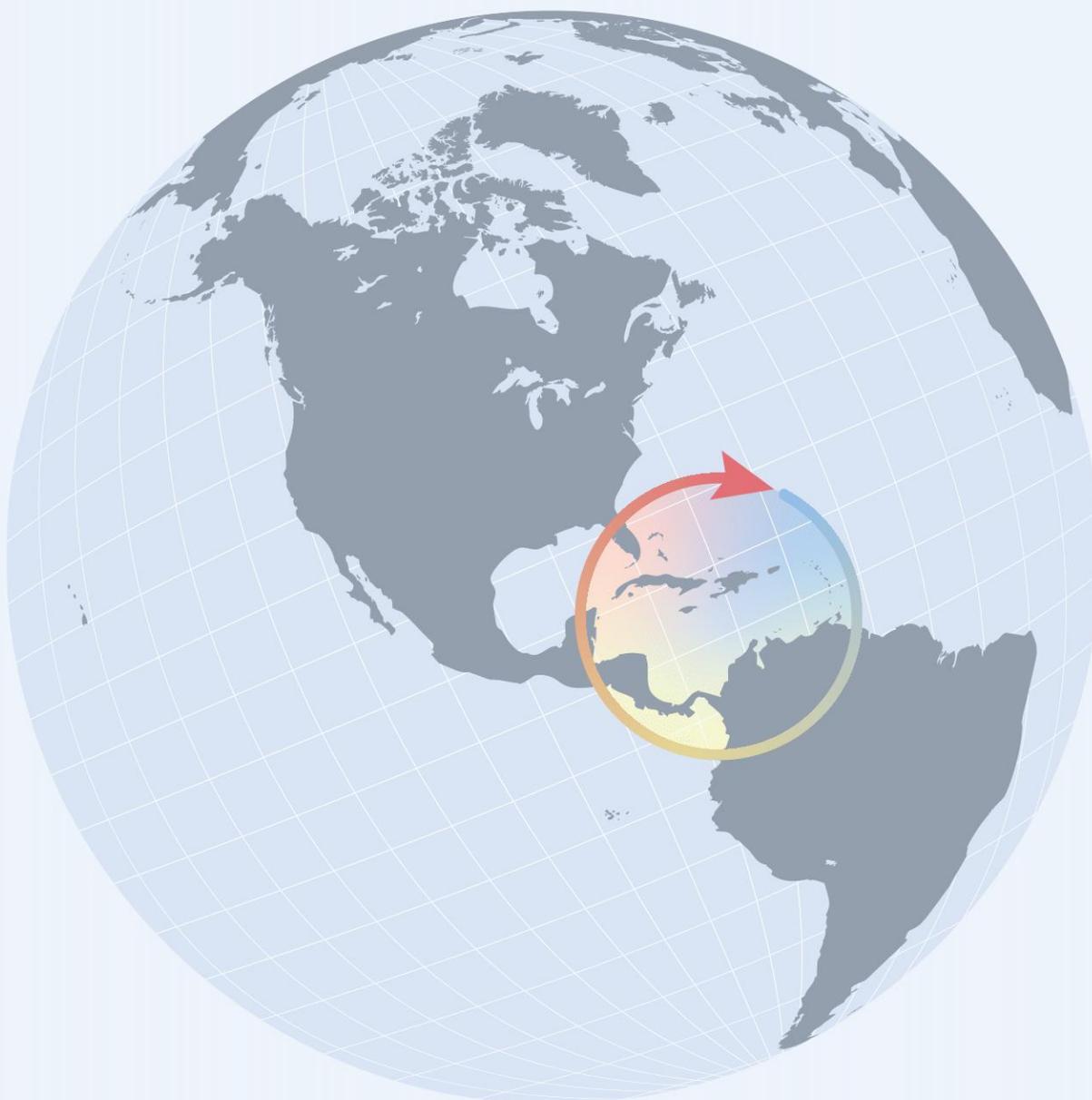


A BACKGROUND PAPER >> MACROECONOMIC RESILIENCE

360° Resilience

A Guide to Prepare the Caribbean
for a New Generation of Shocks



European Union



GFDRR
Global Facility for Disaster Reduction and Recovery



WORLD BANK GROUP

Macroeconomic Resilience in the Caribbean

Ran Li

This work is a product of the staff of The World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR) with external contributions. The sole responsibility of this publications lies with the authors. The findings, analysis and conclusions expressed in this document do not necessarily reflect the views of any individual partner organization of The World Bank (including the European Union), its Board of Directors, or the governments they represent, and therefore they are not responsible for any use that may be made of the information contained therein.

Although the World Bank and GFDRR make reasonable efforts to ensure all the information presented in this document is correct, its accuracy and integrity cannot be guaranteed. Use of any data or information from this document is at the user's own risk and under no circumstances shall the World Bank, GFDRR or any of its partners be liable for any loss, damage, liability or expense incurred or suffered which is claimed to result from reliance on the data contained in this document. The boundaries, colors, denomination, and other information shown in any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Contents

- Introduction 1
- What macroeconomic resilience looks like in the Caribbean? 3
- Macroeconomic Resilience in the Caribbean Region 8
 - Inherent macroeconomic resilience 8
 - Natural disasters risks to assets 8
 - Economic Diversification 9
 - Public Governance 13
 - Macroprudential Policies and Financial Development 15
 - Policy induced macroeconomic resilience 18
 - Monetary Policy 19
 - Fiscal Policy and Fiscal Space 21
- Macroeconomic Resilience Indicators and Discussion 26
- References 1
- Annex: Data description 3

Introduction

Macroeconomic shocks refer to any unpredicted disturbance to the economy through internal or external factors. Depending on the knowledge of the distributions of the unpredictability, the shocks can be further classified into “risks” and “uncertainties” respectively. “Risks” are referred to as those shocks with known distributions (“known unknowns”), including standard bell-shaped distributions or other more fatter tailed distributions. “Uncertainties” are