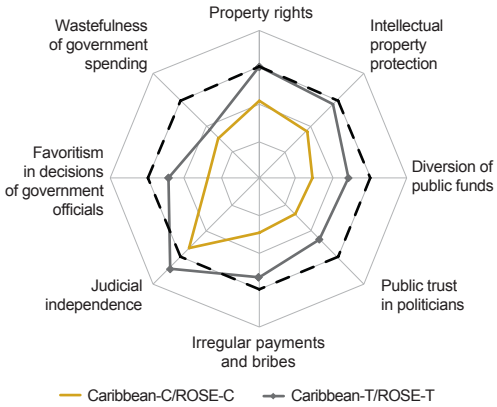
According to the World Economic Forum's (WEF) Competitiveness Index, Caribbean governments are perceived as worse than ROSE governments by their business communities for practically every indicator, with the exception of judicial independence. The gap is larger for commodity-dependent countries than for tourism-dependent countries (Figure 13.3). Thus, although the Caribbean gap for transparency of government policymaking is 15 percent, the trust gap involving Caribbean politicians is 32 percent. The latter follows from a gap of 33 percent in favouritism in decisions of government officials, a 30 percent gap in irregular payments and bribes, a 30 percent gap in diversion of public funds, and a 29 percent gap in wastefulness of government spending.

A State Capture Index suggests that, with the exception of Barbados, Caribbean countries are at the higher end of the spectrum—indicating a value of capture—for this index (Figure 13.4) The index ranges from zero (no capture) to unity (full capture) and is constructed from the average of three pillars of the WEF's Global Competitiveness

[1] See the LAPOP website at http://www.vanderbilt.edu/lapop/survey-data.php.

Index: institutions (pillar 1), labour market efficiency (pillar 7), and goods market efficiency (pillar 6). Then, for each value, the minimum value (within small economies) is subtracted and then divided by the difference between the maximum and minimum values.

Figure 13.3: Businesspersons' Perception of the Government

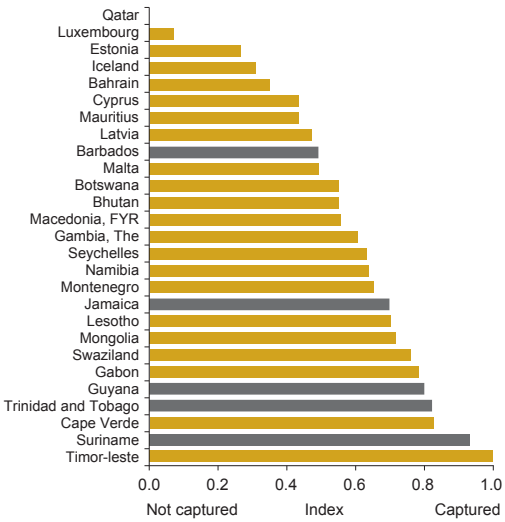


Source: WEF (2015).
Note: Values less than one indicate a worse opinion. Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

13.2. Firm-level Evidence

We defined state capture as the efforts of firms to shape the laws, policies, and regulations of the state to their own advantage by providing illicit private gains to public officials. This section moves to a more common concept of corruption: a bureaucrat extorting bribes from firms to enable them to "get things done." Underlying this view is an understanding of the state as extracting rents from firms for the exclusive benefit of politicians and bureaucrats. The resulting policy recommendations emphasize reducing the discretionary authority of state officials to eliminate their opportunities to extract bribes.

Figure 13.4: State Capture Index



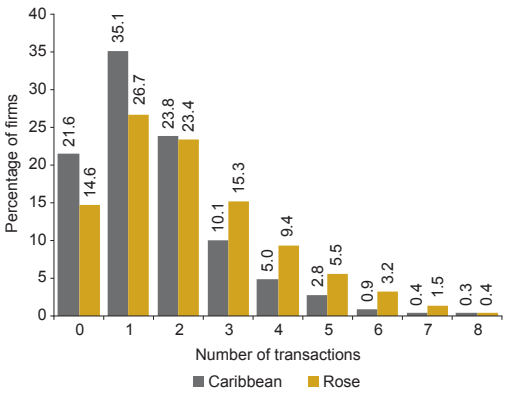
Source: Prepared by the authors based on WEF (2015).

The World Bank's Enterprise Surveys measure the frequency of bribe requests for eight transactions that involve the government and that are crucial for businesses. The eight transactions are construction permits, operating licenses, import licenses, water, telecommunications, electricity connections, tax inspections, and contracts. Following Gonzalez, Lopez-Cordova, and Valladares (2007), we assemble a Graft Index of Firm Transactions (GIFT) that is defined as the probability that a firm

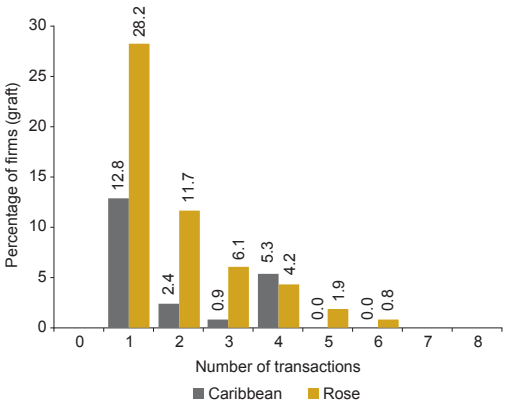
will be asked for a bribe if it undertakes one of the aforementioned transactions with the government. Thus the index is the proportion of instances in which bribes were requested from firms over the total number of solicitations for a public service. In addition, following Gonzalez, Lopez-Cordova, and Valladares (2007), we separate bribes into two sub-sets: (1) those involving infrastructure, and (2) those involving licenses and taxes and contracts. The composition of public and private provision of infrastructure services differs across countries, hence differences in corruption may merely reflect the differences in public-private provision. Private providers would have incentives to prevent their employees from demanding informal payments but would increase formal fees that would accrue as profits. Further, particularly in telecommunications, competition should reduce the ability of private firms to extract rents.

Figure 13.5: Number of Transactions with the Government and Graft Requests

a. Percentage of Firms with Transactions with the Government



b. Percentage of Firms from which Graft Is Requested



Source: World Bank, Enterprise Surveys, 2010.
ROSE = rest of the small economies of the world.

Caribbean firms interact less with the government than ROSE firms. Figure 13.5a shows the percentage of firms that had zero to eight transactions with the government and the percentage, among these, for which illicit payments were requested. Other than for zero to two transactions, Caribbean firms interact less with the government than do ROSE firms. Furthermore, requests for payments are uniformly lower in the Caribbean relative to ROSE (Figure 13.5b).

Graft varies considerably within the Caribbean. The overall Graft Index by country is shown in Figure 13.6. Only Barbados has a higher Graft Index level (11 percent) than the average observed in ROSE (7.5 percent). The rest of the Caribbean countries have Graft Index levels ranging from 1 percent in Grenada to 6.8 percent in Jamaica.

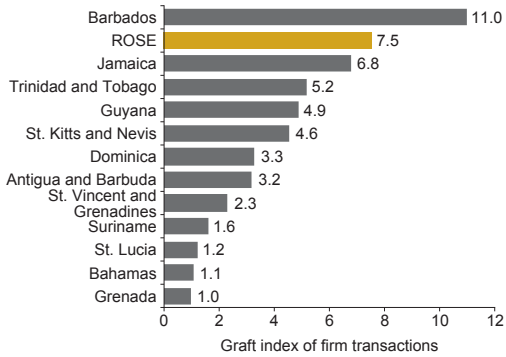
Table 13.1 summarises the likelihood of exposure to bribe requests measured by the incidence of bribery, that is, the percentage of firms

Table 13.1: Incidence of Bribery by Type of Transaction (Graft Index)

		Electricity	Water	Telephone	Construction	Import License	Operation License	Tax Officials	Contracts	Cost to Get Things Done (U.S. dollars)
Caribbean	Mean	5%	11%	4%	8%	3%	4%	4%	1%	124,667.2
ROSE	Mean	12%	11%	8%	13%	6%	7%	6%	3%	458,535.8
Difference (ROSE-Caribbean)	Mean	7%	–1%	4%	4%	3%	3%	3%	2%	333,868.6
	s.d	0.022	0.035	0.015	0.024	0.013	0.013	0.008	0.004	671,566.4
	CI	[0.024 0.110]	[–0.075 0.061]	[0.015 0.075]	[–0.005 0.088]	[0.003 0.055]	[0.005 0.055]	[0.009 0.042]	[0.011 0.027]	[–982,401.5 1,650,139]
Bahamas	Mean	0.133	0.250	0.143	0.257	0.087	0.063	0.130	0.007	32,704.8
	S.D.	0.352	0.463	0.359	0.443	0.288	0.244	0.344	0.082	268,384.5
Barbados	Mean	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.040	1,931.0
	S.D.	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.197	17,947.1
Dominica	Mean	n.a	n.a	n.a	n.a	n.a	n.a	0.022	n.a	n.a
	S.D.	n.a	n.a	n.a	n.a	n.a	n.a	0.147	n.a	n.a
Grenada	Mean	n.a	0.091	0.091	0.105	0.031	n.a	0.020	0.026	5,316.0
	S.D.	n.a	0.302	0.294	0.315	0.177	n.a	0.139	0.160	45,181.2
Guyana	Mean	0.146	0.105	0.037	0.057	0.071	0.105	0.042	0.018	16,137.4
	S.D.	0.000	0.302	0.294	0.315	0.177	0.000	0.139	0.160	45,181.2
Jamaica	Mean	n.a	0.167	n.a	0.071	0.091	0.051	0.051	0.005	2,341.6
	S.D.	n.a	0.408	n.a	0.262	0.290	0.220	0.221	0.073	15,947.2
St. Kitts and Nevis	Mean	0.053	n.a	n.a	n.a	n.a	n.a	n.a	0.020	1,832.7
	S.D.	0.229	n.a	n.a	n.a	n.a	n.a	n.a	0.140	15,067.7
St. Lucia	Mean	n.a	n.a	n.a	n.a	n.a	n.a	0.054	n.a	n.a
	S.D.	n.a	n.a	n.a	n.a	n.a	n.a	0.227	n.a	n.a
St. Vincent and Grenadines	Mean	0.037	n.a	0.031	n.a	n.a	n.a	0.029	n.a	37.6
	S.D.	0.192	n.a	0.177	n.a	n.a	n.a	0.170	n.a	379.8
Suriname	Mean	n.a	0.600	0.200	0.125	n.a	n.a	0.020	n.a	13,901.7
	S.D.	n.a	0.548	0.414	0.342	n.a	n.a	0.141	n.a	135,645.0
Trinidad and Tobago	Mean	0.047	0.100	0.027	0.065	n.a	0.125	0.079	0.022	5,713.1
	S.D.	0.213	0.308	0.164	0.250	n.a	0.338	0.270	0.146	36,189.0

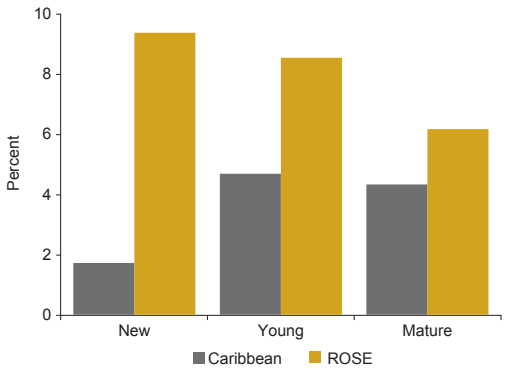
Source: World Bank, Enterprise Surveys, 2010.
Note: CI = confidence interval; n.a. = not available; ROSE = rest of the small economies of the world; S.D. = standard deviation.

