

Different Obstacles for Different Productivity Levels? An Analysis of Caribbean Firms

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Much of the literature relating firm characteristics to productivity and growth in Latin America and the Caribbean (LAC) either lumps Caribbean countries into one observation or tends to overlook them altogether. This is not because researchers want to exclude the Caribbean, but because the data deficit that often poses a challenge for the LAC region is even more extreme when it comes to Caribbean countries. Only a small fraction of over 100 identified indicators affecting growth are available for these countries. Further, limited availability of household data or fewer observations on firms is often prohibitive for standard methodological analysis of economic growth (Ruprah et al. 2014).

So, is an independent analysis of Caribbean firms even needed? The simple answer is yes. Small population size, geographical characteristics,

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and main economic activities set Caribbean economies apart from most Latin American economies. As with Latin America, there is stark heterogeneity among and within Caribbean countries. Even though size may be a defining factor, it is lower productivity levels that define the declining growth of Caribbean economies relative to other small-sized economies (Ruprah et al. 2014). Increasingly, understanding macroeconomic trends requires an understanding of firm dynamics at a micro-level and productivity levels within and across industries (Syverson 2011). Therefore, Caribbean policymakers need this type of micro-data, analysis, and dissemination of information tailored to the region at their disposal. Recent firm-level data from the World Bank Enterprise Surveys (WBES) and the Productivity, Technology, and Innovation in the Caribbean (PROTEQin) Survey offer new opportunities to understand better the characteristics of Caribbean firms at different levels of productivity and the challenges or obstacles that they face in their daily operations.

The primary objective of this chapter is to fill a void in the literature about firms in the Caribbean through a comprehensive analysis of different firm characteristics and productivity. These firm-level characteristics are discussed at length in this book, but they are not directly applied to the Caribbean context.¹

In the next section, we briefly contextualize the Caribbean economies within which firms are operating. Then we examine some of the basic firm characteristics that are frequently empirically linked with productivity, such as firm size, sector, age, exporter status, and use of information and communication technologies (ICT). We then deepen the analysis by specifically focusing on human capital, looking at both management and employees. The following section shows our analysis of firm-level labor productivity in relation to the main characteristics of firms (firm size, sector, age, exporter status, and ICT usage). Then we investigate the obstacles reported by the firms surveyed, specifically looking at the correlation and variation between obstacles and firm performance. Most of the analysis draws on the most recent wave of the WBES, which was carried out for the first time in 14 Caribbean countries in 2010.² We complement the analysis with data from the PROTEQin, which was conducted for the first time in 2013 in five Caribbean countries (Barbados, Belize, Jamaica, Guyana, and Suriname).

Overall, the results from the Caribbean micro-data tell a familiar story about firms with lower productivity levels—they tend to be smaller, to export less, and to have less human capital and technological inputs—but they also tend to report different obstacles to their current operations. If private-sector-led growth is expected to bolster the economy, then documentation and dissemination of the characteristics of this sector and the

bottlenecks that lower and higher productivity firms are facing seems to be a necessary first condition for apt policymaking.

LANDSCAPE OF THE CARIBBEAN ECONOMIES

This chapter uses data from 14 Caribbean economies. Table 7.1 shows that all of the Caribbean economies discussed in this chapter meet the definition of a small economy³ (except the Dominican Republic) based on having a population of less than three million people. The majority of the economies have a population of less than one million people. The econ-

Table 7.1 Brief characterization of Caribbean economies

<i>Country name</i>	<i>GDP per capita, PPP (2012)</i>	<i>Total population (2012)</i>	<i>Largest industry (value of annual output)</i>	<i>No. of cargo ports</i>	<i>Island</i>	<i>No. of firms (WBES)</i>
Antigua & Barbuda	20,385	89,069	Tourism-based	1	Yes	151
Bahamas	22,705	371,960	Tourism-based	2	Yes	148
Barbados	15,299	283,221	Tourism-based	1	Yes	150
Belize	8313	324,060	Garment production	1	No	149
Dominica	9829	71,684	Soap	2	Yes	150
Dominican Republic	11,016	10,276,621	Tourism-based	7	Part of one	360
Grenada	10,975	105,483	Food and beverages	1	Yes	153
Guyana	6054	795,369	Bauxite	2	No	162
Jamaica	8521	2,707,805	Tourism-based	6	Yes	375
St. Kitts & Nevis	20,100	53,584	Tourism-based	1	Yes	150
Saint Lucia	10,359	180,870	Tourism-based	2	Yes	150
St. Vincent & the Grenadines	10,039	109,373	Tourism-based	2	Yes	154
Suriname	15,174	534,541	Bauxite and gold mining	5	No	152
Trinidad and Tobago	29,086	1,337,439	Petroleum	6	Yes	366
Average	14,132	1,231,506		3		
Median	10,995	303,641		2		

