

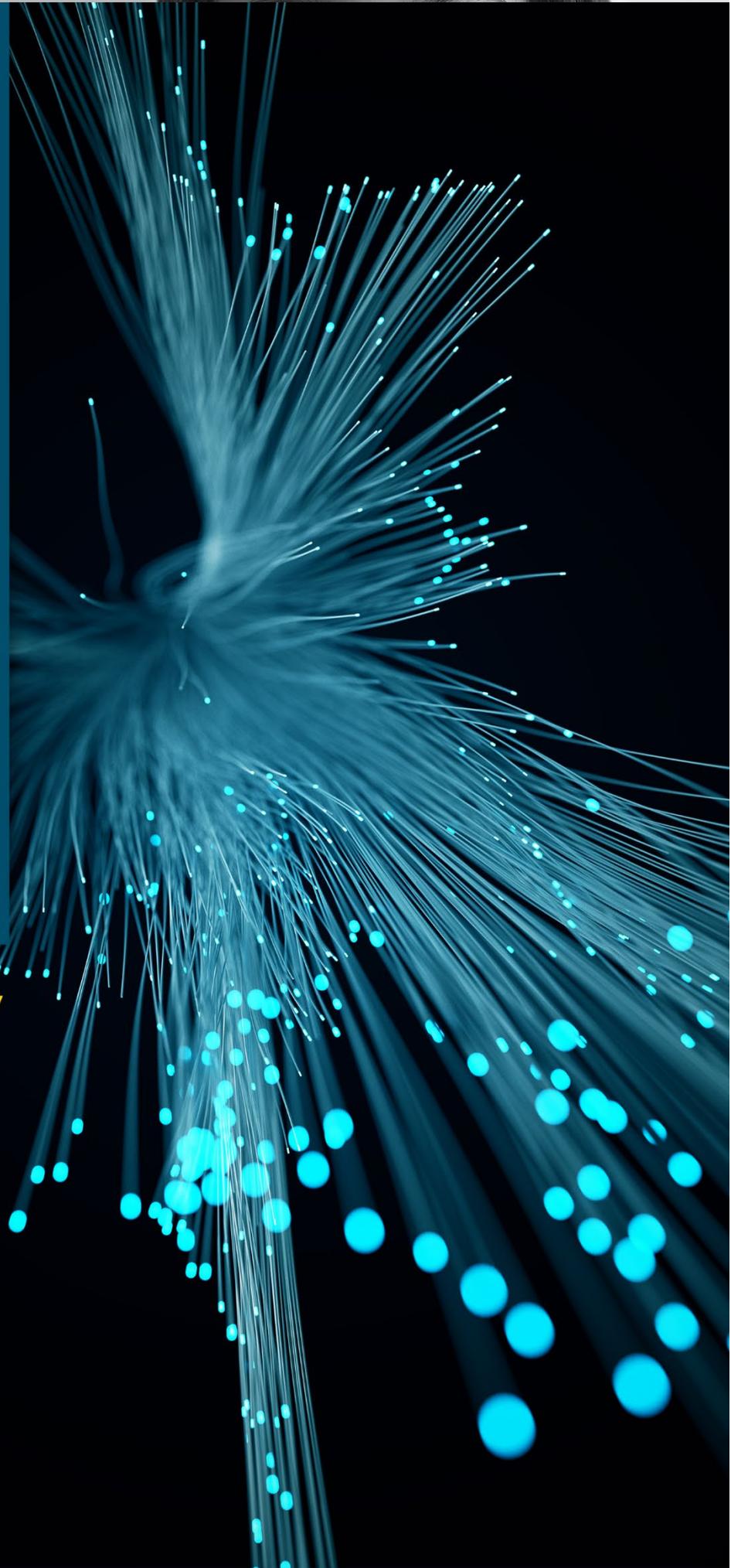
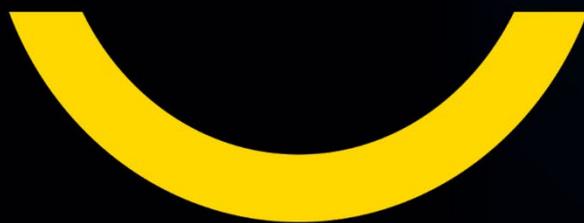


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ECONOMIC  
BULLETIN

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2021: 3

Digital Infrastructure  
and Development  
in the Caribbean





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## Regional Overview: Digital Infrastructure and Development in the Caribbean

Henry Mooney, David Rosenblatt, and Antonio Garcia-Zaballos

### Introduction

After focusing for more than a year on the near-term implications of the COVID-19 shock for lives and livelihoods, this edition of the Quarterly Bulletin refocuses on economic growth in the Caribbean.<sup>1</sup> Specifically, it looks at productivity—the long-term driver of economic growth—and the key role of digital infrastructure in spurring productivity growth.

To this end, this edition reviews the long-term performance of economic growth and productivity in the region. It then draws on research from the Inter-American Development Bank's Connectivity, Markets, and Finance Division that estimates how much investment in digital infrastructure is needed for countries across Latin America and the Caribbean to reach the levels of advanced economies. This research also estimates both the potential economic benefits associated with that investment and its costs, highlighting the potentially large multipliers associated with closing digital infrastructure gaps. The highlights of the analysis include the following:

- Economic growth of most Caribbean countries has generally lagged that of other developing countries, as well as other small economies across the world.<sup>2</sup>
- Productivity growth has also been poor. Aggregate total factor productivity has actually declined in some countries, and firm-level analysis conducted in recent years also reveals slow productivity growth relative to firms in other countries.
- It is estimated that closing the digital access gap between Caribbean economies and members countries of the Organization for Economic Co-operation and Development (OECD) could potentially increase the region's GDP by about 6 to 12 percent over the medium term, depending on the country. These gains are multiples of the estimated costs, ranging from about 2 times to nearly 50 times those estimated costs. The estimates thus indicate a substantial potential return on this type of crucial investment.
- Estimated productivity gains represent about 80 percent of the estimated improvements in GDP.
- Other studies identify the dimensions of governance that can improve digital performance, and these are discussed in this edition.

As is typical with the Caribbean Quarterly Bulletin, the Regional Overview is followed by country sections that provide more detailed analysis for each of the countries covered.

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<sup>1</sup> This report focuses on the six IDB member countries of the IDB's Caribbean Country Department: The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

<sup>2</sup> The World Bank's aggregation of small economies is used here as a comparator.



## Five Decades of Growth in the Caribbean – Falling Further Behind

Reviewing the Caribbean’s historical economic growth performance in a comparative context gives cause to focus on the potential impact of digital infrastructure investment in accelerating growth. As noted in previous editions of this Bulletin and related research, real GDP growth in many Caribbean countries has, on average, lagged that of comparable economies around the world. In addition, for many of the six Caribbean countries examined here this relative performance has, on average, deteriorated over the past several decades. As highlighted in Figure 1, while high-, middle-, and low-income countries globally have seen average annual growth rates of 2 percent or higher since the 1970s, most of the Caribbean countries have experienced considerable volatility with respect to output performance and struggled to keep up with the rest of the world.

In fact, all of the Caribbean economies examined here have experienced at least one decade with average growth of 1 percent or less since the 1970s, while three have suffered at least one decade characterized by negative growth, on average.<sup>2</sup> The Caribbean economies have also underperformed relative to other small economies around the world.<sup>3</sup> Finally, with the exception of Suriname and Trinidad and Tobago—two resource-exporting economies that benefited from a sustained commodity price boom from about 2000 to 2014<sup>4</sup>—it is also clear that the relative growth performance of the Caribbean economies has deteriorated over the past five decades. Even commodity-exporter Trinidad and Tobago experienced a “lost decade” of growth from 2010 to 2019, and the estimated sharp decline of GDP in Suriname in 2020 wiped out much of the previous decade’s economic growth.

The poor and deteriorating relative performance of these Caribbean countries, even prior to the COVID-19 pandemic, has many drivers and antecedents. As small and open economies, they are all highly dependent on external demand as an economic engine. The COVID-19 crisis, as well as previous global economic shocks, have certainly had outsized implications for tourism and services, manufacturing, and commodities exports for most countries in the region.<sup>5</sup> Similarly, most are island or coastal economies that suffer from outsized exposure to the ravages of natural disasters and climate change. These and other shocks have undermined macroeconomic stability and complicated policymaking. Economic and other institutional structures have also long suffered from deficits in terms of capacity and structures that have held the countries back.<sup>6</sup>

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<sup>2</sup> The 1980s saw a series of severe debt problems for many countries across the world, and particularly for Latin America and the Caribbean.

<sup>3</sup> Small economies are referred to here are comprised of the 50 members of the World Bank’s Small States Forum.

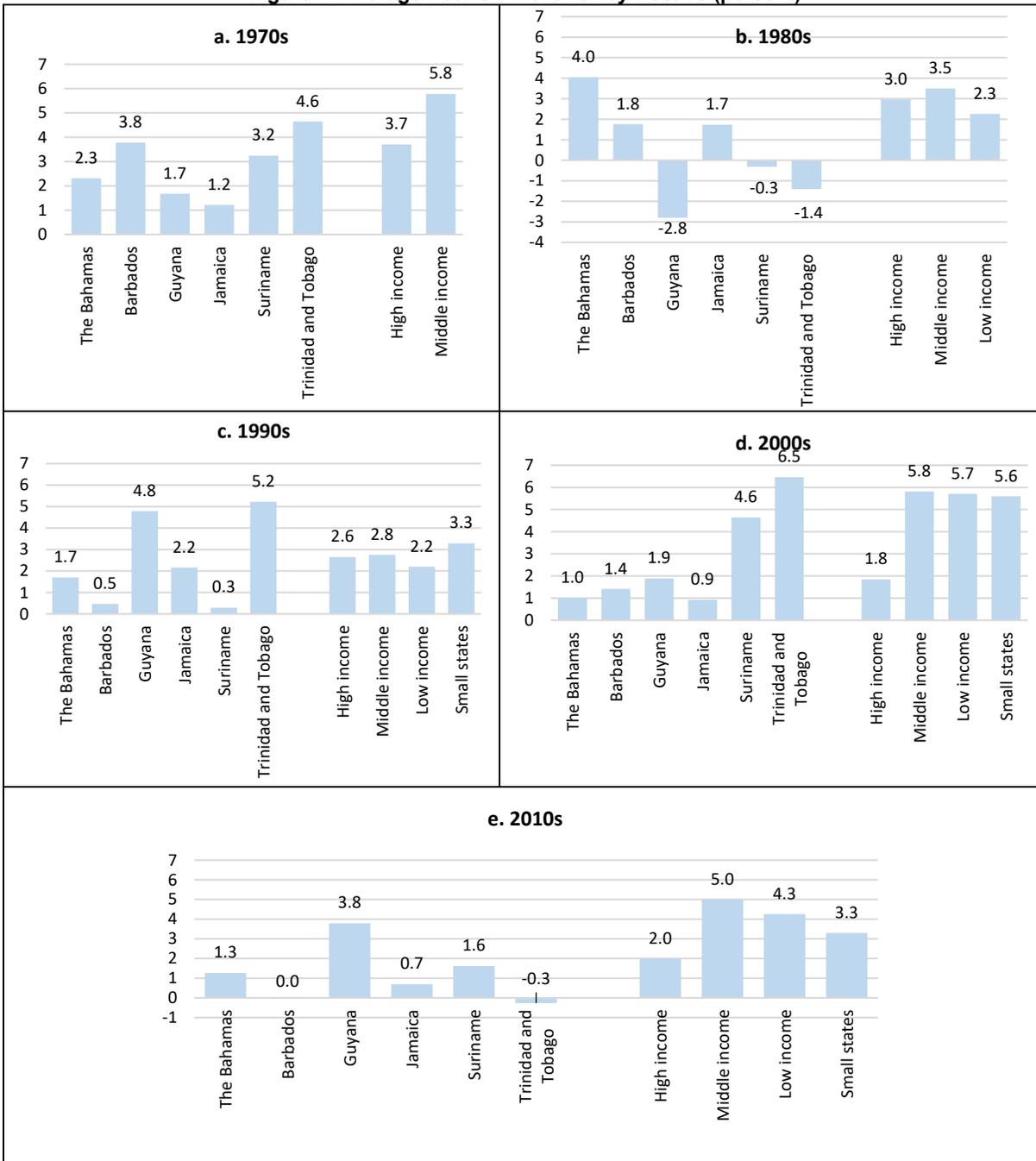
<sup>4</sup> The commodities boom of the 2000s saw related prices (e.g. hydrocarbons, metals, chemicals, etc.) increase and remain elevated from about 2000 through 2014, largely due to rising demand from emerging markets such as China, among other factors.

<sup>5</sup> See the Regional Overview (“[The Pandemic Saga Continues](#)”) in the July 2020 edition of the Caribbean Quarterly Bulletin for a detailed discussion of shock transmission channels and the region’s dependence on external demand.

<sup>6</sup> See Schwartz and Beuermann (2021) for an in-depth discussion of related institutional issues.



**Figure 1. Average Real GDP Growth by Decade (percent)**



Source: Authors' calculations based on the World Bank's World Development Indicators.

Note: The 2010s do not include the deep recession of 2020. "Small states" refers to the 50 members of the World Bank's Small States Forum.



## Slow Productivity Growth – A Brake on Development

In discussing economic prosperity, Nobel Laureate Paul Krugman (1990, p.11) famously wrote that “productivity is not everything, but in the long run it is almost everything.” But what do economists mean by the term “productivity”?

In the most basic sense, any country’s economy relies on its endowment of “factors” used as inputs for the production of economic output. Standard economic theory defines an economy’s factors of production as belonging to one of two main categories: labour or capital. The concept of “labour” is a function of the number of workers employed in an economy, the hours of work they provide, and how efficiently they can produce units of output. The concept of “capital” as a factor of production is somewhat more complex, as it includes tangible assets like the stock of physical capital (e.g., roads, bridges, factories, machinery, etc.); natural capital (e.g., minerals, commodities, other inputs to production); and human capital derived from training, education, and learning by doing, among other things.

With the same inputs—including labour, human and physical capital, and materials—some economies, sectors, and firms are able to produce more than others. The reason for these different levels of output depends on how efficiently these factors are used and allocated in the production of economic outputs, and what technology is used to combine those factors into output. In this context, economies that have been able to accelerate growth performance, wages, and national wealth and well-being are those that have not only added factors—for example, more labour or more capital—but have also managed to make these factors more productive.

One of the most common measures of productivity is total factor productivity (TFP), which is driven in the long run by technological advancements with respect to production processes. This progress can come through the accumulation of human capital through education and training; improved managerial capabilities; research to create new products or processes; and the adoption of new technology to improve the efficiency, quality, or desirability of products. It is important to note that both public and private sectors have an important role to play in this process, as the public sector’s role as provider of basic infrastructure and related capital, institutional and regulatory frameworks, and security and stability are crucial to support this process. In recent decades, more focus has been placed on the role of natural capital and the sustainability of growth.<sup>7</sup>

Aggregate measures of TFP can be somewhat crude, in that assumptions must be made about capital and labour shares of GDP, as well as other factors, in order to isolate the accumulated contribution of particular factors to overall output growth. Whatever is left out is considered TFP; in other words, it is a residual. For example, the use of natural capital, including something as basic as expanding the use of land for agriculture, would be part of that residual. In addition, short-term changes in relative prices—for example, a commodity price boom—will be detected in the residual.

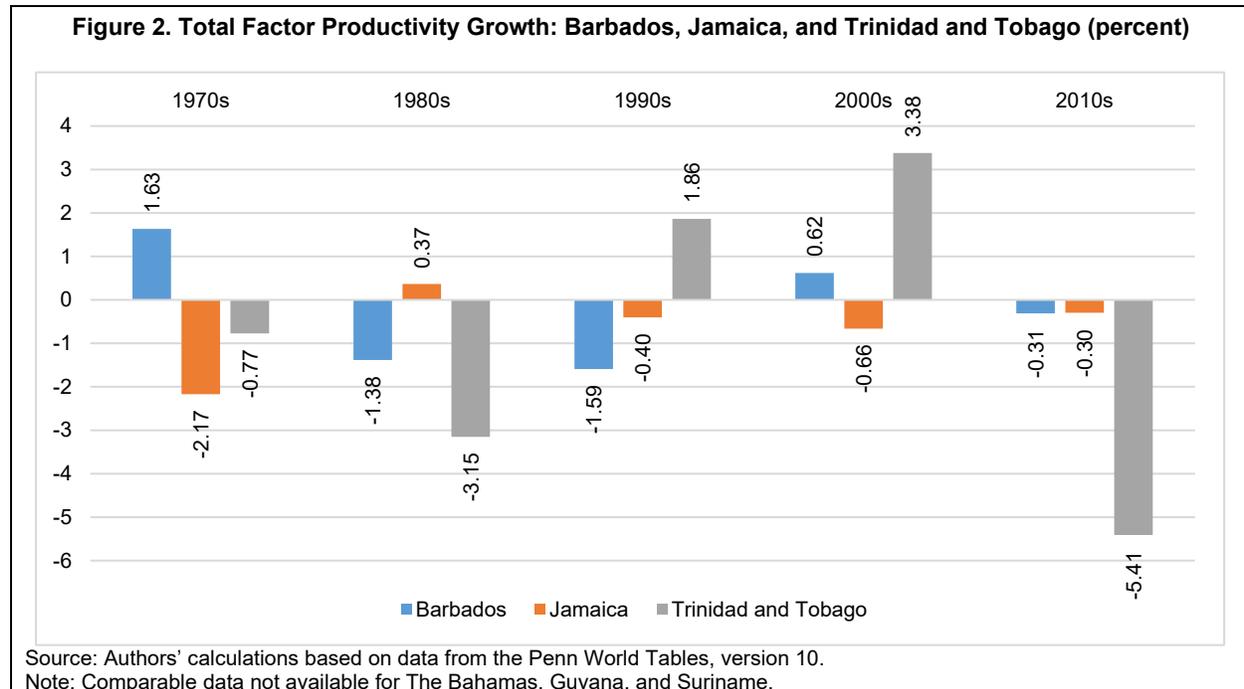
Taking these caveats into consideration, Figure 2 presents data from the Penn World Tables database for TFP growth for three Caribbean countries. TFP levels (measured in constant national prices) have fallen over the past five decades for Barbados, Jamaica, and Trinidad and Tobago, since the negative growth

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<sup>7</sup> For example, see Banerjee, Vargas, and Cicowiez (2020).



bars are bigger than the positive growth bars. This suggests production inefficiency at the aggregate level that explains a large part of the poor growth performance described in the previous section.



Most of the contemporary empirical literature on TFP, and economic growth more generally, has focused on the firm level. That is where the actual decision-making and investment occur, and it is how the subtle nuances behind the changes in productivity across an economy can be uncovered. For example, productivity for the whole economy can come from three sources of change at the firm level: (1) movement of factors from low-productivity firms to high-productivity firms; (2) adoption or creation of improved technology within a firm; or (3) the exit of low-productivity firms accompanied by the creation of new higher-productivity firms (a kind of survival of the fittest).<sup>8</sup>

Past studies have noted the lower levels of productivity of Caribbean firms compared to other small economies (Ruprah and Sierra 2016) and have analysed the importance of different factors affecting firms' productivity (Dohnert, Crespi, and Maffioli 2017). Acevedo et al. (2021) conduct a diagnostic of the impact of the COVID-19 pandemic on firms in the Caribbean, and additional analysis of new firm-level data is expected in the future and will certainly be summarized in future editions of this Bulletin.

<sup>8</sup> See Cusolito and Maloney (2018) for a discussion of these sources of productivity and evidence from firm-level surveys conducted in a diverse group of developing economies.



### **Digital Infrastructure: Wide Gaps Persist**

As noted above, there are multiple factors that affect productivity growth, and consequently, economic growth. Analysts and academics have developed a number of techniques over the years to identify constraints or gaps that can be addressed through a combination of policy reform and investments. IDB staff prepare a “Country Development Challenges” document for each borrowing member country on a periodic basis. Some of the key development challenges are discussed in each of the country sections of this Bulletin.

This section focuses on one increasingly crucial investment—digital and telecommunications infrastructure. As the pace of technological advancement has accelerated, culminating in the information technology revolution, the importance of this sector has and will only continue to grow. The ongoing pandemic is transformative, and has accelerated pre-existing trends favouring digital services, workplaces, and ways of doing business. Investment and innovation in related areas have been led by the world’s most advanced economies, creating the potential for new development challenges with the potential to inhibit the ability of other countries to “catch up” with advanced economies.

In this context, research from the IDB’s Connectivity, Markets and Finance Division has attempted to quantify levels of digital infrastructure that prevail in countries across the world, including across Latin America and the OECD. Using these data, researchers can calculate “gaps” that exist between individual Latin American and Caribbean economies and the average for OECD countries. This exercise has been used to estimate the potential economic benefits for Latin American and Caribbean countries of bringing digital infrastructure up to OECD levels, as well as the possible costs this would involve.

The model developed allows for estimating the capital investment needs to close the gap between the countries of Latin America and the Caribbean and the member countries of the OECD. With this objective in mind, the difference in the penetration of fixed and mobile broadband services in each country with the OECD average is first evaluated (Table 1).



**Table 1. Estimated Gaps Relative to the Organization for Economic Co-operation and Development Average (percentage points)**

	Fixed Broadband Gap	Mobile Broadband Gap
Guatemala	30.7	111.0
Nicaragua	30.8	102.4
Haiti	33.5	91.1
Guyana*	25.4	94.8
Honduras	30.0	89.0
Belize	27.3	90.9
Suriname*	21.0	79.0
Jamaica*	24.0	69.9
El Salvador	26.1	66.5
Paraguay	29.1	63.4
Venezuela	24.7	66.5
Trinidad and Tobago*	9.2	80.4
Colombia	20.3	68.8
Ecuador	22.3	66.4
Dominican Republic	26.3	60.3
Peru	26.6	56.9
The Bahamas*	11.2	60.2
Bolivia	29.3	41.2
Mexico	19.2	51.1
Argentina	14.6	53.8
Barbados*	2.6	61.1
Panama	20.8	41.9
Brazil	18.8	33.0
Chile	16.4	29.5
Costa Rica	17.0	23.9
Uruguay	5.4	-2.8

Notes: (\*) Members of the IDB's Caribbean Country Department. Countries sorted from largest to smallest average gap. Dark red to dark blue range from largest to smallest gaps.

Source: García Zaballos, Iglesias Rodríguez, and Puig Gabarró (2021).