Figure 13.6: Graft Index in the Caribbean (percent)



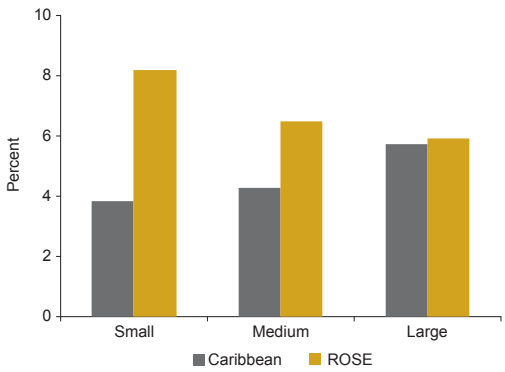
Source: World Bank, Enterprise Surveys, 2010.

Figure 13.7: Graft and Age of Firm (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

Figure 13.8: Graft and Size of Firm (percent)



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

subject to bribery in each transaction type and the average cost (in U.S. dollars) that Caribbean firms typically incur (through gifts or informal payments to public officials in order to get things done). Construction permits and water connections are the transactions for which more bribery occurs in the Caribbean and ROSE. However, the average Graft Index levels in the Caribbean are lower than in ROSE. The cost to get things done is significantly lower (27 percent) in the Caribbean than in ROSE, with a great degree of heterogeneity among Caribbean countries.

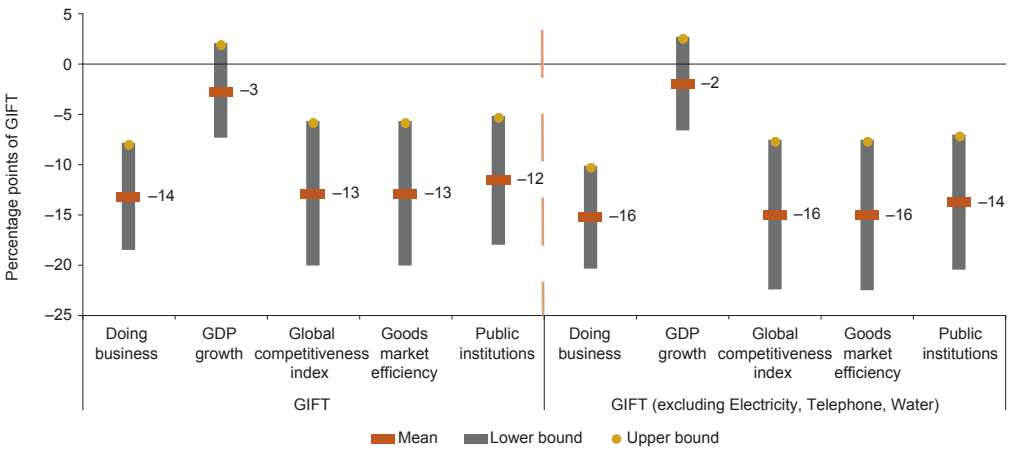
The probability of having to deal with corruption, as measured by the Graft Index, is different according to the size and age of the firm (Figures 13.7 and 13.8). Graft is higher regardless of age and size for Caribbean firms compared to ROSE firms. However, while graft falls as age and size increase for ROSE firms, the opposite holds for Caribbean firms, a result that is in line with the unproductive rent-seeking hypothesis.

A key question is, what drives graft? Burdensome business regulation is a potential driver of graft (Gonzalez, Lopez-Cordova and Valladares 2007). This "tollbooth" view (Shleifer and Vishny 1993) is that regulations are enacted to extract rents. Djankov et al. (2002) show that business entry rules, rather than protecting the public interest, are associated with more corruption. Gonzalez, Lopez-Cordova,

and Valladares (2007) find that higher graft is associated with a higher regulatory burden, as measured by the World Bank's Doing Business Index. Reduced competition in product markets is also associated with higher graft. Ades and di Tella (1999) find that corruption levels are higher in countries where domestic firms are sheltered from foreign competition and where anti-trust regulation is ineffective. Figure 13.9 shows the potential reduction in graft in the Caribbean with regard to the ease of doing business, GDP growth, goods market efficiency, and the quality of public institutions. The figure is based on a simple regression (see Annex) with the aforementioned variables as explanatory variables. For all types of transactions, an improvement by 10 percent in the ease of doing business, global competitiveness, goods market efficiency, and public institutions indicators would reduce graft by 14, 13, 13, and 12 percent, respectively. As in some countries water, electricity, and telecommunications might be privately provided, and when these transactions are excluded, the reduction in graft is typically larger.

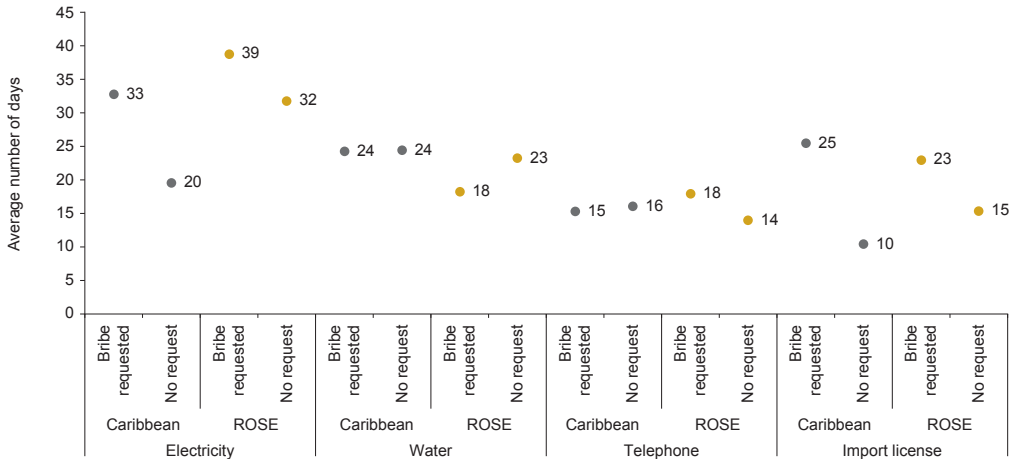
Illicit payments do not seem to always grease the wheels in the Caribbean. Figure 13.10 shows the average time taken to get electricity, water, and telephone connections when firms pay, or not, for prompter service by public officials. For electricity, the average waiting time is significantly lower for non-payers than for bribe payers, both in the Caribbean and ROSE. Getting an electricity connection takes 40 percent less time with no illicit payment in the Caribbean but only 18 percent less time in ROSE. For water and telephone connections, the results are mixed. While the average wait time in the Caribbean is the same regardless of bribe payments (24 days), this time is reduced from 23 to 18 days in ROSE when a payment is made. A slight decrease of one day in

Figure 13.9: Reduction in Graft (percent of GDP)



Source: World Bank, Enterprise Surveys, 2010.
Note: GIFT: Graft Index of Firm Transactions.

Figure 13.10: Time and Graft



Source: World Bank, Enterprise Surveys, 2010.
Note: ROSE = rest of the small economies of the world.

getting a telephone connection is associated with informal payments in the Caribbean. Lastly, import licenses also take longer even when payments are made. These figures seem to contradict the hypothesis that Caribbean firms make irregular payments to get things done. Because of the nature of the data analysed, the timing of these bribe payments cannot be defined. Therefore, it could possibly be that Caribbean firms, after waiting for over 20 days to get a specific service, decide to make a bribe instead of paying first to get the service promptly.

The average cost as a percent of sales to "get things done" and to execute contracts is lower in the Caribbean than in ROSE (see table 13.2). There are two measures of the direct cost of corruption in the Enterprise Survey: (1) the percentage of a contract paid in illicit payments; and (2) the percentage of annual sales to get things done (customs, licenses, regulations, services, etc.). The cost of getting things done represents 3.7 percent of annual sales in the Caribbean compared to 4.9 percent in ROSE. The cost of informal payments or gifts made to secure contracts with governments is 5.7 percent of the total value of the contract, compared to 13.6 percent in ROSE. Bribes are smaller in the Caribbean.

13.4. Conclusion

Diverse opinion surveys suggest that Caribbean governments are less pro-business than their counterparts in ROSE. The environment in which firms operate, established by governments through policies, laws, regulation, and the provision of services, is less

Table 13.2: Direct Cost of Corruption (percent of annual sales)

	Cost of Getting Things Done (as percent of annual sales)	Cost of Contracts (as percent of annual sales)
Caribbean	3.7	5.7
ROSE	4.9	13.6
Difference (ROSE-Caribbean)	1.2 0.009	0.1 0.034
Confidence Interval	[-0.006 0.029]	[0.012 0.145]
Antigua and Barbuda	n.a.	n.a.
The Bahamas	2.2	1.0
Barbados	1.8	1.7
Dominica	n.a.	n.a.
Grenada	2.3	6.8
Guyana	4.8	2.3
Jamaica	6.3	5.5
St. Kitts and Nevis	4.2	7.7
St. Lucia	n.a.	n.a.
St. Vincent and Grenadines	1.5	n.a.
Suriname	5.3	n.a.
Trinidad and Tobago	2.4	9.4

Source: World Bank, Enterprise Surveys, 2010.
Note: n.a. = not available; ROSE = rest of the small economies of the world.

conducive for Caribbean businesses. Thus, although the Caribbean gap for transparency of government policymaking is 15 percent, the trust gap regarding Caribbean politicians is 32 percent. The latter follows from a gap of 33 percent in favouritism in decisions of government officials, a 30 percent gap in irregular payments and bribes, a 30 percent gap in diversion of public funds and a 29 percent gap in wastefulness of government spending. Except for Barbados, Caribbean countries are located at the higher end of a State Capture Index. Firm-level data reveal that graft is lower in the Caribbean than in ROSE but that illicit payments in the Caribbean "grease the wheels," that is, they "get things done." However, while graft falls as the age and size of ROSE firms increases, the opposite holds for Caribbean firms. Larger and older Caribbean firms pay graft, a finding that is in line with the unproductive rent-seeking hypothesis.

14 Bringing It Together: Priority Areas and Strategic Policy Choices

The policy task facing the Caribbean is to resuscitate the region's relatively moribund private sector, as evidenced in the previous chapters, so that it can play an enhanced role as the dynamic, innovative, employment-generating, and exporting actor needed to boost the region's overall economic growth. To better understand this task from both the public and private sector perspective, this chapter tackles three main questions: What are the priority areas? What type of productive development policy strategy should be adopted? What is the governance (public-private) institutional framework required for policy?

14.1. What Are the Priority Areas?

Determining the relative importance of the potential factors influencing firm performance requires looking at several issues. What is the role of macroeconomic (economy-wide) factors versus microeconomic (firm-level) factors, and what are the Caribbean-specific factors, in accounting for the sales growth gap? What is the role of individual-firm-level constraints in accounting for the sales growth gap and what is the relative contribution of endowments versus the returns to those endowments in accounting for the sales gap? What does the quantification suggest in terms of priority areas, i.e., what factors result in the highest increase in sales growth?

To address the first issue—i.e., the relative importance of economy-wide factors versus firm-level factors—we ran two regressions, one for small economies and the other for the Caribbean. We include as explanatory variables a set of economy-wide variables (macroeconomic instability, doing business indicators, and a corruption perception index), firm-level factors, and country and sector fixed effects. For the small economies' regression, we include a Caribbean dummy.