Sources: Adapted from Ruprah et al. 2014. Data for no. of firms is from the WBES; data for GDP and population are from WDI; data for no. of ports is from CargoRouter.com; largest industry data is from the CIA Factbook; and island category is from Ruprah et al. 2014, except the Dominican Republic

Notes: The number of firms used in the two sections of this chapter on characteristics follow a preliminary cleaning of the data. GDP per capita are in constant 2011 PPP

omy with the smallest population is St. Kitts & Nevis, with a population of less than 54,000 (2012). In 2012, Trinidad and Tobago was reported to have the highest GDP per capita (\$29,086 in purchasing power parity [PPP]) and Guyana had the lowest (\$6053 PPP). The median GDP per capita was almost \$11,000 in 2012, with a mean of \$14,132 (in PPP terms).

The majority of the countries are islands where tourism is the largest industry. The number of ports is included in Table 7.1 to demonstrate the interconnectedness of the region to world trade networks, with the vast majority⁴ of the trade being transported by sea (Kaluza et al. 2010). Naturally, these economies face a small domestic market and can be at a disadvantage in global markets, although size does not have to be a binding constraint. Low productivity levels in the private sector in the region compared with similar small economies is a pressing concern for the future of the Caribbean (Ruprah et al. 2014).

Box 7.1. Recent developments in data collection in the Caribbean The release of the 2010 WBES was a starting point for comparable firm-level data in the Caribbean. However, from the outset, researchers recognized the need for subsequent surveys in order to analyze the evolution of firms in the region. Fortunately, not too long after the first WBES was conducted, the region implemented the first wave of pseudo-follow-up surveys—the PROTEQin. This survey was commissioned by the Inter-American Development Bank (IDB), with funding from the Compete Caribbean Program, a regional private sector development and technical assistance initiative financed by the IDB; the United Kingdom Department for International Development; and Canada's Department of Foreign Affairs, and Trade and Development. The survey was executed in partnership with the Caribbean Development Bank.⁵ Administered between 2013 and 2014, the PROTEQin is a critical development in terms of data collection in the Caribbean and targeted establishments that were covered by the 2010 WBES in five economies: Barbados, Belize, Jamaica, Guyana, and Suriname. This decision allowed researchers a first opportunity to use panel data in analyzing firm-related issues in the Caribbean.⁶

The PROTEQin expands the scope of the WBES while also incorporating more detailed questions related to labor, productivity, technology and innovation for 727 firms. The dataset provides updated information on how firm characteristics and performance have evolved since the 2010 WBES. For this reason, we intersperse findings from the PROTEQin where possible to provide more recent information for selected countries and to check the robustness of the WBES data.

PRINCIPAL CHARACTERISTICS OF THE FIRMS IN THE CARIBBEAN

The dominating characteristics of the firms surveyed in the Caribbean are that they tend to be micro or small, concentrated in the services sectors, mature, and non-exporters. The documentation of the proportions of WBES firms with these attributes in each of the countries illustrates the heterogeneity between Caribbean countries and serves as a starting point for the rest of the chapter, establishing the particular features of the firms that are often linked to productivity in the literature.

The majority of firms are small (11 to 50 employees) or micro (10 employees or less). Figure 7.1 shows that 54% of the firms in St. Vincent & the Grenadines are micro and 38% are small for a total of 92%; a little over 6% of the firms are medium and just a shade over 1% are large. Very few large firms exist in any of the Caribbean countries. The Dominican Republic is the only country where more than 10% of the firms in the WBES are large enterprises. As we expect, typically countries with very small populations have a relatively greater percentage of micro and small firms. These countries appear on the left side of the graph, but there are some exceptions. For example, Barbados has a smaller population than Belize but a greater proportion of medium firms.