As detailed in Table 1, with the exception of mobile broadband infrastructure in Uruguay, all Latin American and Caribbean countries have positive gaps relative to the average calculated for advanced OECD countries. In some cases, these gaps are strikingly large, reaching or nearing double digits when measured in percentage points. The next step is to estimate the capital expenditures, or capital investment, needed to close this gap. That approach is described in Box 1.



### Box 1. Capital Expenditure Estimation Approach

#### **Fixed Capital Investment**

For the fixed capital investment (CAPEX) estimation per household, the model takes data from several countries and generates a linear regression as a function of the population density for each economy. The resulting equation of this model is:

$$CAPEX = -125.4 \ln(x) + 854.23,$$

where  $x$  is the population density. Consideration of population density is particularly important, since it has a clear impact on the amount of investment that is required. Thus, the lower the population density, the more per-household capital investment will be needed.

#### **Mobile Capital Investment**

For mobile capital investment, the model estimates the unitary cost of improving mobile coverage, taking as a reference projects such as Mexico's shared network project.

#### **Gap Estimates**

Taking the unitary costs from fixed and mobile as a reference, the model estimates the U.S. dollar cost of the infrastructure requirement per country to close the gap by applying the following formula:

$$Gap\ CAPEX_{pals_i} = BF(p.p) \times Pop_i \times (-125.4 \times \ln(dens_i) + 854.23) + BM(p.p) \times Pop_i \times Cmu,$$

where  $BF(p.p)$  is the fixed gap in percentage points;  $Pop_i$  is the population of country  $i$ ;  $dens_i$  is the population density of country  $i$ ;  $BM(p.p)$  is the mobile gap in percentage points; and  $Cmu$  is the unitary cost for mobile capital investment

Through this technique, the percentage point gaps of Table 1 can be converted to the dollar cost of the gap. The total cost across fixed and mobile technologies can also be calculated in this manner.

### **Economic Benefits and Costs of Investment in Digital Infrastructure**

IDB staff developed an econometric model to estimate the benefits of closing the gap in digital infrastructure (García Zaballos and López Rivas 2012). The analysis showed that a 10 percent point change in digital infrastructure is associated with 3.2 percent higher GDP and 2.6 percent higher productivity, with the full impact estimated over a six-year period. The two elasticities emerge from separate regressions; however, it is interesting to note that the productivity elasticity is about 82 percent of the size of the GDP elasticity. Productivity is not everything, but it is a lot, to paraphrase Paul Krugman. One can take the gaps calculated above as a percent of the existing infrastructure capital stock and apply this elasticity to arrive at an estimate of the percentage change of both GDP and productivity that could occur from closing the existing infrastructure gap. The results are presented in Figure 3.



For nearly half of the Caribbean economies, this type of investment could yield cumulative GDP increases in the double digits. Similarly, for many countries across Latin America and the Caribbean, this could imply transformative improvements in productivity levels. Taken together, this and related evidence highlighted above supports the conclusion that a greater prioritization of investment on the part of both public and private sectors in digital technology, related infrastructure, and in supporting policies could be pivotal in accelerating development—particularly for economies in the region that have relatively lower levels of income.

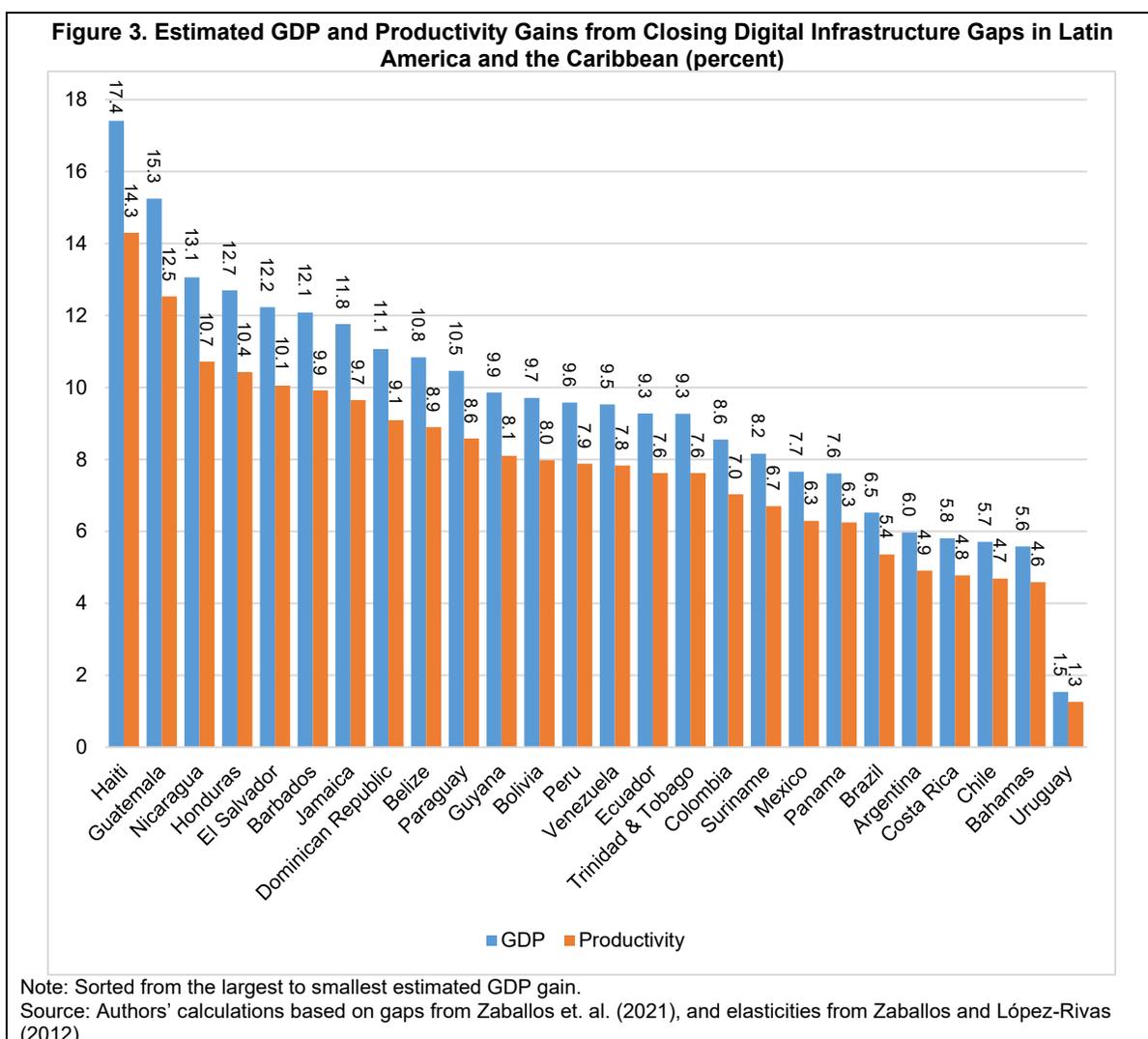
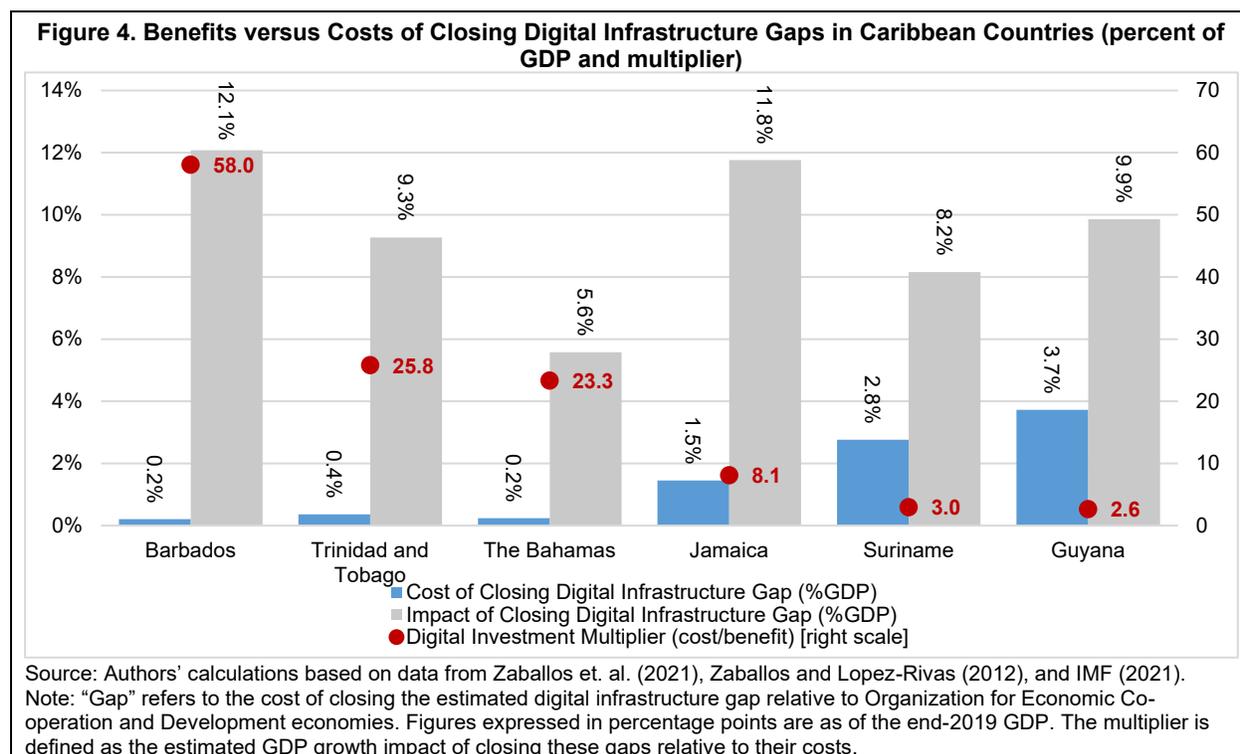


Figure 4 presents the potential implications of closing digital infrastructure gaps for the six Caribbean economies analysed here (see Annex for data on all LAC economies). The cost calculations were presented in the previous section, and they can be divided by GDP to arrive at the cost as a share of GDP. Based on the estimates discussed above, one can calculate both the costs and benefits of closing digital infrastructure



gaps with OECD economies in terms of nominal GDP, as well as the “multiplier”—the ratio of benefits to costs—associated with this level of investment.

Results and related implications for many of the Caribbean economies are striking. For example, for three of the six economies—The Bahamas, Trinidad and Tobago, and Barbados—the potential benefit in terms of the cumulative positive impact on growth could be between 23 and 58 times the associated costs. In each of these three cases, the estimated cost of closing these digital infrastructure gaps is relatively small—under 1 percentage point of GDP in each case. For Guyana, Suriname and Jamaica, benefits are also potentially significant, despite relatively higher costs. For example, in the case of Jamaica, estimates suggest that the yield in terms of cumulative GDP benefits over time could be as much as eight times as much as the costs of investment.



As with any such estimation exercise, many caveats apply with respect to methodological limitations, the availability of information, and crucial assumptions. In this context, the purpose of this presentation and the discussion presented above is not to suggest that such estimates are definitive, but to highlight the transformative potential of national investment—both public and private—in a key sector that has grown in importance over time.

As also discussed in the previous editions of the Caribbean Quarterly Bulletin focused on the implications of the COVID-19 crisis for the region, those countries that are poised to recover fastest and most durably are those whose governments, citizens, firms, and key economic sectors are most able to embrace existing and new technologies to compete globally. If this recent crisis has taught us anything, it is that the ability to



communicate, transact, and reach clients and markets virtually has never before been more critical. The future will reward economies that can do so most effectively.

### The IDB Broadband Index: Positive Signs on the Policy Front?

Infrastructure is critical, but policies and government leadership play an important complementary role in improving both access and the quality of broadband services. Specific government actions, including updating regulatory frameworks for issues such as “rights of ways”, spectrum allocation and universal service funds are crucial. Equally important is the need to establish a close relationship between digital agendas and national connectivity plans.

Against this backdrop, The IDB publishes a Broadband Index annually that covers the Bank’s 26 borrowing member countries and all 39 member countries of the OECD. The index considers four dimensions, each with its own sub-index: (1) public policies and strategic vision; (2) strategic regulation; (3) infrastructure; and (4) applications and training. The first sub-index incorporates five variables, including telecoms’ company governance and investment in research and development, among others. The second sub-index has six variables in areas such as the cost of broadband services and market concentration measures. The third sub-index takes into consideration 11 variables, including various measures of coverage, broadband, and 4G speed. Finally, the fourth sub-index considers accessibility indices, gender equity, e-government, and other factors.<sup>9</sup> Scores range from 1 to 8.

How do the six Caribbean countries fare in the index scores and ranking? Table 2 provides a summary based on the 65 countries for which the index is calculated.

**Table 2. IDB Broadband Development Index: Lead Country Scores and Caribbean Country Scores and Rankings**

	Overall Score (ranking)	Public Policies and Strategic Vision	Strategic Regulation	Infrastructure	Applications and Training
Lead Country	6.96 (Sweden)	7.52 (United States)	7.55 (India)	6.95 (Iceland)	7.37 (Australia)
The Bahamas	4.98 (43)	6.67 (12)	3.64 (63)	4.79 (44)	5.46 (37)
Barbados	5.68 (31)	6.57 (14)	5.07 (52)	5.91 (25)	4.91 (42)
Guyana	3.56 (59)	5.95 (25)	3.80 (62)	2.61 (63)	2.52 (63)
Jamaica	4.42 (51)	4.94 (37)	4.62 (55)	4.09 (51)	4.26 (50)
Suriname	2.8 (64)	1.61 (65)	2.72 (65)	3.28 (62)	3.19 (58)
Trinidad and Tobago	4.63 (47)	3.97 (55)	4.43 (57)	5.18 (38)	4.40 (46)

Source: García Zaballos, Iglesias Rodriguez, and Puig Gabarró (2021).

Note: Green indicates an improvement in the ranking between 2018 and 2020; red indicates a lower ranking between 2018 and 2020.

It is important to note that 39 OECD countries are in the rankings, and that some Caribbean countries are at or near the top of the Latin America and Caribbean region in the rankings. Also, it is promising that several sub-index rankings are improving (Table 2, in green). García-Zaballos et al. (2021) provide an

<sup>9</sup> García Zaballos, González Herranz, and Iglesias Rodriguez (2014) present the full report on the methodology. The most recent data can be found in García Zaballos, Iglesias Rodriguez, and Puig Gabarró (2021).



overview of how to develop national strategies to improve broadband access and quality, based on the national plans of several leading countries.

### **Summary and Conclusions**

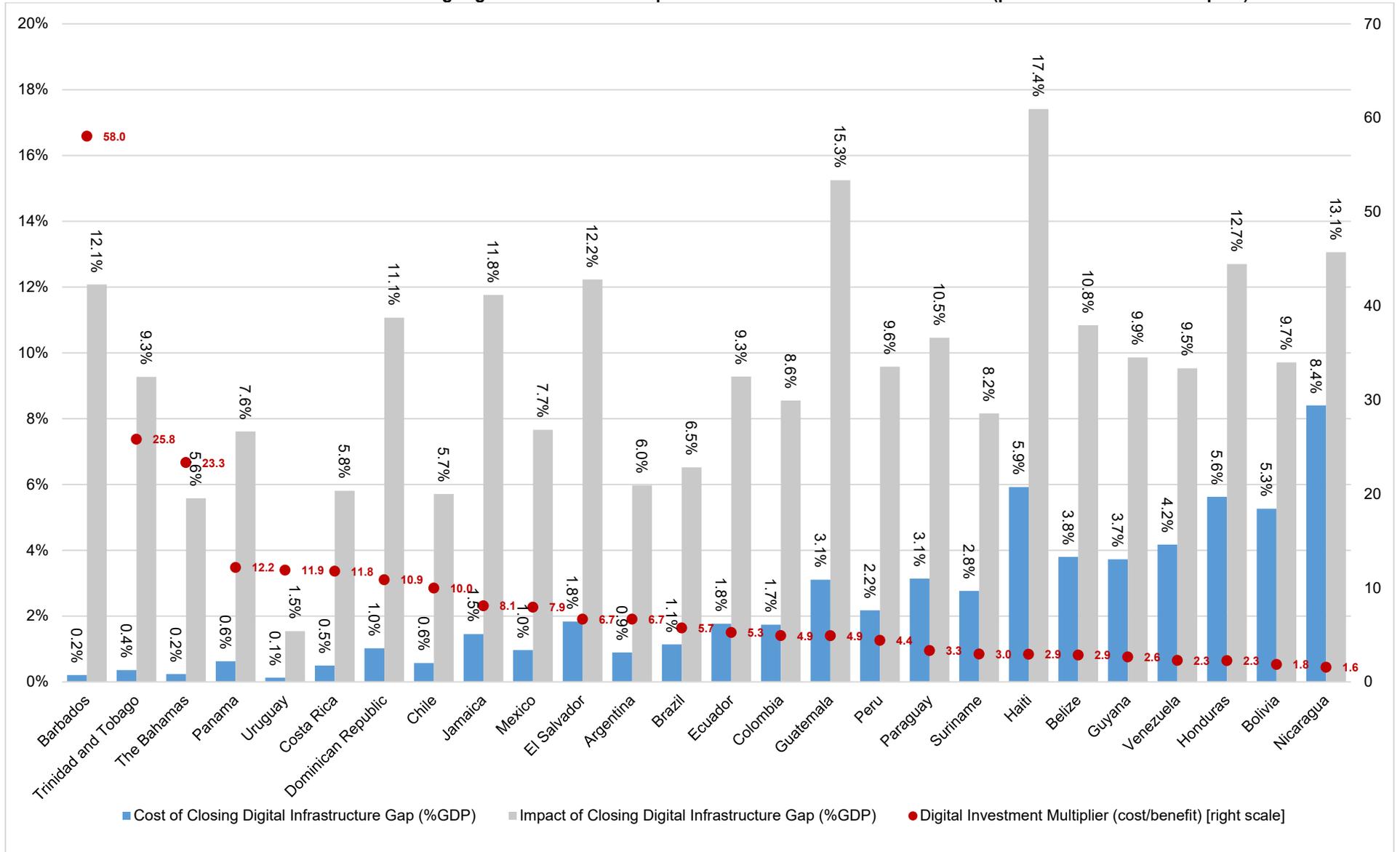
This edition of the Caribbean Quarterly Bulletin has taken a step back from the recent focus on the immediate implications of the global COVID-19 crisis for lives and livelihoods across the region. With the help of research from colleagues in the IDB's Connectivity, Markets, and Finance Division, this overview has examined the trajectory of growth and development across the region over the past five decades and highlighted the unfortunate history of slow and decelerating growth for many countries in the Caribbean—particularly when compared to other groups of countries across the world.

This overview has also considered the underlying drivers of related growth and development challenges. Two key themes have been central to this story—slow productivity growth and lagging investment in national capital stock. In this context, this overview has specifically examined how investment in a key dimension of national infrastructure might help drive faster growth. The analysis shows that, based on existing measures, there is room for improvement in the adoption of digital technologies and practices, particularly when compared with the world's leading advanced economies.

Importantly, IDB research and estimates suggest that while in many cases gaps between countries in the region and OECD economies are large, focused investment in related areas has the potential to yield very large improvements in growth, productivity, and, by implication, development outcomes. This overview has also presented a new measure of the balance of costs versus benefits of such investment and has found that multipliers could be substantial for many Caribbean countries. These and related results can help to focus public and private investment priorities over the short to medium term, particularly because such efforts have never been more consequential for countries that have been hardest hit by the current pandemic.

The country sections that follow provide additional information and a more nuanced country perspective on these issues.

**Annex. Benefits vs. Costs of Closing Digital Infrastructure Gaps in Latin American and The Caribbean (percent of GDP and multiplier)**



Source: Authors' calculations based on data from Zaballos et. al. (2021), Zaballos and Lopez-Rivas (2012), and IMF (2021).  
 Note: "Gap" refers to the cost of closing the estimated digital infrastructure gap relative to Organization for Economic Co-operation and Development economies. Figures expressed in percentage points are as of the end-2018 GDP. The multiplier is defined as the estimated GDP growth impact of closing these gaps relative to their costs.



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## COUNTRY SUMMARIES

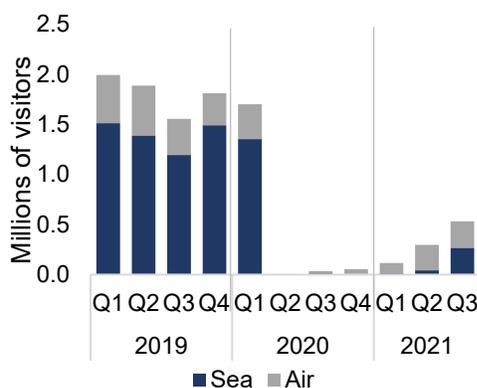
### The Bahamas

Cloe Ortiz de Mendivil

#### Macroeconomic Update

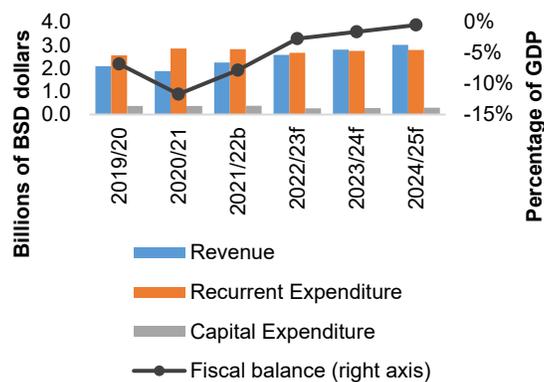
The economy of The Bahamas has shown mild signs of improvement during 2021, and real GDP is expected to grow 2 percent this year. However, the recent spike in COVID-19 cases due to Omicron variant could weaken activity in the first half of 2022 and jeopardize the slight recovery observed in the tourism and construction sectors. Although during this year tourist arrivals have been gradually increasing, figures are below pre-COVID levels. In the third quarter of 2021 the number of visitors was 532,206, representing a large improvement over the 34,221 visitors in the same period in 2020, but equivalent to only a third of arrivals in the third quarter of 2019 (Figure 2). The way tourists reach the country has shifted, as now most visitors arrive by air, while before most did so by sea. The number of cruise lines that have restarted operations is growing, but the delayed restart coupled with restrictive vaccination requirements has hindered the sector's recovery thus far. Activity in the accommodations sector has increased, with hotels like the Atlantis resort reporting over 90 percent occupancy in July, and the BahaMar resort describing the fourth of July weekend as its busiest weekend of the year.<sup>10</sup> The winter season has also been successful. High vaccination rates as well as economic recovery in source markets such as the United States are having a positive impact on The Bahamas, while output in the construction sector was driven by post-hurricane reconstruction activity and foreign investment projects.