The results are summarised in Table 14.1,[1] which shows that for small economies, economy-wide factors contribute 56 percent and microeconomic factors contribute -68 percent of mean sales growth. The problem, then, lies in the microeconomic factors. The Caribbean dummy is negative (–4 percent). For a firm, just being in the Caribbean is already a disadvantage. For Caribbean countries, economy-wide factors reduce sales growth by –131 percent and microeconomic factors increase it by 154 percent. The problem is macroeconomic factors. However, within microeconomic factors the effect of microeconomic constraints is –117 percent. The constraints include an inadequately educated labour force, lack of access to finance, crime, graft, and lack of innovation, rather than firm characteristics (such as age, size legal form, exporter or importer status, gender management, and total or partial foreign ownership) that contribute positively to sales growth. The constraint effect is equivalent in size to the sum of the business environment and the negative effects of corruption. So for the Caribbean, economy-wide factors as well as microeconomic factors constrain the sales growth of Caribbean firms.

To address the second issue—i.e., identifying the micro-firm level factors that influence a firm's sales growth—we estimated four equations (for the rest of the small economies (ROSE) of the world and for the Caribbean separately for tourism- and commodity-dependent countries) of sales growth on microeconomic variables. The microeconomic variables are: firm age in years and years squared; size measured by the number of employees and the number of employees squared; dummy equal to one

Table 14.1: Relative Role of Economy-Wide and Microeconomic Factors in the Sales Growth of Firms (percent)

	Caribbean	Small Economies
Economy-wide factors	–131	56
Macroeconomic environment	–4	–5
Business environment	–66	–8
Corruption	–60	69
Microeconomic factors	154	–68
Firm characteristics	271	–59
Microeconomic constraints	–117	–9
Sector and country effects	77	116
Caribbean dummy	0	–4

Source: Prepared by the authors using the PROTEQIN Survey (2014). See the Annex for more details.
Note: Business Environment is from Ease of Doing Business index where a higher value implies less business friendly, normalised (0,1), Macroeconomic environment range is from 1 to 7 (best), and the index used for the corruption index ranges from 1–10 (least corrupt).

[1] For more details in the results see the Annex.

if firm is predominately foreign-owned;: Dummy equal to one if firm is owned jointly by local and foreign entities;: Dummy equal to one if firm is a private limited liability company; dummy equal to one if firm is a sole proprietorship; dummy equal to one if firm is a partnership; dummy equal to one if firm is a limited partnership; dummy equal to one if firm is owned by a female; dummy equal to one if firm is managed by a female; dummy equal to one if firm is an exporter; dummy equal to one if firm is an importer; graft and graft squared index constructed in Chapter 13; dummy equal to one if firm reported outages; interaction term, which accounts for firms that experienced an outage and owned or shared a generator ; dummy equal to one if firm introduced significantly improved products; dummy equal to one if firm introduced a significantly improved process for producing or supplying products; dummy equal to one if firm report losses (percent of sales) due to crime; dummy equal to one if firm identified labour as a major problem and provided training to its employees; dummy equal to one if firm application for credit was rejected; sector-specific fixed effects and country-specific fixed effects. The results are used in an Oaxaca decomposition that allows us to quantify (and hence rank) the relative contribution not only of each constraint to sales growth but also to determine the relative importance of endowment versus the return to that endowment.

The differences in returns to endowments matter more than the differences in endowments themselves (Table 14.2). Looking at the aggregate results of a regression of sales growth on individual-firm-level constraints and using the Oaxaca decomposition reveals

Table 14.2: Oaxaca Decomposition Aggregate Results

	Complete Sample	Commodity Sample	Tourism Sample
Sales growth			
Rose	0.268	0.266	0.269
Caribbean	0.0785	0.134	0.0327
Difference (sales growth gap)	0.1895	0.132	0.2363
Gao accounted by:			
Endowments	–0.0922	0.161	0.0236
Coefficients	0.153	0.604	0.271
Interaction	0.129	–0.632	–0.0476
Memorandum			
Explained (endowments plus interaction)	0.0368	–0.471	–0.024
Unexplained (coefficients)	0.153	0.604	0.271
In percentages			
Explained (endowments plus interaction)	19%	–357%	–10%
Unexplained (coefficients)	81%	458%	110%

Source: Prepared by the authors using 2010 surveys. See the Annex for more details.

several salient facts. The mean differences in estimated sales growth of ROSE minus the Caribbean gives an estimated sales growth gap of 0.132 for commodity-dependent economies and 0.247 for tourism-dependent ones. Of the gaps in endowments, coefficients, and interactions that contribute to that overall gap, it is the coefficients (returns to endowments) that account for the bulk of the gap. The unexplained portions—i.e., the sum of the contributions of the returns to endowments—account for 485 percent and 110 percent for commodity- and tourism-dependent countries, respectively. The contribution of endowments plus interactions is smaller and negative, i.e., –357 percent and –10 percent, respectively, for commodity- and tourism-dependent countries.

These findings have two key ramifications. First, studies that only consider differences in endowments may be underestimating the role of that constraint (endowment) in the performance of a firm. Second, the focus of policy derived from our analysis should not only tackle easing of the constraints, but also increasing the returns to those constraints. That often implies economy-wide reforms rather than individual or sectoral policies and programmes.

The latter point is reinforced by looking at the relative importance of the individual constraints to the sales gap and the contribution of endowments and returns to each constraint. The results for individual constraints are given in Table 14.3. The relative importance of individual constraints is given in the columns titled "Contribution to Estimated Sales Gap" for tourism- and commodity-dependent countries.

The above analysis facilitates determining priority areas by ranking the contribution of factors to the sales gap, differentiating between the relative importance within each factor and between endowments and the returns to those endowments. This approach suggests a four-way classification of priority areas in which the Caribbean has (1) higher returns and endowments; (2) better returns but worse endowments; (3) worse returns but better endowments; and (4) worse returns and endowments. This classification is presented in Table 14.4.

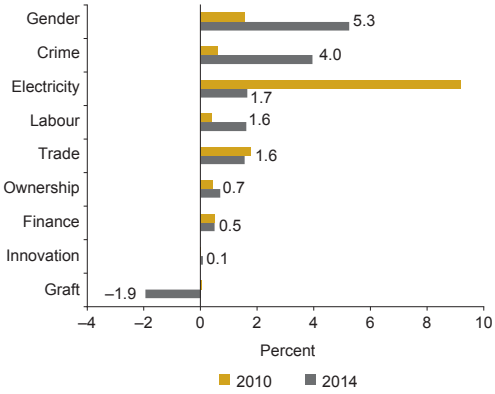
An alternative approach to determining priority areas is to rank potential policy areas by their potential increase in sales growth in the Caribbean. The top four areas in terms of potential increases in sales growth do not have the same rankings in tourism- and commodity-dependent countries. Figures 14.1 and 14.2 show the increase in sales growth for a 10 percent improvement in given constraints in commodity- and tourism-dependent countries for the top 10 areas, using data from 2014 Enterprise Surveys. The four highest returns in commodity-dependent countries in terms of increased sales growth would be, from highest to lowest, in the areas of gender, crime, electricity, and trade. The figures also show how the priority areas have changed in importance since 2010, when the top four areas were (in order) electricity, trade, gender, and crime. For tourism-dependent countries the four top areas are electricity, crime, trade, and finance. In 2010, they were trade, gender, crime, and electricity. Not only have rankings changed, but so have the

Table 14.3: Oaxaca Decomposition Results by Individual Factors

Variables	Endowments	Coefficients	Interaction	Total	Contribution to Estimated Sales Gap (%)	Endowments	Coefficients	Interaction	Total	Contribution to Estimated Sales Gap (%)
	0.0084	-0.1385	0.0348	-0.0953	-72.2	0.0001	-0.1348	0.0021	-0.1326	-53.7
Size	-0.0013	0.0137	0.0011	0.0135	10.2	-0.0004	-0.0145	0.0000	-0.0149	-6.0
Own_foreign	-0.0001	-0.0004	-0.0004	-0.0009	-0.7	0.0000	0.0093	-0.0015	0.0078	3.2
Own_joint	0.0019	-0.0030	0.0015	0.0004	0.3	0.0001	0.0020	-0.0005	0.0016	0.6
Privately held	0.0822	-0.0402	-0.0545	-0.0125	-9.5	0.0230	-0.1270	-0.0493	-0.1533	-62.1
Sole propriertorship	-0.0499	0.0114	-0.0088	-0.0473	-35.9	0.0209	-0.2640	-0.0476	-0.2907	-117.7
Partnership	-0.0064	-0.0068	0.0040	-0.0092	-6.9	-0.0161	-0.0958	0.0418	-0.0701	-28.4
Limited partnership	-0.0287	-0.0213	0.0199	-0.0301	-22.8	-0.0306	-0.0680	0.0526	-0.0460	-18.6
Own_female	0.0018	-0.0379	0.0070	-0.0291	-22.1	-0.0031	0.0262	-0.0138	0.0093	3.8
Manager_female	0.0002	0.0052	0.0001	0.0054	4.1	0.0015	-0.0028	0.0011	-0.0002	-0.1
Exporter	0.0149	-0.0026	-0.0044	0.0079	5.9	0.0007	-0.0010	-0.0001	-0.0004	-0.1
Importer	-0.0002	-0.0003	-0.0001	-0.0006	-0.4	-0.0009	-0.0112	-0.0064	-0.0185	-7.5
Gift	0.0019	-0.0039	-0.0070	-0.0090	-6.8	0.0030	0.0026	0.0130	0.0186	7.5
Outages	0.0164	0.0774	-0.0130	0.0808	61.2	-0.0086	-0.0946	0.0244	-0.0788	-31.9
Outages_generator	-0.0107	-0.0246	0.0180	-0.0173	-13.1	0.0044	-0.0004	0.0003	0.0043	1.7
New_product	0.0196	0.0114	0.0375	0.0685	51.9	-0.0121	0.0064	0.0217	0.0160	6.5
New process	0.0063	0.0063	-0.0063	0.0063	4.8	0.0060	-0.0087	-0.0243	-0.0270	-10.9
Crime_loss	-0.0037	0.0208	0.0150	0.0321	24.3	-0.0011	-0.0385	-0.0076	-0.0472	-19.1
Labor_constraint	0.0012	-0.0004	0.0002	0.0009	0.7	0.0007	-0.0097	0.0068	-0.0022	-0.9
Credit_denied	0.0016	-0.0177	0.0042	-0.0119	-9.0	0.0018	-0.0357	0.0160	-0.0179	-7.3
Sector fixed effects	-0.0063	-0.0326	0.0127	-0.0262	-19.8	-0.0129	-0.0489	-0.0366	-0.0984	-39.8
Country fixed effects	0.1117	0.1117	-0.6937	-0.4704	-356.3	0.0471	0.0471	-0.0397	0.0544	22.0
Constant		0.6761		0.6761	512.2		1.1330		1.1330	458.7
Number of observations	1,073			0.1323	100	657			0.2469	100

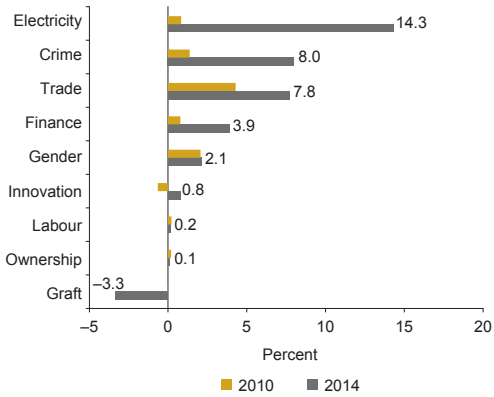
Source: Prepared by the authors using 2010 surveys. See the Annex for more details.
*include country and sector fixed effects.
**Total includes the interaction effects.

