

Chapter 3

The Caribbean 2050: Cone of Possibilities

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3.1 Introduction

Long-term strategies appear to have slipped in priority in the face of short-term crises. While, in the past, Caribbean countries have been able to regroup after a setback and refocus on their long-term strategic goals, thus not affecting the generally positive trajectory, in recent years, with the protracted economic downturn, progress towards development goals appears to have plateaued.

A modelling exercise such as this one allows policy-makers and development planners the opportunity to investigate a number of issues. One of the most important questions that can be assessed is whether countries can still achieve their targets given current economic conditions and existing policies; or, put another way, what is the likely outcome of existing policies given current economic conditions? Furthermore, exercises such as this one allow policy-makers to construct scenarios to determine what actions would be needed today to ensure the development outcomes desired by 2050. This would also bring to the forefront the constraints that would need to be eliminated before progress towards the targets could take place. This is especially useful for development agencies operating in the region, as it would help them better direct financing. Finally, policy-makers could use these models to statistically investigate the trade-offs between financing one goal and another, as well as estimate the impact on the society at large and not just the economy.

The modelling framework used in this paper is analogous to the Global Policy Model outlined by Alphametrics Co. Ltd (2009). Similar to the Global Policy Model, it uses behavioural relationships, identities and ratios to trace historical developments, as well as simulate the potential future impacts of trends, shocks and various policy initiatives over the medium term (35 years, to 2050). The modelling framework is not aimed at providing short-term forecasts, but is instead a consistent, rigorously structured framework for thinking about the social, economic and environmental problems facing the Caribbean.

The model attempts to provide forecasts for each of the seven Caribbean countries covered in this project: The Bahamas, Barbados, Grenada, Guyana, Jamaica, Saint Lucia, and Trinidad and Tobago. Within individual country models, there are interactions between the various social, economic and environmental variables. Each macro-model also comprises a historical time series databank taken from international sources. To ensure comparability, the data is largely sourced from international databases.

The behavioural specification is homogeneous across the countries. Any structural differences between the countries are therefore captured within the model

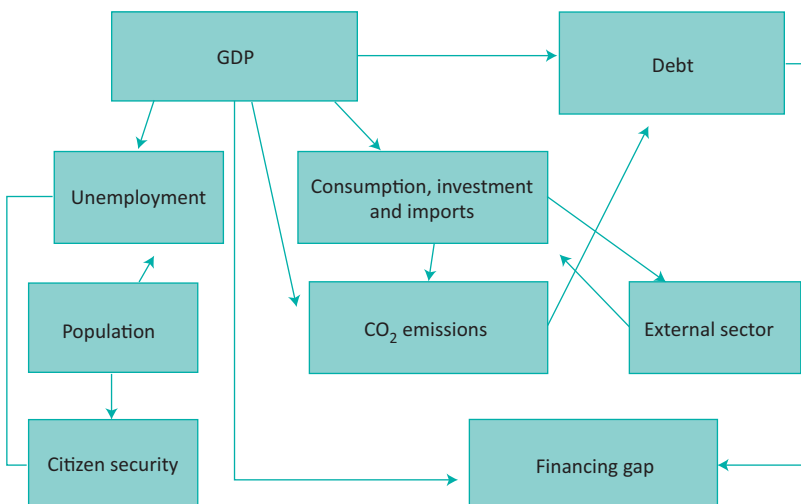
(coefficients and ratios) and not imposed by the model specification or approach employed. The relationships specified in the model are based on either econometric relationships or accounting identities. The model is closed through the financial sector, which also provides an estimate of the financing gap for the country and is of particular policy relevance for small developing states.

The forecasts provided in the study are ‘plain’ projections, as future residuals are assumed to be zero. Medium-term forecasts, such as those provided in this study, are subject to unexpected shocks, policy changes and other events that may push an economy away from its long-run growth path. The projections offered in this paper therefore assume that the economy/ies is/are not subject to major economic shocks over the forecast horizon. While this assumption might appear to be a bit strong, the scenarios are designed to assess various policy scenarios rather than accurately predict future economic trends in the short term.

Given that the policy variables considered in the model enter exogenously, it is also possible to consider what is needed to achieve a particular policy target (e.g. GDP per capita, unemployment or public sector debt). These targets can be achieved by either structural changes to the economy or policy innovations that are linked to the target variable. For example, one can achieve target CO₂ emissions by the introduction of a carbon tax, slower economic growth or reductions in the rate of carbon emissions per dollar of GDP. In addition, given that the model accounts for the structural differences and starting points for the various countries, one can assess the relative efficiency of a policy in various countries.

The policy modules shown in Figure 3.1 represent the domestic interactions of Caribbean small island states. Given the peculiarities of these economies, select indicators have been identified, with their structural relationships discussed below. For small economies, the amount of goods and services produced, gross domestic product (GDP), is vital to increasing and/or maintaining the standard of living of a

Figure 3.1 Policy model modules and interactions



country. GDP is, as shown in Figure 3.1, the central indicator having an influence on all other indicators in the policy model.

GDP is connected to consumption through a series of relationships; GDP is an estimate of the level of income within a country, which partly determines the salaries and wages of a labour force. The level of salaries and wages consequently influences disposable income, which in turn affects consumption patterns. Since many small islands are net importers, the level of consumption therefore is a driver of the amount of imported goods and services. The level of GDP also affects foreign and domestic investment. The level of foreign investment is dependent on the enabling business environment (tax incentives, competitive factors, etc.) and the potential of return on investment. Domestic investments are stimulated by profits and the rate of savings. National consumption comprises public and private consumption, and in small economies public expenditure is usually the largest component of consumption and a contributor to GDP.

The level of production of goods and services also has environmental consequences, with a positive relationship between economic activity and energy consumption (fuel imports), resulting in CO₂ emissions. To curtail the negative effects of CO₂ emissions, the government could encourage cleaner production and operational practices by the implementation of 'green' policies such as tax rebates on eco-friendly equipment and the introduction of carbon taxes on operations that produce high levels of greenhouse gases.

In the model it is assumed that demographic factors also interact and affects GDP. The optimal mix of labour and capital is necessary for the profit maximisation of productive activities. The quality of a labour force in a small island affects not only the quantity of goods and services it is able to produce, but the capacity to create high-value-added products and services. Therefore, variables such as population growth, rate of urbanisation and the literacy rate affect the employability of the labour force. Inversely, the level of economic capacity, in relation to areas of growth, also influences labour market participation, where new areas of growth can result in new jobs. The model also assumes a relationship between employment and crime. It is hypothesised that the level and distribution of income (GDP per capita) are correlated with citizen security and crime rates.

GDP in small island states is a major indicator of a country's ability to manage its debt. This relationship is also illustrated in the policy model. Indicators such as debt-to-GDP ratio and debt-service ratio are gauges used by international lenders and development organisations to measure the health of a country's economy. The relationship between GDP and debt is summarised in the model by the financing gap module. GDP levels are an indication of a country's revenue receipts and foreign exchange reserves, while a country's level of debt (internal and external) indicates its debt service payment obligations along with assigned interest rates. The difference between these two variable sets is the financing gap, a country's ability to pay its debts. The financing gap is important because of the relationship between financing and fiscal policy and, to a lesser extent in the Caribbean, monetary policy. The amount of leverage a country has with its revenue receipts and debt payments influences fiscal policy, direct and indirect taxation, and public expenditure. This interdependent

relationship is therefore important to public policy and the government's ability to provide social goods and services.

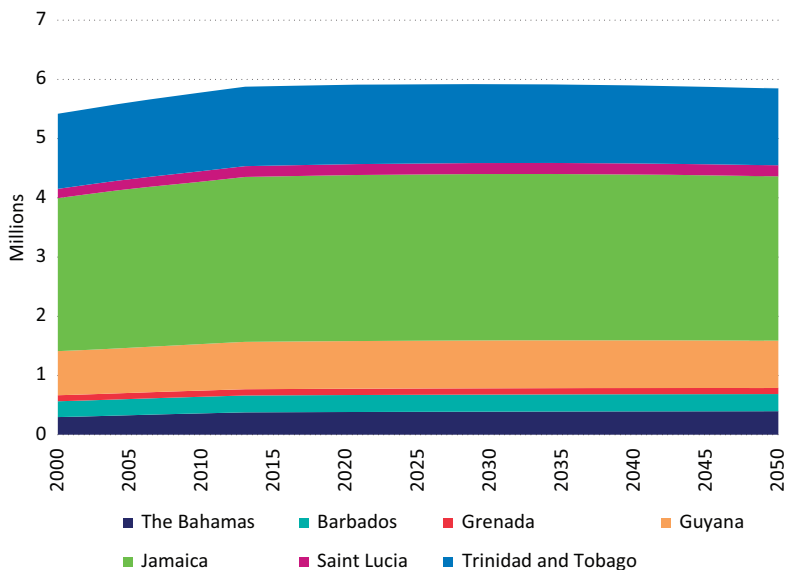
3.2 Policy scenarios

3.2.1 Baseline scenario

The first group of scenarios, baseline scenarios, assume that the policy path is in line with historical experience. Overall, Caribbean population growth rates in the baseline scenario become stagnant over the next three decades, as shown in Figure 3.2. Trinidad and Tobago, Saint Lucia and Jamaica follow a similar trend, peaking before 2020 and levelling off in future decades. These projections are consistent with those from the UN (2014), where the average annual growth rate between 2045 and 2050 is just 0.27 per cent. The stagnation of population growth in the future is mainly due to significant declines in the fertility rate, increased contraception use and high levels of education. Greater proportions of older persons within the population are also expected as a result of falling fertility rates and increasing life expectancy (ECLAC 2013; Yeboah 2002). The following scenarios are based on historical data trends and are projected using 'business-as-usual' growth rates.