Figure 1. The Bahamas: Visitor Arrivals by Mode of Entry



Source: Ministry of Tourism of The Bahamas.

Figure 2. The Bahamas: Fiscal Performance



Source: Ministry of Finance of The Bahamas.  
Note: b: budget; f: forecast.

<sup>10</sup> Tanya Smith-Cartwright, "Baha Mar 'Already Exceeded Its 2019 Occupancy Levels,'" The Tribune, 2 July 2021. Available at <http://www.tribune242.com/news/2021/jul/02/baha-mar-already-exceeded-its-2019-occupancy-level/>



Fiscal performance in FY2020/2021 was in line with what was proposed in the budget exercise, as the fiscal deficit stood at \$1.35 billion (equivalent to 11.7 percent of GDP), only \$20 million higher than expected.<sup>11</sup> Revenues amounted to \$1.87 billion, 6.2 percent above the budgeted amount, which was mainly driven by higher collection of the value-added tax, excise taxes, taxes on property, and taxes on sales of goods and services, which more than offset lower proceeds from taxes on international trade and transactions and property income. Recurrent expenditures stood at \$3.22 billion, 4.2 percent over budget, resulting from increased levels of subsidies, public debt interest, pensions and gratuities, and the use of certain goods and services. On the other hand, compensation of employees decreased. Capital expenditure fell short, as the actual amount spent in FY2020/2021 represented 72 percent of the budgeted amount. Looking ahead, the fiscal balance in the coming fiscal years is expected to improve (Figure 3). The budget for FY2021/2022 contemplates a 20 percent increase in revenues and a modest decrease in total expenditures of 0.6 percent, which would result in a 7.8 percent fiscal deficit. In the following three fiscal years, the fiscal deficit is expected to gradually diminish and reach 0.5 percent of GDP in FY2024/2025.<sup>12</sup> Performance in the medium term will depend on both economic recovery and the government's commitment. The new Minister of Economic Affairs, Michael Halkitis, has said that his priority is to stabilize the country's finances and establish a credible debt management strategy.<sup>13</sup> It should be noted that on September 17, Moody's downgraded The Bahamas' credit rating to Ba3 from Ba2 and on November 12, Standard & Poor's lowered it from BB- to B+.

External reserves reached \$2.71 billion at end-September 2021 and grew 13.87 percent compared to year-end 2020, driven by net foreign currency inflows from government external borrowing activities, from private sector currency inflows, and from the International Monetary Fund's Special Drawing Rights allocation of \$247.5 million received in August. Although the financial system remains liquid and stable, indicators of credit quality are showing signs of deterioration. For domestic commercial banks, by the end of the third quarter of 2021 the ratio of total reserves to required reserves stood at 6.4, above the 5.5 ratio recorded at the end of the first quarter of 2021.<sup>14</sup> The proportion of liquid assets to total assets increased from 31.8 to 33.9 percent from the first to the third quarter of 2021. Domestic credit provided by commercial banks decreased 3.2 percent year-over-year in the second quarter of 2021, while deposits increased 2.0 percent. However, the ratio of non-performing loans to total loans reached 9.14 percent in the third quarter of 2021, while it was 8.2 percent during the same period a year before. The proportion of arrears also grew, from 4.1 percent in the third quarter of 2020 to 4.9 percent in the third quarter of 2021.<sup>15</sup>

The economic outlook remains highly uncertain, and recovery will depend on the evolution of the pandemic both in The Bahamas and source markets, as well as on economic activity in the latter. Portraying the country as a safe destination to attract tourists is a key factor to boost growth and can only be achieved by improving vaccination rates and continued compliance with preventive measures (such as wearing a mask and using hand sanitizer). All efforts along those lines will prove beneficial not only in economic terms, but also in keeping Bahamians healthier and safer.

<sup>11</sup> The Bahamas exchange rate is fixed at 1 U.S. dollar = 1 Bahamian dollar. Budget performance data are obtained from the [Fourth Quarter Report on Budgetary Performance Fiscal Year 2020/21](#) (Ministry of Finance).

<sup>12</sup> Budget forecasts are obtained from the [2021 Pre-Election Economic & Fiscal Update](#) (Ministry of Finance).

<sup>13</sup> Natario McKenzie, "Steady as She Goes: New Economic Affairs Minister Pledges to Stabilize Country's Finances," Eyewitness News, 21 September 2021. Available at <https://ewnews.com/steady-as-she-goes-new-economic-affairs-minister-michael-halkitis-pledges-to-stabilize-bahamas-finances>.

<sup>14</sup> The ratio for 2020: Q2 was even lower, at 3.1.

<sup>15</sup> Non-performing loans are those over 90 days past due, while arrears are loans between 31 and 90 days past due.

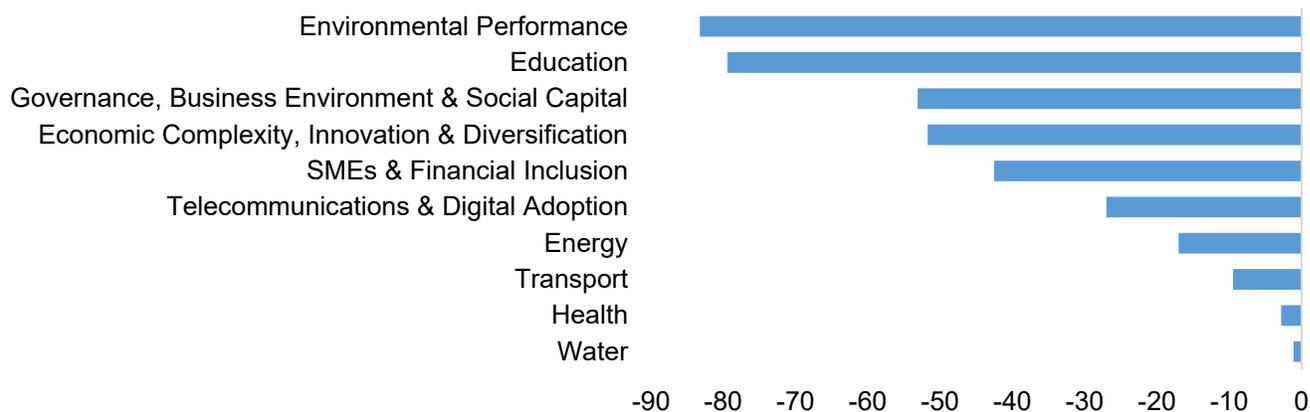


### Development Gaps

Growth in The Bahamas has been modest during the last two decades, with annual real GDP growth averaging 1.0 percent in the decade of the 2000s and 1.3 percent in the 2010s. The geography of the country and its exposure to natural disasters pose particular challenges to development. The Bahamas is an archipelago composed of 700 islands, and 70 percent of the population is concentrated in New Providence, while the rest is scattered mainly among 18 other islands, known as the Family Islands. The lack of adequate connectivity among islands has resulted in uneven development, with the Family Islands having less access to good-quality services and suffering from higher levels of poverty. Moreover, hurricanes that destroy infrastructure and take a toll on human lives and livelihoods are not uncommon, further hindering connectivity.<sup>16</sup>

A gap development analysis performed by the IDB indicates that given the country's level of income per capita, there are deficiencies in several areas related to infrastructure such as telecommunications and digital adoption, energy, transport, and water. Deficiencies also arise in other areas such as environmental performance, education, governance and the business environment, economic complexity, small and medium-sized enterprises (SMEs) and financial inclusion, and health (Figure 4). Closing the gap in infrastructure is essential, as energy, telecommunications, transport, and water and sanitation are key enablers of the production of other goods and services and will also help narrow the gap in the remaining areas for development.

**Figure 3. Development Gaps for The Bahamas 2021 (index)**



Source: Author's calculations based on IDB data.

Note: The index ranges from -100 to 100. For details on the methodology see Azevedo, Borensztein and Lennon (2019) and reference in the Regional Overview of this Bulletin. The index only shows areas with a negative development gap. The Bahamas scored positively on tourism, gender gaps, sanitation, agribusiness, and financial institutions. SMEs: small and medium-sized enterprises.

<sup>16</sup> In the last decade The Bahamas has been hit by hurricanes Irene (2011), Sandy (2012), Joaquin (2015), Matthew (2016), Irma (2017), and Dorian (2019).



## **Energy**

The Bahamas suffers from deficiencies in the energy sector that lead to frequent outages. The main sources of electricity are power stations that operate fuel oil and diesel generators. Old equipment and exposure to weather shocks disrupts power provision. Hurricane Dorian caused damage to power infrastructure estimated at US\$206.6 million.<sup>17</sup> According to Compete Caribbean's latest ProteqIN survey in 2021,<sup>18</sup> 83 percent of the surveyed companies in The Bahamas reported suffering from power interruptions. In a typical month they experienced on average 2.5 outages that lasted 2.7 hours. High electricity costs and low reliability and service quality negatively impact competitiveness of the productive sector. A Conditional Credit Line for Investment Projects (CCLIP) of US\$170 million was approved in January 2020 with the objective of rehabilitating critical infrastructure, improving resilience to climate change, and advancing the adoption of renewable energy.<sup>19</sup>

## **Telecommunications and Digital Adoption**

Although the telecommunications infrastructure in The Bahamas is ample and reaches a large share of the population, compared to other Caribbean countries both mobile and fixed broadband access are more costly and average connection speeds are slower. Moreover, the sector's exposure to natural disasters is double that of other Caribbean countries because it relies on electrical infrastructure as well as on its own infrastructure. The impact of Hurricane Dorian on telecommunications is estimated to have been US\$97.6 million.<sup>20</sup>

## **Water and Sanitation**

Water and sanitation systems also represent a challenge for The Bahamas. The Water and Sanitation Corporation is a public entity that supplies less than half of potable water demand, leaving a significant portion of the population to depend on private water and sanitation systems or wells. Prior to Hurricane Dorian, water-related infrastructure was deficient and the provision of services inefficient. The destruction caused by the hurricane on that infrastructure was estimated at US\$53.8 million. With the support of multilaterals such as the IDB and the Caribbean Development Bank, efforts have been made to rehabilitate water and sewerage systems. Given the risks associated with a lack of clean water, improving resilience and efficiency are a priority.

## **Transport**

The gap in transport is evidenced by the lack of good inter-island connectivity, especially with more remote islands. There are 53 licensed airports (28 government-owned and operated) and air connectivity is comprehensive but outdated, and inadequate infrastructure makes transportation inefficient. A project supported by a US\$35 million IDB loan approved in 2017 and currently in implementation aims to improve

<sup>17</sup> Economic Commission on Latin America and the Caribbean and the Inter-American Development Bank, "Assessment of the Effects and Impacts of Hurricane Dorian in The Bahamas," August 2021. Available at <https://www.cepal.org/en/publications/45968-assessment-effects-and-impacts-hurricane-dorian-bahamas>.

<sup>18</sup> The sample includes 1,979 Caribbean companies from Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, The Bahamas, and Trinidad and Tobago. For The Bahamas, surveys were conducted between July and September 2020 and questions made reference to FY2019/2020.

<sup>19</sup> See IDB loan [BH-Q0006](#).

<sup>20</sup> Hurricane Dorian hit The Bahamas on September 2019.



air transport connectivity and the flow of people in the Family Islands. Maritime transport also requires modernization, as ports and shipping facilities are outdated and inefficient.<sup>21</sup>

Overall, Hurricane Dorian had an impact on infrastructure valued at US\$452.5 million, equivalent to 3.3 percent of GDP in 2019.<sup>22</sup> Investments are being made in resilient and reliable infrastructure to repair the effects of such a shock and be better prepared for the next extreme weather event. Further efforts to close the development gap will have positive spillovers not only on all productive sectors, but also on the population's well-being and quality of life. An uninterrupted and cheaper power supply will directly boost competitiveness and lower the economic burden on households. Access to clean water will prevent diseases. Efficient transport will save time in the movement of both people and goods. Finally, better digital infrastructure will help connect Bahamian companies to the world, improve processes, and decrease transactions costs, while wider household access to digital infrastructure can make education and training opportunities more broadly available.

### **Digital Infrastructure**

Digital infrastructure is a key booster of development, as reliable broadband access has a positive impact on many sectors. It has the potential to improve efficiency and productivity at multiple levels, which not only increases economic growth, but also improves living standards and the quality of life.<sup>23</sup>

The COVID-19 pandemic has deeply impacted the way individuals and companies work, and it is now clearer than ever that putting in place solid digital infrastructure is key to remain competitive and connected to the world. Initial measures to contain the spread of the virus included mobility restrictions and limitations on face-to-face interactions. Businesses that had already incorporated digital tools in their day-to-day operations faced less disruption than those that had not. Companies had to adapt quickly in order to survive, and individuals without Internet access saw how many tasks, such as submitting payments or ordering items from the supermarket, became much more difficult. In addition, digital connectivity and the development of online tools and solutions now play a major role in providing not only sophisticated services, but also access to basic services such as education. Students and teachers around the globe had to quickly adapt to online teaching as schools remained closed for long periods. Households with no Internet access or without adequate and sufficient devices were particularly affected. Unequal access to digital infrastructure exacerbates inequality, with poorer individuals facing exclusion and having fewer opportunities to advance.

In The Bahamas, remarkably, mobile broadband (4G) coverage reaches 99 percent of the population, which is even above the average for Organisation for Economic Co-operation and Development (OECD) countries (98 percent).<sup>24</sup> However, regarding access, there are 61 mobile and 23 fixed broadband lines per 100 population in The Bahamas, above the average for the Caribbean but below OECD levels. In The Bahamas,

<sup>21</sup> See [The Bahamas Vision 2040](https://www.vision2040bahamas.org) at <https://www.vision2040bahamas.org>

<sup>22</sup> The impact of Hurricane Dorian including damages, losses, and other costs is estimated at US\$206.6 million on power infrastructure, US\$97.6 million on telecommunications, US\$53.8 million on water and sanitation, and US\$94.6 million on transport. See source on footnote 17.

<sup>23</sup> For a broader discussion on the benefits of broadband access see García Zaballos et al. (2020), referenced in the regional section of this Bulletin.

<sup>24</sup> Unless otherwise mentioned, data on digital infrastructure and adoption are from: García Zaballos, Iglesias Rodríguez, and Puig Gabarró (2021). Please see the regional section of this Bulletin for a discussion of the methodology. When referring to Caribbean averages, only the six countries examined in this Bulletin are considered (The Bahamas, Barbados, Jamaica, Trinidad and Tobago, Guyana, and Suriname).



71 percent of households have at least one personal computer, and 66 percent have Internet access, while in the Caribbean these shares are 51 percent and 55 percent, respectively, and in the OECD they are higher, at 83 percent and 78 percent, respectively. One factor that could hinder further adoption is that costs are high. The monthly fee for a fixed broadband connection in The Bahamas is 5 percent above the Caribbean average and 113 percent above the OECD average, while for a mobile broadband connection the fees are 54 percent and 24 percent higher, respectively.<sup>25</sup> Finally, it is worth noting that improvements in connection speed could be beneficial. Although average broadband speeds in the Bahamas are only slightly below the Caribbean average, they are close to half the mobile broadband speed in the OECD and close to a third of that in the OECD for fixed broadband.<sup>26</sup> Overall, in The Bahamas 80 percent of the population uses the Internet, in line with the OECD average of 83 percent and above the Caribbean average of 60 percent. However, no data on intensity of use are available.

The Bahamas was ranked 43rd out of 65 countries on the IDB's 2020 Global Broadband Development Index. This represents a decline of five spots from 2018. However, it is worth mentioning that The Bahamas is in second place among Caribbean countries, and seventh among Latin American and Caribbean countries. The index is constructed by analysing multiple variables aggregated into four areas: public policy and strategic vision, strategic regulation, infrastructure, and training and capabilities. Among Latin American and Caribbean countries, The Bahamas ranked 24th in strategic regulation, 8th in infrastructure, and 3rd in training and capabilities.<sup>27</sup>

Although among Caribbean countries The Bahamas fares well in terms of digital infrastructure, an estimated investment of US\$30.7 million is needed to close the gap with the OECD averages, equivalent to 0.27 percent of GDP. Such investment would increase the fiscal deficit for FY2021/2022 from 7.8 to 8.1 percent but closing the digital infrastructure gap would bring benefits estimated at 5.6 percent of GDP and productivity gains of 4.6 percent over 6 years. Although these gains are below Latin American and Caribbean averages (9.5 percent and 7.7 percent, respectively) they still well offset the costs, as the digital multiplier is above 20. Moreover, such an investment would also create more than 4,000 jobs. The resources needed in urban areas represent 61 percent of the total, with the other 39 percent would be needed in rural areas. The gap for fixed broadband amounts to US\$17.1 million, while for mobile broadband it is slightly smaller at US\$13.6 million.

One of the priorities of the previous government was the broad digital transformation and modernization. To that end, the portal [mygateway.gov.bs](http://mygateway.gov.bs) was launched in May 2021 to request and pay for government services. Individuals can now request certified copies of birth, death and marriage certificates, request police character certificates, obtain traffic records, and renew e-passports and driver licenses; and business can apply for duty exemptions, among other services. The aim is to put 200 services online in five years.<sup>28</sup> The expansion of the portal is ongoing and 40 new services are expected to go live by December 2021. More than 6,000 Bahamians are registered on the webpage.<sup>29</sup> This initiative not only reduces monetary

<sup>25</sup> Costs are based on purchasing power parity, so they are comparable.

<sup>26</sup> Mobile broadband average speed is 23.8 Mbps in The Bahamas, 29.1 Mbps in the Caribbean, and 43.4 Mbps in the OECD; fixed broadband average speed in these regions is 35.1 Mbps, 40.5 Mbps, and 100.6 Mbps, respectively.

<sup>27</sup> Not enough information for The Bahamas is available to build the public policy and strategic vision category.

<sup>28</sup> See the Digital Transformation Unit [Press Release](#).

<sup>29</sup> The IDB is providing support through the investment loan "[Government Digital Transformation to Strengthen Competitiveness](#)"



and time costs to both the government and users, but it also increases transparency. The new administration remains committed to digital transformation.<sup>30</sup>

In line with the digitization agenda, the Central Bank of The Bahamas launched the Sand Dollar in October 2020.<sup>31</sup> It is the first retail-oriented central bank digital currency and has the objective of increasing efficiency of payment systems, providing financial inclusion, and strengthening defense against money laundering and other illicit ends. The first phase of the project was completed in September 2021, allowing Bahamian residents to pay for government services within the Bahamas Digital Payment Platform DigiPay. The second phase is currently under implementation and involves government expenditure payouts in Sand Dollars. Additionally, completing the infrastructure to allow for interoperability between payment service providers and commercial banks is an ongoing process. Finishing the creation of the full ecosystem and promoting the digital tool through education, will be key elements to deepen adoption.

Improving the telecommunications infrastructure as well as digital adoption in The Bahamas will help reduce gaps in other key areas such as governance and the business environment, SMEs and financial inclusion, and education and health, among others. Greater access to physical devices with Internet connectivity and to digital tools has a direct impact on productivity and efficiency. For example, administrative processes with the government, such as requesting permits or submitting payments, can take a fraction of the time that in-person transactions take. SMEs can promote their businesses, reach more customers, or accept digital payments. Educational services can reach students in isolated areas and better provide continuing education and training for adults. Telemedicine can help address minor health concerns without the need to go to a healthcare facility. Given that the potential benefits outweigh costs, closing the gap and maintaining an adequate digital infrastructure, as well as providing broad access, should be a priority for The Bahamas.

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<sup>30</sup> In The [Speech from the Throne](#) that took place on October 6, it was mentioned that legislation will be introduced to facilitate a comprehensive programme of digitization, and that digitization will be implemented to increase efficiency and clear backlogs within the Ministry and Public Service Commission.

<sup>31</sup> See <https://www.sanddollar.bs/>



## Barbados

Ariel McCaskie and Cloe Ortiz de Mendivil

### Economic Update

Despite initial expectations of 2021 being the year of recovery, Barbados' economy contracted by 3.2 percent in the first nine months. The imminent arrival of an effective vaccine was perceived as the end of the pandemic.<sup>32</sup> However, the combination of supply issues and vaccine hesitancy with mutations of the virus has led to multiple waves of cases in Barbados and in source markets. This has resulted in lockdowns and delays in tourism resumption. Gross domestic product (GDP) grew by 10 percent in the third quarter of 2021 year-on-year. The improved performance reflected the combined effects of an expansion in private spending and the strengthening of the recovery in the tourism sector. Overall, growth is expected at 1.6 percent for 2021 and would increase 10.1 percent in 2022.<sup>33</sup>

Although the debt-to-GDP ratio rose to 156.8 percent in FY2020/21 compared to 124.8 percent in FY2019/20, the primary balance target for FY2020/21 of -1 percent of GDP was achieved. At the end of June 2021, public debt stock was equivalent to 150.3 percent of GDP (BB D\$13 billion). The increase in the debt ratio is mainly driven by the contraction in GDP, which was responsible for 78 percent of the increase in the pre- COVID debt ratio. The completion of the debt exchange in December 2019 was a key milestone in the reform program and contributed to lowering the debt -to -GDP ratio to 124.8 percent of GDP in FY2019/20 from a peak of 158.3 percent in FY2017/18 prior to the country's debt restructuring.

Gross international reserves totalled US\$1.4 billion (41.7 weeks of import cover) as at end-September 2021. Total borrowings from IFIs stood at US\$224.5 million at the end of 2021. Despite these inflows, the reserve increase was only US\$102 million, a result of the steep reduction in travel credits during the first quarter and the improvement in import demand.