used to describe the shocks without a known distribution or without any confidence of any outcome (“unknown unknowns”) (World Bank, 2018). Consistent with other chapters, this paper focuses on the shocks that are with known distribution, i.e., “risks”, for which there is an ex-ante stochastic distribution, but the probability of occurrence is not necessarily known. On the other hand, examples of “unknown unknowns” include the 9-11 terrorist attack and World War. The analysis and policy discussion are expected to address “risks”. However, it is worth noting that in certain discussions, the differences between risks and uncertainties are less obvious and analysis can be applied to both. For example, due to incomplete market, even risks with known distributions cannot be fully insured¹. Then strategies including precautionary savings need to be used to cope the risks, which is also being used to address “uncertainties”.

Economic resilience is broadly defined as the inherent or policy-induced ability of individuals or communities to withstand or recover from the effects of the various shocks.² It not only depends on how vulnerable an economy is to unpredictable shocks, but also the capacity the economy has to react to and mitigate the shocks. It can take place at the level of the firm, household, market, macroeconomy, or even at the regional level. The effects of external shocks not only depend on the characteristics of the event, but also on the ability of the economy to cope, recover, and reconstruct and, therefore, to minimize aggregate losses. Macroeconomic resilience in this chapter refers to the inherent ability at the aggregated economic level, including how macroeconomic structure and current institutional arrangements mitigate the initial impacts and affect resilience, or as an “absorber” of the impacts; as well as the policy-induced responses to various shocks, in particular monetary and fiscal policies, i.e., as a “stabilizer” which responds to the shocks (Chart 1). In other words, country’s macroeconomic resilience depends on its capacity to withstand the impact of an adverse external shock and its capacity to rapidly implement policies to counteract the effects of the shock on economic and financial stability (Montoro and Rojas-Suarez 2012). Corresponding to the framework in Hallegatte (2014), the absorber and stabilizer are also referred to as “instantaneous resilience” and “dynamic resilience” (Chart 2), respectively.