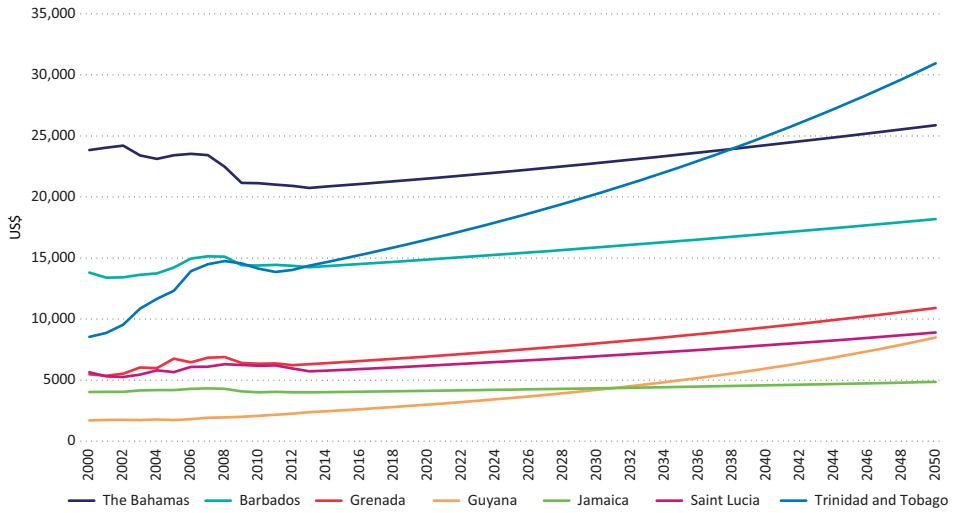
With the exception of the islands of Trinidad and Tobago and Guyana, real GDP per capita for the Caribbean is expected to rise only marginally in most countries. GDP per capita in Trinidad and Tobago is expected to more than double by 2050, reaching more than US\$30,000 (see Figure 3.3). This persistent rise in consumption is predicted to be driven by continued investment and development of the gas and oil industry, with the assumption that world oil prices continue their historical upward

Figure 3.2 Population projections for selected Caribbean countries



Source: Authors' projections

Figure 3.3 Real GDP per capita projections for selected Caribbean countries



Source: Authors' projections

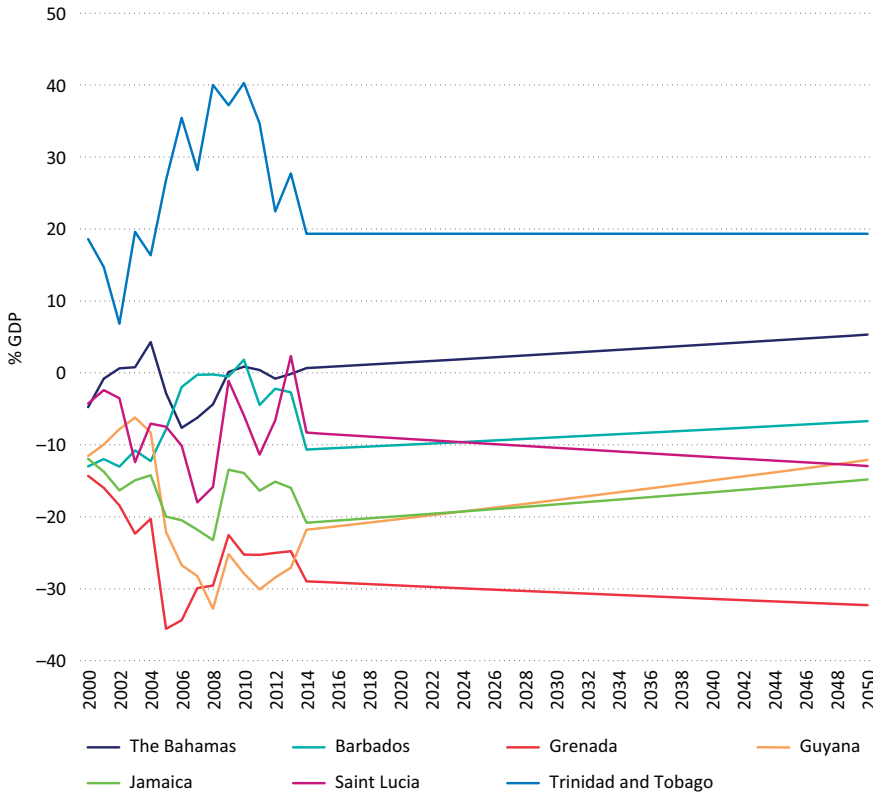
trajectory. The natural endowment of oil reserves is a major source of income to the twin-island state, and explorations for oil, particularly in deep water, are likely in the future (Russell and Bududass 2012).

Recent favourable global conditions have favourably affected growth in Guyana. Real economic activity expanded thanks to stronger performances in the services, gold, diamond, rice and alcoholic beverages industries, reflecting favourable prices and increased investments (Bank of Guyana 2013). In the baseline model, Guyana has the highest average propensity to consume, of 0.81, with the exception of Grenada, which has the same propensity. It is assumed the relatively high growth rate in Guyana (3.5 per cent) in 2005–2015 will continue and have a positive impact on household income and consumption. Real GDP per capita in the other islands is not expected to record any significant growth, mainly because of low or falling rates of growth in real economic activity owing to low rates of productivity growth.

In general, the projections for the external account suggest there are two main clusters of country groups (See Figure 3.4). One cluster, The Bahamas and Trinidad and Tobago, are likely to experience some improvement in their external position, and may obtain some surpluses on their external account. The other country cluster, by contrast, are expected to have negative external current account balances, particularly those countries in the Organisation of Eastern Caribbean States, given the declining market for traditional commodity exports (Addy 2000).

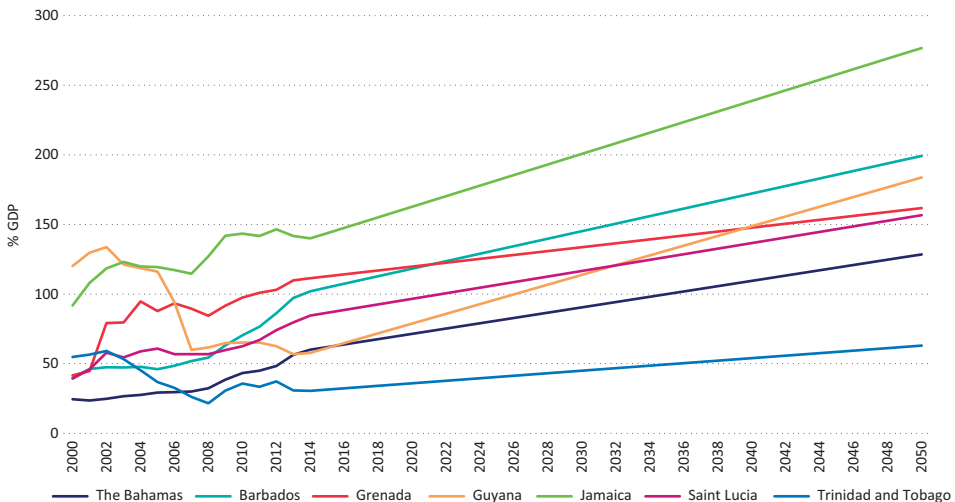
In all the islands, debt as a percentage of GDP is expected to rise (see Figure 3.5) as a result of structural weaknesses in their fiscal accounts. Following historical trends, Jamaica is forecast to have the highest levels of debt – reaching almost 260 per cent of GDP. The island is currently one of the most indebted countries in the world, with extremely high debt-servicing costs due to high effective interest rates (Johnston and Montecino 2011). Trinidad and Tobago’s debt as a percentage of GDP, in contrast,