Figure 14.1: Potential Increase in Sales Growth in Commodity-dependent Countries (percent)



Source: Prepared by the authors using 2010 surveys. See the Annex for more details.

Figure 14.2: Potential Increase in Sales Growth in Tourism-dependent Countries (percent)



Source: Prepared by the authors using 2010 surveys. See the Annex for more details.

Table 14.4: Comparative Returns and Endowments

	Contribution to Sales GAP: Returns and Endowments			
	Tourism	Commodity	Tourism	Commodity
	Endowments (+)		Endowments (-)	
Returns (+)	Ownership	Electricity	Gender	Crime
	Corruption	Innovation		Size
Returns (–)	Labor	Labor	Crime	
		Age		
	Finance	Finance	Innovation	
	Trade	Ownership		
	Electricity	Gender	Legal form	
	Age	Trade		
	Size	Corruption		

Source: Prepared by the authors using 2010 surveys. See the Annex for more details.

Table 14.5: Classifications of Productive Development Policies and Programmes

	Horizontal	Vertical
Public Inputs	Improve the business environment	Phytosanitary controls
Market-based	Research and development subsidies	Tax exemptions for tourism

Source: Crespi (2014, Figure 3).

returns in terms of sales growth, which have increased in practically all the areas. A key takeaway from this analysis is that while trade, finance, and innovation are often analysed in research on constraints to firm performance, our analysis reveals the oft-ignored areas of crime, gender, and electricity as higher policy priority areas in the Caribbean.

14.2. Policy Strategies

For the past several decades, productive development policy (PDP) strategy discussions, dominated by the Washington Consensus, focused on whether PDP policies should be adopted. Today that is no longer the case**.** The tide has changed to focusing on what is the most appropriate policy mix of public-private dialogue along a continuum between strict non-intervention to preferential treatment for pre-selected firms or industries. Strategic PDP (industrial policy, in traditional parlance) and business environment reform directed towards a level playing field, as recommended by the Washington Consensus, are no longer considered mutually exclusive or incompatible (see Weiss 2013 for a discussion)**.**

In discussing the potential types of PDP, it may be helpful to first set out some simple classifications that incorporate both strategies. A two-by-two classification of policy measures is (1) public goods versus market mechanisms; and (2) horizontal versus vertical interventions that can be represented by a schematic two-by-two matrix (see Weiss, 2013, and Crespi, Fernández-Arias, and Stein, 2014, both of whom use such a classification). Table 14.5 presents this approach to classification with examples of the different policies. Interventions can be either through the provision of public inputs or public goods (such as facilitating doing business, or physical or social infrastructure) or through market-based incentives (such as subsidies, tax holidays, funding, or import protection). The incentives can be available to all who meet the specified criteria regardless of sector or firm (known as horizontal incentives) or only to specified subsectors (vertical incentives). Policy recommendations derived from the Washington Consensus focused on public-provision horizontal policies, as seen in the northwest quadrant of Table 4.5. Traditional industrial policies typically fell in the southeast quadrant, i.e., market-based vertical incentives.

One reason why this classification matters is because rent seeking was identified as a perverse part of the environment faced by Caribbean firms. Rent-seeking problems, as argued by Crespi, Fernández-Arias, and Stein (2014), would be higher for vertical and market-based interventions, and hence would be highest in the quadrant of vertical market-based programmes. These types of policies, as they generate concentrated benefits to a few, create strong and politically powerful constituencies that lobby for continued support and facilitate such sustained lobbying. Most PDP policies and programmes in the Caribbean typically fall into that quadrant.

Discussing individual policies and programmes for the priority areas in detail is beyond the scope of this chapter. However, many relevant programmes are discussed in detail in Crespi, Fernández-Arias, and Stein (2014) and in the papers cited therein, and in Fernández-Arias et al. (2016). Navarro, Benavente, and Crespi (2016), for example, discuss policies and programmes in the area of innovation in detail. Table 14.6 provides some examples for innovation policy. The menu of options, some already practised in the Caribbean countries, is immense.[2] The problem is how to choose which ones to implement.Many of these programmes require public expenditure or tax incentives. Is this feasible in terms of financing a sufficient amount of programmes to make a difference? We now turn to this question.

Table 14.6: Innovation Policies and Programmes

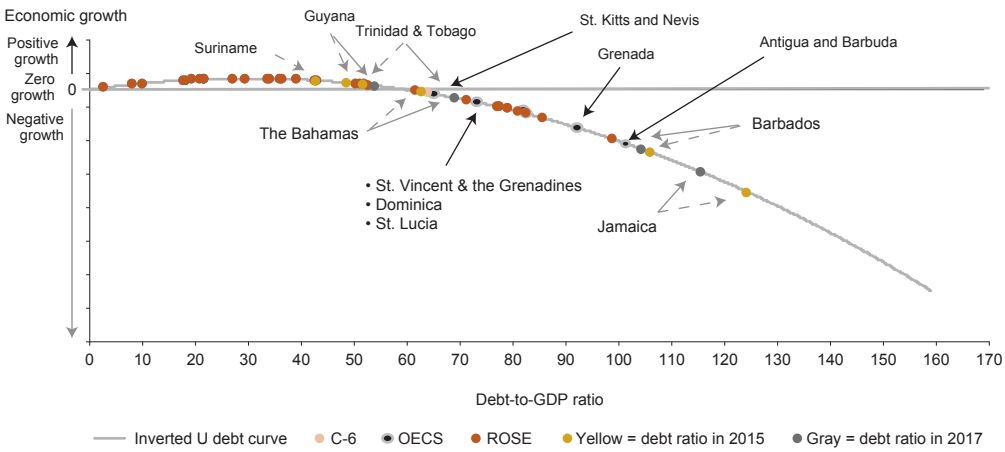
	Horizontal	Vertical
Public Inputs	• Higher education and training • Support of scientific research • Intellectual property rights • Research infrastructure • Human capital immigration • Labour training • Competition policy • Regulation • Technology transfer organization • Entrepreneurship education • Intellectual property rights and bankruptcy legislation and regulation • Innovation climate • Improved deal flow through technology transfer • Tax policy	• Technological institutes (e.g., agriculture, industry, energy, and fishing) • Standardization • Thematic funding • Signalling strategies • Information diffusion policies (extension systems) • Technological consortiums • Contests • Industry-specific training programmes
Market-based	• Research and development subsidies • Research and development tax credits • Financial measures (e.g., guarantees for technology investments and intangible values) • Adoption subsidies • Public financing of seed, angel, and venture capital directly or through private venture capital funds • Generic business incubators and accelerators • Tax incentives	• Public procurement • General-purpose technologies (e.g., information and communications technology, biotech, and nanotech) • Strategic sectors (e.g., semiconductors, nuclear energy, and electronics) • Defence sector • Business incubators and accelerators focused on a particular strategic sectors (e.g., information and communications technology or biotechnology)

Source: Navarro, Benavente, and Crespi (2016).

[2] For details of PDPs for the Caribbean, see the Private Sector Assessment Reports on individual countries commissioned by Compete Caribbean at http://competecaribbean.org/featured/private-sector-assessment-reports/.

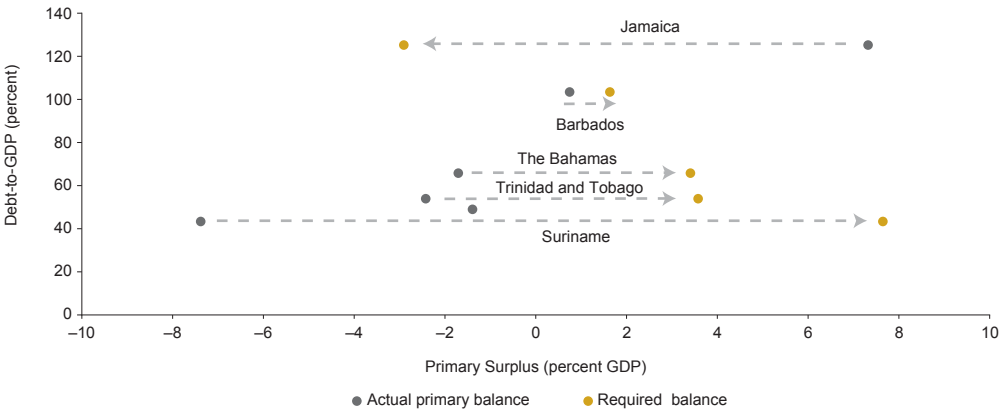
One criterion relevant for selecting policies and programmes is the degree of fiscal space. Many of the Caribbean countries have limited fiscal space. Most require fiscal retrenchment, and thereby have a limited ability to directly finance infrastructure or provide subsidies or tax expenditures (tax exemptions). Figure 14.3 shows the level of debt to GDP in 2015 and expected levels forecast for 2017. As can be seen, most Caribbean countries are on the dark side of the debt-to-economic-growth relation, in the sense that debt-to-GDP ratios above 60 percent put downward pressure on economic growth. Figure 14.4 shows the degree of fiscal adjustment required to stabilise public

Figure 14.3: Debt-to-GDP Ratios that Are Too High



Source: Prepared by the authors using data from IMF (2015).
Note: C6 = The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago; OECS = Organisation of Eastern Caribbean States; ROSE = rest of the small economies of the world.

Figure 14.4: Required Fiscal Adjustment



Source: Prepared by the authors using data from IMF (2015).

debt, i.e., the actual fiscal primary balance in 2015 and the required level. To reduce debt, fiscal retrenchment will clearly have to be larger. However, it could be argued that change in the composition of expenditure and tax exemptions towards pro-private-sector programmes is still feasible even during periods of austerity. However, this would require tackling the problem of rigidity of expenditures, where the wage bill is often the largest component after interest payments.

Public-private partnerships (PPPs) could loosen these fiscal constraints and promote the private sector. PPPs are a procurement modality that, if well planned, structured, and managed, can potentially increase value to government and citizens. PPPs engage private investment in the financing, design, construction, and management of public infrastructure and related services (Yescombe 2007).

However, the devil is in the contractual detail. PPP contracts entail negotiation between the public and private sectors on the allocation of risks (usually related to operations and cost management). Depending on the particular PPP project, capital expenditures may be financed by the private sector, and with concession projects, such as a toll road, revenues for operations and maintenance come from users (i.e., drivers). Hence, these projects can be attractive to governments that do not have the public budget to develop projects, and economically efficient because project costs are allocated to project beneficiaries. However, PPPs may also take the form of private sector investments in return for a stream of payments from government. In other cases, sources of revenue to the private sector come from deferred payments from the government ("availability projects"), rather than from charging users. This is the case with social infrastructure, for example.

Governments should pursue PPP projects when they have greater value-for-money (VfM) for the government versus publicly procured projects. PPPs can allow for investment and improved quality in public service delivery to the extent that they bring improved VfM. VfM is the difference between the total life-cycle cost of a traditionally procured project and the total life-cycle cost of the same project procured as a PPP, both providing the same level of quality. Better VfM means that PPP delivery of a project is more attractive than conventional public delivery from the public perspective. Projects should undergo a cost-benefit analysis and a VfM analysis. Improved VfM can result in a PPP with improved private sector efficiency, innovation, and management, as well as better whole-life costing for the project. PPPs involve a "bundling" of construction, operation, and maintenance responsibilities under the same contract, which in principle can incentivize the private sector to do each of these things more effectively. PPPs are in essence pay-for-performance contracts, wherein the private sector is not compensated unless it complies with key performance indicators defined in the contract.