In a recently published note that maps the enterprises in LAC based on WBES data, there tend to be even more small and medium enterprises (SMEs) in the Caribbean than in the rest of LAC (94% versus 90%) and more firms are in the services sector (Francis et al. 2014).⁷ Although favorable views of SMEs contend that they spur competition and are a good source of employment, this argument only holds if the SMEs are productive, which implies that they are competitive and innovative (Pagés 2010).

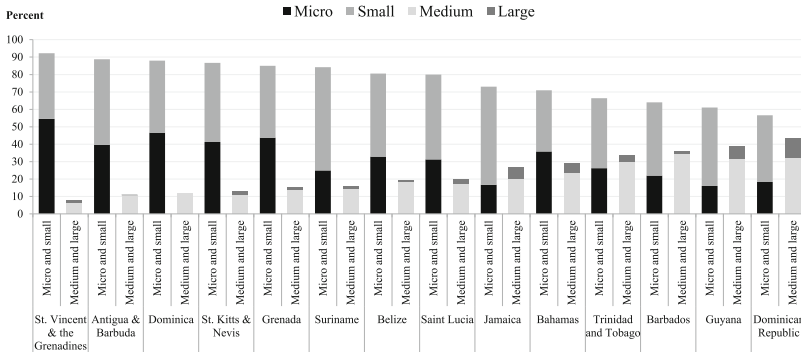


Fig. 7.1 Caribbean firms by size (number of employees)

Source: Authors' elaboration based on WBES data

Notes: firm size is based on the number of full-time, permanent employees in the previous fiscal year. The number of employees per size category is micro (≤ 10), small (>10 and ≤ 50), medium (>50 and ≤ 250), and large (>250)

In fact, research using the global WBES found that, while small firms may have the largest shares of job creation and sales growth, large firms tend to display higher productivity growth (Ayyagari et al. 2011). Chapter 3 showed that large firms are more likely to invest in innovation and that those that do are more productive.

In most countries in the Caribbean, there is a greater proportion of firms in the services sector; however in Suriname, for example, firms are split roughly evenly between the services and manufacturing sectors. In the WBES, the firms self-classify as either being in manufacturing or in services. The corresponding workforce within the countries may be even more heavily concentrated in the services sector. In the LAC region, over 60% of the workforce is in services; in the Organization of East Caribbean States, the number is over 80% (Caribbean Knowledge Series 2013).

As discussed in Chap. 1, and in line with recent research on productivity growth, it is the services sector that drags down overall productivity levels in LAC (Pagés 2010). Several studies have looked at the differences in productivity and innovation in the two sectors (Arias Ortiz et al. 2014; Crespi et al. 2014, for Latin America only; Arias Ortiz et al. 2012; IDB 2011a). These studies found that the allocative efficiency in the services sector tends to be much lower than in manufacturing. Knowing the sectoral composition of the firms in each country is a key element for analyzing the productivity of firms.

In addition to being small and largely in the services sector, Caribbean firms also tend to be older. Very few new firms (defined as less than three years old) exist, whereas mature firms (defined as those in existence for over ten years) are much more prevalent. Mature firms represent the majority, except in Dominica, where the proportion of such firms dips below 50%. In general, the LAC region tends to have a smaller proportion of young firms compared with other developing regions (Francis et al. 2014). The implications of age and productivity could go in either direction. Young firms are often seen as being a potential source of newness and innovation; however, mature firms may be seen as having stood the test of time.

The next important question relates to how connected these firms are. Given that firms tend to be smaller and older, have they adopted ICTs to connect to domestic or international markets? Are they internationally engaged? Figure 7.2 shows that cellphones and email are widely used in everyday business practices. More sophisticated ICTs, such as owning a website, which often requires some basic programming knowledge, are much less pervasive. There is a lot of heterogeneity within the Caribbean with regard to ICT, as there is throughout LAC, where evidence suggests that