Figure 3.4 External current account projections for selected Caribbean countries (% of GDP)



Source: Authors' projections

Figure 3.5 Debt projections for selected Caribbean countries (% of GDP)



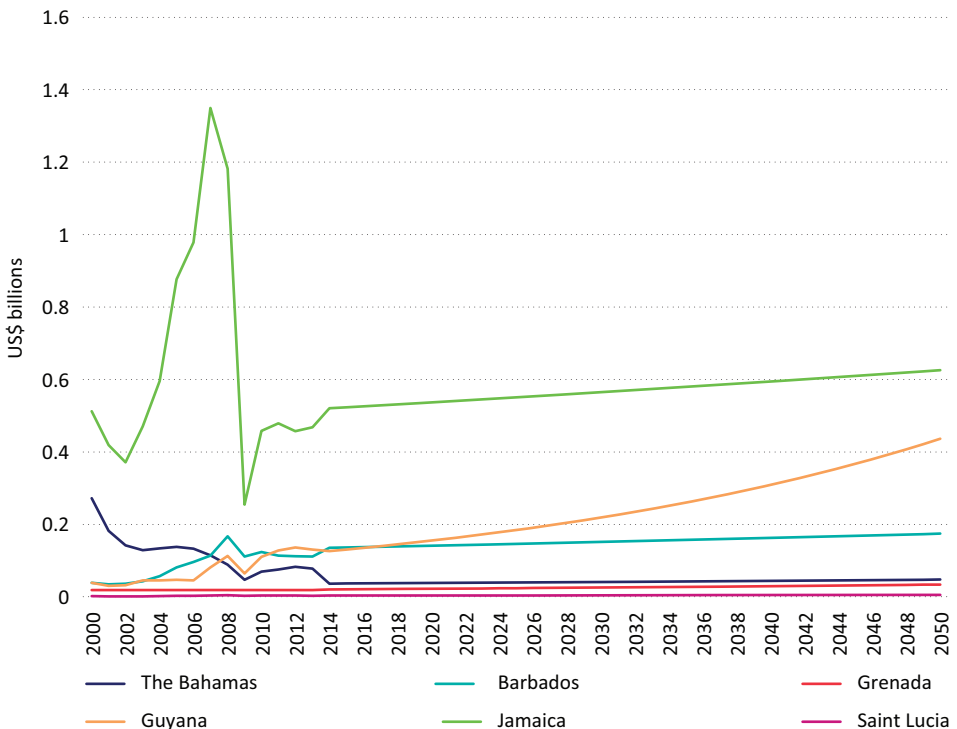
Source: Authors' projections

will only increase by 7 per cent. This relatively slow rate of growth in debt is due to projected revenues from the oil and gas industry. To date, Trinidad and Tobago is the only Caribbean island with the ability to run concurrent fiscal surpluses. Barbados’s debt increases steadily after 2015 to 200 per cent of GDP by 2050, owing to high expenditures relative to its ability to collect revenues. The Bahamas, Guyana, Grenada and Saint Lucia are also projected to have greater debt ratios, ranging from 128 per cent to 185 per cent of GDP.

In the baseline energy scenario (see Figure 3.6), fuel costs are expected to rise in line with historical trends, ranging between US\$174 million and US\$33 million. Guyana and Jamaica are expected to have the highest annual fuel costs by 2050, reaching US\$436 million and \$625 million respectively. In addition, Guyana is expected to have the highest rate of increase in fuel oil, with a 67 per cent expansion in fuel costs being incurred between 2035 and 2050. Within all of these countries, the cost of energy is a major hindrance to firm profitability and the cost of doing business.

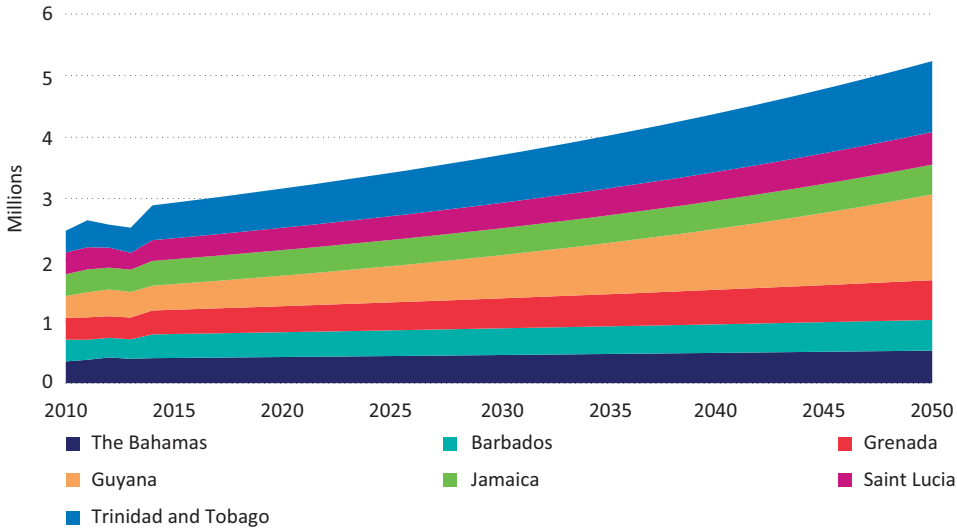
CO₂ emissions for most Caribbean countries are expected to rise in line with economic activity (see Figure 3.7). As expected, Trinidad and Tobago will be one of the main countries responsible for CO₂ emissions owing to its dependence on the oil and gas industry. In addition to Trinidad and Tobago, the relatively fast rate of growth forecast in Guyana is also likely to result in increased CO₂ emissions, rivalling

Figure 3.6 Energy cost for selected Caribbean countries



Source: Authors' projections

Figure 3.7 Projected CO₂ emissions for selected Caribbean countries

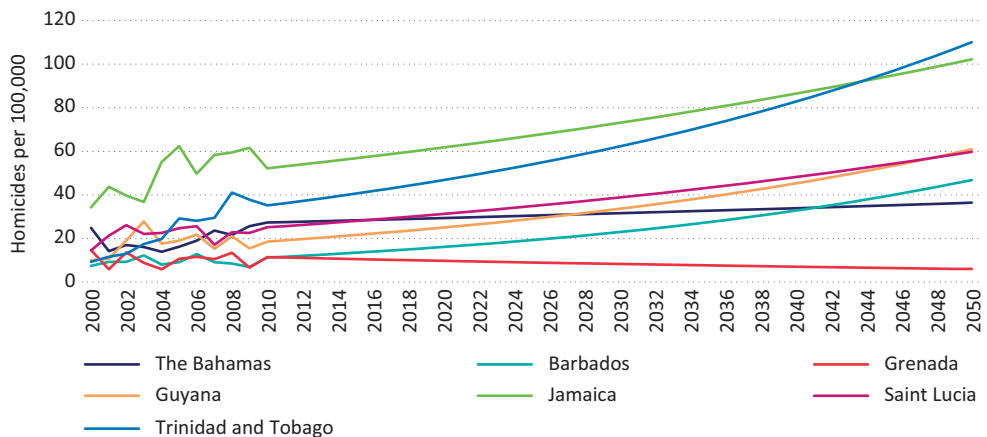


Source: Authors' projections

those of Trinidad and Tobago. Most of the other countries are expected to have some growth in emissions, but these will be a small share of total Caribbean output of CO₂ emissions, because of technological efficiencies and slow growth. Although projected CO₂ emissions for the selected countries exhibit overall growth in the future, small island developing states such as those in the Caribbean contribute a minuscule amount of less than 1 per cent to global emissions (Climate and Development Knowledge Network 2010).