PPPs are often chosen over traditional public investment and government supply of services to move public investment off budget and debt off the government

balance sheet. However, the government still bears considerable risk and faces potentially large fiscal costs. Thus, proper accounting and reporting of the fiscal implications of PPPs is essential to prevent their misuse.[3]

14.3. Governance Framework

A third option in defining policies and programmes is through public-private dialogue and implementation of reform through development councils. Being successful with this option requires getting the governance structure right.

Even when a specific static or dynamic market or government failure is clear and the "best" PDP is identified from among alternatives, a governance structure is still needed to design and implement the policy and programme. Thus, determining the most appropriate policy mix depends not only on observed static or dynamic market failures, but also on the ability and willingness of governments to tackle them. From the public choice perspective, this requires insulating government decision-making from business interest groups, or invoking the concept of embedded autonomy, i.e., there is a need for dense links between government and the business community (i.e., public-private dialogues and development councils).

Regarding the choice between isolation and dense links with the private sector from a public choice perspective (Krueger 1974), businesses lobby for trade protection, administrative entry barriers, and subsidies (directly or through tax expenditures) in order to reduce competitive pressure and obtain extra profits (rents). State-business relations are of a corporatist nature, whereby protected cartels of business "insiders" benefit from state protection, while the state gains support from the respective faction of the private sector. As these cartels are not subject to market discipline, they tend to be inefficient and permanently extract surpluses from consumers and taxpayers. Market-oriented reforms and public good and horizontal types of policy are needed to break these corporatist alliances and create competitive pressure. But rent seekers will lobby against such reforms. To bring about market-oriented reforms, governments thus need to be insulated from the rent-seeking interests of business.

However, the embedded autonomy approach (Evans 1995) highlights the need for dense links between governments and the private sector. Through such links governments have a better understanding of the private sector's needs and opportunities, which is necessary to devise appropriate strategies. Governments should be "embedded in a concrete set of social ties that binds the state to society and provides institutionalized channels for the continual negotiation and renegotiation of goals and

[3] See the guidance provided by the World Bank at https://pppknowledgelab.org/ppp-cycle/fiscal-management.

policies" (Evans 1995). Thus, public-private policy networks, preferably formalized (public-private dialogues and development councils), are needed to ensure frequent meetings on particular sets of policy issues, and repeated mutual exposure serves to build trust.

However, the choice is not either/or but rather, as Rodrick (2004, argues, somewhere in between: "Too much autonomy for the bureaucrats and you have a system that minimizes corruption, but fails to provide the incentives that the private sector really needs. Too much embeddedness for the bureaucrats, and they end up in bed with (and in the pockets of) business interests." Further, unproductive rent seeking can be tackled through other methods and policies. In light of country experiences, several working practices can be identified with regard to the application of PDPs. Three in particular stand out. The first is regulating interest group influence (Zinnbauer 2009; Martini 2012), including lobbying registration and disclosure, prevention of conflict of interest, regulation of the revolving door, comprehensive asset and interest disclosure by public officials, anti-trust regulations, and freedom of information laws. The second practice is to develop public-private dialogue mechanisms, and the third is to create national development or competitiveness councils.

Reducing and regulating interest group influence would reduce unproductive rent seeking and, hence, once in place would favour embeddedness. Paraphrasing, Martini (2012) summarises the issues as follows:

1. "Competitive policy. Concentration of political influence. Therefore, increasing competition, particularly in sectors dominated by monopolies or powerful conglomerates is also important to enhance competition over policy influence. Measures to promote competition include restructuring key monopolies; removing entry-barriers; removing anti-competitive advantages; improving investment climate; promoting different forms of interest representation among existing firms, and strengthening anti-monopoly agencies, among others (Hellman 2011).
2. Mandatory lobbying registries to ensure interest group activities are more transparent and accountable. Registration systems should allow for public disclosure of lobbyists' names, their clients, issue areas, targets, techniques, as well as financial information. Effective implementation will also require robust mechanisms of oversight and enforcement (Zinnbauer 2009).
3. Conflict of interest regulation of three types can be identified: prohibitions on activities, declarations of interests, and exclusion from decision-making processes (Reed 2008).
4. Asset declaration regimes have been introduced in many countries as a way to enhance transparency and integrity as well as the trust of citizens in public administration. They aim at preventing conflicts of interest among public officials

and members of the government and avoiding illicit enrichment or other illegal activities by monitoring wealth variations of individual politicians and civil servants (Djankov et al. 2010).

5. Interest group influence may also depend on the salience of an issue—the more attention the public pays to a specific decision; the more difficult it should be for a special interest group to influence the outcome In this context, governments should encourage citizens' participation, facilitating (or making mandatory) open hearings on policies and consultative decision-making processes.
6. Transparency. Other measures which may enhance transparency and accountability in policymaking, and help to identify any suspicious relationship between special interest group and politicians, include: freedom of information legislation to allow access to government documents related to the policymaking process; E-government mechanisms to encourage consultations and public comment on draft laws and regulations; and public disclosure of Parliamentary votes, among others (Hellman 2011)."

Public-private dialogue offers an opportunity to reduce information asymmetry, discover areas of reform, and reach mutual agreement on those reforms. It can also reduce state capture by the few. This will require that private sector participants in the dialogue be genuinely representative, and that the public sector side not be "captured" by favoured firms or industries. Since both the impact of business restrictions and the nature of constraints on the investment climate can vary between subsectors and depending on firm size, it is important to conduct public-private dialogue at a sufficiently micro level to allow heterogeneity of real barriers and constraints to be identified. Further, in economies with a relatively weak private sector, insofar as public-private dialogue succeeds in developing a private sector advocacy groups, it will over time create a constituency for further dialogue.[4]

The operation of national development councils, competitiveness councils, or similar bodies mandated to support restructuring has been shown to further both continuity of policy and high-level political commitment, particularly if those bodies have a clear focus on policy targets (Schneider 2010, 2013). The main council can have several subcommittees with appropriate business associations and trade union participation, as well as the participation of nongovernmental organisations, academics, and other industry experts.[5]

[4] One public private dialogue instrument in the Caribbean is the Caribbean Growth Forum. See http://caribgrowth.competecaribbean.org/about-the-cgf/.

[5] A number of Competitiveness Development Councils already exist in the Caribbean.

14.4. Conclusions

The policy task facing the Caribbean is to resuscitate the region's relatively moribund private sector. A comprehensive revision of existing policies and programmes, and a review of potential programmes that could lead to a policy reset, is needed to obtain a dynamic, exporting, and employment-generating private sector. In commodity-dependent countries, the top areas that require attention in terms of highest returns for increased sales growth are (from highest to lowest) gender, crime, electricity, and trade. For tourism-dependent countries, the four top areas are electricity, crime, trade, and finance. A key takeaway from our analysis is that while trade, finance, and innovation are often analysed in research on the constraints to firm performance, our analysis reveals the oft-ignored factors of crime, gender, and electricity that are higher policy priority areas in the Caribbean. Further, a focus on the characteristics of firms that excludes their returns in terms of sales growth would be misleading. Economy-wide and market reforms will give greater returns than programmes focused directly on changing firms' characteristics. Further, with limited fiscal space, standard policy interventions such as subsidies and tax breaks may not be feasible without major changes in the composition of public expenditure.

The urgency to increase countries' economic growth should be translated into an urgency to promote the private sector. A revision of existing policies, programmes, and reforms, determined through public-private dialogue and by giving power to development councils to lead the way towards a strategy and its implementation, is therefore urgently required to obtain a dynamic, innovating, and exporting private sector.

15 Conclusions

This report has been organised around three main questions: What is the performance gap between firms in the Caribbean and comparable small economies (i.e., countries with a population of less than 3 million), differentiating between commodity- and tourism-dependent countries? What accounts for the performance gap between firms, and which portions of that gap can be attributed either to differences in the characteristics of the private sector or to the relative returns associated with those characteristics? Finally, what would be the hierarchy of policy areas and the appropriate policy framework to foster improved performance to obtain a dynamic private sector?

15.1. Performance Gap

Is there a performance gap? At both the macroeconomic and firm levels, there is indeed a Caribbean private sector under-performance gap relative to rest of the small economies (ROSE) of the world. Underlying the countries' real GDP growth under-performance gap, there is a Caribbean private sector under-performance gap**.** The Caribbean private sector invests (as a proportion of GDP and total investment) less than its ROSE counterparts. The gap is larger for commodity-dependent economies (Guyana, Suriname, and Trinidad and Tobago) than for tourism-dependent economies (Barbados, Jamaica, and The Bahamas).

If performance of firms is gauged by growth in sales, employment, efficiency, and the level of total factor productivity, Caribbean firms perform worse—i.e., there are under-performance gaps—in all four dimensions relative to the ROSE benchmark. The raw data suggest that average sales growth of Caribbean firms was only 40 percent that of ROSE comparators, and average employment growth was 66 percent that of ROSE comparators. Adjusting prices with the relevant purchasing power parity conversion factor, Caribbean sales growth represents only 6 percent of the average sales growth in ROSE. This shows how the performance gap is widened due to marked

differences in purchasing power parity. Further, Caribbean firms' performance has worsened over time, and most firms are stagnant, with the proportion of stagnating firms increasing from 50 to 87 percent from 2010 to 2014. This is a worrisome finding because that stagnation occurred despite an uptick in overall economic growth in the countries by 2014. Thus, ceteris paribus, the existing Caribbean business sector is not up to the challenge to increase the region's economic growth and employment, and hence, to increase public resources and improve the welfare of citizens in the region.

15.2. What Accounts for Firms' Performance Gap?

Is poor performance due to the profile of Caribbean firms? The profile of the Caribbean private sector is not encouraging: smaller, older, less open to international trade, predominantly locally owned, and primarily made up of sole proprietorships. Considering the empirical regularities in the literature regarding the relation between these characteristics and performance, the relatively poor performance of the Caribbean private sector is no surprise. However, the key takeaway from the analysis is that while differences in characteristics of firms do partly explain the differences in performance between the Caribbean and ROSE, another part of the sales growth gap is attributed to the returns to those characteristics. That finding is consistent with our central hypothesis that the Caribbean business sector is falling behind because the policy environment hinders rather than promotes a dynamic and innovative private sector. The finding also suggests that firm- and sector-specific policies would have lower returns than economy-wide reforms. But the standard characteristics of firms (size, age, and legal form) and their returns do not account for a large part of the performance gap. So, what other factors need to be considered to explain that gap? To that question, we turned to the laments of businesspersons to help us identify the other constraints faced by Caribbean firms.

What do businesspersons say? Asked what they believe their problems are, Caribbean businesspersons were more likely than their ROSE counterparts to rank the most serious problems as follows, from most to least serious: customs and trade (by a margin of 50 percentage points greater than their ROSE counterparts), access to finance (40 percentage points), crime (30 percentage points), inadequately educated labour force (20 percentage points), tax administration (20 percentage points), electricity (10 percentage points, competitors in the informal sector (1 percentage point), and corruption (1 percentage point). They complain less than their ROSE counterparts about political instability (by 50 percent less), licenses and permits (30 percent), transport (30 percent), labour regulations (20 percent), telecommunications (20 percent), and tax rates (10 percent). The complaints are generally correlated with objective indicators suggesting that complaints are more often than not rooted in an objective reality faced by private firms.