The rate of inflation as measured by the 12-month moving average at end-August 2021 rose to 1.8 percent compared to 1.5 percent at end May 2021. This is due to price increases registered for food and non-alcoholic beverages, transportation and housing and utilities. The principal drivers for the price increases include international oil prices and freight costs. The unemployment rate was 15.9 percent as of June 2021. With approximately 8,700 jobs being recovered during the second quarter of the year, the unemployment rate declined by 1.3 percentage points to 15.9 percent. As of September 2021, unemployment claims have trended downward to pre-pandemic levels.<sup>34</sup>

### Development Gaps

The economy of Barbados faces several growth and development challenges. The country's development progress has been hindered by its vulnerability to natural disasters, weak business climate, lack of economic diversification, and high dependency on imports. Its geography leaves the country exposed to natural disasters such as tropical storms and hurricanes, droughts, and deterioration of infrastructure. Regarding the business climate, Barbados ranked 77th out of 141 countries in the World Economic Forum's

<sup>33</sup><http://www.centralbank.org.bb/Portals/0/Files/Central%20Bank%20Review%20of%20the%20Economy%20-%20January%20to%20September%202021.pdf>

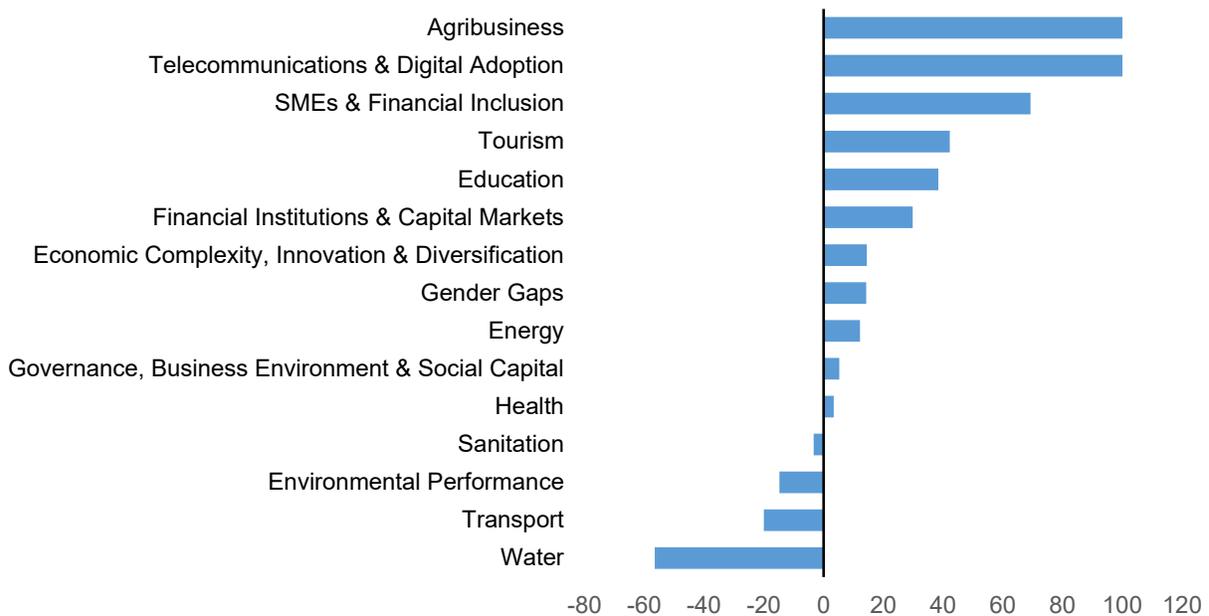
<sup>34</sup><https://www.nis.gov.bb/statistics/>



*Global Competitiveness Report* for 2019, down from the 30th position in the 2017 report. The tourism and financial services sectors contributed approximately 50 percent to GDP, not including indirect tourism linkages to other economic sectors. Lastly, the country spends 40.9 percent of GDP on imports, of which 6 percent are fuel imports.<sup>35</sup>

Barbados has high-quality infrastructure given its income level, but the infrastructure stock is aging and the fiscal space for investments is decreasing, which could have a negative impact on development. A gap development analysis performed by the IDB shows that infrastructural gaps persist in the areas of water and sanitation and transport (Figure 1). The Barbados Economic Recovery and Transformation (BERT) Plan is an integrated part of a wider set of economic reforms that will address long-term structural challenges that hamper long-term development and growth. The country entered into a four-year extended arrangement with the IMF in October 2018 to combat high debt levels, low growth, and recurring fiscal deficits. Barbados has positive infrastructure gaps for key sectors of the economy such as energy and telecommunications, yet there has been a decline in infrastructure investments. The quality of infrastructure indicators reflects a decline in capital stock and the country’s vulnerabilities to climate change and natural disasters.

**Figure 1. Development Gaps for Barbados 2021**



Source: Authors’ calculations based on IDB data.

Note: The index ranges from -100 to 100. For details on the methodology see Acevedo, Borensztein and Lennon (2019), listed in the references of the regional section of this Bulletin. SMEs: small and medium-sized enterprises.

### **Transportation**

Substantial investment in road infrastructure is under way in Barbados. The country has achieved one of the highest road density levels in Latin America and the Caribbean. Approximately 80 percent of roads on the island are paved, though the infrastructure is aging and requires regular maintenance and upgrades to

<sup>35</sup> See the U.S. Department of Energy, “Barbados Energy Snapshot” at <https://www.nrel.gov/docs/fy20osti/76636.pdf>.



accommodate increasing traffic congestion. The quality of roads remains one of the country's lowest scoring sub-indexes on the *Global Competitiveness Report's* Quality of Road Infrastructure Index, with Barbados ranking 111th among 138 countries in 2019.<sup>36</sup> The Barbados road network system consists of 1,950 km of roadways. Over the last year, the transport sector benefited from new investment, as Barbados outlined a capital works program costing BBD\$500 million that will focus on upgrading infrastructure on the island.<sup>37,38</sup> The investments include development of the Scotland district with four major bridge projects and a series of roadworks. The finalization of a BBD\$230 million loan with China is currently in progress to further boost investment in road infrastructure and repair. The public transport sector in Barbados is worth over BBD\$200 million. A review of the public transport system is also under way with a view to possible privatization. The government of Barbados has commenced a program to review the entire concept of a Mass Transit Authority.

Barbados has faced a rapid change in traffic patterns due to the increasing number of motor vehicles on the roads affecting traffic flows. The growing volume of traffic, especially at peak periods, is a cause of increasing public concern. In 2020, the IDB Road Rehabilitation and Improving Connectivity of Road Infrastructure Programme was launched to improve the quality of Barbados' road infrastructure in order to enhance tourism competitiveness. The primary road network has reached its design life and is in need of rehabilitation. The BBD\$50 million operation will contribute to sustainable growth of the Barbados economy through interventions to rationalize and improve public sector efficiency and to support greater private sector involvement in the transport sector.<sup>39</sup> The project seeks to repave over 31 kilometres of the island's road network using economic, social, and environmental criteria.

### **Energy**

Barbados is highly dependent on imported fossil fuels, which account for 95.4 percent of the country's primary energy needs.<sup>40,41</sup> The transport sector is a major source of fossil fuel consumption and represents 33 percent of the island's fuel consumption.<sup>42</sup> The country imports 100 percent of its petroleum products and is vulnerable to international oil price shocks, directly impacting the cost of electricity. However, 100 percent of the population has access to electricity,<sup>43</sup> and more sustainable forms of energy are being integrated into the energy mix in terms of electricity delivery and other energy services.<sup>44</sup> Barbados Light and Power, the island's only integrated private electricity utility, has an installed capacity of 286.6 megawatts (MW),<sup>45</sup> with 85 percent of its power generation based on heavy fuel oil and 15 percent on diesel

<sup>36</sup> The report is available at [http://www3.weforum.org/docs/WEF\\_TheGlobalCompetitivenessReport2019.pdf](http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf).

<sup>37</sup> In 2020, the government of Barbados outlined a three-year plan to improve road, water and transportation infrastructure for a total of BBD\$500 million.

<sup>38</sup> Barbados has a fixed exchange rate of US\$1 = BBD\$2.

<sup>39</sup> Environmental and Social Management Plan, Road Rehabilitation and Improving Connectivity of Infrastructure Design Services, Volume 3, 2020.

<sup>40</sup> The remaining amount comes from oil, natural gas, biomass, and solar energy.

<sup>41</sup> See the U.S. Department of Energy, "Barbados Energy Snapshot" at <https://www.nrel.gov/docs/fy20osti/76636.pdf>

<sup>42</sup> See Lisa Viscidi, Nate Graham Marcelino Madrigal, Malaika Masson, Veronica R. Pradoand, and Juan Cruz Monticelli, "ELECTRIFIED ISLANDS: The Road to E-Mobility in the Caribbean," February 2020, Organization of American States, IDB, and The Dialogue. Available at <https://ecpamericas.org/wp-content/uploads/2020/12/Electrified-Islands-Final-2.pdf>

<sup>43</sup> See the 2019 *Global Competitiveness Report* at [http://www3.weforum.org/docs/WEF\\_TheGlobalCompetitivenessReport2019.pdf](http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf)

<sup>44</sup> See IDB, "Barbados to Boost Renewable Energy and Energy Efficient with IDB Support," news release, September 30, 2019, available at <https://www.iadb.org/en/news/barbados-boost-renewable-energy-and-energy-efficiency-idb-support>

<sup>45</sup> Compared to 30MW solar capacity in 2019. As a reference, Itaipu, the largest hydro power plant in Brazil and Latin America and the Caribbean, has an installed capacity of 14,000 MW.



fuel. The island produces approximately 700 barrels of oil per day (equivalent to 6 percent of the total consumed), but due to the country's lack of capacity for oil refining the barrels are exported.<sup>46</sup>

As a small island developing state, Barbados is the leader in the deployment of solar water heaters, leading the ranking of the top 10 countries per capita in 2019.<sup>47</sup> The shift to renewable energy technologies is important in the face of high fossil fuel costs. Barbados relies heavily on imported fossil fuels and spends a large proportion of its GDP on energy imports. The country has capitalized on its geographic position and its access to a constant source of energy, as it receives over 3,000 hours of sunshine per year. The widespread adoption of solar water heating technology has been a success, saving over 100,000 MWh of energy per year.

Barbados is also a regional leader in electric vehicle deployment and is among the top users of electric vehicles per capita. In 2018, 1.28 percent of new car sales were electric and at present there are approximately 352 electric vehicles on the road (this includes both private and commercial). As Barbados is primarily reliant on oil imports for power generation and transportation, this will improve energy security and reduce the country's dependence on imported oil, as well as its carbon footprint. In the transport sector, Barbados spends about US\$165,000 per day on oil, totalling US\$800 million annually. In August 2020, Barbados took the lead in the Caribbean region by deploying 33 electric buses and the required infrastructure. As of September 2021, there were approximately 30 publicly available charging points on the island and an additional eight at government facilities. In total there are approximately 450 charging stations on the island. Additionally, the FY2021/2022 budget review disclosed the purchase of 14 electric buses that arrived in August 2021, complementing the 33 currently in service. The total cost was BBD\$42 million as part of a smart energy program to procure the electric buses and implement the new electrical infrastructure.<sup>48</sup>

The government of Barbados launched a new BBD\$250 million housing initiative in March 2021. The Home Ownership Providing Energy (HOPE) initiative features the construction of 1,000 affordable homes intended to be offered to police, nurses, teachers, and other civil servants earning BBD\$4,000 a month and under. All homes will be energy-efficient and solar-powered. The government has also invested BBD\$40 million in a Housing Credit Fund to get the project under way. Applications for the scheme opened in May 2021.

### ***Water and Sanitation***

Barbados is a water-scarce economy with deteriorated wastewater treatment facilities. The island is particularly vulnerable to the effects of cyclical droughts compounded by the waste of very scarce supplies of water as a result of aging infrastructure and delivery systems. In the water sector, institutional challenges limit the capacity of the Barbados Water Authority (BWA) to afford operating costs, make capital expenditures, and service its debt. This has negative implications for service delivery and the maintenance of key infrastructure. The island's potable water and wastewater systems are set for major upgrades under a project designed to remedy ongoing water issues. The Barbados Water Infrastructure Rehabilitation Project being undertaken by the BWA has been made possible through financial assistance from the

<sup>46</sup> In 2015, the electricity matrix was over 90 percent powered by imported fossil fuels, with 22 MW of solar capacity accounting for 2.4 percent of electricity generation, and another 5.6 percent generated by bagasse.

<sup>47</sup> Source: Solar Heat Worldwide, 2021.

<sup>48</sup> This program was funded by the IDB.



European Investment Bank (EIB) and the Latin American Development Bank. The US\$12 million EIB loan will allow for the modernization of water supply and sewerage systems, leading to substantial energy savings, reducing water losses in networks, and improving wastewater treatment operations by focusing on the rehabilitation of aged and deteriorated leaking infrastructure, pipes, and reservoirs. The EIB is working to ensure that the supply of clean water is secure, and that water infrastructure is protected from changing climate and extreme weather.<sup>49</sup> In the 2019 *Global Competitiveness Report*, Barbados ranked 70th out of 141 countries in the reliability of the water supply.

### **Digital Infrastructure**

The economy of Barbados requires an estimated investment of US\$10.6 million to close the digital infrastructure gap, equivalent to 0.24 percent of GDP. The gap for mobile broadband amounts to US\$10.3 million, while the gap for fixed broadband is less significant at US\$286,163. Closing the digital infrastructure gap would bring estimated benefits of 12.1 percent of GDP and productivity gains of 9.9 percent. Both gains are much greater than the Latin American and Caribbean averages of 9.5 percent and 7.7 percent, respectively. As a result, all efforts to bridge the gap would well outweigh the costs, as the digital investment multiplier is above 49. Additionally, the investment will result in the creation of 7,456 jobs. The resources needed in urban areas represent 13 percent of the total, while most of the resources would be needed in rural areas (87 percent).

The IDB conducted a gap analysis to identify the areas for improvement in digital infrastructure in Latin America and the Caribbean. Barbados secured the highest position within the Latin American and Caribbean countries on the Annual Broadband Development Index Report.<sup>50</sup> Overall, Barbados was ranked 31st among the 65 countries analysed.<sup>51</sup> The report highlights digital gaps across Latin America and the Caribbean relative to broadband penetration and mobile broadband (4G) technology in Organization for Economic Co-operation and Development (OECD) countries. Closing this gap is crucial to increase employment and contribute to sustainable economic growth. Barbados is making good progress in its digital transformation of public sector administration and in improving service quality. The reforms were further strengthened by the BERT plan, introduced in October 2018 and further prioritized given the COVID-19 shock.<sup>52</sup> Overall, Barbados is taking steps to digitally transform its economy, including an investment of US\$40 million that was secured to bridge the digital gap, equivalent to 0.769 percent of GDP.<sup>53</sup> The IDB-supported project aims to achieve (1) greater use of digital channels by individuals and companies to access public services; (2) greater efficiency in public sector administration; and (3) strengthened public sector skills to operate in a digital economy.

Mobile broadband (4G) coverage in Barbados reaches 95 percent of the population, slightly below the average for OECD countries (98 percent). However, regarding access, there are 60 mobile and 31 fixed

<sup>49</sup> See EIB, "Barbados: EIB Backs Improved Water Supply and Sanitation," press release, June 19, 2020, available at <https://www.eib.org/en/press/all/2020-157-eib-backs-improved-water-supply-and-sanitation-in-barbados>.

<sup>50</sup> The index measures the current status and development of broadband in Latin America and the Caribbean in comparison with member countries of the OECD. It is based on four pillars: public policies and strategic vision, strategic regulation, infrastructure, and applications and training.

<sup>51</sup> Eleven places higher than in 2018.

<sup>52</sup> In 2018, a US\$40 million project was designed to digitalize and modernize government processes.

<sup>53</sup> See IDB, "Barbados will Invest in the Modernization of the Public Sector with IDB Support," press release, November 28, 2019, available at <https://www.iadb.org/en/news/barbados-will-invest-modernization-public-sector-idb-support>.



broadband lines per 100 population, both above the average for the Caribbean but below OECD levels.<sup>54</sup> In Barbados, 71.7 percent of households have at least one personal computer, while 67.7 percent have Internet access. Overall, 79.6 percent of the population uses the Internet, in line with the 83 percent OECD average and above the 60 percent Caribbean average. Average broadband speeds could be improved, as connection speeds are slightly below the Caribbean average. The connection speed is close to half the speed in mobile broadband in the OECD and close to a third of that in the OECD in fixed broadband.

Barbados is actively pursuing its digital transformation agenda by simplifying the process of doing business and promoting efficiency in the public sector. To date, the government has digitally transformed several departments and processes as follows:

- i. National Identification Card: By the end of 2022, a new digital identity system will facilitate the transfer of personal information and will include Internet banking, e-commerce, e-communications, and user authentication features.<sup>55</sup>
- ii. Barbados Revenue Authority: In June 2018, the government introduced a new tax system known as the Tax Administration Management Information System (TAMIS) to replace the outdated tax administration system. The new tax system is a modernized electronic platform that allows users to manage both individual and corporate taxes online. In September 2021, the government introduced the facilitation of online registration of private and commercial vehicles using the Barbados Revenue Authority's new services portal.
- iii. Barbados Statistical Service (BSS): On August 1, 2021, The BSS launched its new website, including new features such as the provision of updates on the National Population and Housing Census.
- iv. Police Certificate of Character: The police certificate of character process was automated in March 2020 and for the first time allows applicants to apply online, pay online, and receive the certificate electronically.

Greater use of financial technologies is crucial to bridging the digital gap. Firms and banks in Barbados report that strict know-your-client and regulatory burdens, including those related to anti-money laundering and combating the financing of terrorism, hinder domestic financial transactions and credit provision. Fostering greater use of new and innovative financial technologies and revising relevant regulatory requirements to enhance access could help address some of these barriers to financial access and inclusion.<sup>56</sup> The percentage of Internet users per the adult population in Barbados is 81.8 percent and ranks it 35th out of 141 countries on the 2019 *Global Competitiveness Report* index. The country's information and communications technology (ICT) adoption score is 23rd out of 141 countries on the same Index. This is a major contrast to the 2015 ranking of 101st out of 143 countries. Telecommunications infrastructure

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<sup>54</sup> Unless otherwise mentioned, data on digital infrastructure and adoption are obtained from: García Zaballos, Iglesias Rodriguez, and Puig Gabarró (2021). Please see the regional section of this Bulletin for a discussion of the methodology. When referring to Caribbean averages, only the Caribbean countries analyzed in this Bulletin are considered (The Bahamas, Barbados, Jamaica, Trinidad and Tobago, Guyana, and Suriname).

<sup>55</sup> The national identification card of Barbados is currently a laminated paper printed with basic information such as the holder's name, sex, date of birth, nationality, height, date of issue, national registration number, and a signature.

<sup>56</sup> See Ariel McCaskie and Yajaira Archibald, "Barbados' Journey to Stronger Economic Institutions," IDB Caribbean DevTrends, June 9, 2021, available at <https://blogs.iadb.org/caribbean-dev-trends/en/barbados-journey-to-stronger-economic-institutions/>.



and ICT service coverage in Barbados is adequate, but there are low levels of ICT development and usage in both the public and private sectors.

Infrastructure in Barbados can be improved by way of more public-private partnerships. The only publicly owned infrastructure utility is in the water sector, whereas energy, telecommunications, and digital infrastructure is privately owned. The country has already taken the necessary steps within the energy sector with the deployment of electric vehicles and solar water heating infrastructure and is leading regionally on both fronts. Water infrastructure is also being modernized in terms of water supply and sewerage systems in order to reduce water losses in networks and improve wastewater treatment operations. The biggest gaps exist in the telecommunications and digital areas, in access to Internet connectivity, in the speed required to improve the telecommunications infrastructure across mobile and broadband platforms, and in providing digital training for teachers to enhance their educational services skills, given the challenges of the COVID-19 environment. To close the digital gap, there needs to be greater investment in financial technologies, and the government must continue its current digital transformation agenda.



## Guyana Victor Gauto

### Economic Update

#### **Labour Market**

The Guyana Bureau of Statistics published new information on the labour market in November, with updated data on employment for the first three quarters of 2021. The Guyana Labour Force Survey had paused due to the pandemic after the first quarter of 2020. Notably, labour force participation rates, which capture the share of the population working or looking for work relative to the working age population (>15), moderately increased for men, from 61 percent in 2020:Q1 to 65 percent in 2021:Q1. This indicates that some who had previously been outside of the labour force joined it in the beginning of the year, then gradually declined to 62 percent in 2021:Q3. The labour force participation rate of women remained relatively stable, with a slight decline from 41 percent in 2020:Q1 to 39 percent in 2021:Q1. On the other hand, the unemployment rate increased much more for women, from 14.4 percent in 2020:Q1 to 19.1 percent in 2021:Q1 before dropping to 18.4 percent in 2021:Q3. For men it increased from 11.7 percent to 14.1 percent in 2021:Q2 before dropping to 12 percent in 2021:Q3. Total unemployment rates increased from 12.8 percent in 2020:Q1 to 14.5 percent in 2021:Q3. The data show that the labour force participation rate of men in the 15-65 age group increased the most among those with little or no schooling, from 57 percent in 2020:Q1 to 73 percent in 2021:Q1. These trends are potentially related to the impact of the pandemic, perhaps drawing more men into the labour market to offset negative income shocks across households, along with relatively more women losing their jobs, a trend that has also been observed in other countries (Figures 1 and 2).

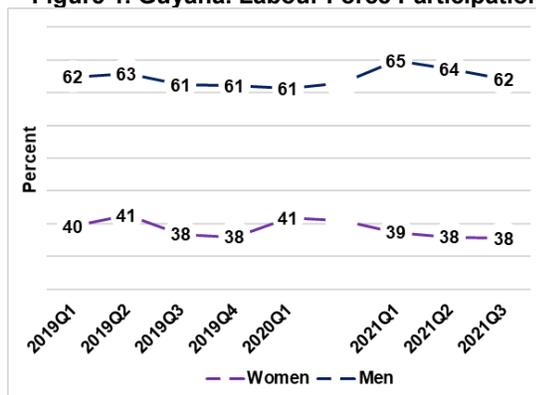
#### **Financial Sector**

Net domestic credit, which had increased by 13.6 percent year-over-year in December 2020, declined by approximately 50 percent in June 2021 and July 2021, mainly because the central government's debt with the Bank of Guyana in the form of overdrafts was securitized, practically changing the category of this central bank asset outside of net domestic credit into net other items.<sup>57</sup> The overdraft amount was approximately US\$700 million, or 27 percent of total government debt. Private sector credit growth recovered through the first half of the year, after credit growth slowed to 1.8 percent year-over-year in February 2021. Since then, year-over-year growth rates have continuously increased, reaching 10.5 percent in October 2021. Total private sector credit was US\$1.4 billion in October 2021 or approximately 24 percent of 2020 GDP. Businesses make up most of the commercial lending portfolio, representing 51 percent of total loans, followed by mortgages at 33 percent and household loans at 13 percent. Credit to household saw the highest y-o-y growth rates in 2021, reaching 16.4 percent in September 2021, followed by households at 11.9 percent in October 2021 and mortgage loans at 4.4 percent the same month.

<sup>57</sup> See the Banking System Statistical Abstract – July 2021.