Crime is one of the more serious developmental challenges facing the Caribbean. Figure 3.8 suggests that the baseline projection would see the number of homicides

Figure 3.8 Projected crime rates for selected Caribbean countries



Source: Authors' projections

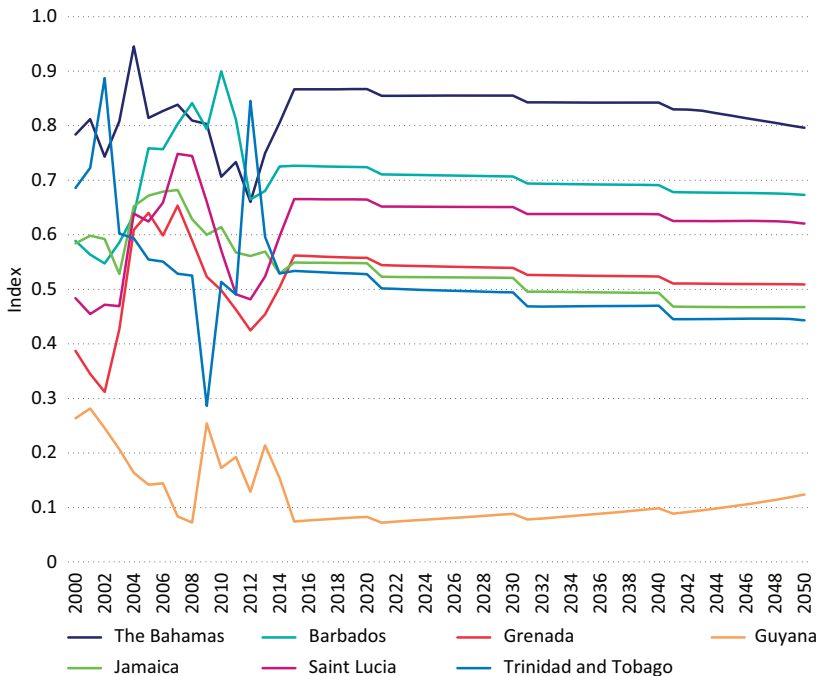
per 100,000 persons going over 100 by 2050, based on current trends, for Jamaica and Trinidad and Tobago. While comparatively lower, the other Caribbean countries would also see some growth in rates of crime, with most of the other countries expected to have homicides per 100,000 persons of between 30 and 60 persons per year by 2050. In the relatively small islands of the Caribbean, such a rise in the homicide rate would probably affect productivity, tourism and the social fabric of society.

Based on the socio-economic projections highlighted above, the resilience of most Caribbean countries is likely to fall over the period under analysis. Figure 3.9 provides the baseline projections for the resilience index put forward by Briguglio et al. (2008) and is based on the indices of macro-economic stability, micro-economic efficiency, governance and social development. Most countries are expected to experience a reduction in the resilience index, particularly Jamaica because of debt, governance and social development challenges, while Trinidad and Tobago would experience a decline in governance. This decline implies that small states in the Caribbean would probably be more susceptible to external shocks and experience a somewhat longer period before they return to normal growth paths following shocks.

3.2.2 Baseline scenario with further negative shocks

The following section outlines a worst-case scenario where further negative shocks are experienced in select policy variables. The first scenario considers the case of a 2 per cent fall in productivity over the period under investigation. These shocks

Figure 3.9 Projected resilience index for selected Caribbean countries

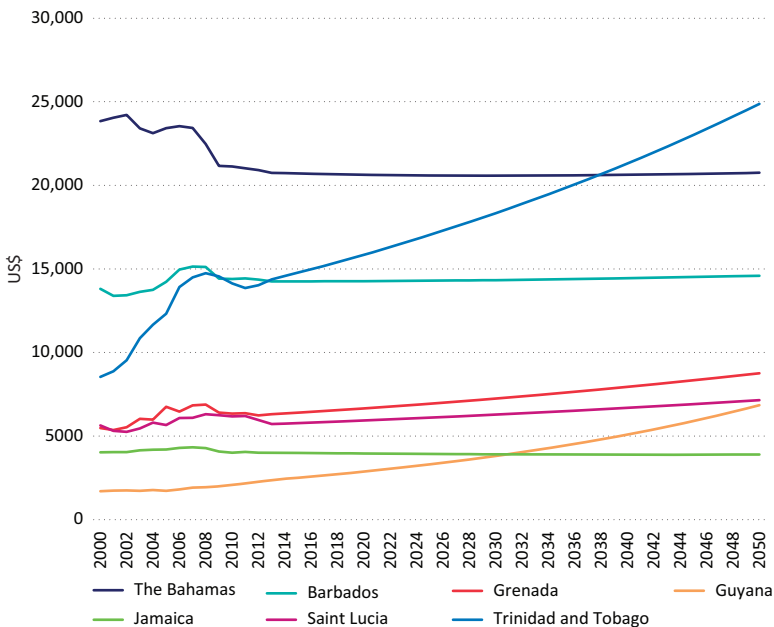


Source: Authors' projections

could occur from the myriad of natural disasters that have affected the region in the past (e.g. hurricanes, earthquakes, floods, to name a few). In the scenario, reduced productivity results in a contraction in real GDP per capita levels in all countries except Trinidad and Tobago. Debt levels are exacerbated by both reduced productivity and falling tax collection, with Jamaica's debt ratio climbing to 350 per cent of GDP and all other countries, except Trinidad and Tobago, reaching debt levels above 200 per cent of GDP. Therefore it is projected that six out of the seven selected countries will have higher debt levels than Greece, which reported a debt-to-GDP ratio of 174 per cent in 2014 (IMF 2015). Increased oil prices are also expected to have a negative impact, particularly in Jamaica and Guyana. Oil prices largely feed through the real and external sectors of the model, with the rise in fuel imports reducing GDP and leading to a deterioration in the external current account. Figure 3.10 illustrates the effects of a further 2 per cent reduction in productivity, relative to the baseline, across the selected countries. In all of the countries, with the exception of Trinidad and Tobago as well as Guyana, a reduction in real GDP per capita occurs in the long run. The islands of Grenada, Saint Lucia, Guyana and Jamaica are projected to experience a fall in real GDP per capita levels to below US\$10,000. If it is compounded by an exogenous shock (e.g. a natural disaster), these countries face the risk of being downgraded to low-income economies.

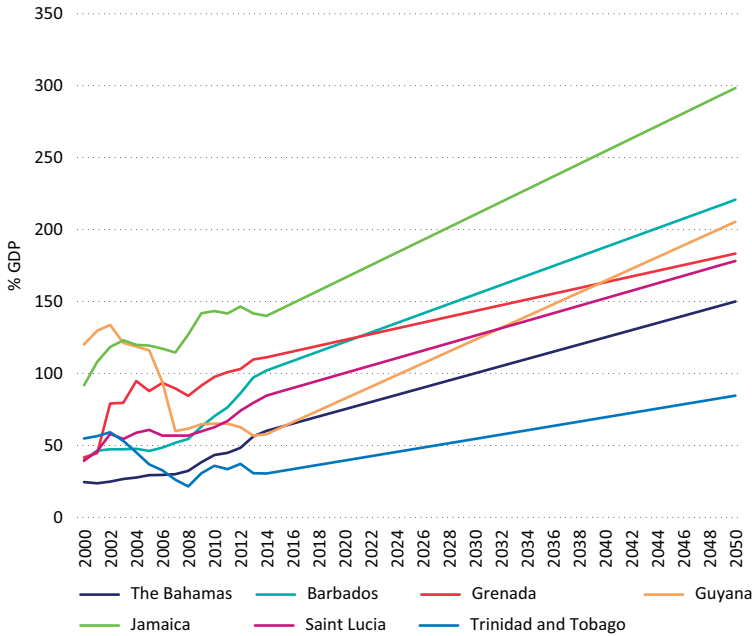
Significant increases in debt levels are projected to occur in the worst-case scenario (see Figure 3.11). In 2050, the selected countries are expected to experience debt levels of 150 per cent to 200 per cent of GDP, excluding Jamaica and Trinidad and Tobago.

Figure 3.10 Projected real GDP per capita for selected Caribbean countries (with 2% fall in productivity)



Source: Authors' projections

Figure 3.11 Projected debt (% of GDP) for selected Caribbean countries (with 2% fall in productivity)



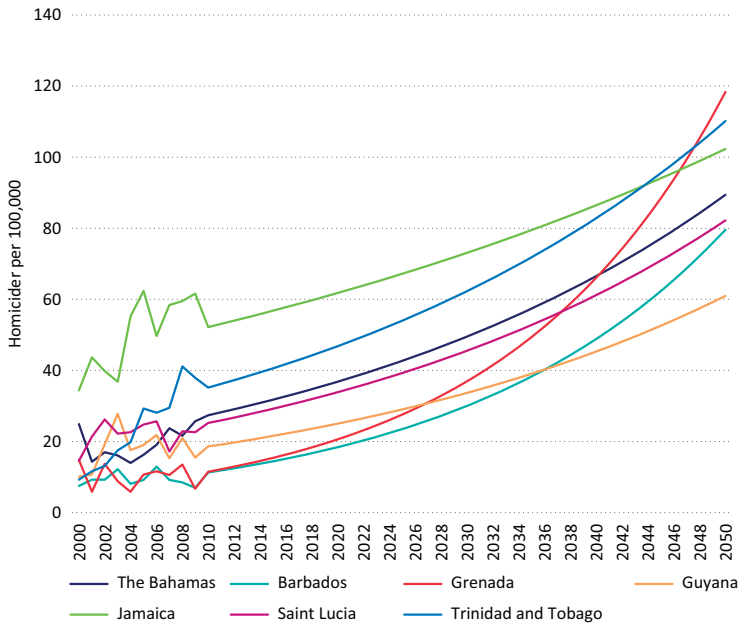
Source: Authors' projections

Jamaica’s prolonged debt challenges are exacerbated by the fall in productivity, rising to almost 300 per cent of GDP. Only Trinidad and Tobago would maintain a debt-to-GDP ratio below 100 per cent over the forecast horizon.