The external shocks lead to volatilities and impose high risks on the economies. These shocks are mostly unpredictable and come without any signal and affect almost all the macroeconomic aggregates of the economy. They may occur due to various reason, such as oil price hikes, a sudden fall in demand for any commodity, or an unpredicted fall in supply of any commodity. Broadly, the external shocks can be categorized into two types: supply shocks and demand shocks. A supply shock is defined as any sudden rise or fall in the supply of any commodity in any given economic region during a given span of time. Similarly, a demand shock entails a sudden increase or decrease in demand of any commodity resulting in a decrease or increase in its price. In the case of the Caribbean region, with its small open economies,

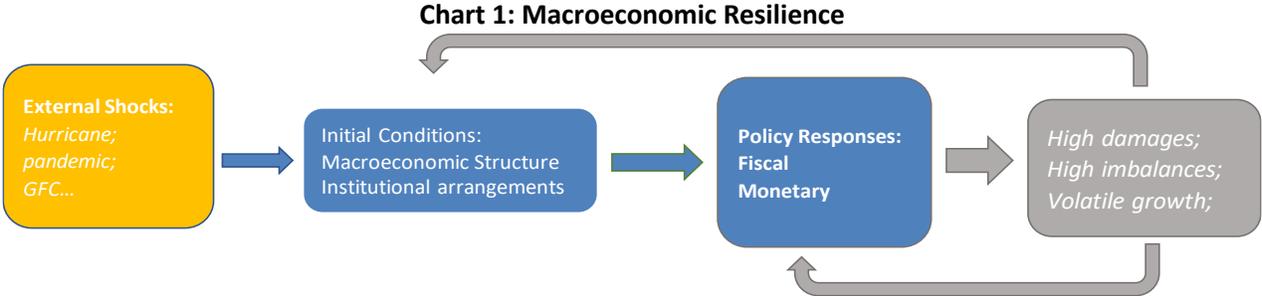
¹ The prior knowledge of the Risks following fat-tailed distributions are dominated by individual, major events, including natural disasters and large capital flows. So only limited knowledge can be obtained priorly.

² Md. Zakir Hossain, Md. Mostafizur Rahman. (2020) Climate change vulnerability and resilience of urban poor in Khulna, Bangladesh: the role of asset-based community development approach. International Journal of Urban Sustainable Development 0:0, pages 1-17.

most external shocks come in the form of demand shocks due to uncertainties from the international market. Natural disasters, on the other hand, appear to be an important shock to the Caribbean through both supply and demand channel, mainly affecting the domestic production process, as well as international demand especially tourism (Table 1). The national disasters here also include health shocks like pandemics, which is similar to a hurricane and can constitute both supply shocks, as they affect the local economic production, as well serve as an indirect source of a demand shock by reducing the demand for tourism or other international services.