Is international trade the problem? Customs and trade regulations were ranked by Caribbean businesspersons as seventh in absolute terms but first in relative terms as a binding constraint to private sector operations. However, on average, Caribbean countries do not face greater transaction costs in international trade than ROSE countries. At the country level, the Caribbean's openness to international trade has fallen while openness in ROSE has risen. The Caribbean's loss in world market share in both commodities and tourism relative to ROSE appears driven by a loss of competitiveness and relatively stagnant export and tourism source countries.

Caribbean firms are less engaged in international trade: 82.5 percent of Caribbean firms only produce for the domestic market, compared to 76 percent of ROSE firms. Exporters are larger in size than non-exporters, but half of large firms in ROSE are involved in international trade compared to only 37 percent in the Caribbean. Skill intensity does not differ drastically between exporters and non-exporters. While Caribbean exporters perform better in terms of sales growth than non-exporters, they do not do so in terms of employment growth or total factor productivity, while ROSE exporters do. Economic sectors with a higher share of exporters are not more productive in the Caribbean, while in ROSE they are. The negative relation between total factor productivity and exporting is also confirmed in the relation between export intensity (percentage of exports to total sales) and productivity.

Is poor performance due to inadequate direct foreign investment (FDI)? Country-level figures show that the Caribbean has attracted more FDI than ROSE. Not only has the Caribbean attracted more FDI, but its inward capital flows are more stable. Interestingly, these relatively higher flows occur with capital controls in place. Although FDI has a positive effect on a country's overall economic growth, such an effect is reduced in the Caribbean relative to ROSE.

Firm-level data show that, compared to ROSE, there is a lower percentage of foreign-owned firms in the Caribbean but a higher share of joint ventures. Comparing performance metrics (i.e., sales and employment growth) for foreign versus domestic firms reveals that foreign firms located in the Caribbean are under-performing, while the opposite holds for those located in ROSE, although the degree of foreign ownership matters. In terms of the percentage of firms with a positive share of material inputs and supplies of domestic origin, backward linkages are lower in the Caribbean than in ROSE, hence there is less of a probability of spillovers. However, while FDI contributes negatively to firm performance in the Caribbean, backward linkages contribute positively.

Is poor performance due to financing constraints? Although country macro-level data do not indicate greater financing constraints, firm-level data reveal that Caribbean firms are relatively more credit constrained and discouraged from credit markets than firms in ROSE. Several market-level determinants found to affect access to finance

were benchmarked between Caribbean countries and ROSE. The analysis found that credit registries appear to be the most relevant institution that is absent in the Caribbean. This is especially important because previous evidence consistently shows that the presence of these institutions significantly fosters access to finance. Moreover, given the relatively high presence of foreign-owned banks in the Caribbean, the emergence of credit registries would be especially relevant in light of recent evidence showing positive benefits of foreign-owned banks within settings where credit registries are in place. The analyses also found a relatively low level of bank penetration for Caribbean commodity-based economies.

Is poor performance due to crime? The country-level indicators are mixed regarding the problem of crime in the Caribbean relative to ROSE. Using World Economic Forum indices, crime was found to be a bigger problem in ROSE than in the Caribbean. However, in terms of crime against private property, the United Nations Office on Drugs and Crime, using police-recorded offences**,** found that the Caribbean exceeded ROSE in three of eight indicators: theft of a motor vehicle (34 percent higher in the Caribbean than in ROSE), theft of cars (26 percent higher), and robbery (64 percent higher). Another feature is the low trust of citizens regarding the police. There is little to no trust in the police in the Caribbean, and a significant percentage of crimes are not reported to the police: the average level of "little to no trust" among Caribbean countries is 39 percent, and the average number of crimes reported to the police is 59 percent.

And although firm-level data indicate that the incidence of crime is lower in the Caribbean than in ROSE, cross-country heterogeneity calls for attention in countries like Guyana and St. Kitts and Nevis**.** Furthermore, Caribbean firms are affected disproportionally depending on their size. Large firms are more prone to be victims of crime, although this does not translate into a higher burden because crime-related direct costs are proportionately similar regardless of firm size. Alarmingly, Caribbean firms spend more on security than research and development (R&D).

Is poor performance due to lack of adequate labour? Country-level evidence shows that the availability of scientists and the overall perception in the Caribbean regarding the efficient use of talent is not significantly different from that of ROSE. Furthermore, average years of total schooling in the Caribbean stands around the worldwide average for small economies, suggesting that a lack of education may not to be a major constraint in the region.

However, firm-level data show that the education of the workforce is of more concern for Caribbean firms than for their ROSE counterparts, and evidence suggests there are problems of skill matching, skill deficiency, and inadequate labour market intermediation. One particular problem seems to be skills mismatch, which exists when the supply of and demand for skills are not synchronised in either direction,

oversupply or undersupply. In the Caribbean there is a skills mismatch characterised by oversupply of workers without tertiary education and undersupply of workers with tertiary education. Regarding skill shortages, the evidence shows that employers face relatively more difficulty in finding candidates with the demanded core skills for managerial/professional roles. International migration appears to explain a significant share of the observed undersupply of a tertiary educated labour force: emigration of educated workers was cited as a very important causal factor for skill shortages by 65 percent of Caribbean firms. Regarding labour market intermediation systems, labour regulations do not appear to introduce frictions in the Caribbean, as the vast majority of firms did not indicate they were constrained in their personnel decisions. Entrepreneurs believe that the main determinant behind the inability of Caribbean firms to find adequate skills is related to the quality of local educational institutions. However, Caribbean firms are less likely to provide formal training for their employees than their ROSE counterparts. If the labour constraint is measured by whether firms identify labour as a major constraint and provide labour training, estimates suggest that if the labour constraint were relaxed by 10 percent, the reduction in the sales growth gap would be 0.2 percent in tourism-dependent countries and 0.4 percent in commodity-dependent countries.

Is poor performance due to electricity issues? Complaints about electricity rank sixth in relative terms and fourth in absolute terms by Caribbean businesspersons. There are two types of drivers of this problem, both related to energy costs and insufficient reliability of electricity supply. First, market factors, which include volatility in energy prices, high and increasing demand, and lack of diversified sources, contribute to higher energy costs in the region. Second, the institutional framework within which the energy sector operates leads to an inefficient energy outcome.

Firm-level data reveal that more firms in the Caribbean have been affected by power outages than in ROSE: 77 percent of Caribbean firms have reported power outages compared to 59 percent of firms in ROSE. Electricity outages more often affect small rather than large firms in both the Caribbean and ROSE. However, firms in the Caribbean obtain a larger share of electricity from self-owned generators than from the country's grid. Thus, Caribbean firms report relatively lower losses due to power outages. Taken together, the lack of responsiveness to electricity prices (as confirmed by the lower propensity in the Caribbean to incur losses due to power outages), along with patterns in generator ownership, suggest that Caribbean firms have already responded to the unpredictable and high cost of electricity from the grid by buying generators. As a result, they are now less sensitive to electricity costs than their ROSE counterparts, which have more reliable energy provision with relatively lower costs. The inverted U-shaped relationship between energy intensity and firm size is found for commodity-dependent countries but not for tourism-dependent countries.

The literature suggests that innovative firms should be less energy intensive; however, expenditure on innovation is positively associated with energy intensity in the Caribbean. Contrary to evidence elsewhere, and with the exception of medium-size firms, foreign-owned firms in the Caribbean are more energy intensive than local firms.

Is poor performance due to lack of innovation? The importance of innovation stems from its role at the national level in terms of a country's economic growth and its role in terms of firm performance. A benchmarking analysis between the Caribbean and ROSE using country-level data shows that the Caribbean is effectively innovating at a lower rate. However, Caribbean countries do not differ from ROSE in terms of their potential capacity for innovation, as the quality of scientific research institutions, along with university-industry collaboration, is similar. Total factor productivity (TFP) has declined over time in the Caribbean with respect to ROSE. TFP is a measure of how efficiently inputs (labour and capital) are used in the production process, and therefore can be interpreted as a measure of an economy's technological dynamism. The process of innovation is positively linked to changes in TFP. Lack of innovation could be a key determinant behind the relative decline in TFP growth in the Caribbean.

Investment in R&D is a major determinant of technological innovation. Caribbean firms invest less in R&D, and considerably fewer Caribbean firms introduce innovation in products or processes than their ROSE counterparts. There being a higher proportion of Caribbean firms with R&D expenditure does not translate that expenditure into the introduction of innovation. This gap in R&D and innovation mainly occurs at the level of small firms, as large Caribbean firms are similar to their ROSE counterparts. The low level of R&D spending among Caribbean firms corresponds to the lack of established within-firm departments dedicated to innovation. The degree of competition in the product market in which firms operate plays a role in a firm's TFP; less competition is associated with lower TFP.

Is poor performance due to gender disparity? Country-level indicators suggest gender parity is similar between the Caribbean and ROSE, but female-managed firms outperform male-managed firms in the Caribbean. Female management participation in the Caribbean private sector is close to the average of ROSE. Female participation is particularly high in St. Vincent and The Bahamas and low in Guyana and Suriname. The data show that Caribbean firms with female managers are smaller and less open to trade. However, they outperform male-managed firms in terms of employment growth in commodity-dependent Caribbean countries, as well as in sales growth in Caribbean tourism-dependent countries.

Is poor performance due to government not being good for business? At the country level, diverse measures based on opinion surveys suggest that Caribbean governments are less pro-business than their counterparts in ROSE. The environment in which firms operate, established by governments through policies, laws, regulations,

and the provision of services, is less conducive for businesses. Thus, although the Caribbean gap with regard to ROSE in terms of transparency of government policy-making is 15 percent, the trust gap with Caribbean politicians is 32 percent. The latter follows from a gap of 33 percent in favouritism in decisions of government officials, a 30 percent gap in irregular payments and bribes, a 30 percent gap in diversion of public funds, and a 29 percent gap in wastefulness of government spending. Except for Barbados, Caribbean countries are located at the higher end of a state capture index.

15.3. What to Do?

If all the areas discussed previously hinder performance, what areas can be prioritised because of their effect on sales growth and on reducing constraints?

Estimates suggest that for small economies, economy-wide factors contribute 56 percent and microeconomic factors contribute –68 percent of mean sales growth. The problem, then, is microeconomic factors. The Caribbean dummy is negative (–4 percent). A firm already is at a disadvantage by being in the Caribbean. For Caribbean countries, economy-wide factors reduce sales growth by –131 percent and microeconomic factors increase it by 154 percent. The problem, then, is macroeconomic factors. However, within microeconomic factors, the effect of microeconomic constraints is –117 percent, with constraints being an inadequately educated labour force, lack of access to finance, crime, graft, and lack of innovation, rather than firm characteristics (such as firm age, size, legal form, exporter or importer status, gender management, and total or partial ownership foreign totally or partially) that contribute positively to sales growth. The effect of constraints is equivalent in size to the sum of the business environment and the negative effects of corruption. So for the Caribbean, economy-wide factors as well as microeconomic constraints hinder the sales growth of firms.

Looking at the firm-level data, the differences in returns to endowments matter more than differences in endowments themselves. The mean differences in estimated sales growth of ROSE minus the Caribbean gives an estimated sales growth gap of 0.132 for commodity-dependent countries and 0.247 for tourism-dependent countries. The gap in sales growth can be decomposed into three factors: the contribution of differences in firms' characteristics between regions, the endowment effect, the contribution of differences in the coefficients or the returns effect, and interaction term that accounts for the fact both differences can occur at the same time: The unexplained portions—the sum of the contributions of the returns to endowments—account for 485 percent and 110 percent, respectively, for commodity- and tourism-dependent countries. The contribution of endowments and interaction are smaller and negative, i.e., –357 percent and –10 percent, respectively, for commodity- and tourism-dependent

countries. This finding reinforces the assertion that economy-wide reforms would have greater returns to sales growth than policies and programmes directed to the firm level.