Another scenario considered the case of a convergence in homicides rates due to the worsening economic situation, the increased size of the underground economy (drug trafficking) and greater youth unemployment. In this case, homicide rates in the relatively small islands of the Eastern Caribbean would reach levels similar to those experienced in the larger territories of Trinidad and Tobago and Guyana (see Figure 3.12). Such high rates of crime in the relatively small islands of the Caribbean would have significant spillover effects on tourism and society in general.

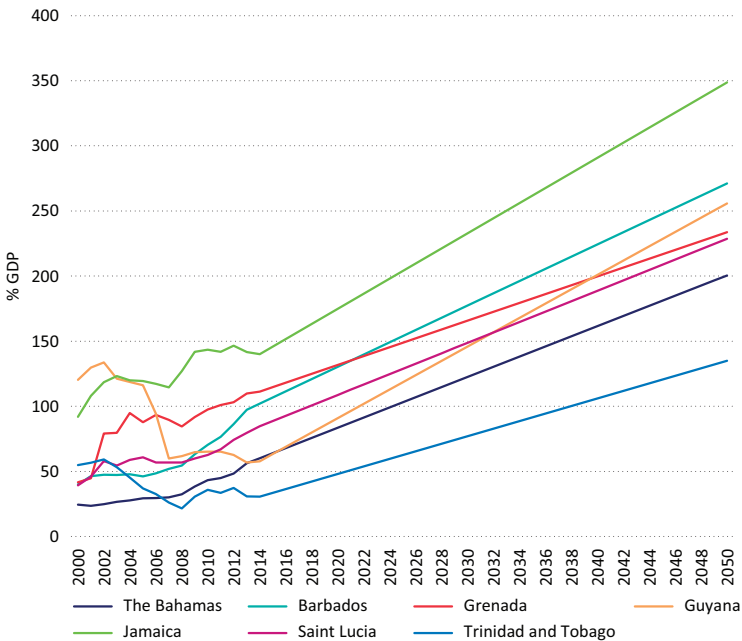
In relation to the fiscal position of the region, one of the trends observed within recent years has been a fall in tax revenue. In another worst case, the study considered the scenario of a further reduction in tax collections due to inefficiencies in tax collection procedures (weak institutions) and the overall decline in economic activity. Figure 3.13 illustrates the impact of falling tax collection on debt. These results are very similar to the impact on debt provided earlier as a result of falling rates of productivity (Figure 3.11). However, reduced tax collection has a greater negative effect on debt levels due to the direct impact of reduced revenue on government financing. Jamaica’s debt in the long run is projected to reach 350 per cent of GDP, with the other countries, with the exception of Trinidad and Tobago, clustering between 200 per cent and 250 per cent of GDP.

Figure 3.12 Crime rates for selected Caribbean countries (convergence in rates of homicides)



Source: Authors' projections

Figure 3.13 Projected debt (% of GDP) for selected Caribbean countries (falling rates of tax collection)



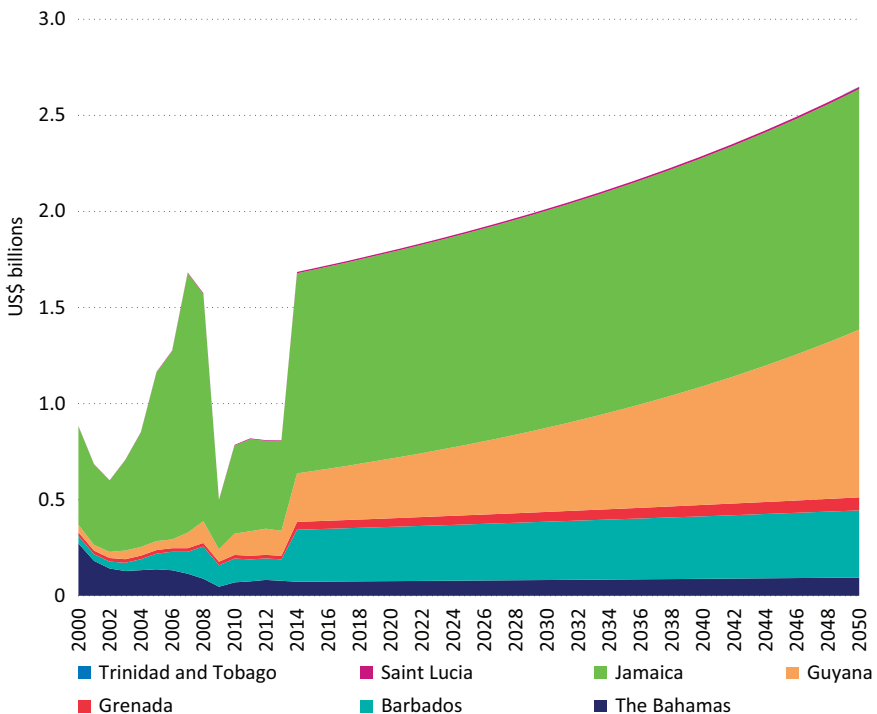
Source: Authors' projections

In the worst-case scenario it is assumed global oil prices double, with the impact on fuel costs for the selected Caribbean countries provided in Figure 3.14. While all the countries will experience a rise in fuel imports, Jamaica and Guyana have the largest increases in fuel costs, estimated at US\$1.2 billion and US\$872 million respectively. These significant increases may be explained by the higher levels of industrial activities in both of these countries than in the other countries under investigation. The total cost of fuel imports for the six Caribbean countries is therefore expected to rise from under US\$1 billion in 2010 to just over US\$2.5 billion by 2050.

3.2.3 Projections with policy Interventions

Following the conceptual model presented earlier, the quantitative model is analysed by comparing the effect of specific policy interventions on the variable of interest relative to baseline scenario. This approach allows one to obtain an idea of the relative impact of the policy interventions on the variable of interest. From a planning perspective, such an approach would also be useful for comparing the relative efficacy of various policy interventions. The report considers policy interventions specifically targeted at achieving an increase in productivity, export performance, youth policy, fiscal reform and crime over the planning period up to 2050. While

Figure 3.14 Fuel costs for selected Caribbean countries (with doubling in energy prices)



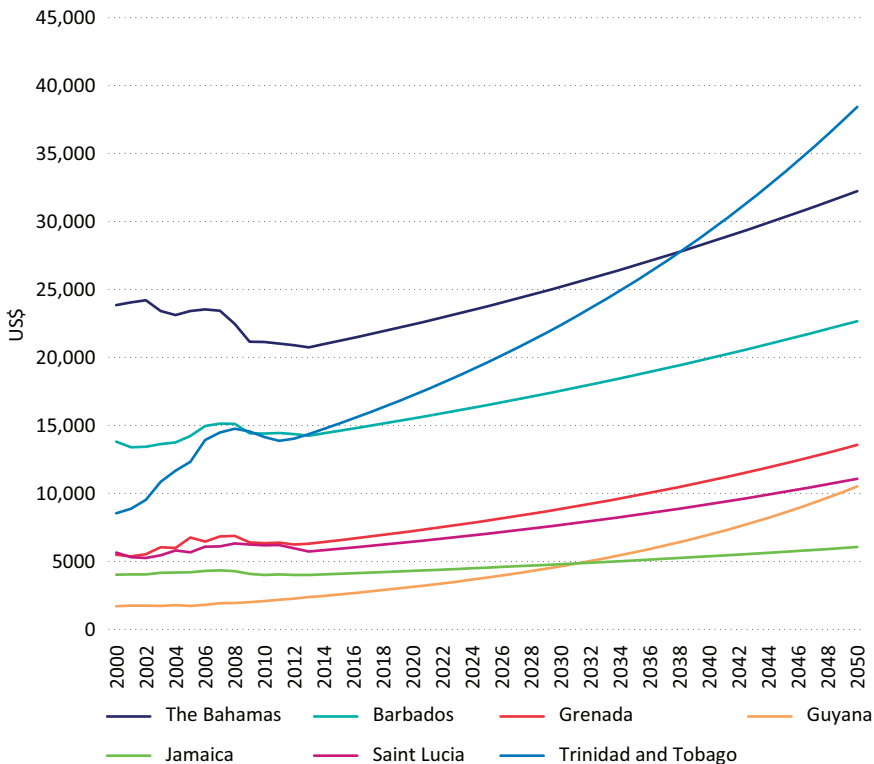
Source: Authors' projections

these interventions are modelled separately, it is easy to conceptualise the cumulative impact on regional sustainable development if some overlapping policy is pursued.