Table 1. Types of external shocks

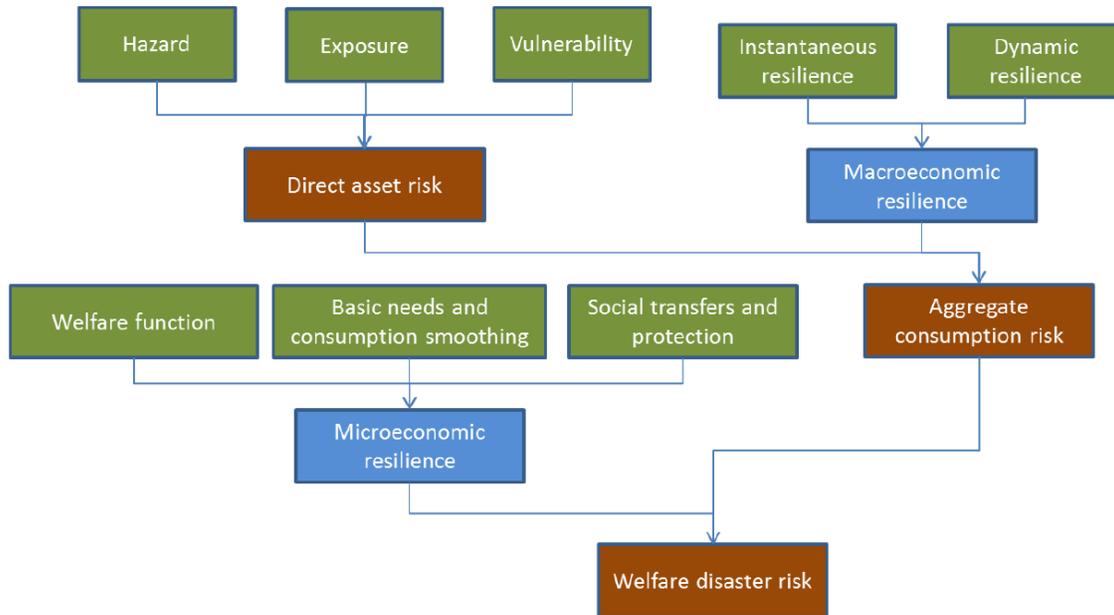
Category	Sources of the shock
Economic	<ul style="list-style-type: none"> - External real supply and demand shocks (e.g. commodity price shock, changes in terms of trade, for example from Brexit) - External financial shocks (e.g. interest rate on public debt)
Natural disasters	<ul style="list-style-type: none"> - Hurricanes - Floods - Droughts - Earthquakes - Disease outbreak



Source: Author

This chapter aims to characterize the overall macroeconomic resilience in the Caribbean region against a broad range of external shocks. The rest of the chapter starts with the discussion on the vulnerability and risks in the region, then proceeds to various factors determining the level of macroeconomic resilience. The last section estimates and presents the current macroeconomic resilience level in the Caribbean and how it is compared with the top performers in the Caribbean region.

Chart 2: Structure of the assessment of welfare disaster risk



Source: Hallegatte, Stephane. Economic resilience: definition and measurement. The World Bank, 2014.

What macroeconomic resilience looks like in the Caribbean?

The challenges to macro-resilience of the Caribbean countries, which are mostly Small Island Developing States (SIDS), first arise from their small sizes and the interplay of several factors related to the small sizes. Structurally, the SIDS have small populations and small land areas, which translates into to small domestic markets and a narrow resource base, including limited land, freshwater and human capital. Lacking economies of scale, the Caribbean countries are less diversified and heavily dependent on one or two major sectors, which are also the main exporters and mostly driven by external demand. This exposes the countries to sector specific shocks and global business cycles. The Caribbean, depending on the supporting industry, can be generally classified as tourism- or commodity-dependent countries; both of which are highly reliant on external demand. Its vulnerability is further aggravated by the exposure to natural disasters and climate change, which not only directly affect a large portion of the land and population, but also indirectly impact the economy significantly by halting tourism, which contributes to an average of 34 percent of GDP for the region’s tourism-dependent economies.³

Small sizes also partially contribute to the constrained institutional capacity and resources to react to external shocks and contain the negative economic consequences. Institutional characteristics have an impact on the macroeconomic consequences as they affect how efficiently and effectively the resources are mobilized post-shock. Also the mechanism to build resilience needs to be transparent and strong arrangements need to be put in place to maintain public governance and general activities uninterrupted

³ Include Bahamas, Antigua and Barbuda, St Lucia, Grenada, Dominica, Jamaica, Barbados, St Vincent and the Grenadines, St Kitts and Nevis and Dominican Republic.

with minimized damages in the event of external shocks. However, small size affects returns-to-scale in the public sector, which is equipped with less staff compared with its function. Migration to larger economies leads to difficulties finding and keeping high-skilled public employees. Lack of economies of scale also means maintenance cost is high for a small country. For example, without a well-functioning online system, natural disasters threaten the physical storage and offline processing of public documents and delay policy implementation and post-shock recovery. However, maintaining online systems require professional staff and their relative cost is high for a small state. Moreover, a lack of private and international insurance leads to less risk-sharing and the individuals or the governments under direct impacts tend to bear higher costs. The development of the insurance market correlates with the development of the financial market, which not only helps diverse the risks, but also facilitates resource mobilization after shocks. In addition, other institutional arrangements also contribute to the mitigation of the impact of the shock, and containment of spillovers to the economy, including greater financial sector depth and a high degree of trade openness, and can increase governments' ability to mobilize resources for reconstruction. However, Caribbean countries are generally weak in those aspects.