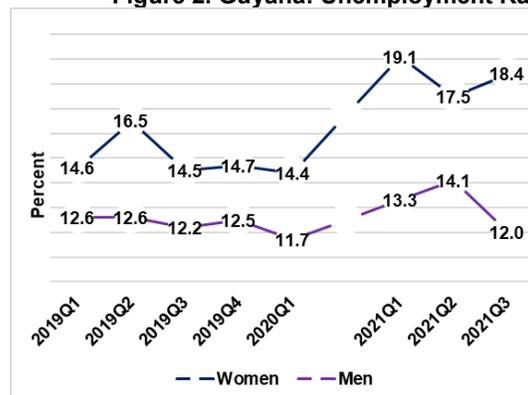


Figure 1. Guyana. Labour Force Participation Rate



Source: Guyana Labour Force Survey, Bureau of Labor Statistics.

Figure 2. Guyana: Unemployment Rate



Source: Guyana Labour Force Survey, Bureau of Labor Statistics.

## Development Bottlenecks

Infrastructure development is considered a fundamental component of economic growth, with capital stock representing a key determinant of production. Consequently, an important challenge will be to translate Guyana's newfound resource wealth into an agent for economic transformation, including infrastructure development. Research on infrastructure indicates that every 1 percent increase in physical infrastructure increases GDP by approximately 1-2 percent. Infrastructure development is important for two main reasons. First, it is a cornerstone of productivity. Better roads, bridges, energy, and communication reduce transportation and production costs. Second, infrastructure may contribute to reducing income inequality and poverty by enhancing access to jobs, health, and education (Calderon and Serven, 2014). In this context, the concept of sustainable infrastructure, which considers environmental and social aspects of critical projects, has moved to the foreground of development policy discussions.

Infrastructure challenges in terms of transportation, energy, and telecommunications continue to represent significant obstacles for private sector development in Guyana. High energy costs and reliability are major challenges. The average tariff for electricity in Guyana is US\$0.30/kilowatt hour (kWh), representing one of the highest rates in Latin America and the Caribbean, where the average tariff is US\$0.18/kWh. However, access to energy has expanded over the last decade, increasing from 79 percent in 2008 to 92 percent in 2018, while over the same period in Latin America and the Caribbean as a region it increased from 90.5 to 96 percent and in the Caribbean as a sub-region it increased from 94 to 98 percent. As an additional energy benchmark, members of the Organization for Economic Co-operation and Development (OECD), which are mostly high-income countries, had energy coverage of 100 percent over the same period, according to the World Bank's World Development Indicators. In Guyana, the gap between urban and rural communities has narrowed, but the widespread use of generators to supplement transmission and reliance on heavy fuels for power generation represent a significant cost to the economy.

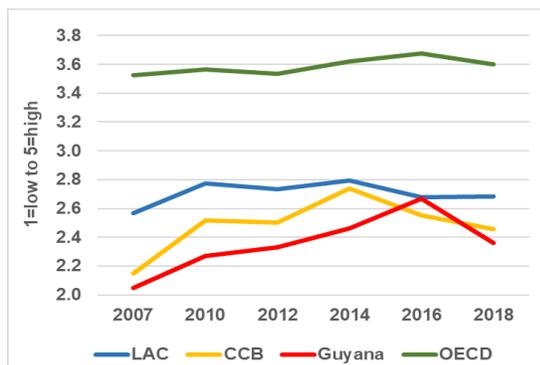
In terms of transportation, about 80 percent of Guyana's road network is unpaved, limiting land transport within the country and abroad. On the World Bank's Logistics Performance Index (LPI), Guyana's score significantly improved between 2007 and 2016 from 2.05 to 2.67 out of 5 before declining slightly to 2.36 in 2018, below the average scores of 2.68 for Latin America and the Caribbean as a region and 2.46 for the Caribbean as a sub-region. These measures are all significantly below the OECD figures, which averaged 3.59 over the years for which data are available (Figure 3). Guyana ranked 132nd out of 160 economies



on the LPI, while the average rankings of Latin America and the Caribbean as a region and the Caribbean as a sub-region were 90th and 120th, respectively.

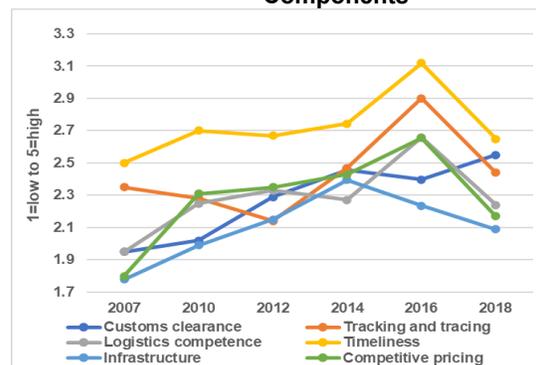
The LPI includes several components relevant to Guyana's future development as economic activities increase and economic diversification policies are adopted. The index indicator with the best overall performance was "timeliness of shipments," with scores ranging from 2.5 in 2007 to 3.1 in 2016 before dropping in 2018. Other areas with relatively improving performance include "tracking and tracing consignments" and "ease of arranging competitively priced shipments." The components with relatively lower scores over time include "efficiency of customs clearance" (though this was the only indicator that improved in 2018); "competence and quality of logistics services;" and the indicator with the lowest score in 2018 and generally, "quality of trade and transport-related infrastructure." Guyana's highest ranking on these indicators was "customs clearance," on which it ranked 84th, exceeding averages of 91st for Latin America and the Caribbean as a region and 85th for the Caribbean as a sub-region. Guyana's lowest ranking, at 148th, was on "ease of arranging competitively price shipments," compared to averages of 88th and 177th for Latin America and the Caribbean as a region and the Caribbean as a sub-region, respectively (Figure 4).<sup>59</sup>

Figure 3. Logistics Performance Index



Source: World Bank, Logistics Performance Index.  
Note: CCB: Caribbean (The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago); LAC: Latin America and the Caribbean; OECD: Organisation for Economic Co-operation and Development.

Figure 4. Guyana. Logistics Performance Index Components



Source: World Bank, Logistics Performance Index.

## Digital Technology

Coverage of information and communication technologies, and their utilization, is among the lowest in the region, hindering productivity and innovation. Figures 5-8 provide some context for communications technology in Guyana.

One of the most basic indicators is the share of the population using the Internet (Figure 5). In Guyana, this percentage rose from 13.8 percent in 2007 to 37.3 percent in 2019, a significant increase but below the benchmark averages of Latin America and the Caribbean as a region and the Caribbean as a sub-region over the same period. In fact, averages of the share of the population using the Internet both for Latin America and the Caribbean as a region (61 percent) and the Caribbean as a sub-region (64 percent) increased at a higher rate than in Guyana in 2019. The same rate in OECD countries was 82 percent of the

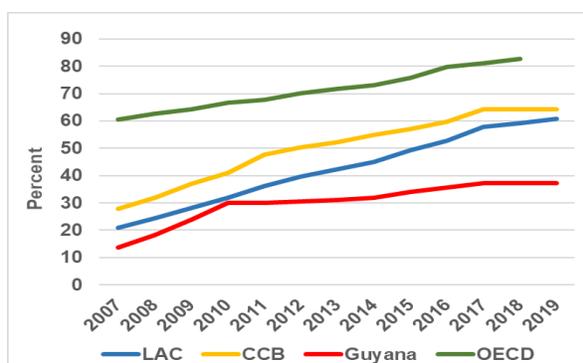
<sup>59</sup> Caribbean averages do not include Barbados and Suriname, for which no LPI data were available.



population in 2018. This is a distinct measure of the technology gap separating Guyana from other countries in the region and improving it could significantly contribute to increasing productivity. Similarly, in terms of the fixed broadband subscriptions per 100 population, Guyana trails the group of selected comparators, increasing from 0.31 subscriptions per 100 population in 2007 to 8.3 in 2019. The averages in 2019 for Latin America and the Caribbean as a region and the Caribbean as a sub-region were 12.7 and 19.3, respectively, well below the OECD average of 31.4 in 2018 (Figure 6).

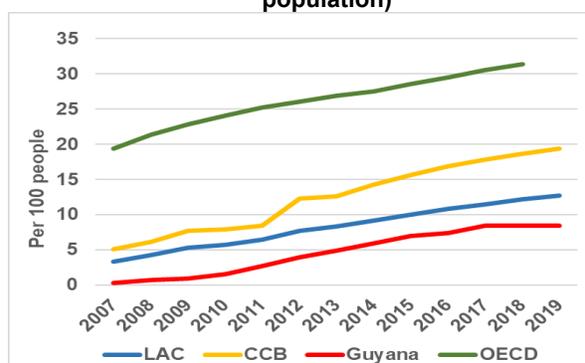
In terms of telephone communications indicators, Guyana lags regional averages in both fixed and mobile communications subscriptions per 100 population. Fixed telephone subscriptions per 100 population have declined in Guyana and in all selected benchmark comparators. In Guyana they declined from 20.1 fixed telephone subscriptions per 100 population in 2014 to 17.5 in 2019. Overall, there are more fixed subscriptions per population in Guyana than in Latin America and the Caribbean on average, where they declined from 16.5 in 2014 to 14.9 in 2019 (Figure 7). However, the Caribbean has higher average subscriptions per 100 population, reaching 23.8 in 2019. The declining trend in fixed mobile subscriptions is potentially due to increasing mobile cellular subscriptions per 100 population. In Guyana mobile subscriptions per 100 population increased from 59.9 in 2008 to 82.9 in 2019, compared to the averages of 108.9 for Latin America and the Caribbean as a region and 116.4 for the Caribbean as a sub-region (Figure 8).

**Figure 5. Population Using the Internet (percent)**



Source: World Bank, World Development Indicators.  
Note: CCB: Caribbean (The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago); LAC: Latin America and the Caribbean; OECD: Organization for Economic Co-operation and Development.

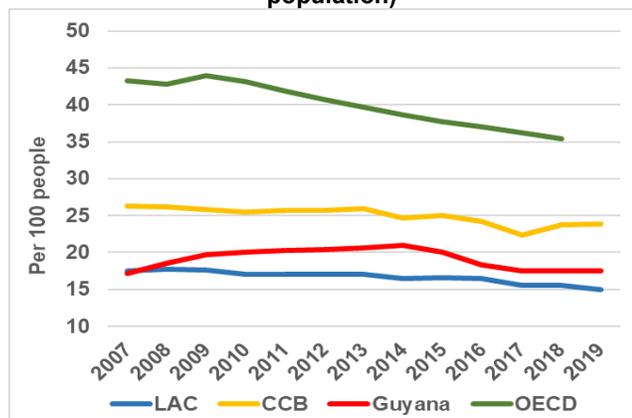
**Figure 6. Fixed Broadband Subscriptions (per 100 population)**



Source: World Bank, World Development Indicators.  
Note: CCB: Caribbean (The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago); LAC: Latin America and the Caribbean; OECD: Organization for Economic Co-operation and Development.

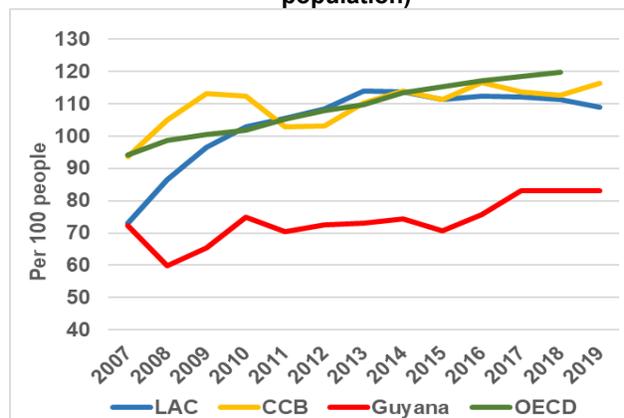


**Figure 7. Fixed Telephone Subscriptions (per 100 population)**



Source: World Bank, World Development Indicators.  
Note: CCB: Caribbean (The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago); LAC: Latin America and the Caribbean; OECD: Organization for Economic Co-operation and Development.

**Figure 8. Mobile Cellular Subscriptions (per 100 population)**



Source: World Bank, World Development Indicators.  
Note: CCB: Caribbean (The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago); LAC: Latin America and the Caribbean; OECD: Organization for Economic Co-operation and Development.

An additional measure of digital technology development is the United Nations' E-Government Development Index (EGDI), which focuses on the adoption of technology in the delivery of public services and benchmarks in 193 UN member countries based on three equally weighted components: telecommunications infrastructure, human capital, and online services, which assesses the national online presence. The EGDI ranges from 0-1 and groups countries in four categories: very high EGDI (0.75-1.00), high EGDI (0.50-0.75), middle EDGI (0.25-0.50), and low EGDI (0.00-0.25). In 2020, Guyana ranked 129th and was in the middle EDGI grouping with a score of 0.49. On the components making up the index, all ranging from 0-1, Guyana was evaluated as having high human capital (0.64), mid-level telecommunications infrastructure (0.36), and, on the measure that is most related to e-government, mid-level online services (0.46). Among other Caribbean countries, Barbados was ranked the highest at 62nd, The Bahamas 73rd, Trinidad and Tobago 83rd, Jamaica 114th, and Suriname 122nd.

A study by the IDB in 2019 entitled "The Impact of Digital Infrastructure on the Sustainable Development Goals" estimates the digital infrastructure gap for several Latin American and Caribbean countries relative to OECD levels. It highlights the positive impact of telecommunications infrastructure on several UN Sustainable Development Goals (SDGs) such as ending poverty (SDG1), zero hunger (SDG2), good health and well-being (SDG3), and decent work and economic growth (SDG8), among others. The main recommendation in the study is that, due to evidence showing that telecommunications infrastructure fosters sustainable development, investment in digitalization and related-infrastructure should be strongly incentivized.

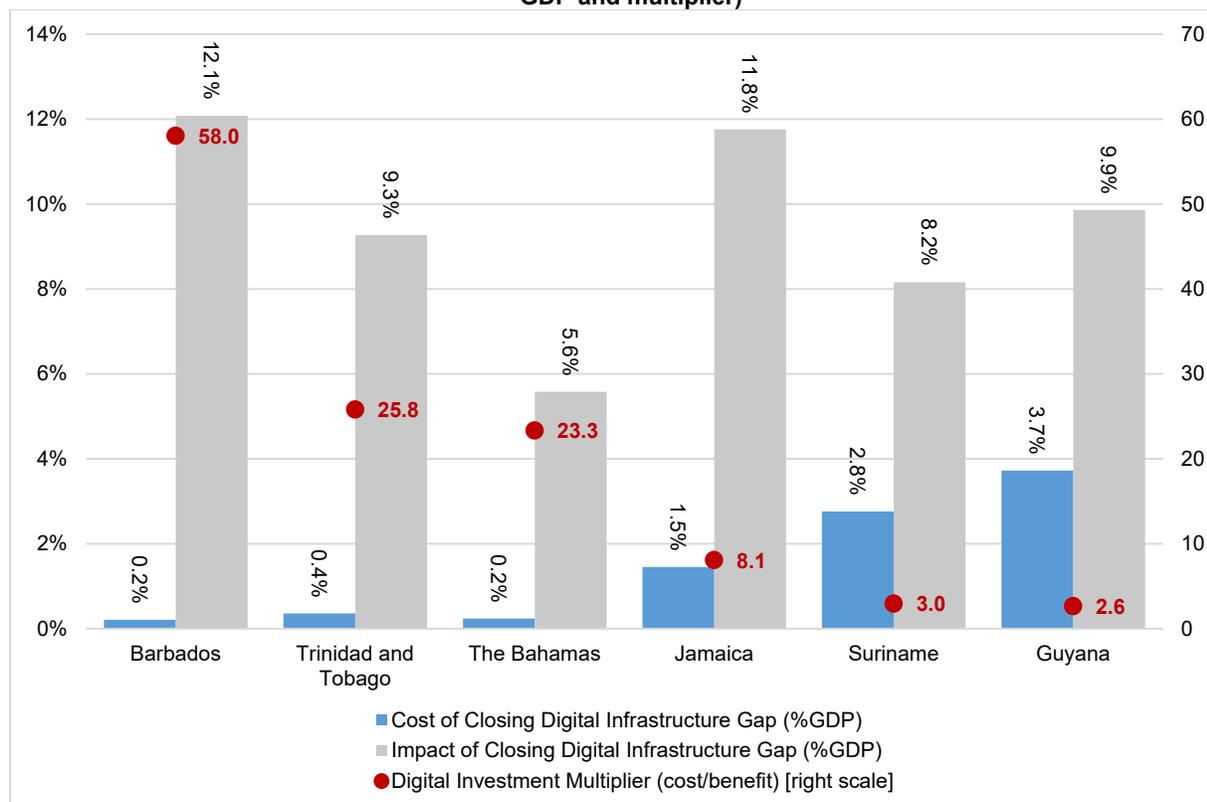
The authors of the study applied the same methods to Caribbean countries to evaluate the cost of closing the infrastructure gap relative to OECD economies and its impact on GDP.<sup>58</sup> The details of the costs in the figure include infrastructure gap estimates for Guyana for fixed and broadband investments as well as urban versus rural investments. The total estimate for this specific infrastructure gap in Guyana is US\$178 million, of which US\$135 million corresponds to fixed broadband infrastructure and US\$43 million to mobile

<sup>58</sup> See the regional section of this report for the methodology behind these estimates.



broadband infrastructure. That translates to 3.09 percent of nominal GDP. Infrastructure investments in urban areas are estimated at US\$19.5 million, while in rural areas they are estimated at US\$158.5 million. Guyana's current levels of government capital expenditure are US\$495 million, or 8.5 percent of 2020 GDP. The empirics of the study, which focused on 26 Latin American and Caribbean countries, found that an increase in digital infrastructure investment of 1 percent contributed to increasing GDP by 0.319 percent, suggesting telecommunications investments leverage GDP growth, primarily through the direct effects of building infrastructure and, indirectly, by increasing communications, innovation, and productivity, which have pervasive positive spillovers in the economy, including agriculture. For Guyana, an investment in telecommunications of 3.09 percent of GDP would contribute to increasing GDP by 9.86 percent, having a "multiplier" effect of 2.6 (Figure 9).

**Figure 9. Benefits versus Costs of Closing Digital Infrastructure Gaps in Caribbean Countries (percent of GDP and multiplier)**



Source: Authors' calculations based on data from the Table 1, Zaballos and Lopez-Rivas (2012) and IMF (2021). Please see the regional section of this Bulletin for a discussion of the methodology and references.

Note: "Gap" refers to the cost of closing the estimated digital infrastructure gap relative to Organization for Economic Co-operation and Development economies. Figures expressed in percentage points are as of the end-2019 GDP. The multiplier is defined as the estimated GDP growth impact of closing these gaps relative to their costs.

### Policy Developments and Conclusion

Improving telecommunications technology has long been identified as a development objective in Guyana and was included in the country's 2000–2010 National Development Strategy, which explains the history



of the telecommunications sector and how fixed communications services evolved from a public to private corporation in 1990. However, privatizing the telecommunications sector included granting a private corporation monopoly rights for some telecommunications operations, such as fixed communications services and international voice and data. The government reversed that through the 2016 Telecommunications Act, but agreement disputes between the private corporation and the government hindered implementation of the liberalized telecommunications policy.

In October 2020, the government announced the end of the 30-year monopoly by fully implementing the liberalization measures of the 2016 Telecommunications Act, expected to contribute to better quality of communications services, lower prices for consumers, and potentially expanded services to unserved and underserved areas. In the same vein, in February 2021 the government announced licensing exemptions for approximately 50 small Internet service providers in order to strengthen the telecommunications sector and expand Internet coverage to 200 remote rural communities in Guyana's hinterland. As a result of the policy change, private operators immediately announced lower rates for mobile communications and the expansion of Internet services to previously unserved locations.<sup>59</sup>

In 2018, the government engaged authorities of the government of Estonia in collaboration with the IDB to cooperate on the development of a Digital Governance Roadmap for the government of Guyana, considering Estonia's progress in communications technology and e-government over recent decades. The document was completed that year, with key recommendations for governance, coordination across agencies, updating of legislation, infrastructure, and cybersecurity, among other areas. Another ongoing government program is the National Broadband Expansion Project, which is funded by a US\$37.6 million loan from the government of China, with the objective of expanding and upgrading the E-government network.

Finally, oil and gas developments in Guyana point to the importance of strengthening information and telecommunications infrastructure. Oil and gas production are data-intensive industries requiring expanded storage and sharing capacity, as well as data management systems to inform decision-making in both the private and public sectors. Oil producers use advanced technologies for 3-D seismic imaging and are also advancing in connectivity to improve productivity.<sup>60</sup> These developments put additional pressure on governments to advance their information and communications capacity to store and process growing volumes of information. In this context, oil producers in Guyana are planning to connect their offshore and onshore operations with fibre optic cable for improved data transmission and process monitoring, which is expected to also support government oversight of oil production.

## REFERENCES

Calderón, César and Luis Servén. 2014. Infrastructure, Growth, and Inequality: An Overview. World Bank Policy Research Working Paper Number 7034.

<sup>59</sup> See Stabroek News, "E-Networks Opens New Store at Anna Regina," September 21, 2021, available at <https://www.stabroeknews.com/2021/09/01/news/guyana/e-networks-opens-new-store-at-anna-regina/>

<sup>60</sup> <https://www.mckinsey.com/industries/oil-and-gas/our-insights/how-tapping-connectivity-in-oil-and-gas-can-fuel-higher-performance>



## Jamaica

Henry Mooney and Jason Christie

### Macroeconomic Update

Annualized real GDP growth for the second quarter of 2021 in Jamaica is estimated at 14.2 percent, owing in part to a nascent recovery of tourism and domestic demand.<sup>61</sup> The relaxation of some domestic and external travel and commercial restrictions over the past 12 months has helped to support stronger economic performance. However, as detailed in the [previous edition of the Caribbean Quarterly Bulletin](#), considerable uncertainty remains with respect to the performance of key sectors during the rest of FY2021/2022 and beyond, owing to challenges that include domestic health-related restrictions, COVID-19 vaccine supplies and their distribution, external demand conditions, and global commodity prices.