Given the macro-economic trends highlighted above, the priority for policy-makers going forward should be focused on enhancing growth and generating decent work opportunities. Much of the cross-country literature on economic growth finds that the bulk of long-run economic growth is driven by productivity (Easterly and Levine 2001). Within this cross-country growth literature, productivity or TFP includes the growth-enhancing effects of technological innovations, externalities and the adoption of lower-cost production techniques. In more developed countries, the growth-enhancing effects of productivity account for more than 50 per cent of overall economic growth, and in some instances an even higher proportion, while in developing countries about 30 per cent of all growth can be attributed to productivity.

In the case of productivity, it is assumed that the policy interventions discussed in the sector reports can lead to a sustained growth in productivity of about 2 per cent per year. Figure 3.15 suggests that, if one can increase productivity in these Caribbean states, growth will accelerate in all countries. There are likely to be two

Figure 3.15 Projected GDP per capita (US\$) in selected Caribbean countries (with 2% growth in productivity)



Source: Authors' projections

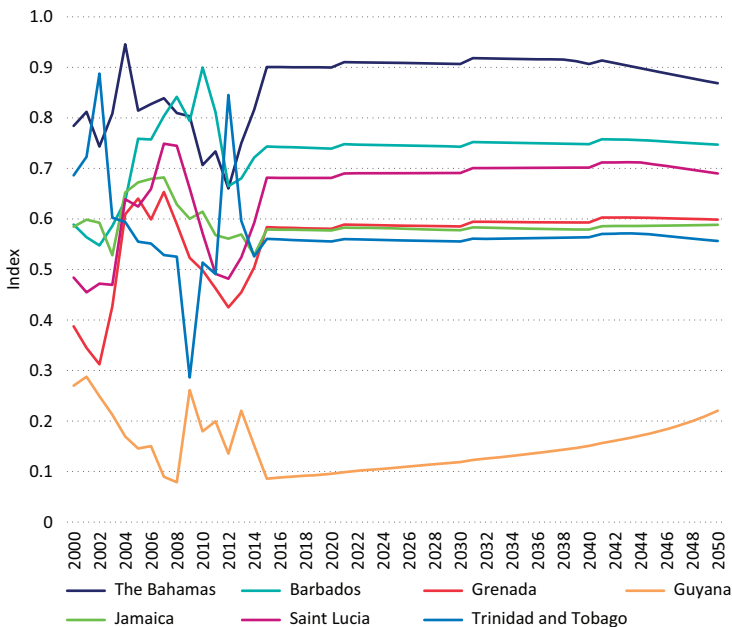
countries that could benefit significantly in this scenario: Trinidad and Tobago and Guyana. In this scenario, Trinidad and Tobago would overtake The Bahamas by 2040 in real GDP per capita terms, while Guyana would move from last to overtake both Jamaica and Saint Lucia.

The growth in productivity would also have a positive impact on resilience in the region. By 2050, the majority of the countries in the sample would be on their way to building resilience (see Figure 3.16). Most countries would exceed their peak resilience index score. The only country that would still be in the bottom half of the resilience scores would be Guyana, indicating that stronger productivity growth and social interventions would be needed to boost resilience and achieve convergence with the other small states in the region.

The projected growth in economic activity is also likely to positively impact on other key macro-economic variables. In this scenario, the debt ratios in most countries would fall relative to the baseline scenario; however, most countries would still breach the 100 per cent of GDP threshold by 2050 (see Figure 3.17). This finding suggests that greater growth alone would not be enough to address the debt challenges facing the region by 2050.

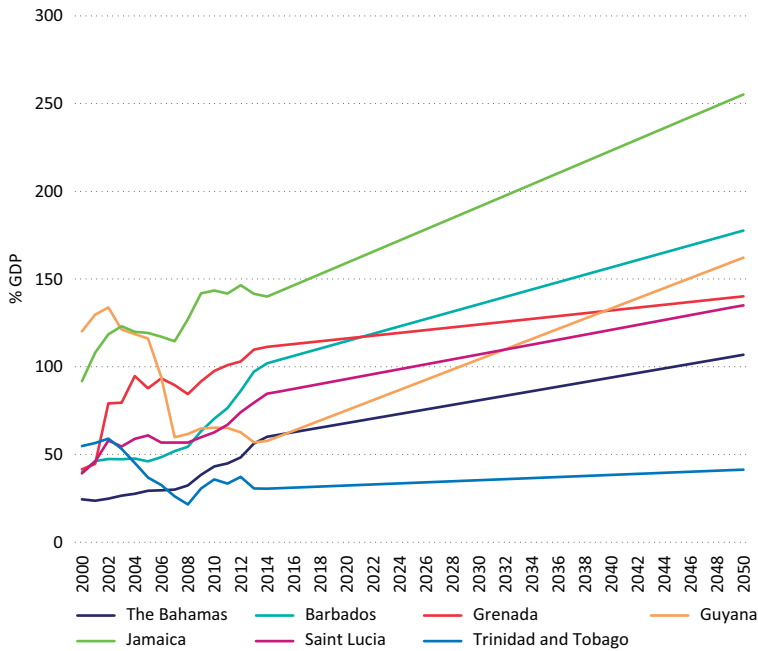
Another strategic objective considered in the report are policies aimed at increasing export growth in the Caribbean. As the macro-economic background section discussed, export growth in most Caribbean countries has been deteriorating as a result of declining competitiveness and slow growth in target markets. The export growth scenario targets export growth of 2 per cent per annum over the forecast

Figure 3.16 Projected resilience index in selected Caribbean countries (with 2% growth in productivity)



Source: Authors' projections

Figure 3.17 Projected debt in selected Caribbean countries (% of GDP; with 2% growth in productivity)



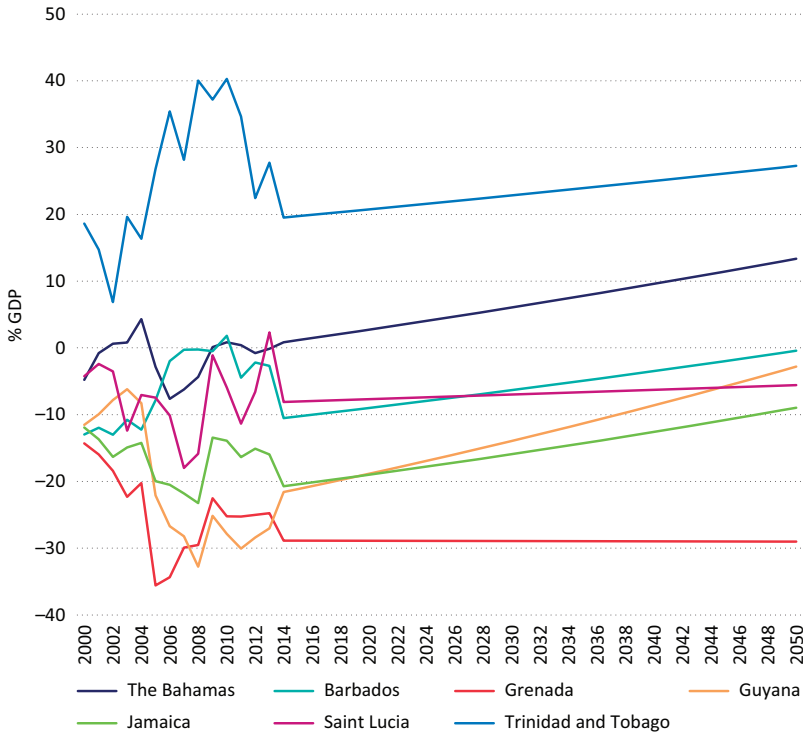
Source: Authors' projections

horizon. The impact on GDP growth is, as expected, positive. In contrast to the productivity scenario, however, the cumulative impact on GDP is somewhat smaller because of the additional imported inputs that would be needed to support this growth in exports. Therefore, while a 2 per cent annual growth in productivity enhances the standard of living by 20 per cent by 2050, a similar increase in export growth leads to a 10 per cent rise in the standard of living.

Nevertheless, the upturn in exports is also likely to have a positive impact on the external current account, as well as the level of debt. In addition, the rise in income from exports will have indirect impacts on taxation and expenditure levels. As a result, debt levels in the Caribbean are likely to improve somewhat, but are not significantly different from the growth scenario considered earlier. Similarly, the external current account improves in all countries (see Figure 3.18). Three out of the seven countries under review would move their external current account balance into surplus should this targeted export growth rate be achieved. Trinidad and Tobago, as well as The Bahamas, which start from a better position, would be relatively better off.

The comparatively high level of youth unemployment in the Caribbean has been a persistent and troubling problem. In addition to reducing the size of the labour force qualified to take advantage of emerging opportunities, there is also an intimate link between youth unemployment and crime (Moser and Van Bronkhorst 1999).