Chart 3a: High debt level in the Caribbean region (year = 2019)

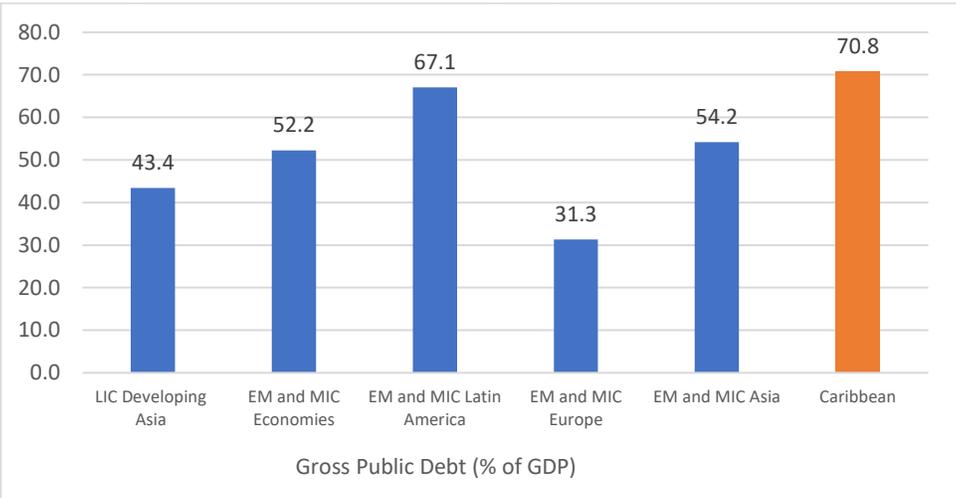
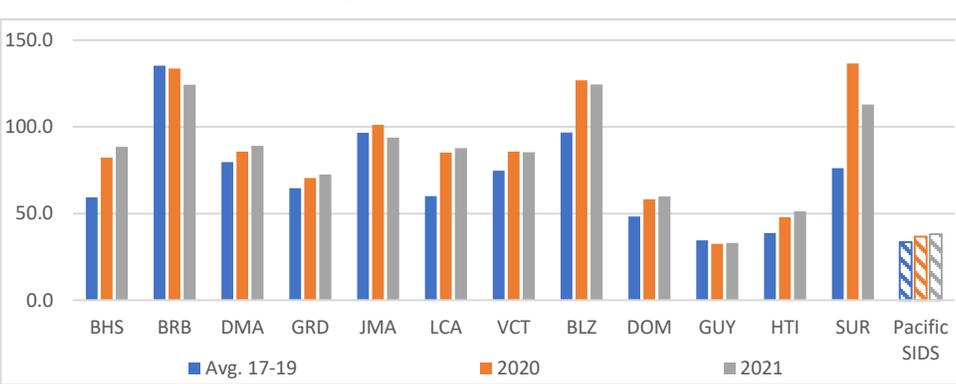