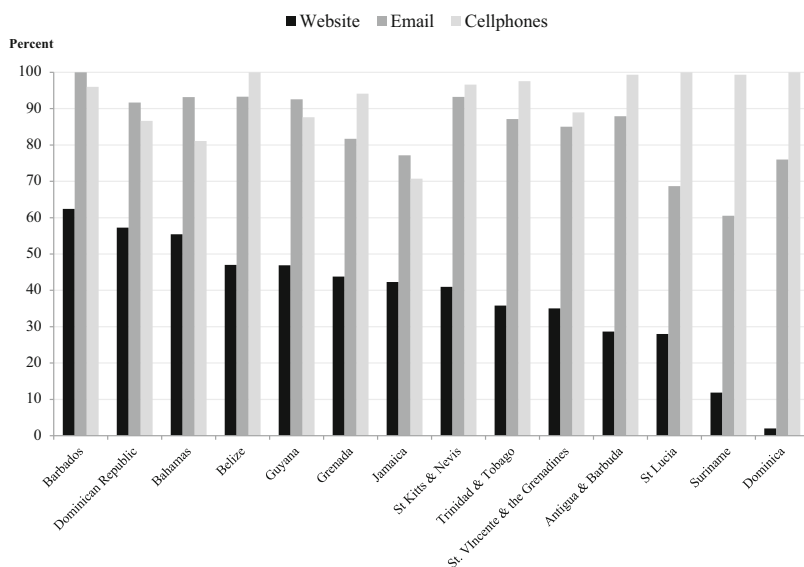


Fig. 7.2 ICT usage in the Caribbean

Source: Authors' elaboration based on WBES data

within-country differences are as notable as between-country differences (IDB 2011b). The low levels of website ownership by tourism-based economies suggest that there is room for gains by attracting new clients who are not being reached by conventional hotel and restaurant search methods.

The PROTEQin provides updated information about ICT penetration in select Caribbean countries. Firms were asked the same series of questions about email, websites, and cellphones for business operations. The improvements in these indicators vary by country. Countries like Barbados and Belize, which already showed relatively high levels in 2010, saw slight improvements in websites (Barbados and Belize) and cellphones (Barbados). With a 4% improvement over 2010 in cellphone usage, Barbados reached 100% penetration in both cellphone and email usage to communicate with clients. Suriname and Jamaica showed significant improvements in ICT usage between the two survey periods. For example, in Jamaica, cellphone use increased by 24%. Suriname saw sizeable increases in both website usage (28%) and email usage (18%). Guyana is the only country that showed declines in ICT penetration in both website and email usage. On the whole, for cellphone penetration, the PROTEQin shows improvement over the WBES 2010 average, with all five countries above 90%.⁸ To meet regional averages, Jamaica, Guyana, and Suriname need to improve email usage. Use of firm websites was by far the weakest area for the selected countries, with Barbados being the only one to outperform the 2010 regional average. Despite these gaps, the large improvements between 2010 and 2013 in some of the underperforming countries, like Jamaica and Suriname, should not be overlooked.

In terms of international linkages, the WBES data shows that most Caribbean firms are non-exporters (Fig. 7.3a); therefore, a very small proportion of sales are derived from either indirect or direct exports (Fig. 7.3b). In general, exporting is thought to be positively linked with productivity. A recent survey of micro-econometric studies from 33 developed and developing countries summarizes corroborative evidence from 1995 to 2004 (Wagner 2005). The author claimed that most of the differences were due to pre-entry self-selection into export markets rather than gains in productivity post-entry into the market (Wagner 2005).⁹ In addition to whether or not a firm is exporting, the average proportion of sales earned from exports ranges from 3% in Grenada to 16% in Dominica. Across the Caribbean, a very small average proportion of sales are being generated from indirect export sales.

Given the dominating characteristics of the firms covered in this section (small, old, and in the services sector), if policymakers want to help firms become more internationally engaged and connected through technology,