Importantly, the Bank of Jamaica (BOJ) increased its policy rate to 2.5 percent in December 2021, in an effort to adhere to its target band of annualized inflation of between 4 and 6 percent. The BOJ refrained from easing its key policy rate throughout the COVID-19 shock period up to October due to its limited room for maneuver, and the fact that rates that were already near the zero bound. The BOJ chose instead to deploy a number of other stimulus and support measures to help the financial sector and economy weather the shock, including reducing reserve requirements and other forms of liquidity injection (amounting to over J\$300 billion<sup>62</sup>), loosening collateral requirements for access to emergency facilities, and using “moral suasion” to encourage banks to work with debtors to avoid defaults. However, the BOJ has determined that risks to the price forecast over the next two years have intensified. Higher inflation through November 2021 primarily reflected higher prices for food, driven by adverse weather conditions, higher international commodity prices, and the impact of global supply chain disruptions. Regardless, the BOJ considered it prudent to take action at this juncture to guide prices and expectations back toward their target band.

### Long-Term Growth and Productivity

As discussed in the Regional Overview of this Bulletin, Jamaica’s low long-term growth rate has been influenced by poor productivity performance over the past several decades. Despite the country’s exemplary progress over the past several years with macroeconomic stabilization, institutional reform, fiscal rectitude, and debt reduction, much remains to be done to support improvements in growth performance. After decades of annual real GDP growth averaging about 1 percent (see Figure 1 in the Regional Overview), it is important to consider the potential benefits of investments and policies that can help diversify the economy and improve productivity performance.

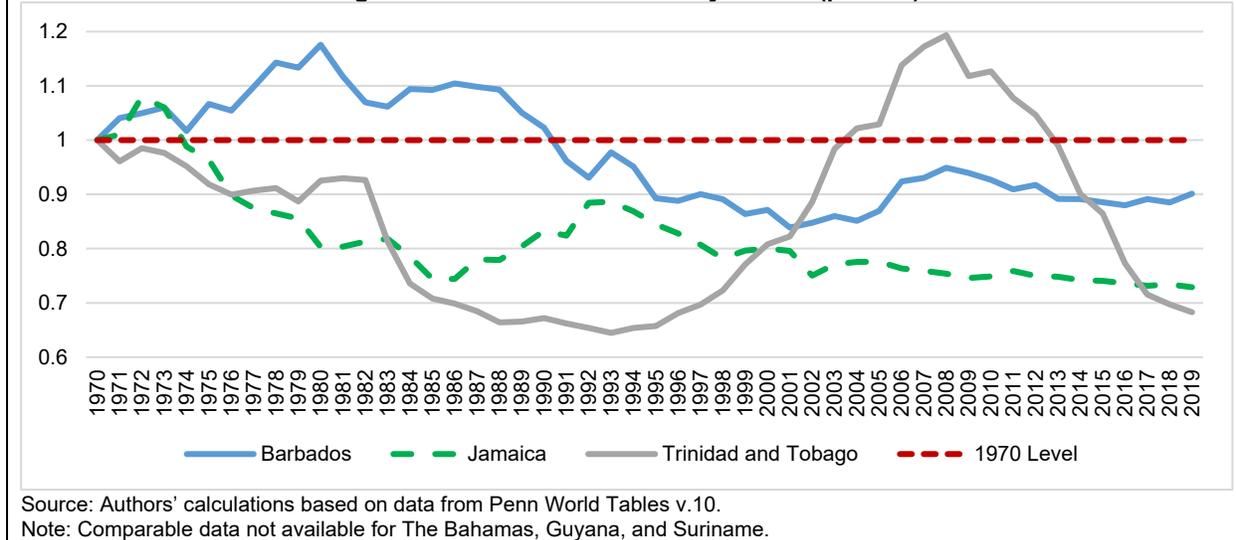
Productivity levels have fallen over the past five decades for Jamaica, as well as for other Caribbean countries. Based on available cross-country data, total factor productivity (TFP) levels have been in decline for decades in Jamaica, and as of 2019 (last available data point) they remained below levels in the early 1970s (Figure 3). This is not unique to Jamaica, with other Caribbean countries for which comparable data exist, such as Barbados and Trinidad and Tobago, displaying similar trends.

<sup>61</sup> See Richard Byles, Governor, Bank of Jamaica, “Monetary Policy Press Statement,” 1 October 2021, available at: <https://boj.org.jm/wp-content/uploads/2021/10/Governors-Monetary-Policy-Press-Statement-September-2021.Final.pdf>

<sup>62</sup> See: <https://boj.org.jm/qmpr-press-conference-october-2021-governor-richard-byles/>



Figure 1: Total Factor Productivity Growth (percent)



TFP is among the most common measures of productivity, which is driven in the long run by technological advancements in production processes. This progress can take place through the accumulation of human capital via education and training; improved managerial capabilities; research to create new products or processes; and the adoption of new technology to improve the efficiency, quality, or desirability of products. It is important to note that both public and private sectors have an important role to play in this process, as the public sector's role as the provider of basic infrastructure and related capital, institutional and regulatory frameworks, and security and stability are crucial.

### The Crucial Importance of Digital Infrastructure and Development

There are many factors that affect productivity and, consequently, economic growth. Analysts and academics have developed a number of techniques over the years to identify constraints or gaps that can be addressed through a combination of policy reforms and investments. These importantly include traditional "brick-and-mortar" investments in both public and private physical infrastructure, including roads, bridges, ports, and factories. Increasingly important over recent decades has been investment in training and skills development, as well as in technologies to support production, logistics and communications (e.g., computers, automated production tools, and digital communications infrastructure).

Of these investment categories, the one that is becoming increasingly crucial is digital and telecommunications infrastructure. As the pace of technological advancement has accelerated, culminating in the information technology revolution, the importance of this sector has and will only continue to increase. The ongoing COVID-19 pandemic is also transformative and has only sped up pre-existing trends favoring digital services and workplaces, as well as ways of doing business. Investment and innovation in related areas have been led by the world's most advanced economies, creating new development challenges with the potential to inhibit other countries' ability to "catch up" with advanced economies.



In this context, research by the IDB has attempted to quantify levels of digital infrastructure that prevail in countries across the world. This research has focused on calculating “gaps” between individual Latin American and Caribbean economies, and the average for the world’s most advanced economies—i.e., member countries of the Organization for Economic Co-operation and Development (OECD). This exercise has been used to estimate the potential economic benefits for countries across Latin America and the Caribbean (LAC) of bringing digital infrastructure up to OECD levels, as well as the possible costs this would involve. In particular, models that have been developed allow for an estimation of the capital investment needs to close the gap between LAC and OECD countries. With this objective in mind, the difference in penetration of fixed and mobile broadband services between countries in the region and the OECD average is first evaluated (Table 1). As illustrated, based on this research, Jamaica has a relatively significant capital investment gap relative to OECD countries with respect to both fixed and mobile broadband infrastructure.

**Table 1. Estimated Gaps relative to OECD Average, Percentage Points**

	Fixed Broadband Gap	Mobile Broadband Gap
Guatemala	30.7	111.0
Nicaragua	30.8	102.4
Haiti	33.5	91.1
Guyana	25.4	94.8
Honduras	30.0	89.0
Belize	27.3	90.9
Suriname	21.0	79.0
Jamaica	24.0	69.9
El Salvador	26.1	66.5
Paraguay	29.1	63.4
Venezuela	24.7	66.5
Trinidad and Tobago	9.2	80.4
Colombia	20.3	68.8
Ecuador	22.3	66.4
Dominican Republic	26.3	60.3
Peru	26.6	56.9
The Bahamas	11.2	60.2
Bolivia	29.3	41.2
Mexico	19.2	51.1
Argentina	14.6	53.8
Barbados	2.6	61.1
Panama	20.8	41.9
Brazil	18.8	33.0
Chile	16.4	29.5
Costa Rica	17.0	23.9
Uruguay	5.4	-2.8

Color code: Dark blue to dark red range from largest to smallest gaps.  
Source: García Zaballos, Iglesias Rodríguez, and Puig Gabarró (2021).

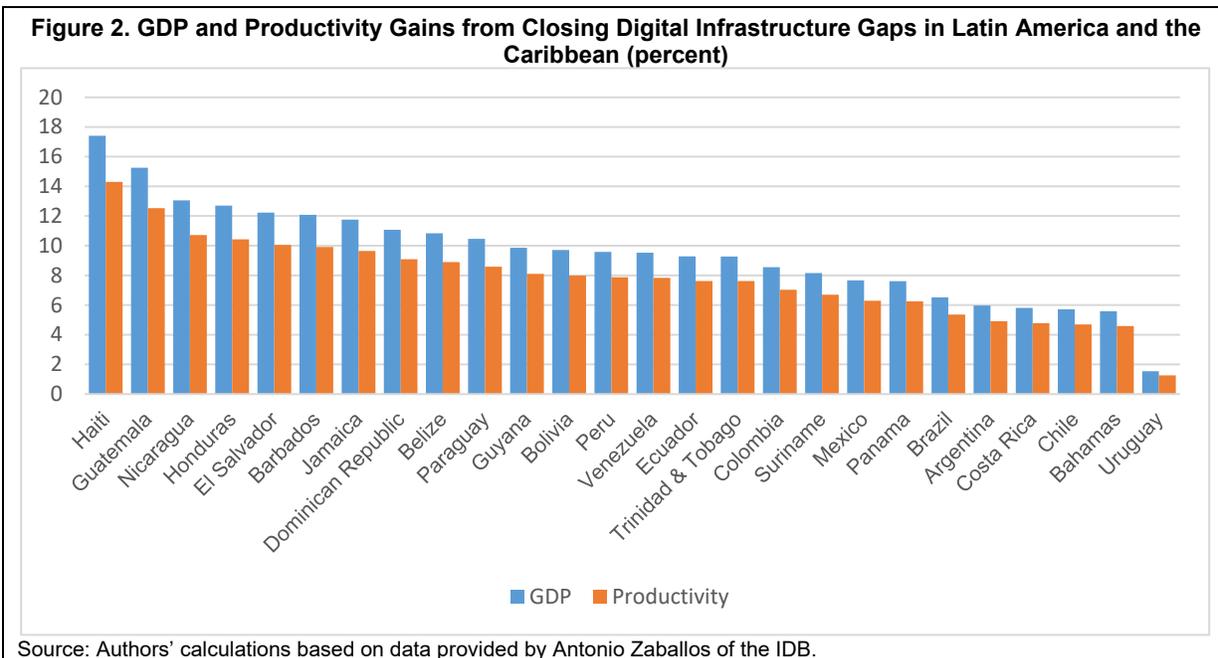
### Economic Benefits and Costs of Investment in Digital Infrastructure

In line with the exercise outlined above, IDB staff developed an econometric model to estimate the benefits of closing the gap in digital infrastructure. In general, this research found that a 10 percentage point change in digital infrastructure is associated with a 3.2 percent increase in GDP, and a 2.6 percent increase in



productivity, with the full impact estimated to accrue over a six-year period.<sup>63</sup> One can take the gaps calculated above as a percentage of the existing infrastructure capital stock and apply this elasticity to estimate the percentage change of both GDP and productivity that could occur from closing the existing infrastructure gap.

For many countries across Latin America and the Caribbean, the potential cumulative gains from closing digital infrastructure gaps with advanced economies are substantial. As detailed in Figure 4, the potential GDP growth and productivity gains from closing digital infrastructure gaps are, in some cases, strikingly large. For 14 of the 26 countries assessed, GDP could increase by about 10 percentage points cumulatively as a result of such investments, while implications for productivity could also be substantial. According to these results, Jamaica is among the countries that might benefit most from closing related gaps, which could result in an increase in GDP of about 12 percentage points, and in productivity of about 10 percentage points, cumulatively in each case.

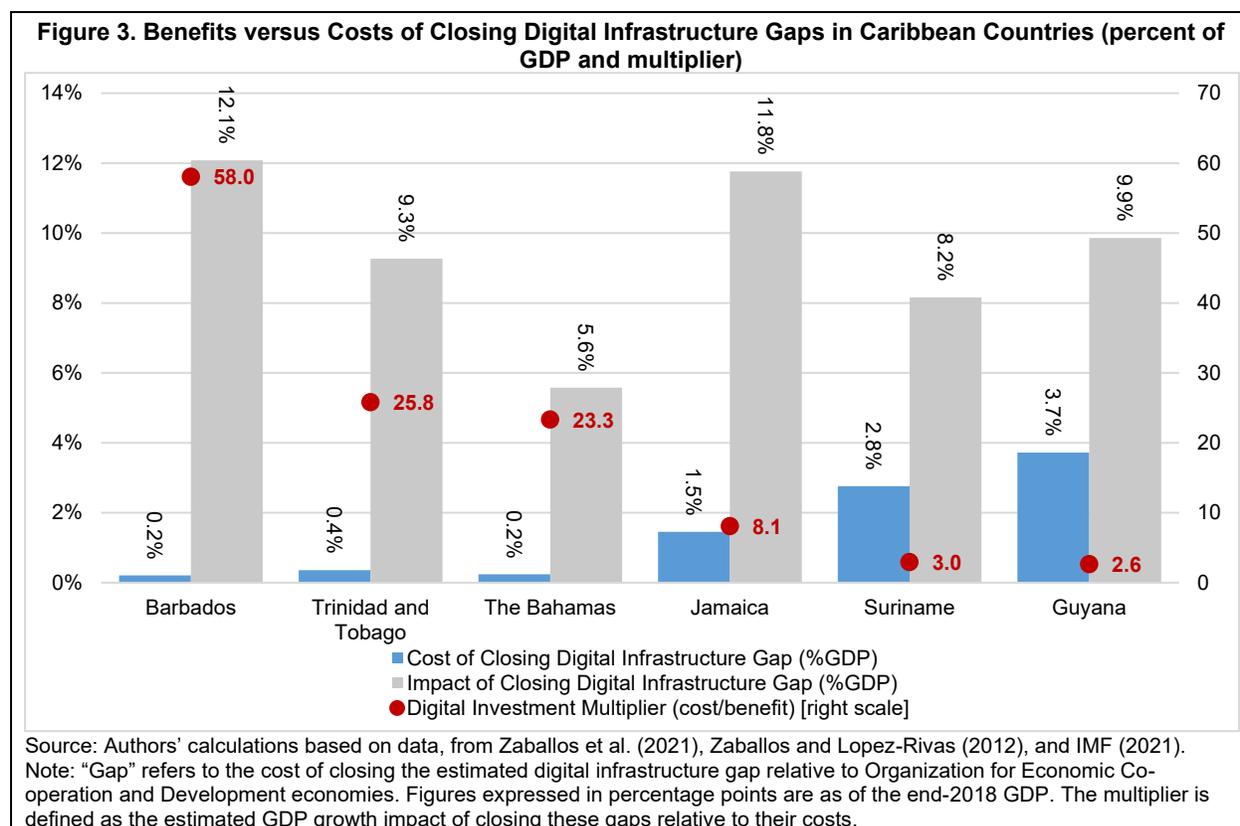


While true that the costs associated with such investments can be significant, research suggests that the benefits would far outweigh any related outlays. Based on the estimates discussed above, both the costs and benefits of closing digital infrastructure gaps with OECD economies are calculated in terms of nominal GDP, as is the “multiplier” associated with this level of investment. Results and related implications for many of Caribbean economies are striking (Figure 5). For example, for three of the six economies examined in this Bulletin, the estimated potential benefit in terms of the cumulative positive impact on growth is between 23 and 58 times the associated costs. In each of these three cases, the estimated cost of closing these digital infrastructure gaps is relatively small—less than 1 percentage point of GDP. In the case of Jamaica, estimates suggest that the yield in terms of cumulative GDP benefits over time could be more than eight

<sup>63</sup> See the Regional Overview for a detailed discussion of related methodologies.



times as much as the costs of investment. See the Annex from the regional overview section, above, for related estimates for all LAC economies.



The evidence from this exercise points strongly to large potential gains from increasing investment in digital infrastructure in Jamaica. As with any such estimation exercise, many caveats apply with respect to methodological limitations, the availability of information, and crucial assumptions. In this context, the purpose of the discussion above is not to suggest that such estimates are definitive, but to highlight the transformative potential of investment—both public and private—in a key sector that has grown in importance over time. As also discussed in previous editions of the Bulletin focused on the implications of the COVID-19 crisis, economies across the region that are poised to recover fastest and most durably are those whose governments, citizens, firms, and key economic sectors are most able to embrace existing and new technologies to compete globally. If this recent crisis has taught us anything, it is that the ability to communicate, transact, and reach clients and markets virtually has never before been more critical. The future will reward economies that can do so most effectively.

## Suriname

Jeetendra Khadan

### Macroeconomic Update

The country's macroeconomic policy framework will benefit from a comprehensive reform program in the coming years, supported by an IMF Extended Fund Facility (EFF). The government embarked on a home-grown recovery plan to stabilize the economy, protect the poor, restore debt sustainability, rebuild international reserves, and create a strong foundation for future growth and prosperity. To support its recovery plan, Suriname reached a Staff Level Agreement (SLA) with the IMF on a three-year program under the EFF in May 2021. On December 22, 2021, the Board of the IMF approved the US\$688 million EFF program. The program aims to lay the foundation for a strong, resilient, and inclusive economic recovery by restoring fiscal sustainability, protecting the poor, upgrading the monetary and exchange rate policy framework, stabilizing the financial system, and strengthening institutional capacity to tackle corruption and money laundering, and improving governance.<sup>64, 65</sup>

The Central Bank of Suriname's monthly economic activity index contracted by 13.5 percent (year-over-year) in March 2021. The central bank reported that economic activity contracted by 15.6 percent in February 2021—the worst since the start of the pandemic. The economic decline slowed in March 2021 (year-over-year) due to a slight recovery in the manufacturing and agriculture, hunting, and forestry sectors. As regards the manufacturing sector, production of fuel oil, premium diesel, and premium gasoline improved significantly in March 2021 compared to March 2020. The contraction in the agriculture, hunting and forestry sector slowed to 37.1 percent from 47.3 percent over the same period, reportedly due to an increase in economic activity in both local and export markets. For instance, customs data show an increase in exports of wood and wood products by 9 percent (year-over-year) in March 2021. The main contributors to the contraction in economic activity were wholesale and retail trade (3.8 percentage points), manufacturing (2.6 percentage points), construction (2.2 percentage points), and transportation, storage and communication (1.8 percentage points). As for the wholesale and retail trade sector, the decline was mainly due to a fall in the sale of food and non-alcoholic beverages, alcoholic beverages, and heavy equipment by 23.2 percent, 33.2 percent and 34.1 percent, respectively. The decline in manufacturing was largely due to a 14.6 percent decline in gold production due to lower-grade ore extraction, unusual heavy rainfall in the Rosebel Gold Mines mining area, and COVID-19 restrictions. For the construction sector, the decline in economic activity was related to a 31.5 percent decline in imports of construction materials. A decline of 77 percent of transportation services following restrictions on international travel to curb the spread of the COVID-19 pandemic is reported to be the main driver of the decline in the transportation, storage, and communication sector.

Fiscal balances improved in the first four months of 2021.<sup>66</sup> According to data from the Ministry of Finance, Suriname reported a fiscal surplus of SRD 700 million (1.5 percent of the estimated 2021 GDP) during January-April 2021, compared to a fiscal deficit of SRD 1,767 million (5.7 percent of the estimated 2020 GDP) for the same period in the previous year. The primary balance improved to a surplus of 1.8 percent of GDP for January-April 2021 compared to a primary deficit of 4.9 percent of GDP for the same period in 2020. The improved fiscal performance was a result of an increase in revenue (104.7 percent, year-over-year), mostly due to a significant increase in mining revenue (212.8 percent, year-over-year). Non-mining

<sup>64</sup> <https://www.imf.org/en/Publications/CR/Issues/2021/12/23/Suriname-Request-for-an-Extended-Arrangement-under-the-Extended-Fund-Facility-Press-Release-511294>

<sup>65</sup> See Ministry of Finance and Planning, July 29, 2021 (<https://bit.ly/3jvJ58m>).

<sup>66</sup> The fiscal year runs from January-December.



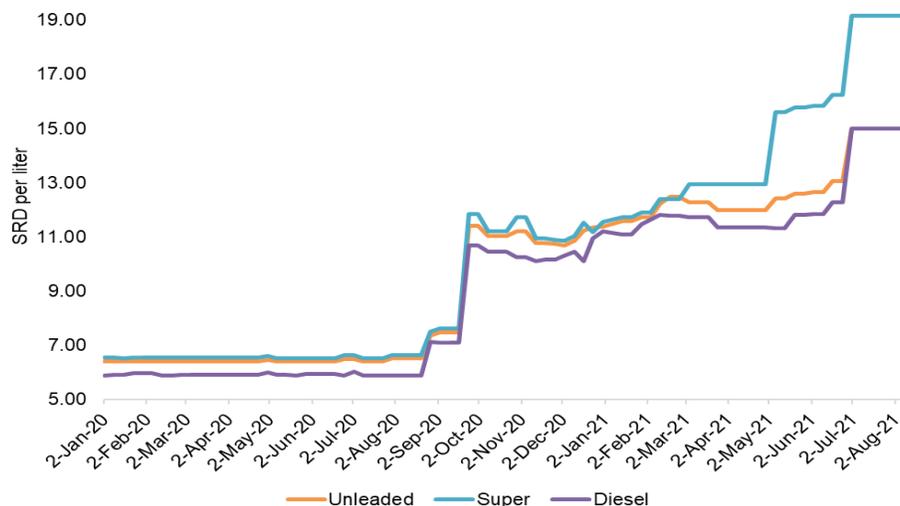
revenue also increased by 54 percent, and government expenditure fell by 10 percent in the first four months of 2021 compared to the same period for 2020.

After four months of negotiations, the government successfully restructured approximately US\$100 million in debt to local contractors. The objectives of the negotiations were twofold: (1) to settle existing debt, and (2) to restart infrastructure projects. The restructuring includes adjustments to interest rates and maturities, which has provided the government with some breathing room. Critical infrastructure projects have resumed.

Fuel prices continue to increase. The authorities implemented a new method for setting fuel prices at the pump. According to the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation, the cost price of fuel under the new system is determined by the average of the previous month's international oil prices (including transport costs) and an operating margin. The cost price is either increased by a government tax or reduced by a subsidy to arrive at the final pump price, which is allowed to adjust monthly. For August 2021, the prices were as follows: diesel (SRD 17.95 or US\$0.71 per litre), unleaded (SRD 15.95 or US\$0.91 per litre), and super (SRD 21.04 per litre or US\$0.71 per litre). Fuel prices have increased significantly since August 2020, with unleaded, super, and diesel rising by 130 percent, 188 percent, and 154 percent, respectively (Figure 1).