Chart 3b: Debt level increase significantly due to COVID-19



Source: IMF WEO

Besides high exposure to external shocks and insufficient institutional arrangements to absorb the impacts, the policy space in the Caribbean is also constrained to react to the residual macroeconomic

impacts. Despite *ex ante* resilience building against external shocks, including a resilient macroeconomic system and climate-resilient infrastructures, it is impossible to secure full insurance for external shocks, which leads post-shocks responses to residual impacts are equally important. The social protection system for households and insurance market for the enterprises are less developed compared to other countries⁴, which leaves household and private sector less resilient financially to external shocks. Therefore, the public policies play a bigger role in guiding and facilitating the recovery process in the private sector, as well as the overall economy. However, the space for public policies, in particular monetary policy and fiscal policy, is limited and also constrained by less efficient governance capacity. For monetary policy, fixed or managed exchange rate regime, as preferred by export-oriented economies because of more stable exchange rate, leaves little room for monetary policy to react to other shocks besides exchange rate volatilities. Fiscal policy, on the other hand, is also limited by the prevailing high debt levels in the region (Chart 3a&3b). Lower levels of debt allow governments to have less difficulty accessing debt markets and respond more aggressively to a recession or financial crisis by reducing tax collections or increasing spending. Put another way, prudent fiscal policy can act as an insurance policy against future economic downturns (Romer & Romer, 2019). Moreover, many countries in the region benefit significantly from bilateral or multilateral concessional financing during crisis. High-debt levels compromise the creditworthiness of the country and ability to borrow due to concern over solvency. The availability and costs of the financing is also sensitive to sudden changes of international liquidity conditions, which exacerbates the already high debt risks.

Following the definition in the previous section, here we use the volatility of real output to measure the overall economic costs and welfare loss from a lack of macroeconomic resilience. By definition, real output volatility measures how much the real economy deviates from the historical average value. From a theoretical point of view, a model with a stochastic endowment predicts that a volatile output leads to volatile consumption and lower households' welfare, which is especially relevant in a closed economy or a small open economy with incomplete markets.⁵ Extensive literature has also linked higher volatility with lower economic growth (Chart 4). One potential channel is from the negative effect of volatility on investment (see Aizenman and Marion, 1993 and Serven, 1998). The real output volatility measures the actual macroeconomic costs from various shocks, including not only the exposure to external shocks and the economy's capacity to mitigate these risks, but also the vulnerability to domestic shocks. However, in the case of the Caribbean, which are small open economies, we consider that the domestic shocks take up a relatively small share of the overall costs. Therefore, real output volatility is used as a close proxy for macroeconomic resilience.

The question following such a measure is why volatility matters economically beyond its pure definition. In early literature, Robert Lucas (1987) has suggested the possible returns from understanding business cycles are trivial compared to those from understanding growth, and the idea was based on the implicit assumption that the standard dichotomy in macroeconomics between growth and business cycle volatility. However, numerous studies have identified the effects of volatility on long-run growth (Ramey and Ramey 1995), welfare (Pallage and Robe 2003, Barlevy 2004), as well as inequality and poverty (Gavin and Hausmann 1998, Laursen and Mahajan 2005). And theoretically, volatility is related to economic