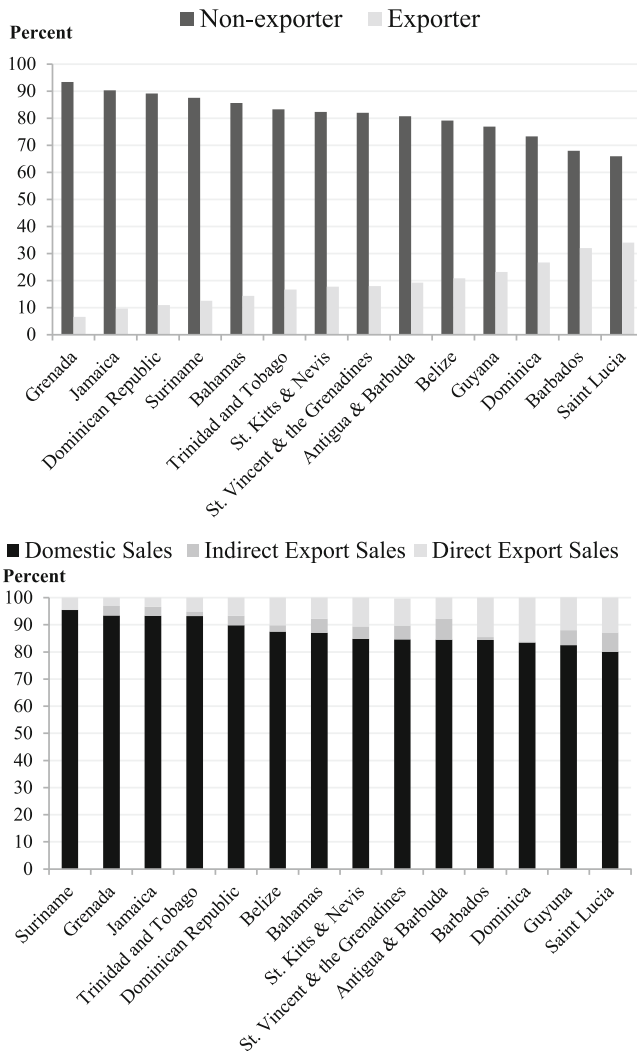


Fig. 7.3 (a) Export status; (b) domestic, indirect, and direct sales

Source: Authors' elaboration based on WBES data

preparatory work along the supply chain is needed on the pre-entry side. For example, in the Caribbean, even fewer firms are engaged in indirect export sales than are in direct export sales.

PRINCIPAL CHARACTERISTICS OF HUMAN CAPITAL IN THE CARIBBEAN

Every firm is made up of its people. Just as aggregate productivity is the combination of the productivity of individual firms, each individual firm's productivity is the sum of the productivity of its workers. In this section, we delve into the characteristics of human capital in Caribbean firms, from managers down to workers. Unobservable factors such as the skills of the workforce and managerial capability are often more responsible for the variation in firm performance than are observable firm attributes such as size, age, and international linkages (Jensen and McGuckin 1997). A better understanding of the knowledge, capabilities, and background of the workforce is important, as both the observable and unobservable characteristics of a firm must be included in a complete analysis of firm growth (Laursen et al. 1999).

Entrepreneurs in the Caribbean

We begin with an analysis of the entrepreneurs (firm owners or managers) in the Caribbean. Recently, some scholars have attributed entrepreneurship with the commercialization of new knowledge and consider it a third driver of economic growth (Vivarelli 2013).¹⁰ Although the economic literature has long been fascinated with entrepreneurship, not all characterizations describe entrepreneurs as agents of change and economic growth (Wennekers and Thurik 1999).¹¹ Although new businesses may contribute to job creation, in order to contribute to productivity, businesses must also grow into their potential (Wagner 2014).

Figure 7.4 shows that firms in the Caribbean are not often created to introduce a new product or idea. Coupled with the fact that firms tend to be mature, this suggests that the majority are not responsible for commercializing new knowledge that would position them as drivers of economic growth. Figure 7.4a shows whether the firm was established out of necessity; the responses vary widely across countries. Figure 7.4b shows what type of opportunity motivated the firm's creation. For example, more than 80% of the firms interviewed in Suriname reported that the business was started because of a lack of better employment opportunities. In contrast, none of the firms in Dominica responded that this was the case.¹²

Figure 7.4b shows that fewer firms were created to develop a completely new product or idea than to replicate or modify an existing product or idea. The results are similar for both Caribbean countries and Latin American countries (see Chap. 6). These findings are consistent