Figure 3.18 External current account in selected Caribbean countries (% of GDP; with 2% growth in exports)



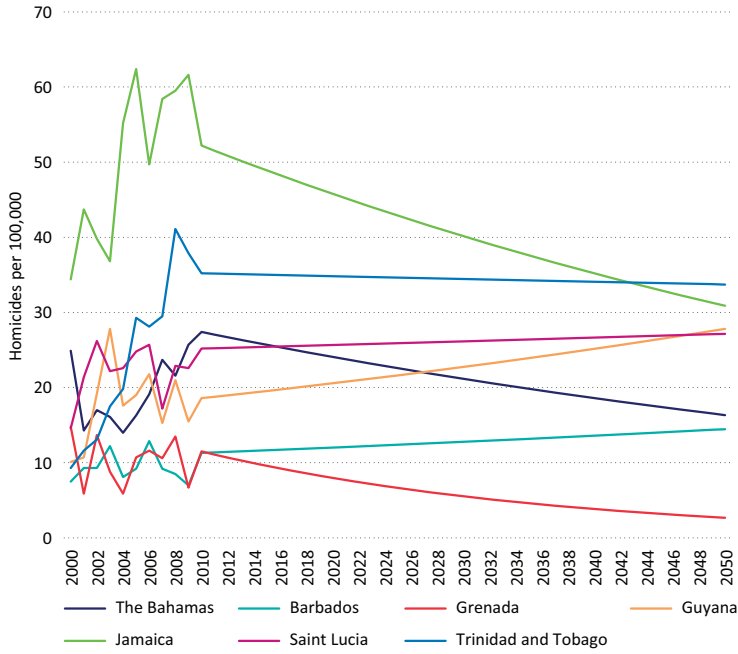
Source: Authors' projections

The policies aimed at tackling youth unemployment in this report would therefore have potential benefits in relation to crime. Enabling youth increases the labour participation rate and possibly decreases the expenditure of the state. The rationale behind these interactions is, if given more opportunities, young people will take advantage of these and rely less on public services, reducing government expenditure.

The model projections indicate also that higher levels of employment among the youth will lead to a decrease in the crime rate. Figure 3.19 suggests that all countries experience a decrease in crime when policies are targeted towards youth engagement. The relatively small deviation reported for Grenada is largely due to the relatively low base for violent crimes in this country. As a result, the homicide rate in most Caribbean countries converges to 30 homicides per 100,000 persons or lower. For most countries, this is still above their historical average and indicates that youth policy alone would not be enough to bring down the rate of violent crime. In addition, there would be a small stimulant effect on growth, owing to the reduced cost of doing business and increased availability of labour.

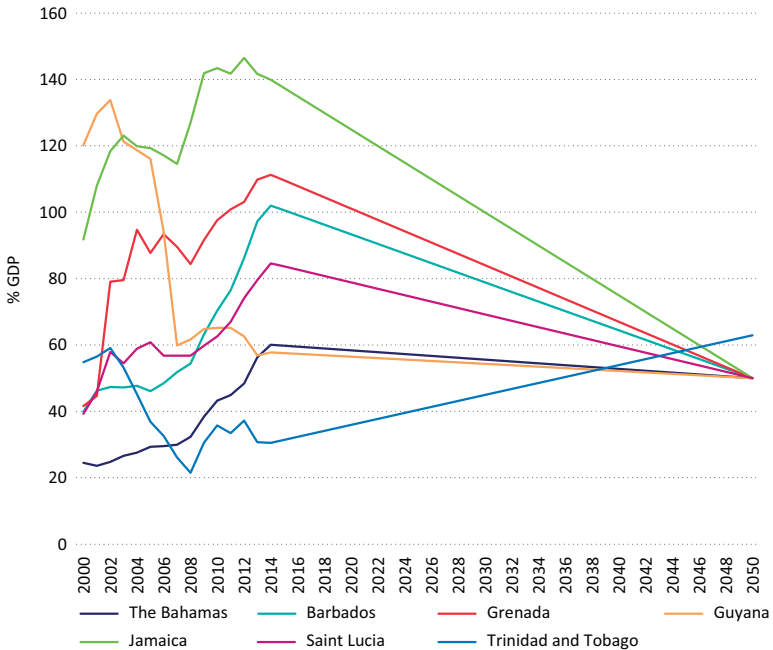
The next policy intervention considered relates to fiscal reform. The debt statistics provided earlier in this report indicate that there are underlying structural weaknesses in the fiscal system of most Caribbean countries (see Figure 3.20). During periods

Figure 3.19 Crime in the Caribbean and youth policy



Source: Authors' projections

Figure 3.20 Fiscal policy rules and debt

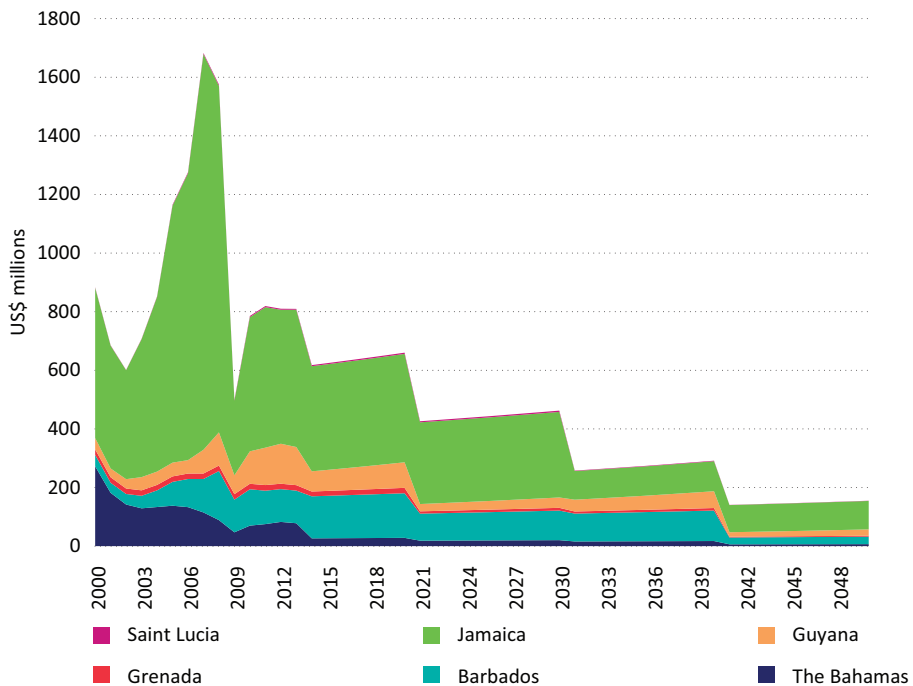


Source: Authors' projections

of growth, these weaknesses are masked, but the recent global recession exposed the weaknesses and resulted in a significant jump in the debt levels of most countries. Given the difficulty of raising revenue, it is thought that most of this adjustment was made on the expenditure side. It was assumed that countries would implement a fiscal rule that limits government expenditure to some given percentage of GDP, to achieve a debt-to-GDP ratio of 60 per cent or lower by 2050. The required expenditure targets vary in each country given the efficiency of revenue collection: 13 per cent in The Bahamas and Grenada, 26 per cent in Barbados, Guyana, Saint Lucia and Trinidad and Tobago and 23 per cent in Jamaica. If these expenditure rules are implemented, debt-to-GDP targets could be reached without significant increases in tax revenues.

Policy interventions aimed at increasing renewable energy to curb the projected high-energy costs and promote green economies are assumed within the model. In an effort to reduce the dependence on fuel oil in the selected countries, two energy scenarios are assumed: a probable scenario and a possible scenario. A probable energy scenario is assumed in the model with a target of reducing fuel cost by 19 per cent of current costs by 2050 (see Figure 3.21). This reduction in costs is assumed to lead to reductions in the propensity to import fuel, as well as to reduce overall import levels. In the model, the decline in fuel cost also leads to an increase in growth in the long run.