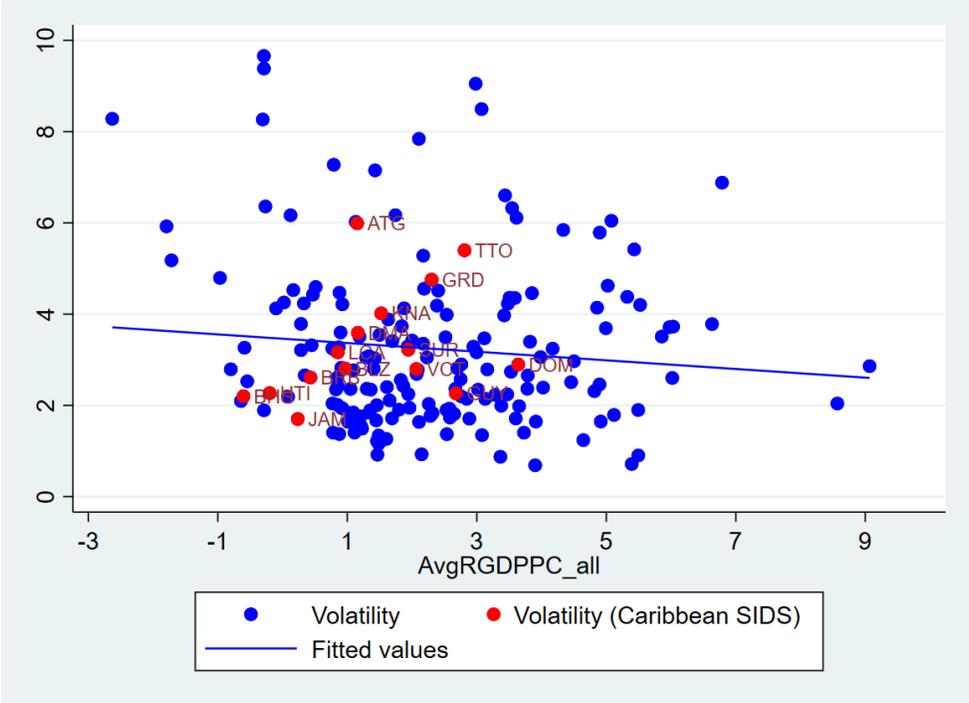
⁴ The average spending on social protection is higher than in the Caribbean than that of Latin America; however the effectiveness of safety nets, social insurance, labor market policies, and other social services is hampered by a lack of poverty data; insufficient coverage given the large informal sector and infrequent survey; ineffective and inefficient identification, delivery and monitoring of services. See details in background note "XXX SP".

⁵ The consumption data for the region is less readily available than output data.

growth in both aspects. The negative impacts of high volatility on growth arise from uncertainties lowering investment and leading to suboptimal production decisions ex-post. Meanwhile, volatility can bring positive benefits through high precaution savings, which lead to higher investment. Empirically, however, Imbs (2007) and Ramey and Ramey (1995) showed that although sectoral volatility may bring a higher return and thus a higher growth rate, on the macro-level, countries with highly volatile GDP grow at a lower rate. This chapter uses the standard deviation and average of real GDP per capita growth rate for the period of 2000-18, and shows a negative correlation between the two (Chart 4). This finding echoes the statement in BIS (2017) that “any assessment of macroprudential policies should consider the potential of an intertemporal trade-off between growth and volatility”. We use economic volatility as the main indicator to measure the level of macroeconomic resilience.

The lack of inherent or policy-induced ability to address external shocks translates into high economic volatility along with a lower average growth rate. Chart 5 plots the standard deviation and average of real GDP per capita growth rate. Despite the Caribbean countries not showing a higher absolute volatility than other SIDS, the relative volatility to the average growth rate is significantly higher than other economies. This has become even more prominent after the global financial crisis (GFC). One possible explanation is that the higher debt levels related to the post-GFC recovery have further handcuffed the policy space to stabilize the economy after shocks.

Chart 4: Mean vs. Standard Deviation Growth per Capita



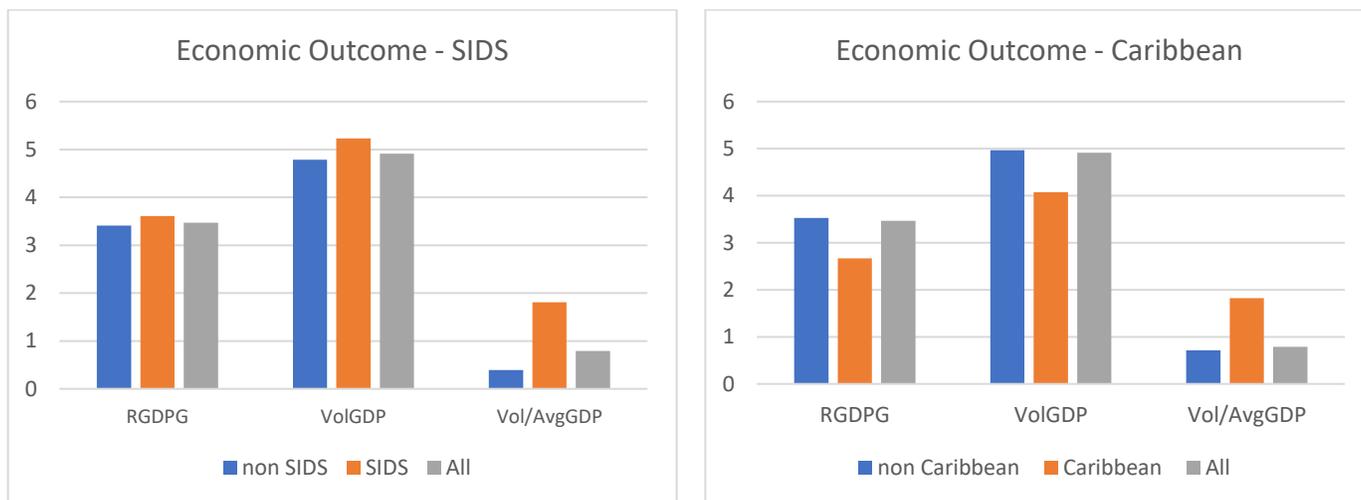
Source: World Bank WDI; author’s calculation.