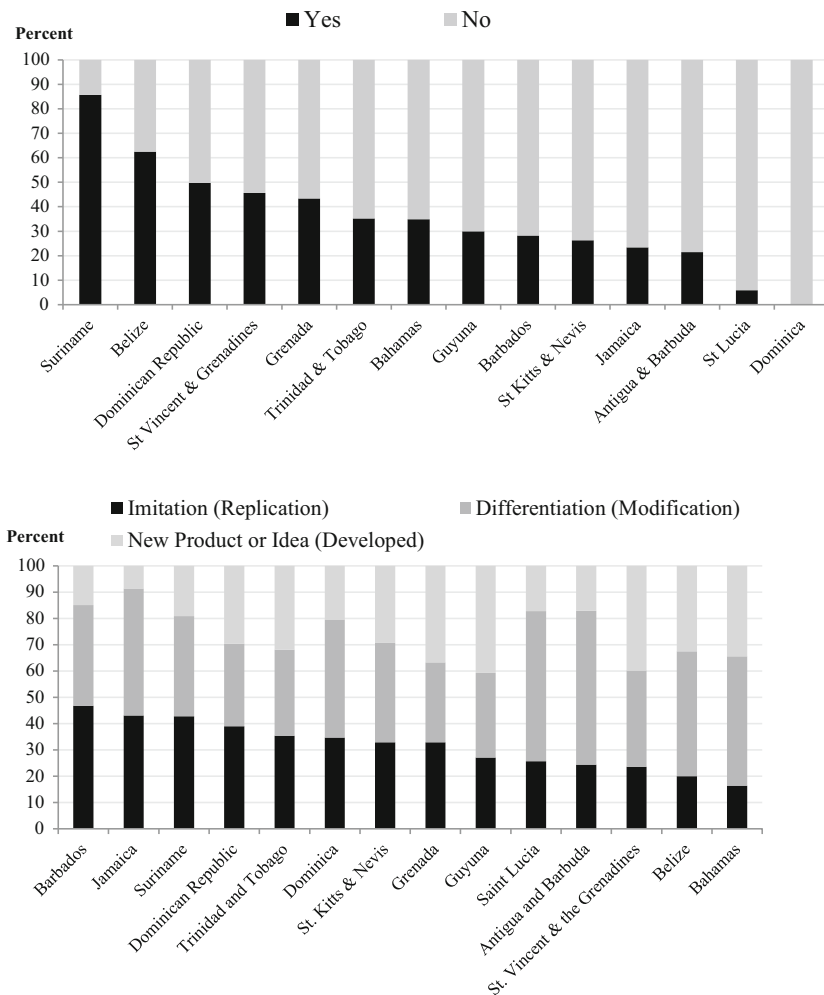


Fig. 7.4 (a) Was the firm established Due to necessity? (b) what type of opportunity motivated the firm's creation?

Source: Authors' elaboration based on WBES data

with general theories about the dominant nature of innovative business activities in less developed countries (Abramovitz 1989). Data analysis for LAC suggests the same, although studies are largely concentrated on Latin America (Pagés 2010); however, it may not be so different in the Caribbean.

The previous experience of top managers varies widely throughout the Caribbean. In Fig. 7.5 a significant number of countries have some top managers that transitioned from being unemployed into the position. In Suriname, for example, over 10% of those surveyed transitioned from being unemployed to being employed as a top manager, but this does not seem to be the general trend. On the whole, the top manager tends to have previously held a managerial position that may have provided the impetus to start a new business, especially given that the majority of firms are created to either imitate or replicate existing products or services.

In sum, Caribbean firms tend to replicate, imitate, or differentiate products or services that exist in the market. Further, very few of the firms surveyed are considered high-growth ones. The role of the entrepreneur in transforming an economy rests on the match between available market opportunities and entrepreneurial talent (Naudé 2008).¹³ So,

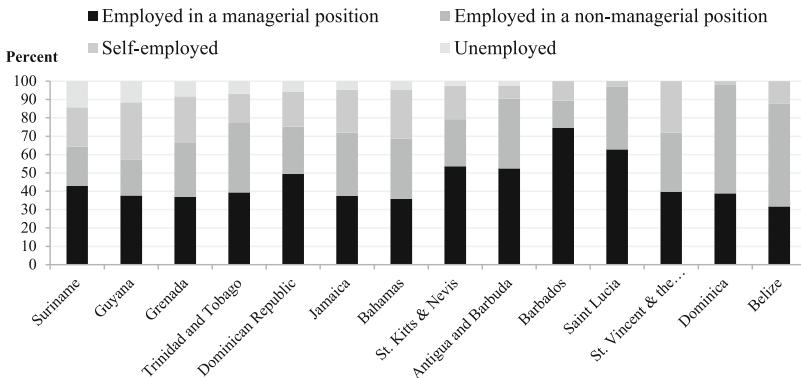


Fig. 7.5 Previous occupation of the Top manager

Source: Authors' elaboration based on WBES data

Notes: Questions about employment in a managerial versus non-managerial position were differentiated in the questionnaire by whether the firm was owned by the respondents' family, but were combined in this figure to reflect only the previous position

if most of the entrepreneurs in the Caribbean are not commercializing new knowledge, they may be absorbing technology from elsewhere, which requires social capacity to imitate and differentiate—skills also associated with gains in productivity. These skills relate to a broad variety of factors within economies, including but not limited to the general level of education of the workforce, the technical competence of workers, and the amount of technical training provided to workers.