The exchange rate remained relatively stable after floating, but inflation rose in July 2021. A floating exchange rate system was adopted on June 7, 2021, after two large devaluations during the period from September 2020 to May 2021. The floating of the exchange rate has fully eliminated the parallel market premium, and the official exchange rate has remained stable at roughly SRD 21:US\$1. However, after a decline in inflation from 63.8 percent in January 2021 to 43.6 percent in May 2021, inflation rose to 58.9 percent in July (year-over-year). There were noticeable increases in subcomponents related to communication, transportation, healthcare, and food away from home.

**Figure 1. Suriname: Fuel Prices**



Source: IDB staff

The current account reported a surplus in 2021:Q1, and international reserves are gradually improving. At the end of 2020, the country posted a current account surplus of 9.6 percent of GDP compared to a deficit of 10.6 percent of GDP in 2019. The current account surplus continued to improve during the first quarter



of 2021 to US\$117 million (4.7 percent of GDP) compared to a surplus of US\$24 million (1 percent of GDP) for the same period in 2020. The surplus reflected a larger trade surplus, mainly arising from lower imports (both goods and services). International reserves improved slightly from US\$601.8 million in January 2021 to US\$683.4 million in July 2021. The reserves position will be further boosted by the recent IMF Special Drawing Rights (SDR) allocation: Suriname received SDR123.5 million (equivalent to US\$175 million).

### Development Bottlenecks

The main challenge facing Suriname in the short term is to restore macroeconomic sustainability. Even before the pandemic, Suriname was experiencing large fiscal and external imbalances, high debt levels, low economic growth, and depleted international reserves. The pandemic exacerbated an already precarious economic situation. With limited sources of financing in 2020, the government was unable to pay its obligations and has been accumulating external and domestic arrears. As a result, credit rating agencies downgraded Suriname to default status. These outcomes are the result of commodity shocks (price and output) that were exacerbated by weak economic institutions and economic mismanagement. There are apparent weaknesses in the country's public expenditure management, public investment management, public procurement, public financial management, tax policy, tax and customs administration, and related economic institutions. There are also important vulnerabilities in the banking system, with low profitability (a return on assets of 0.3 percent in April 2021) and a high level of non-performing loans (14.1 percent in April 2021).<sup>67</sup> Serious governance issues are reflected by the country's low ranking with respect to most regional comparators in the areas of government effectiveness, regulatory quality, rule of law and corruption, and significant data gaps. This also hampers the decision-making process and implementation of public policy.<sup>68</sup> In addition to the country's immediate macroeconomic challenges, a development gap analysis indicates that Suriname continues to underperform in governance, business environment, education, innovation, and other social issues such as health and gender equality (Figure 2).<sup>69</sup>

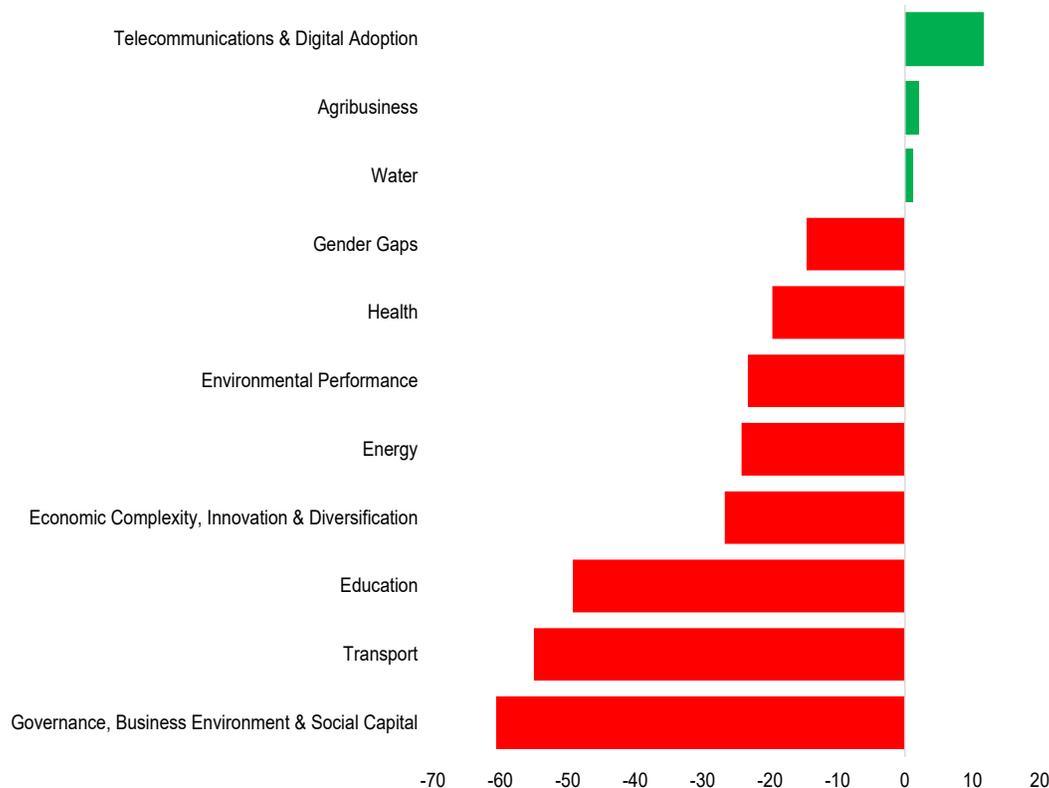
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<sup>67</sup> Data from the Central Bank of Suriname.

<sup>68</sup> See J. Khadan, 2020, "Suriname in Times of COVID-19: Navigating the Labyrinth," IDB Technical Note No. 1920, Inter-American Development Bank, Washington, DC.

<sup>69</sup> The development gap approach compares the level of achievement measured by an indicator with a calculated "norm" appropriate for the country. The indicators are selected among the most commonly used measures of development in each area. The norm is the level of achievement that could be expected in a given country considering its level of per capita income. The estimates for individual indicators are first standardized and then aggregated into different sectors or development areas. See Joaquin Lennon and Maria Cecilia Acevedo, 2020, "Development Gaps: Innovations to the Original Framework and Methodology and Results for Suriname," Inter-American Development Bank, Washington, DC.

Figure 2. Development Gaps for Suriname



Source: IDB staff estimates.

In light of these development gaps, reforms to improve competitiveness and support investments in infrastructure are important to put Suriname on a path to sustainable and inclusive socioeconomic development. The country's private sector has potential to contribute more to economic growth, but it is constrained by a weak business climate, skills gap, and lack of innovation and investment in critical infrastructure. The 2021 Innovation, Firm Performance and Gender (IFPG) dataset shows that the main constraints to business operations in Suriname as identified by firms are (1) an unfavourable macroeconomic environment (26.5 percent of firms), (2) an inadequately educated workforce (14.2 percent of firms), and (3) lack of access to land for expansion (10.5 percent of firms).<sup>70</sup> Economic diversification is also limited by the lack of skills and innovation, an under-developed financial sector, lack of connectivity, and underinvestment in urban revitalization. In addition, there are challenges in access to and the reliability of basic infrastructure services such as transportation, telecommunications, the Internet, and electricity, with spatial inequality. Finally, the pandemic has exacerbated social conditions in the country, and the existing unequal distribution of critical infrastructure to support economic recovery could make existing inequalities worse. The next section will examine these constraints in more detail, with a focus on digital infrastructure.

<sup>70</sup> The IFPG dataset is available at <https://www.competecaribbean.org/ifpg-call/>.



## Digital Infrastructure

COVID-19 has highlighted the need for adequate digital infrastructure to support continuity in the use of public services and remote consumption and to promote an inclusive economic recovery from the pandemic. Digital infrastructure is an enabler for the use of data, technologies, and digital systems and processes. This section will examine Suriname's performance in digital infrastructure as it relates to broadband connectivity, telecommunications, and supporting infrastructure.

### ***Broadband Connectivity and Related Infrastructure***

Suriname's fixed broadband subscriptions are relatively low compared to regional comparators. The country has 13.8 fixed-broadband subscriptions per 100 population, marginally lower than the average for Latin America and the Caribbean (14.1) and significantly lower than the average for Organization for Economic Co-operation and Development (OECD) countries (34.8). Mobile broadband subscriptions per 100 population were estimated at almost 15 in 2015, compared to 18.4 for Latin America and the Caribbean and 62.7 for OECD countries. Relatedly, data from the World Bank shows that Internet usage in Suriname is relatively low compared to the region, with about 49 percent of the population using the Internet, which is lower than the Latin American and Caribbean average of 63 percent and the OECD average of 82 percent.<sup>71</sup> There are also spatial disparities in broadband connectivity, with no access in the country's interior. Internet access in schools is also perceived to be lower when compared to the averages for Latin America and the Caribbean. Households with Internet access are estimated at 36 percent compared to an average of 55 percent for Latin America and the Caribbean and 78 percent for OECD countries. The country's secure Internet servers per 1 million population increased significantly from 202 in 2017 to 7,098 in 2020, surpassing the average for Latin America and the Caribbean (1,964) but lower than the average for OECD countries (57,528) (Figure 3).

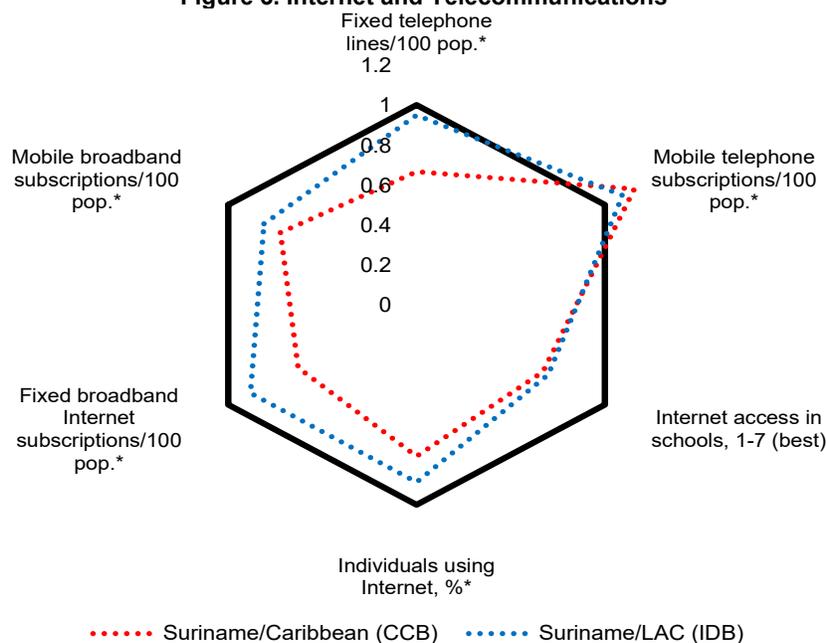
### ***Telecommunications***

The state of Suriname's telephony is more in line with regional averages. The country reports 15.8 fixed telephone subscriptions per 100 population, similar to the Latin American and Caribbean average of 16.3. Its 141.3 mobile cellular subscriptions per 100 population is much higher than the Latin American and Caribbean average of 107.4 (Figure 3). However, remote and sparsely populated zones of the country's interior lag considerably behind in telecommunications infrastructure and information and communication technology (ICT) services compared to the urban coastal areas. As a result, the population in the interior does not have access to equal opportunities, which can cause that population to fall further behind in terms of socioeconomic outcomes.

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<sup>71</sup> See World Bank, "Individuals Using the Internet," available at <https://bit.ly/3jrKgWt>.

**Figure 3. Internet and Telecommunications**



Source: World Economic Forum, 2015.  
Note: LAC: Latin America and the Caribbean.

### Supporting Energy Infrastructure

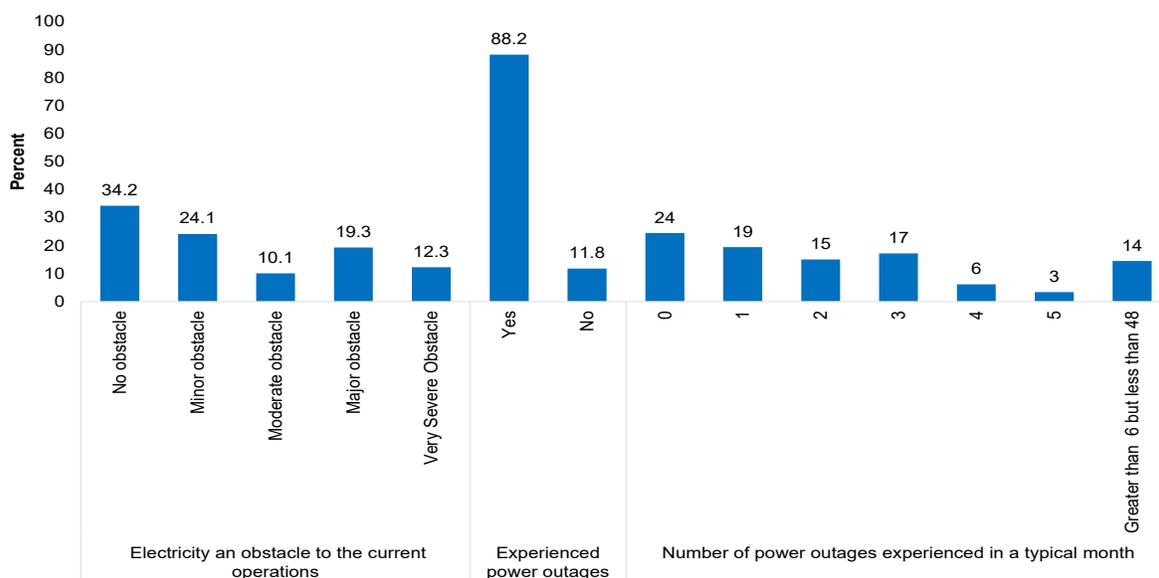
Access to a reliable electricity supply is a necessary enabler of digital infrastructure and related technologies. While Suriname has made progress in improving overall access, some challenges remain related to the reliability of supply and spatial inequalities. At the national level, 96.8 percent of the population has access to electricity. However, there is a notable difference between urban and rural areas, with 99 percent access in urban areas compared to 91 percent access in rural areas. In particular, remote communities receive electricity for roughly six hours per day or less and at a relatively higher cost due to the use of diesel generators. In terms of reliability, the 2018 World Bank Enterprise Survey showed that almost one-third of firms identified electricity as a major or very severe obstacle to their business operations. For instance, 88.2 percent of firms experienced power interruptions with a frequency of power outages of one to three times in a typical month (Figure 4).<sup>72</sup> Such inequalities in access to basic infrastructure can hinder digital connectivity in the country. It is important for Suriname to continue implementing rural electrification projects to close this gap.<sup>73</sup>

<sup>72</sup> See J. Khadan, 2020, "Suriname in Times of COVID-19: Navigating the Labyrinth," IDB Technical Note No. 1920, Inter-American Development Bank, Washington, DC.

<sup>73</sup> For example, the IDB approved the funding of a US\$30 million electrification project for Suriname in 2019 to support adequate and modern access to sustainable electricity. The aim is to enhance the living conditions for rural populations while improving the rural business environment with better provision of electricity as a public service. See IDB, "Suriname to Increase the Electricity in Rural Areas with IDB Support, press release, December 23, 2019. Available at <https://www.iadb.org/en/news/suriname-increase-electricity-coverage-rural-areas-idb-support>



Figure 4. Suriname: Electricity

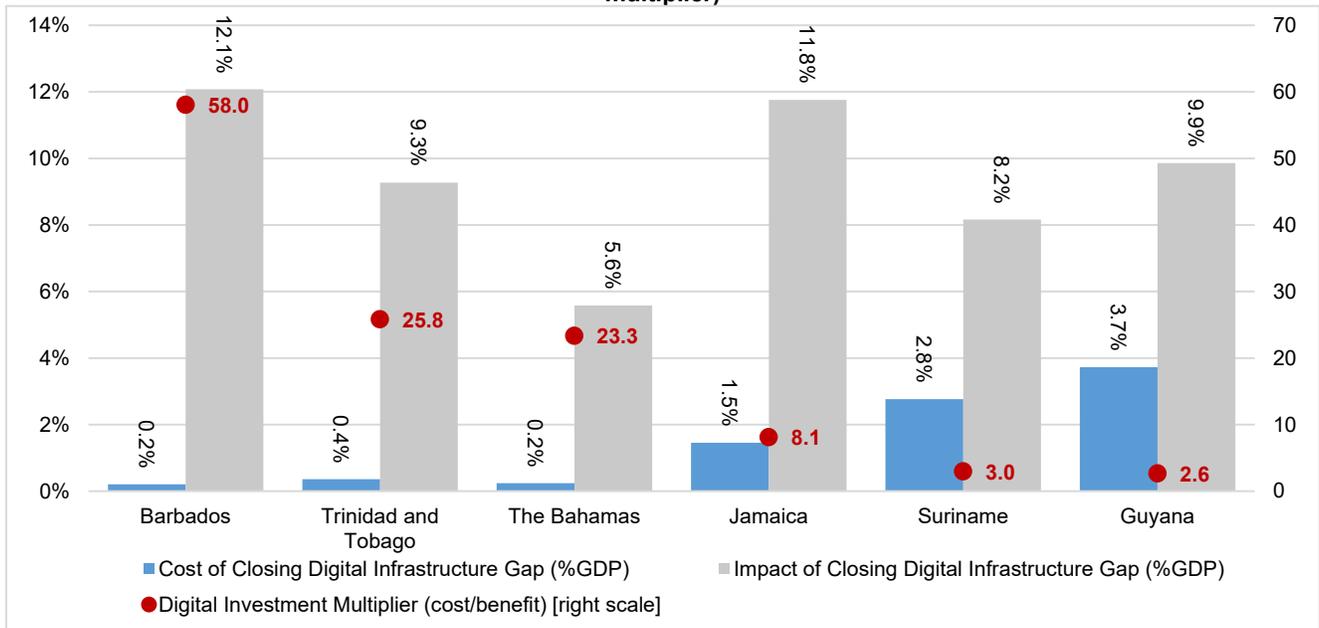


Source: Author's calculations based on data from the 2018 World Bank Enterprise Survey.

Closing the digital infrastructure gap is costly, especially given Suriname's precarious fiscal situation, but doing so has substantial benefits for growth, productivity, and employment. IDB staff estimates suggest that Suriname needs to invest roughly 3 percent of GDP to close the digital infrastructure gap relative to OECD countries. This represents the second highest required investment to GDP among Caribbean countries (Figure 5). However, the impact of closing the gap could yield returns amounting to 8.2 percent of GDP (i.e., a digital investment multiplier of 3) over six years. Decomposing the benefits by geography and fixed broadband versus mobile broadband from closing the digital infrastructure gap with respect to OECD countries shows that about 61 percent of the impact on GDP would come from investments in rural areas, where there is a lack of basic digital infrastructure and adequate energy infrastructure compared to urban areas. Furthermore, about 76 percent of the impact on GDP would come from investments in fixed broadband infrastructure (Figure 6). Investment in digital infrastructure has the potential to increase productivity. It is estimated that by closing the country's digital infrastructure gap relative to OECD countries, productivity could increase by 6.7 percent, with most of the productivity gains coming from investments in rural areas (75.8 percent) and in fixed broadband infrastructure (60.7 percent). Similarly, employment is expected to increase as the country invests in closing the digital infrastructure gap, with Suriname's employment estimated to increase by 10,117 (or about 5 percent of the labour force). Again, the employment gains are higher for investments in rural areas and in fixed broadband infrastructure (Figure 7).



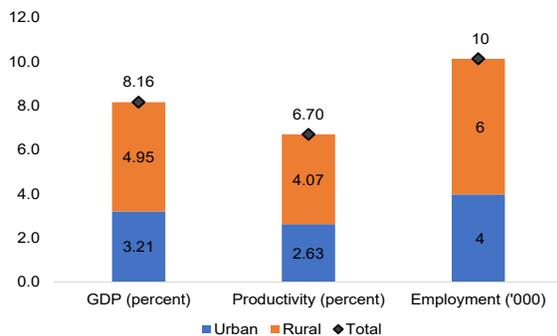
**Figure 5. Benefits versus Costs of Closing Digital Infrastructure Gaps in Caribbean Countries (percent of GDP and multiplier)**



Source: Authors' calculations based on data from the Table 1, Zaballos and Lopez-Rivas (2012) and IMF (2021). Please see the regional section of this Bulletin for a discussion of the methodology and references.

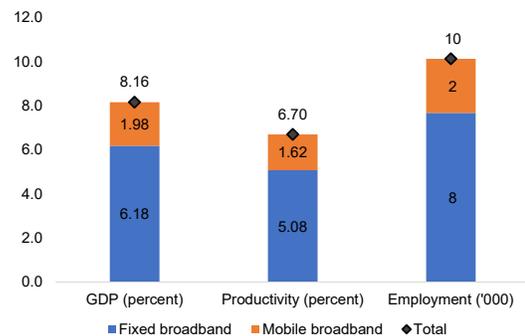
Note: "Gap" refers to the cost of closing the estimated digital infrastructure gap relative to Organization for Economic Co-operation and Development economies. Figures expressed in percentage points are as of the end-2019 GDP. The multiplier is defined as the estimated GDP growth impact of closing these gaps relative to their costs.

**Figure 6. Decomposition of the Benefits by Geography for Suriname**



Source: Author's calculations based on CMF data and the International Monetary Fund's April 2021 *World Economic Outlook*.

**Figure 7. Decomposition of the Benefits by Fixed versus Mobile Broadband for Suriname**



Source: Author calculations based on CMF data and the International Monetary Fund's April 2021 *World Economic Outlook*.



## Conclusion

Suriname is experiencing a severe economic crisis. The country's large fiscal deficit, low growth, high-double-digit inflation, high debt levels, banking sector vulnerabilities, and low international reserves have been exacerbated by the COVID-19 pandemic. Expected improvements in commodity prices and output, and an expected reform program supported by the IMF, if implemented, should help the country restore macroeconomic sustainability over the medium term. However, the measures implemented to curb the spread of COVID-19 have significantly affected the quality of life. Poverty and increasing income inequality are expected to worsen in the short term,<sup>74</sup> though socioeconomic indicators should improve as the country recovers from the economic crisis. Focusing on strengthening digital infrastructure could help to support sustainable and inclusive long-term growth.

Suriname has made slow progress in digital infrastructure. A review of some key indicators related to digital infrastructure shows that there are gaps in broadband connectivity such as fixed broadband and mobile broadband with spatial disparities. As a result, Internet access for households and schools is also lower than regional comparators. Suriname does better overall in the area of telecommunications when compared to regional comparators, but telecommunications infrastructure and ICT services lag behind in remote and sparsely populated zones of the country's interior compared to urban coastal areas. Underlying these challenges is inadequate energy infrastructure to support digital infrastructure and related technologies, especially in rural areas.