Figure 3.21 Projected energy costs in selected Caribbean countries (probable scenario)



Source: Authors' projections

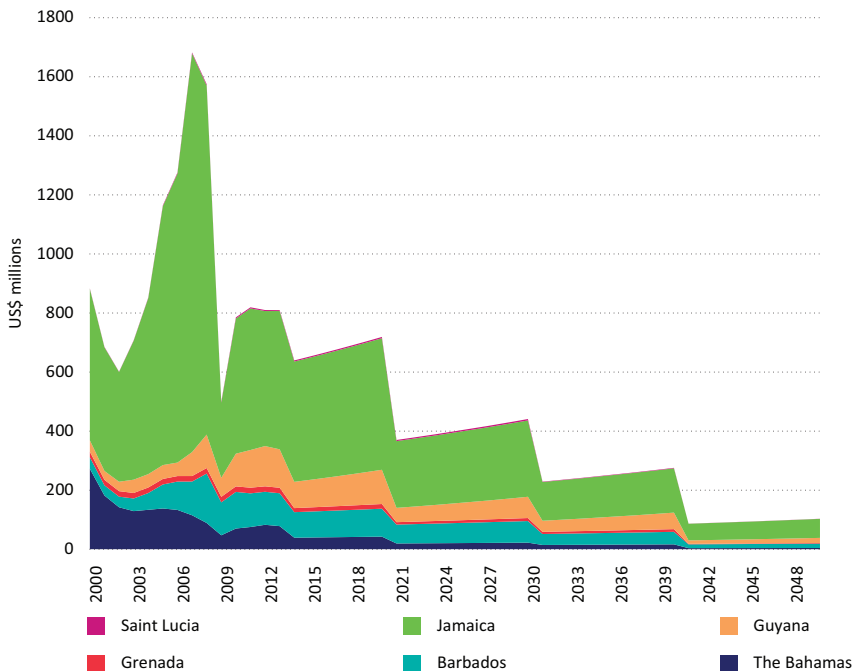
The possible energy scenario is the ideal scenario where fuel costs are reduced to 11 per cent of current levels by 2050 (see Figure 3.22). Like the probable scenario, the vision scenario projects reductions in the propensity to import and reduced overall import levels. Higher levels of growth are projected for all countries in this scenario than in the probable scenario, as higher gains are expected with the further reduction in energy costs. In both scenarios, costs are reduced proportionally to each decade; this may be attributed to the high cost to transition from fuel oil to renewable energy in the beginning and the savings from the transition being actualised over the long run.

3.2.4 Financing for development

The above model is closed through the financial sector. The difference between the monetary liabilities generated by the economic scenario and the public sector funding requirement, as well as private sector credit demands, provides an estimate of the financing needs of the country. Figure 3.23 provides the baseline estimates of this financing gap. It should be noted that this is not an estimate of the initiatives that are implemented in the scenario, but simply an estimate of the finance needed to ensure consistency between the various sectors of the economy.

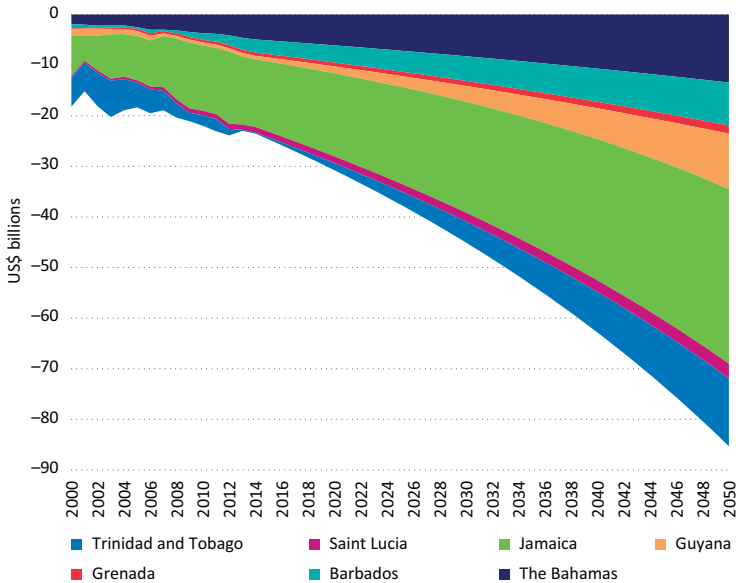
In the baseline scenario, the financing gap is estimated at US\$20 billion at the beginning of the scenario, but then quickly rises to more than US\$70 billion owing to the worsening fiscal position of most Caribbean countries in the baseline scenario.

Figure 3.22 Projected energy costs in selected Caribbean countries (possible scenario)



Source: Authors' projections

Figure 3.23 Baseline financing gap for the Caribbean



Source: Author’s projections

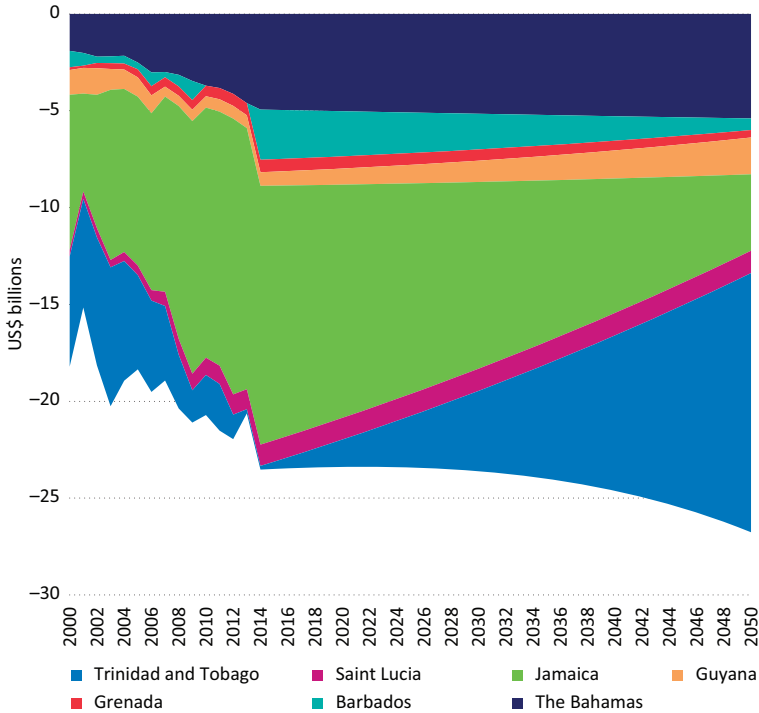
Each scenario has different implications for the financing demands of countries over the forecast horizon. In the scenario targeting a 2 per cent growth in productivity, the financing gap reaches US\$80 billion by 2050, as financing will be needed to support the additional growth projected in this scenario.

One way of closing this financing gap, however, is to reduce the size of the public sector borrowing requirement (see Figure 3.24). In the scenario with a fiscal rule and tax reform, the financing gap declines up to 2050, with most of this gap occurring because of unsatisfied credit demand from the private sector. In addition, the size of this financing gap would be significantly smaller – at less than US\$15 billion by 2050.

3.3 Conclusion

The Caribbean has experienced significant growth in the standard of living in the post-independence era. Indeed, most of the countries considered in this study were ranked as having ‘high human development’ by the UNDP in 2013 (UNDP 2013). This performance has been largely driven by significant expansions in the level of economic activity, as well as standards of health and to some extent education. In most countries, the life expectancy at birth is among the highest in the world.

Despite these achievements, there are still some remaining challenges that the region needs to address. Economic growth in the Caribbean during most of the 2000s was modest and has deteriorated significantly since 2007 (the period of the great recession). The region is characterised by relatively high rates of unemployment (particularly among the youth), low rates of productivity, rising rates of crime, underlying fiscal weaknesses and a relatively weak export industry.

Figure 3.24 Financing gap with fiscal rules and tax reform for the Caribbean

Source: Author's projections

The modelling framework used in this paper employs behavioural relationships, identities and ratios to trace historical developments, as well as simulate the potential future impacts of trends, shocks and various policy initiatives over the medium term (35 years, to 2050). The modelling framework is not aimed at providing short-term forecasts, but provides a consistent, rigorously structured framework for thinking about the social, economic and environmental problems facing the Caribbean. The policy variables considered in the model enter exogenously, therefore making it possible to consider what is needed to achieve a particular policy target (e.g. GDP per capita, unemployment or public sector debt). These targets can be achieved either via structural changes to the economy or through policy innovations that are linked to the target variable.

The model is used to consider the effects of specific policy interventions on the variable of interest relative to baseline scenario. The report considers policy interventions specifically targeted at achieving an increase in productivity; improving export performance; youth policy; fiscal reform; and crime over the planning period up to 2050. While these interventions are modelled separately, it is easy to conceptualise the cumulative impact on regional sustainable development if some overlapping policy is pursued.

The results suggest that policies aimed at increasing productivity could garner significant economic benefits (in terms of GDP, debt and unemployment, to name

a few) while a policy intervention aimed at reducing the relatively high levels of unemployment among the region's youth could generate benefits in relation to reduced crime. While the policy interventions considered in this report were presented as separate policy interventions, it is expected that some integrated policy approach that captures all elements of the initiatives identified above could generate even greater benefits.

Note

- 1 Inputs to this chapter were provided by Marsha Atherley-Ikechi, Denny Lewis-Bynoe, Anthony Clayton, Alicia Matheson, Ryan Peterson and Tom Rogers.

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