The Caribbean Workforce

Since 1960, there has been a lot of progress in the Caribbean in terms of attaining primary and secondary education. The region's average years of schooling for the adult population are now on par with the rest of Latin America and approaching Organisation for Economic Co-operation and Development (OECD) averages. The same is not true of transition from secondary to tertiary education. In the firms surveyed, the average percentage of workers with at least a bachelor's degree ranges from 2 in Grenada to 20 in the Dominican Republic.¹⁴ In addition, pass rates for math and English tests are often below 50%. These signs point to a deeper issue of whether there is a match between skills taught in school and those demanded by employers in the workplace (Caribbean Knowledge Series 2013) (Fig. 7.6).

Finding workers with the right skillset is a major issue in the Caribbean, where over 35% of firm owners report having unfilled vacancies. An inadequately educated workforce is one of the most often cited obstacles to firm growth in the region (see “Obstacles to Firm Operation in the Caribbean” below). The “right” skills, however, differ by country. On the one hand, in Grenada, Barbados, and Antigua and Barbuda, workers with technical skills are more difficult to find. On the other hand, in Guyana and the Dominican Republic, employers have a slightly harder time finding workers with social skills.

An interesting finding from the PROTEQin data is the variation in the difficulty of finding certain skills by job type (i.e. managerial versus professional). For example, the PROTEQin asks firm owners to rate the difficulty of finding candidates with appropriate skills by different positions within the firm. Figure 7.7 displays the percentage of firm owners who responded that certain skills were very difficult or almost impossible to find in candidates.¹⁵ The findings are notable. Adequate job-related skills tend to be the most difficult attributes to find in candidates for both managerial

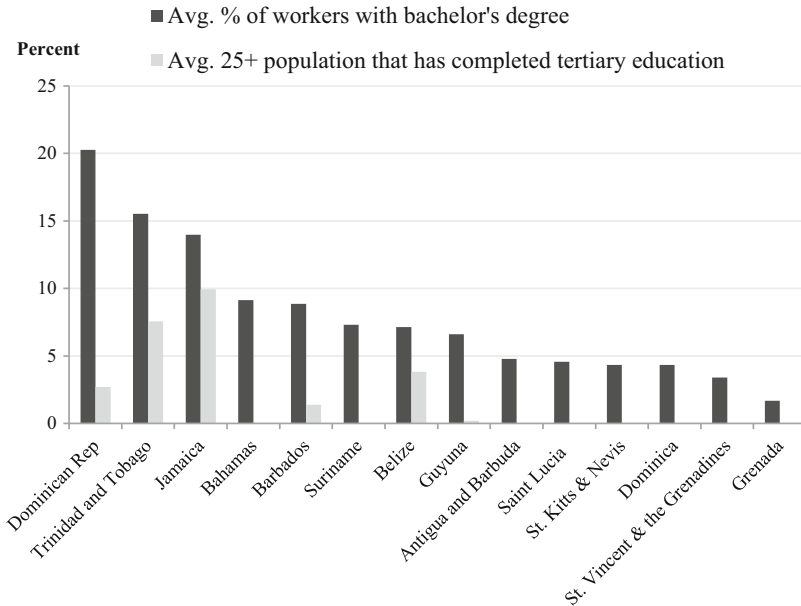


Fig. 7.6 Full-time permanent employees with at least a bachelor's degree and population over age 25 that has completed tertiary education (%)

Source: Authors' elaboration based on WBES data and Barro and Lee [2010]

and professional positions. On average, almost 30% of firm owners in this subsample found core skills to be very difficult or almost impossible to find when hiring professionals compared to one-fifth when hiring managers. These results show that, in the Caribbean, there is a lack of adequate skills not only for lower-level workers, but also when seeking capable managers.