Microeconomic estimates suggest that an increase in sales growth from a 10 percent improvement in a given constraint would be, from highest to the lowest, in the areas of gender, crime, electricity, and trade in commodity-dependent countries and electricity, crime, trade, and finance in tourism-dependent countries.

Caution needs to be taken in a pure mechanical interpretation of the findings. Innovation is found to have low returns in terms of increased sales growth, and hence is identified as a low-priority area. However, this finding may be due to the fact that it takes much longer to realise the benefits of innovation than the three-year horizon used in the analysis. Further, there is another key problem in this area: there being a higher proportion of Caribbean firms with R&D expenditure does not translate into the introduction of an innovation. Another example is graft. We found that graft "greased the wheels" in the Caribbean, but this does not imply that graft should be increased.

Further, there is a difference between policies to increase the endowments versus policies to increase the returns to those endowments within these areas. Such differences have important ramifications in terms of the kinds of policies to pursue in these areas. If the returns are low, then policy should focus on reform of the markets and the context more generally in which the firms operate, rather than on policies directed at increasing endowments.

What are the key elements of a policy strategy to obtain a dynamic business sector? Often the knee-jerk reaction to this question is to propose expansionary fiscal policy, including an increase in subsidies through expenditure or tax exemptions for private firms. However, most countries are in fiscal distress. Most countries have too-high levels of public debt that require fiscal retrenchment that could involve reducing expenditure, including subsidies, increasing taxes, and reducing tax expenditures. With this high level of rigidity in terms of expenditure, expenditure switching may involve deep public sector reform.

The Caribbean is not an empty slate: each individual country already has a set of policies and programmes that affect the business sector. The problem is that, taken together, these policies and programmes are not working and there is a need for an overhaul. Instead of adding more programmes, it would be prudent to evaluate existing programmes to determine whether they are working. If they are not, then close them; if they are, then consider expanding them. A word of caution, however: the assertion that the general policy environment hinders rather than promotes a dynamic and innovative private sector suggests that firm-specific policies would have lower returns than economy-wide reforms.

Annex: Data and Methodology

A.1. Data

Latin-American and Caribbean Enterprise Survey 2011 (LACES 2011), and the Productivity, Technology and Innovation (PROTEQIN) Survey 2014.

The Inter-American Development Bank (IDB), Compete Caribbean, and the World Bank jointly implemented the Caribbean Enterprise survey (CES 2011) in 2010–2011 as part of the Latin-American and Caribbean Enterprise Survey (LACES 2011 also refered to as World Bank Enterprise Survey). This instrument is a firm-level survey that is a representative sample of the private sector in a country. The survey was stratified at the industry- and firm-size levels. The survey was implemented in Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, The Bahamas, and Trinidad and Tobago. The sample size of the whole group of countries accounts for 2,421 firms.[1] As stated on the survey website: "The standard Enterprise Survey topics include firm characteristics, gender participation, access to finance, annual sales, costs of inputs/labor, workforce composition, bribery, licensing, infrastructure, trade, crime, competition, capacity utilization, land and permits, taxation, informality, business-government relations, innovation and technology, and performance measures."[2]

In 2014, the IDB, in collaboration with Compete Caribbean, launched the PROductivity, TEchnology and INnovation survey (PROTEqIN) in Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, The Bahamas, and Trinidad and Tobago. This survey was used

[1] See the Technical Note on the surveys prepared by Compete Caribbean, IDB, UKaid, Government of Canada, and the Caribbean Development Bank. Available at https://mydata.iadb.org/api/views/sg55-pt-dh/files/37126a4a-cdfa-4da8-bd38-8ffad38d5bb6?download=true&filename=Technical-Note-PROTEqIN-2014&LACES-2011-Survey-Description&Technical-Report.pdf.

[2] See http://www.enterprisesurveys.org/methodology.

partly as a panel survey for the CES 2011 that was conducted as part of the LACES. However, many new sections were added to cover issues of innovation, demand-side skills, crime, public programme support needs, and perception of efficacy, to name a few. The PROTEqIN Survey targeted some 1,680 respondents drawn from the recently completed LACES survey. It aimed to provide feedback from enterprises that participated in the previous round of surveys in 2011 and to capture additional information on firm performance, finance, gender of ownership and management, use of productive development programmes, and issues related to management style, innovation, and crime.[3]

The final sample for the LACES 2011 and PROTEqIN surveys 2014 is presented in Table A1. As previously mentioned, the total sample for LACES 2011 was 2,421 whereas for PROTEqIN 2014 it increased to 1,966. Of those, 1,890 from were related to the LACES and 76 were new.

Both datasets can be downloaded free of charge from the enterprise survey website (http://www.enterprisesurveys.org) and the Compete Caribbean PROTEqIN's website (http://competecaribbean.org/proteqin/).

Table A1: Final Sample of LACES 2011 and PROTEqIN 2014 Surveys

Country	LACES	PROTEqIN Included in LACES	PROTEqIN Not Included in LACES	Panel
Barbados	150	123		27
Belize	150	12		28
Guyana	165	70	50	95
Jamaica	376	242		134
Suriname	152	94	26	58
Antigua-Bermuda	151	131		20
Dominica	150	126		24
Grenada	153	129		24
St. Lucia	150	128		22
St. Kitts and Nevis	150	128		25
St. Vicente and the Granadines	154	125		21
Trinidad and Tobago	340	340		30
The Bhamas	127	127		23
Total	2,421	1,890	76	531

Source: Technical Note on the surveys prepared by the Inter-American Development Bank, Compete Caribbean, UKaid, Government of Canada, and the Caribbean Development Bank.

[3] See page 3 of the Technical Note (see footnote 1).

A.2. Methodology

We estimate the following linear model:

$$
\begin{aligned}
O_r = {} & \beta_0 + \beta_1 Age_r + \beta_2 Age2_r + \beta_3 Size_r + \beta_4 Size2_r + \beta_5 Own_foreign_r + \beta_6 Own_joint_r \\
& + \beta_7 Privately\ held_r + \beta_8 Sole\ Proprietorship_r + \beta_9 Partnership_r \\
& + \beta_{10} Limited\ Partnetship_r + \beta_{11} Own_female_r + \beta_{12} Manager_female_r \\
& + \beta_{13} Exporter_r + \beta_{14} Importer_r + \beta_{15} Corruption_r + \beta_{16} Corruption2 \\
& + \beta_{17} Outages_r + \beta_{18} Outages_generator_r + \beta_{19} New_product_r \\
& + \beta_{20} New_process_r + \beta_{21} Crime_loss_r + \beta_{22} Labor_constraint_r \\
& + \beta_{23} Credit_denied_r + \beta_{24} CCB\ dummy_r + \beta_{25} Ease\ of\ doing\ business\ index_r \\
& + \beta_{26} Macroeconomic\ environment_r + \beta_{27} Corruption\ perception\ index_r \\
& + \theta_s + \mu_c + \epsilon_r
\end{aligned}
$$

where:

- O_{ri} : Firm-level outcome (sales growth, purchasing power parity [PPP] adjusted)
- Age_{ri} : Firm age in years
- $Age2_{ri}$: Firm age in years squared
- $Size_{ri}$: Number of employees
- $Size2_{ri}$: Number of employees squared
- $Own_foreign_{ri}$: Dummy equal to one if firm is predominately foreign-owned
- Own_joint_{ri} : Dummy equal to one if firm is owned jointly by local and foreign entities
- $Privately\ held_{ri}$: Dummy equal to one if firm is a private limited liability company
- $Sole\ Proprietorship_r$: Dummy equal to one if firm is a sole proprietorship
- $Partnership_r$: Dummy equal to one if firm is a partnership
- $Limited\ Partnetship_r$: Dummy equal to one if firm is a limited partnership
- Own_female_r : Dummy equal to one if firm is owned by a female
- $Manager_female_r$: Dummy equal to one if firm is managed by a female
- $Exporter_r$: Dummy equal to one if firm is an exporter
- $Importer_r$: Dummy equal to one if firm is an importer
- $Corruption_r$: GIFT index constructed in Chapter 13
- $Corruption2$: Corruptionr squared
- $Outages_r$: Dummy equal to one if firm reported outages
- $Outages_generator_r$: Interaction term, which accounts for firms that experienced an outage and owned or shared a generator
- $New_product_r$: Dummy equal to one if firm introduced significantly improved products
- $New_process_r$: Dummy equal to one if firm introduced a significantly improved process for producing or supplying products
- $Crime_loss_r$: Dummy equal to one if firm report losses (percent of sales) due to crime

- *Labor_constraint*$_r$: Dummy equal to one if firm identified labor as a major problem and provided training to its employees
- *Credit_denied*$_r$: Dummy equal to one if firm application for credit was rejected
- *CCB dummy*$_r$: Dummy equal to one if firm belongs to The Bahamas, Barbados, Jamaica, Guyana, Suriname, Trinidad and Tobago
- *Ease of doing business index*$_r$: Dummy equal to one if firm belongs to a country with a macroeconomic environment index value less than or equal 3. The macroeconomic environment index ranges from 1–7 (best)
- *Macroeconomic environment*$_r$: The Ease of Doing Business Index is normalized to vary between 0 (more business-friendly regulations) and 1 (less business-friendly regulations). Dummy equal to one if firm belongs to a country with a value greater than 0.4
- *Corruption perception index*$_r$: Dummy equal to one if firm belongs to a country with a Corruption Perception Index value less than 6. The Corruption Perception Index ranges from 1–10 (highly clean)
- θ_s sector-specific fixed effects
- μ_c country-specific fixed effects,

and $r \in$ {Caribbean, Caribbean-C, Caribbean-T, ROSE, ROSE-C, ROSE_T, Small economies} and $i \in$ {sales growth, PPP adjusted}. We assume that the error term has the common properties.