Investing in digital infrastructure could help support sustainable and inclusive medium- to long-term growth. This analysis has shown that closing the infrastructure gap for Suriname would yield benefits in terms of growth, productivity, and employment. Those benefits are mostly expected from investments in fixed broadband infrastructure and in the country's rural areas. Estimates suggest that the country would need to invest about 5 percent of GDP to close the digital infrastructure gap relative to OECD countries. However, Suriname's current fiscal and debt positions are at precarious levels and would require fiscal retrenchment in the short term. As Suriname consolidates public finances and reorients public spending to productive infrastructure it would be beneficial to invest in strengthening the country's digital infrastructure to support sustainable and inclusive long-term growth.

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<sup>74</sup> See J. Khadan, 2020, "Suriname in Times of COVID-19: Navigating the Labyrinth," IDB Technical Note No. 1920, Inter-American Development Bank, Washington, DC.



## Trinidad and Tobago

Nazera Abdul-Haqq and Jeetendra Khadan

### Macroeconomic Update

A gradual economic recovery is expected for Trinidad and Tobago. Revised estimates from the country's Ministry of Finance suggest that real GDP contracted by 7.4 percent in 2020 and is expected to contract again by 1 percent in 2021. The Central Bank of Trinidad and Tobago reported a mixed performance of the energy sector in the first four months of 2021. Output of several products (natural gas and its related downstream products) declined, while prices of energy exports improved significantly. The non-energy sector, while showing some signs of a recovery in the first four months of 2021, is expected to contract in the second quarter due to COVID-19 measures. As COVID-19 restrictions are being phased out, improvements in the non-energy sector can be expected in the second half of the year.<sup>75</sup>

The 2021/2022 budget was presented to the country's Parliament on October 4, 2021. The budget proposes a fiscal deficit of TT\$9.1 billion (5.8 percent of GDP). The new budget will continue to prioritize support for households and firms through a reduction in tax rates, incentives for investment in digitalization, and a stimulus package to increase agriculture production and promote growth in the tourism sector. The government is expected to reduce the fiscal deficit to an overall balance by 2024. According to data from the Ministry of Finance, a fiscal deficit of TT\$13.7 billion (9.2 percent of GDP) is expected for FY2021, compared to a fiscal deficit of 11.2 percent of GDP for FY2020. The government financed the deficit from domestic borrowing and withdrawals from the Heritage and Stabilization Fund. At the end of May 2021, net public sector debt was 85.8 per cent of GDP.

Inflation increased slightly in 2021. Headline inflation increased marginally from 0.9 percent (year-over-year) in January 2021 to 2.2 percent (year-over-year) in July 2021. Core inflation increased to 1.1 percent, while food inflation reached 4.9 per cent over the same period. The authorities are expecting inflationary pressures to continue in the short term due to global price developments, especially regarding food prices and supply side factors.

International reserves have been boosted by a recent Special Drawing Right (SDR) allocation by the International Monetary Fund (IMF). International reserves declined to US\$6,649.2 million (8.1 months of import cover) in July 2021 from US\$7,220.7 million in July 2020. However, the recent IMF SDR global allocation of SDR 450.3 million provided to Trinidad and Tobago would increase the country's reserves by roughly US\$640.4 million.<sup>76</sup>

Credit rating agencies have updated their rating and outlook for Trinidad and Tobago. Standard and Poor's Global Ratings (S&P) revised its outlook on Trinidad and Tobago to negative from stable and affirmed its BBB- long-term sovereign credit rating in July 2021. This follows a downgrade from BBB to BBB- with a stable outlook in March 2020. The recent outlook revision reflects risks of poor long-term growth with at least a one-in-three chance of a lower rating in the next 12 to 24 months. S&P noted that a favourable external profile, stable democracy, and government liquid assets limit fiscal and external financing risks.

<sup>75</sup> IMF, October 2021 *World Economic Outlook*.

<sup>76</sup> IMF, "2021 2021 General SDR Allocation," August 23, 2021, available at <https://www.imf.org/en/Topics/special-drawing-right/2021-SDR-Allocation>.



CariCRIS (a regional credit rating agency) downgraded Trinidad and Tobago's issuer ratings by one notch to CariAA (Foreign and Local Currency Ratings), with a stable outlook, on its regional rating scale.

### **Development Bottlenecks**

Trinidad and Tobago faces a challenging growth and development outlook derived from longstanding structural issues that have been exacerbated by the ongoing COVID-19 pandemic. These challenges can be summarized into three categories: (i) declining competitiveness and a less supportive business climate, (ii) human capital constraints that affect productivity, and (iii) institutions and governance in need of strengthening. This section will explore these issues. A development gap analysis indicates that there is room for improvement in transportation, governance, business environment, tourism, environmental performance, innovation, digital adoption and education (see Figure 1 for a summary of the country's development gaps).

#### ***Competitiveness and the Business Climate***

Institutional and structural issues constrain the country's business climate. The underlying causes of these problems relate to institutional challenges in the public sector, "resource curse" effects such as a crowding out of MSME financing, and institutional support for the non-energy sector. To address these challenges the country might consider supporting reforms to stimulate MSME financing, improve trade facilitation and transport infrastructure, and correct institutional and governance deficiencies. To ensure an inclusive and sustainable recovery from the pandemic, it will be critical for Trinidad and Tobago to invest in digital infrastructure and policies to support a digital business environment.

#### ***Human Capital Constraints that Affect Productivity***

Unequal learning outcomes, specific health problems, and deficiencies in the water and sanitation sector constrain productivity in Trinidad and Tobago. First, the education sector is affected by failing infrastructure, inadequate teacher capacity, delays in the implementation of new curricula, a lack of mechanisms to evaluate teacher performance, and a workforce development system that is delinked from private sector needs. The lack of digital competencies (for teachers and students) and digital infrastructure to facilitate online/hybrid education during the pandemic are exacerbating existing challenges and inequalities in the country's education sector. Many of these problems can be traced back to low institutional capacity. To improve outcomes in the education sector, it is recommended that the country implement the updated curriculum and strengthen the capacity of relevant institutions, including in data collection and analysis.

Second, in terms of health, non-communicable diseases, childhood obesity, and mental health problems affect the country's productivity. The underlying causes relate to behavioural risk factors, inadequate primary care services, a lack of health personnel, and institutional issues in the health system. Implementation of an integrated health policy and strengthened primary healthcare services could substantially improve outcomes in the health sector.

Third, the water and sanitation sector is characterized by challenges in water supply, wastewater treatment, drainage infrastructure, solid waste management, and the performance of public entities. The underlying reasons relate to institutional and policy issues (including outdated tariffs), aging pipes, and less than ideal behavioural norms leading to pollution and environmental degradation. To improve the country's water and

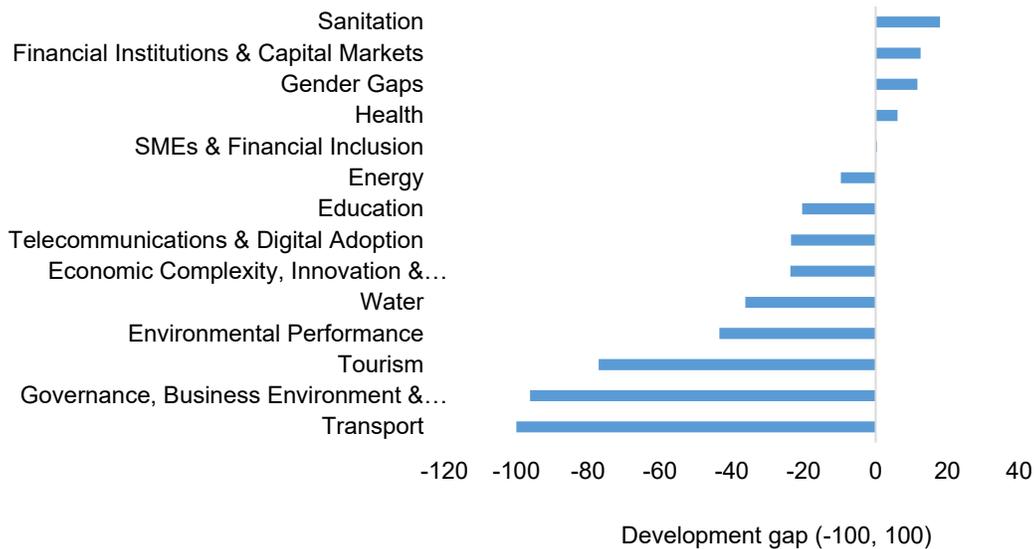


sanitation sector, there is a need for legislative changes, institutional strengthening, targeted investments, and public awareness campaigns to reduce pollution and environmental degradation.

### ***Weaknesses in Institutions and Governance***

While Trinidad and Tobago is a well-established democracy with free and fair elections, the country can improve in many institutional dimensions. Most notably, there is room to improve political selection and replacement and policy formulation and implementation. The underlying causes for such issues relate to the aforementioned “resource curse,” limited citizen engagement, challenges in media markets and lack of information on policy outcomes, low social capital, and low capacity in public administration, including in evidence-based policymaking. To address these issues, it is recommended that the country strengthen the objective provision of information, improve citizen engagement, support decentralization, and improve evidence-based policymaking. As policy implementation is constrained by an inadequate public administration, strengthening the performance of the civil service is also recommended.

**Figure 1. Trinidad and Tobago: Development Gaps Analysis<sup>77</sup>**



Source: Inter-American Development Bank.  
Note: SMEs: small and medium-size enterprises.

<sup>77</sup> The Development Gap approach compares the level of achievement measured by an indicator with a calculated “norm” appropriate for the country. The indicators are selected among the most commonly used yardsticks of development in each area. The norm is the level of achievement that could be expected in a given country considering its level of per capita income. The estimates for individual indicators are first standardized and then aggregated into different sector or development areas. See Lennon, Joaquin and Cecilia Acevedo, Maria. 2020. Development Gaps: Innovations to the original framework and methodology and results for Suriname. Strategic Planning and Knowledge Division, IDBG. Washington, DC: Inter-American Development Bank.

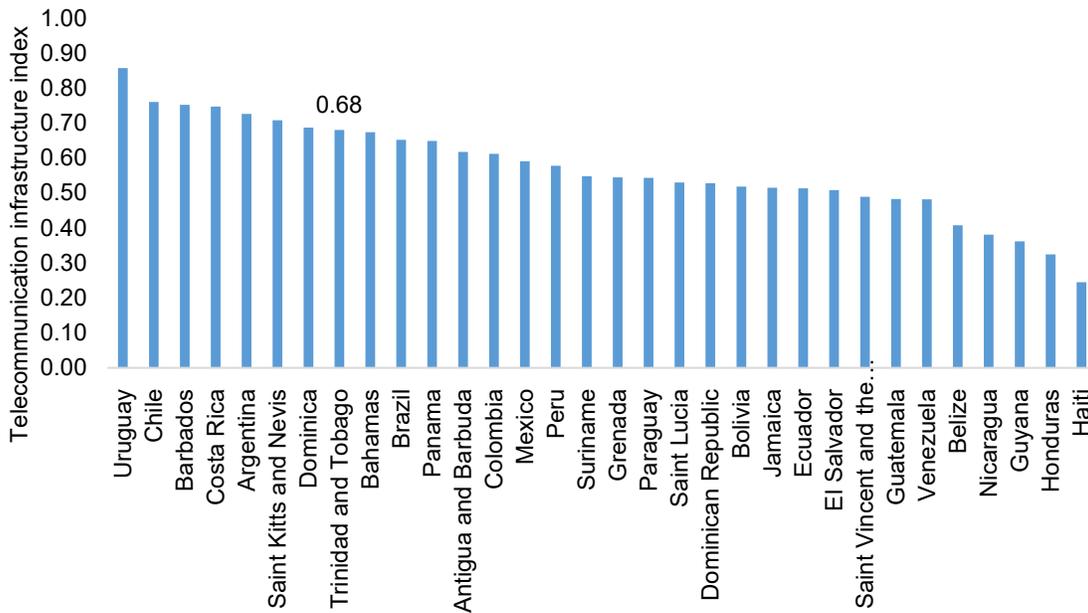


## Digital Infrastructure

This section examines opportunities to improve the various elements that constitute the digital infrastructure in Trinidad and Tobago.

The country's telecommunications infrastructure is relatively well developed compared to the Latin American and Caribbean region, as evidenced by its performance on the United Nations E-Governance Telecommunications Infrastructure Index (Figure 2).<sup>78</sup> However, there is scope to better safeguard telecommunication networks for disaster preparedness, improve infrastructure in rural areas, finalise amendments to the Telecommunications Act, Chapter 47:31 and Subsidiary Regulations, and review interconnection rates.<sup>79</sup>

Figure 2. Telecommunications Infrastructure Index, 2020



Source: UN E-Governance Index, 2020.

Broadband infrastructure in Trinidad and Tobago could be improved. On average, the country performs better than the Latin American and Caribbean region in terms of broadband penetration,<sup>80</sup> but performs below the average for Organization for Economic Co-operation and Development (OECD) countries, especially for fixed broadband services. As a percent of the population, Trinidad and Tobago's broadband fixed penetration is 24.6 compared to an average of 31.6 for OECD countries, and broadband wireless

<sup>78</sup> The Telecommunication Infrastructure Index is an average of five indicators: (i) estimated number of Internet users per 100 population; (ii) number of main fixed telephone lines per 100 population; (iii) number of mobile subscribers per 100 population; (iv) number of wireless broadband subscriptions per 100 population; and (v) number of fixed broadband subscriptions per 100 population.

<sup>79</sup> See Telecommunication Authority of Trinidad and Tobago, "Expanding Your Horizons: Annual Report, 2019".

<sup>80</sup> Broadband penetration is a measure of the amount of the high-speed Internet accessed by the population.



penetration is 40.7 compared to an average of 113 for OECD countries.<sup>81</sup> In terms of affordability, fixed and mobile broadband are also more affordable in Trinidad and Tobago than in most Latin American and Caribbean countries.<sup>82</sup> However, mobile broadband is considered marginally unaffordable, considering that it is above the 2 percent target threshold for affordability set by the UN Broadband Commission for Sustainable Development. In addition, Trinidad and Tobago lags behind the Latin American and Caribbean region with respect to 4G mobile network coverage.<sup>83</sup> Further, based on the IDB's Broadband Development Index (IDBA),<sup>84</sup> there is scope for the country to improve its digital public policies and strategic vision, as well as strategic regulation – both of which are critical dimensions of a broadband ecosystem.

There are gaps in Trinidad and Tobago in terms of supporting infrastructure. First, reliable electricity service provision is critical to preventing IT outages and subsequent digital risks. But in Trinidad and Tobago, the electricity sector faces several challenges such as frequent outages, electricity interruptions, and unreliable electricity supply that affect businesses and residential customers.<sup>85</sup> Cybersecurity protection, as well as telecommunications and information and communications technology (ICT) infrastructure, especially in rural areas, should also be strengthened.<sup>86</sup>

Digital exclusion affects access to public services in Trinidad and Tobago. Despite relatively high levels of Internet usage, 23 percent of the population does not have access to the Internet or use it. Further, inequalities exist in Internet access in favour of urban areas. This urban bias prohibits segments of the population from accessing online public services, such as education. For example, the pandemic highlighted a longstanding trend in which rural areas (and lower-income groups) face challenges in accessing the Internet and electronic devices for online/hybrid education. This was particularly evident in September 2020, when an estimated 65,000 students (or 29 percent of the country's total student population) did not have devices to access online learning. Taking a more medium-long term view, Internet access and usage are necessary ingredients to build the e-competence and Internet skills needed for employability in the future world of work.

Closing the infrastructure gap – which is measured in terms of fixed and mobile broadband infrastructure in urban and rural areas – could yield economic benefits for Trinidad and Tobago. The government's investment in digital infrastructure is key to ensuring that the country remains competitive in the digitalized world. Based on IDB estimates, the cost of closing the digital infrastructure gap in Trinidad and Tobago is US\$85 million. It is estimated that closing the gap would yield a significant increase in GDP estimated at 9.3 percent, a 5.5 percent increase in productivity, and 20,189 new jobs (Figure 3).

<sup>81</sup> For OECD averages, see “Chapter 3: Access and Connectivity” of the *OECD Digital Economy Outlook 2020*. For Trinidad and Tobago broadband penetration rates, see International Telecommunications Union, “Statistics”.

<sup>82</sup> Broadband affordability is measured as the percentage of average per capita income for fixed or mobile service rates.

<sup>83</sup> In Trinidad and Tobago, 75 percent of the population is covered by at least a 4G network, compared to an average of 79 percent in the Latin American and Caribbean region.

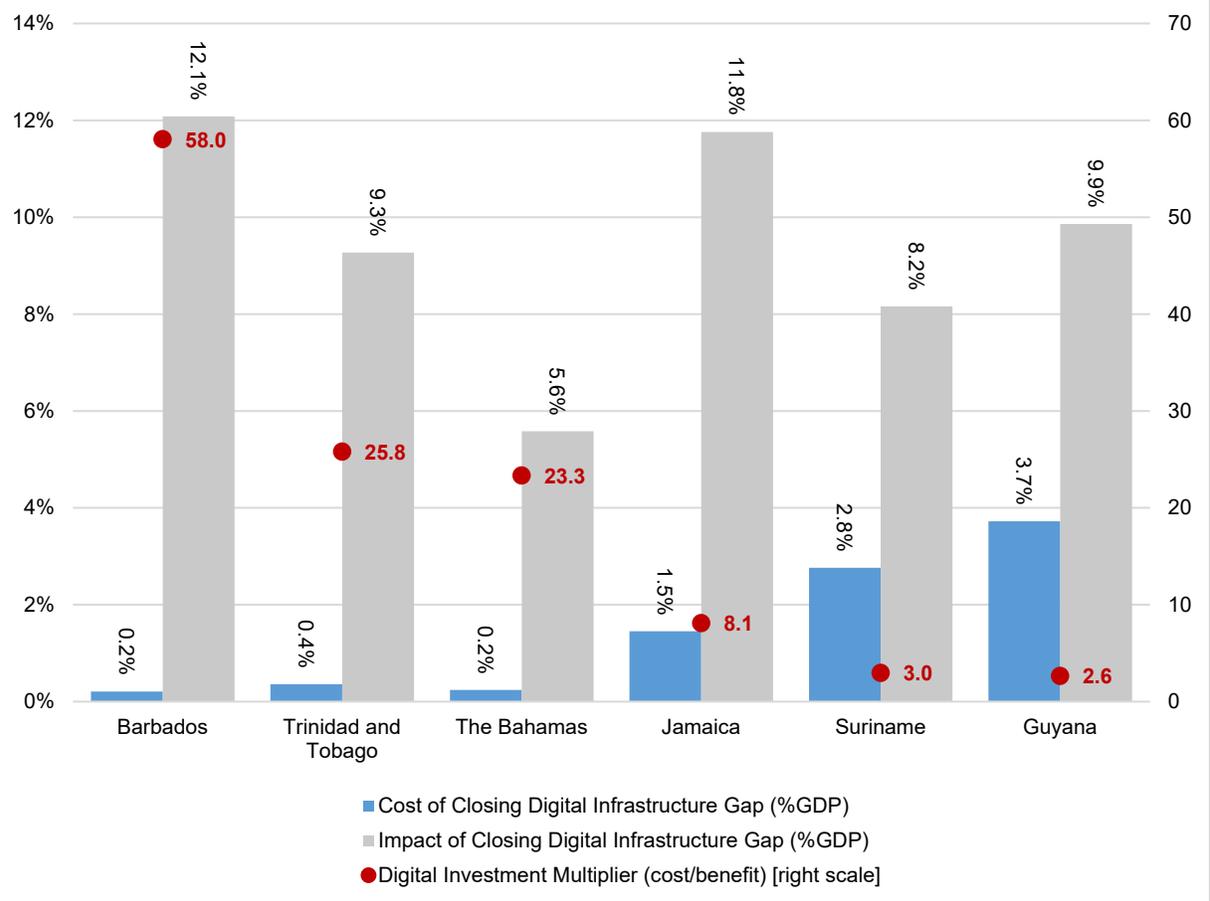
<sup>84</sup> The IDBA is a measure of four main dimensions of the broadband ecosystem: infrastructure, application and training, strategic regulation, and public policy and strategic vision. Trinidad and Tobago ranks 10th out of 26 Latin American and Caribbean countries on the IDBA.

<sup>85</sup> Regulated Industries Commission, “Review of the Status of the Trinidad and Tobago Electricity Commission (T&TEC) 2016–2019,” June 2021.

<sup>86</sup> Recent efforts to respond to rural inequalities in Internet access include the commencement of a Universal Service Infrastructure Project by the government in 2019 to provide broadband Internet access in designated underserved areas.



**Figure 3. Benefits versus Costs of Closing Digital Infrastructure Gaps in Caribbean Countries (percent of GDP and multiplier)**



Source: Authors' calculations based on data from the Table 1, Zaballos and Lopez-Rivas (2012) and IMF (2021). Please see the regional section of this Bulletin for a discussion of the methodology and references.

Note: "Gap" refers to the cost of closing the estimated digital infrastructure gap relative to Organization for Economic Co-operation and Development economies. Figures expressed in percentage points are as of the end-2019 GDP. The multiplier is defined as the estimated GDP growth impact of closing these gaps relative to their costs.



## Conclusion

Trinidad and Tobago experienced a large economic contraction in 2020. Real GDP declined by 7.4 percent in 2020 and is expected to decline by 0.9 percent in 2021. The ongoing COVID-19 shock has adversely impacted economic growth through lower gas and oil output and prices, and a partial lockdown of the domestic economy. The domestic economy is gradually reopening, and travel restrictions are being relaxed as the authorities continue the COVID-19 vaccination campaign. A gradual economic recovery is expected over the medium term, supported mostly by improvements in commodity prices. However, pandemic headwinds in Trinidad and Tobago's trading partners and a scarred domestic private sector could affect the pace of economic recovery.

Trinidad and Tobago has made good progress in digital infrastructure, but there is room for improvement. A review of some key indicators related to digital infrastructure shows that the country performs better than the Latin America and Caribbean region on average but needs to invest more to reach OECD standards. Investments should also focus on improving access to and the reliability of electricity, cybersecurity protection, ICT, and telecommunications infrastructure, especially in rural areas. It is estimated that closing the infrastructure gap would yield significant economic benefits, including a 9.3 percent increase in GDP, a 5.5 percent increase in productivity, and 20,189 new jobs.



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