When firms were asked in the PROTEQin to identify the importance of various factors causing skill shortages, 52% cited worker emigration as important, very important, or critical. Considering in the Caribbean net migration is among the highest in the world and that outflows are predominantly migrants with a tertiary education (Nurse and Jones 2009),¹⁶ it could even be surprising that *only* 52% of firms cited worker emigration as such an important factor. It is possible that the diaspora has come to be seen in the Caribbean as a unique source of human capital that provides links to external markets and international customer bases, transfers

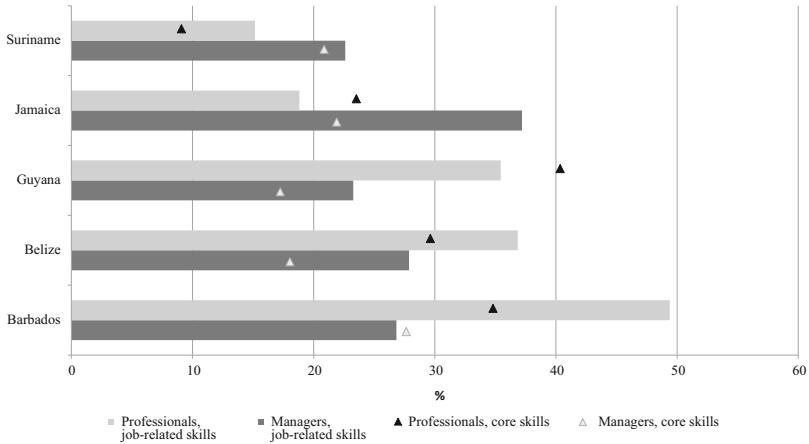


Fig. 7.7 Difficulty finding skills by job type (respondents who cited very difficult or almost impossible)

Source: PROTEQin

Notes: The bars represent the difficulty in finding job-related skills among professionals [*light gray*] and managers [*dark gray*]; the triangles represent the level of difficulty in finding core skills among professionals [*dark gray*] and managers [*light gray*]

industry-specific knowledge, and acts as sources of investment.¹⁷ Evidence from a recent report suggested around 40% of the diasporic entrepreneurs surveyed,^{18 19} indicated that they earned some form of revenue from clients in the diaspora. In addition, interviews with large iconic firms in the Caribbean (Suriname, Jamaica, and Guyana) and diasporic firms outside the Caribbean (e.g. New York) revealed these large iconic firms have designed business strategies to target the diasporic customer base (Nurse and Kirton 2014) who then also influence consumer taste in the international markets where they have migrated. While the majority of firms responding to the PROTEQin acknowledged that emigration may deplete *local* human capital resources, causing skill shortages, they more frequently cited the quality of education or a shortage in the number of local professionals trained by local institutions,^{20 21} They also noted that emigration of workers may provide intangible inputs to local business development, especially through their potential link to an international network and potential customer base outside the country.

Box 7.2. Education and skills in the Caribbean The PROTEQ in was a first attempt to deepen the micro-data available for the region, and one of the most important areas was education and skill development. The PROTEQin data breaks out education levels of the workforce beyond that included in the WBES. With such a detailed classification, researchers can readily assess the differences in education levels across countries. A cursory analysis finds similar patterns for Barbados, Belize, Jamaica, and Guyana and Suriname. For example, about 80% of managers in Barbados, Belize, and Jamaica have completed some sort of tertiary education, compared to around 50% for Guyana and Suriname. Education levels for skilled workers follow a similar pattern as for managers. For less skilled jobs, such as plant and machine operators, firms in Barbados, Belize, and Jamaica tend to employ workers with less education than firms in Guyana and Suriname. Over half of the plant and machine operators in Barbados, Belize, and Jamaica have only completed primary education compared to 29% in Guyana and 22% in Suriname.

Despite managers and skilled workers having relatively high levels of educational attainment in Barbados, Belize, and Jamaica, over 60% of firms in those countries cite a lack of a strong educational background as a major or severe obstacle to productivity. This may be an indication of a mismatch between the skills students are learning in school and the skills desired by the employers in these countries rather than a reflection of low educational attainment. These workforce constraints are less of an issue in Guyana and Suriname, where only around 30% of firms cited lack of educational background as a major or severe obstacle. This does not mean that it is not an important issue for firm productivity, just that there are likely other, more pressing, obstacles in the firm manager's mind.

FIRM PRODUCTIVITY IN THE CARIBBEAN

How do the firm characteristics presented above relate to firm performance? Table 7.2 presents the results of an analysis of firm characteristics disaggregated by productivity levels. First, we calculate the average firm labor productivity (sales/employees) for the main product ISIC code in each country. Then, we determine whether the individual firm is above or