Threefold Oaxaca Decomposition

Following the methodology used by Jann (2008), we analyse mean sales growth, differences between the Caribbean economies, and the rest of the small economies of the world (ROSE). We define the difference between the expected value for each of these parameters for ROSE and the Caribbean as gaps. Thus,

$$GAP = E(O_{ROSE}) - E(O_{Car}),$$

where $E(O)$ is the expected value of the growth variables, and is accounted for by regional differences in the firms' characteristics.

$$GAP = E(O_{ROSE}) - E(O_{Car}) = E(X'_{ROSE}\beta_{ROSE}) - E(X'_{Car}\beta_{Car}),$$

where X is the set of the explanatory variables used in the model. Adding and subtracting $E(X'_{ROSE}\beta_{Car})$, $E(X'_{ROSE}\beta_{ROSE})$, $E(X'_{Car}\beta_{ROSE})$, we obtain the following:

$$\begin{aligned} GAP = {} & [E(X_{ROSE}) - E(X_{Car})]'\beta_{Car} + E(X_{Car})'(\beta_{ROSE} - \beta_{Car}) \\ & + [E(X_{ROSE}) - E(X_{Car})]'(\beta_{ROSE} - \beta_{Car}), \end{aligned}$$

which gives us the "three-fold" decomposition of the gap:

$$GAP = E + C + I,$$

and where:

$$E = [E(X_{ROSE}) - E(X_{Car})]'\beta_{Car},$$

Next we take into account the contribution of differences in firms' characteristics between regions, or the so-called *endowment effect*. The second component, *C*, takes the contribution of differences in the coefficients or returns (including difference in the intercept) into consideration.

$$C = E(X_{Car})'(\beta_{ROSE} - \beta_{Car}).$$

Last, the third element is an interaction term that accounts for the fact both differences can occur at the same time:

$$I = [E(X_{ROSE}) - E(X_{Car})]'(\beta_{ROSE} - \beta_{Car}),$$

The literature on discrimination uses a version of the three-fold decomposition with a nondiscriminatory parameter vector β^* so that the new version is:

$$GAP = [E(X_{ROSE}) - E(X_{Car})]'^{\beta^*} + [E(X_{ROSE})'(\beta_{ROSE} - \beta^*) + E(X_{Car})'(\beta^* - \beta_{Car})],$$

such that,

$$GAP = Q + U,$$

and the first part, where the first part, *Q*, is defined as the "explained" part that accounts for differences in the firm's characteristics between groups,

$$Q = [E(X_{ROSE}) - E(X_{Car})]'\beta^*,$$

and the second part, *U*, or the *unexplained* part, is said to come from discrimination but also an unobserved variable:

$$U = [E(X_{ROSE})'(\beta_{ROSE} - \beta^*) + E(X_{Car})'(\beta^* - \beta_{Car})].$$

The Stata command *Oaxaca* uses the vector of parameters estimated in a pooled regression using the information from both the Caribbean and ROSE to identify β^*.

A.3. Results

Table A2: Regression Results for Small Economies and Caribbean

Dependent Variable: Sales Growth (PPP Adjusted)	Small Economies	Caribbean Countries
CCB dummy	−0.05	
Ease of doing business index	−0.0556*	−0.122***
Macroeconomic environment	−0.222***	−0.01
Corruption perception index	0.224***	−0.0653*
New product	0.105*	0.00
New process	−0.151**	−0.01
Loss due to crime	0.02	−0.0329*
Labor constraint	−0.05	−0.02
Credit denied	−0.0920**	−0.02
Age	−0.0114**	−0.00220*
Age2	0.0000832*	0.00
Foreign owned	−0.01	−0.02
Joint owned	−0.05	−0.0522*
Female owned	−0.06	0.01
Female manager	0.0439**	0.01
Size	0.00	0.00
Size2	0.00	0.00
Privately held	0.05	0.190*
Sole propiertship	0.04	0.163*
Partnerships	0.01	0.16
Limited partnerhips	0.02	0.13
Exporter	0.05	0.0717***
Importer	0.01	−0.05
Gift	0.06	0.33
Gift2	−0.11	−0.420*
Outages	−0.02	−0.06
Outages_generator	−0.03	0.01
Constant	0.219**	0.01
Number of observations	2271	521
Sector fixed effects	Yes	Yes
Country fixed effects	Yes	Yes

Source: Prepared by the authors based on LACES (2011).
Note: CCB = The Bahamas, Barbados, Jamaica, Guyana, Suriname, and Trinidad and Tobago. PPP = purchasing power parity.
*p<0.05, ** p<0.01, *** p<0.001

Table A.3: Regression Results for Caribbean and ROSE Separately for Commodity- and Tourism- Dependent Countries and for 2010 and 2014

Dependent Variable: Sales growth (PPP adjusted)	LACES, World Bank Enterprise Survey (2010)						PROTEqIN Survey (2014)	
	Country Groups							
	Caribbean	Caribbean-C	Caribbean-T	Rose	Rose-C	Rose-T	Caribbean-C	Caribbean-T
Age	-0.00220*	-0.003	-0.002	-0.0119***	-0.0111***	-0.011	-0.000863	0.000291
Age2	0.00001210	0.00003560	0.00000884	0.0000766**	0.0000708*	0.000	-0.00000218	0.000000717
Size	0.00019900	0.00015200	0.00000498	0.000460**	0.000475*	-0.001	0.0000275	-0.0000583
Size2	-0.00000015	-0.00000014	-0.00000004	-0.000000151**	-0.000000159*	0.000	0.000000238	0.000000153
Own_foreign	-0.018	-0.008	-0.004	0.000	-0.035	0.315	0.0778	-0.00262
Own_joint	-0.0522*	-0.046	-0.006	-0.067	-0.082	0.036	0.0611	0.0000163
Privately held	0.190*	0.181	0.278*	0.031	0.061	-0.317*	0.246	-0.0225
Sole propriertorship	0.163*	0.155	0.255*	0.109	0.182**	-0.326**	0.254	-0.0193
Partnership	0.164	0.248	0.239*	0.085	0.091	-0.382*	0.212	-0.0109
Limited partnership	0.127	0.150	0.224*	0.102	0.046	-0.161	0.121	-0.00184
Own_female	0.007	-0.021	0.013	-0.096	-0.104	0.072	0.0552*	0.00845
Manager_female	0.006	0.048	-0.014	0.052	0.074	-0.024	0.023	-0.00358
Exporter	0.0717***	0.121*	0.0736**	0.0858*	0.085	0.064	-0.027	0.0481
Importer	-0.045	-0.010	-0.020	-0.035	-0.013	-0.163	0.00896	-0.0151
Corruption	0.329	0.171	0.310	-0.077	-0.292	1.422**	0.0645	0.0413
Corruption2	-0.420*	-0.252	-0.378	0.000	0.237	-1.612**	0.0062	-0.0101
Outages	-0.063	-0.154*	0.038	-0.044	-0.032	-0.070	0.0709	-0.0378
Outages_generator	0.014	0.106*	-0.026	-0.062	-0.072	-0.027	0.0532	0.0204
New_product	0.000	0.0442*	-0.042	0.121**	0.129*	0.033	—	—

(continued on next page)

Table A.3: Regression Results for Caribbean and ROSE Separately for Commodity- and Tourism- Dependent Countries and for 2010 and 2014 *(continued)*

Dependent Variable: Sales growth (PPP adjusted)	LACES, World Bank Enterprise Survey (2010)						PROTEqIN Survey (2014)	
	Country Groups							
	Caribbean	Caribbean-C	Caribbean-T	Rose	Rose-C	Rose-T	Caribbean-C	Caribbean-T
New process	−0.006	−0.0783***	0.042	−0.199***	—	−0.126	−0.0217	0.0139
Crime_loss	−0.0329*	−0.024	−0.024	0.044	0.073	−0.193	−0.0661	−0.0333*
Labor_constraint	−0.023	−0.045	−0.010	−0.046	−0.053	−0.104	−0.0123*	−0.00228
Credit_denied	−0.019	−0.033	−0.009	−0.118	−0.122	−0.094	−0.0131	−0.0238
Constant	−0.0563	−0.144	−0.255*	0.31	−0.218	0.988**	−0.292	0.0947
Number of observations	521	169	352	1209	904	305	66	126
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Prepared by the authors based on the LACES (2011) and PROTEqIN (2014) surveys.
Note: * p<0.05, ** p<0.01, *** p<0.001. Caribbean-C = commodity-dependent countries; Caribbean-T = tourism-dependent countries; ROSE-C = small economies in the rest of the world that are commodity-dependent; ROSE-T = small economies in the rest of the world that are tourism-dependent.

Table A.4: Oaxaca Decomposition

Threefold Oaxaca Decomposition						
Overall		**Complete Sample**		**Commodity Sample**		**Tourism Sample**
Rose		0.266***		0.279***		0.268***
Caribbean		0.134***		0.0327		0.0785*
Difference		0.132***		0.247***		0.189***
Endowments		-0.0354		-0.055		-0.0854*
Coefficients		0.153*		-0.283***		0.271*
Interaction		0.0718		0.471***		0.0614
Variables	**Endowments**	**Coefficients**	**Endowments**	**Coefficients**	**Endowments**	**Coefficients**
Age	0.00851*	-0.190***	0.0198*	-0.164***	-0.000743	-0.171
Age2	-0.00246	0.0414*	-0.0114	0.0255	0.000847	0.0362
Size	0.00255	0.00885	0.000598	0.0139	0.000099	-0.0216
Size2	-0.00226**	-0.00000233	-0.00190*	-0.000157	-0.000501	0.00711
Own_foreign	-0.000118	0.000417	-0.000111	-0.000439	0.0000171	0.00928
Own_joint	0.00124	-0.000968	0.00193***	-0.00303	0.0000712	0.00203
Privately held	0.0875***	-0.0426**	0.0822**	-0.0402	0.023	-0.127**
Sole propriertorship	-0.0473***	-0.0235	-0.0499**	0.0114	0.0209	-0.264***
Partnership	-0.0128	-0.00823	-0.00637	-0.00682	-0.0161	-0.0958**
Limited partnership	-0.0219***	-0.00477	-0.0287**	-0.0213	-0.0306*	-0.068
Own_female	-0.000682	-0.0466	0.00179*	-0.0379	-0.0031	0.0262
Manager_female	-0.000245	0.0112	0.00016	0.00518	0.00151	-0.00279
Exporter	0.00698*	0.00123	0.0149**	-0.00262	0.000738	-0.000992

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Table A.4: Oaxaca Decomposition *(continued)*

Threefold Oaxaca Decomposition						
Overall		**Complete Sample**		**Commodity Sample**		**Tourism Sample**
Importer	−0.0022	0.0011	−0.000239	−0.000288	−0.00091	−0.0112
Corruption	0.0106	−0.00854	0.0044	−0.0133	0.00967	0.0163*
Corruption2	−0.00605	0.00622	−0.00253	0.00942	−0.00667	−0.0137*
Outages	0.0143	0.0149	0.0164*	0.0774	−0.00856	−0.0946
Outages_generator	−0.00206	−0.0143	−0.0107	−0.0246	0.00437	−0.000393
New_product	−0.000129	0.0130*	0.0196***	0.0114	−0.0121	0.00643
New process	0.000254	−0.0126**	0.00634***	0.00634***	0.00602	−0.00867
Crime_loss	−0.00451*	0.0172	−0.00367*	0.0208	−0.0011	−0.0385
Labor_constraint	0.00118*	−0.00186	0.00117	−0.000438	0.000733	−0.00969
Credit_denied	0.00307	−0.0318	0.00156	−0.0177	0.00177	−0.0357
Constant		0.486***		0.00469		1.242***
Sector fixed effects	−0.00514	0.00143	−0.00625	−0.0326	−0.0129	−0.0489
Number of observations		1730		1073		657

Source: Prepared by the authors based on the LACES (2011) and PROTEqIN (2014) surveys. Notes: country and sector fixed effects included in each regression. * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table A.5: Graft Index Estimations

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7
Caribbean	−7.6	***	−15.2	***	−2.76		−16.4	***	−16.3	***	−14.9	***	0
Ease of Doing Business (EDB)			−1.58	***									
Caribbean*EDB			1.46	***									
GDP Growth					0.14	**							
Caribbean*GDP Growth					−0.12								
Global Competitiveness Index							−3.12	**					
Caribbean* GCI							3.02	**					
Goods Market Effeciency (GME)									−2.93	**			
Caribbean*GME									2.89	**			
Public Insitutions (PI)											−3.13	**	
Caribbean*PI											2.88	**	
Corruption Index (CI)													−0.53
Caribbean*CI													
Constant	11.76	***	20.16	***	6.94	***	21.96	***	20.89	***	12.24	***	
N	89		87		89		71		71		71		41

Source: Prepared by the authors using LACES 2011. Note: * p<0.05, ** p<0.01, *** p<0.001.

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