Measured by economic volatility above, the costs of low macroeconomic resilience in the Caribbean is high and there is space to improve resilience level. The challenges to macro-resilience arise from the interplay of several factors related to the sizes of the Caribbean economies, which are mostly Small Island Developing States (SIDS). Structurally, the SIDS have small populations and small land areas, which translates into to small markets and limited resources. Lacking economies of scale, the Caribbean

countries are less diversified and heavily dependent on one or two major sectors, which are also the main exporters and mostly driven by external demand. This exposes the countries to sector specific shocks and global business cycles. The Caribbean, v on the supporting industry, can be generally classified as tourism- or commodity-dependent countries; both of which are highly reliant on external demand. Its vulnerability is further aggravated by the exposure to natural disasters and climate change, which not only directly affect a large portion of the land and population, but also indirectly impact the economy significantly by halting tourism, which contributes to an average of 34 percent of GDP for the region’s tourism dependent economies.⁶

The lack of inherent or policy-induced ability to address external shocks translates into high economic volatility along with a lower average growth rate. Chart 5 plots the standard deviation and average of real GDP per capita growth rate. Despite the Caribbean countries not showing a higher absolute volatility than other SIDS, the relative volatility to the average growth rate is significantly higher than other economies. This has become even more prominent after the global financial crisis (GFC). One possible explanation is that the higher debt levels related to the post-GFC recovery have further handcuffed the policy space to stabilize the economy after shocks.

Chart 5: Economic volatility and average growth



Source: WB WDI; Author’s calculation

This chapter first identifies the key factors determining macroeconomic resilience and analyzes how these factors affect macroeconomic stability. The following section focuses on the performance of the Caribbean countries in each of the dimensions, as presented by the “traffic light system”, and indicates how vulnerable each country’s inherent or policy-induced ability is.

⁶ Include Bahamas, Antigua and Barbuda, St Lucia, Grenada, Dominica, Jamaica, Barbados, St Vincent and the Grenadines, St Kitts and Nevis and Dominican Republic.

Macroeconomic Resilience in the Caribbean Region

As defined in the previous section, macroeconomic resilience is broadly classified into two categories (Chart 6). Inherent macroeconomic resilience can be related to initial macroeconomic conditions, including the characteristics of the economy and institutions, while policy-induced macroeconomic resilience is considered as the dynamic policy responses to these shocks. This section will present the key factors from the existing literature and studies determining each dimension of macroeconomic resilience. Respective indicators are selected, and the relative performance of the Caribbean countries are presented in comparison to international levels or other SIDS countries.

Chart 6: Summary of Macroeconomic Dimensions

Macroeconomic Resilience						
Macroeconomic Risks		Institutional arrangement			Policy capacity to react	
Risk to assets from natural disasters, climate change	Economic diversification	Public Governance	Financial Development	Financial Cushion	Monetary Policy	Fiscal Policy

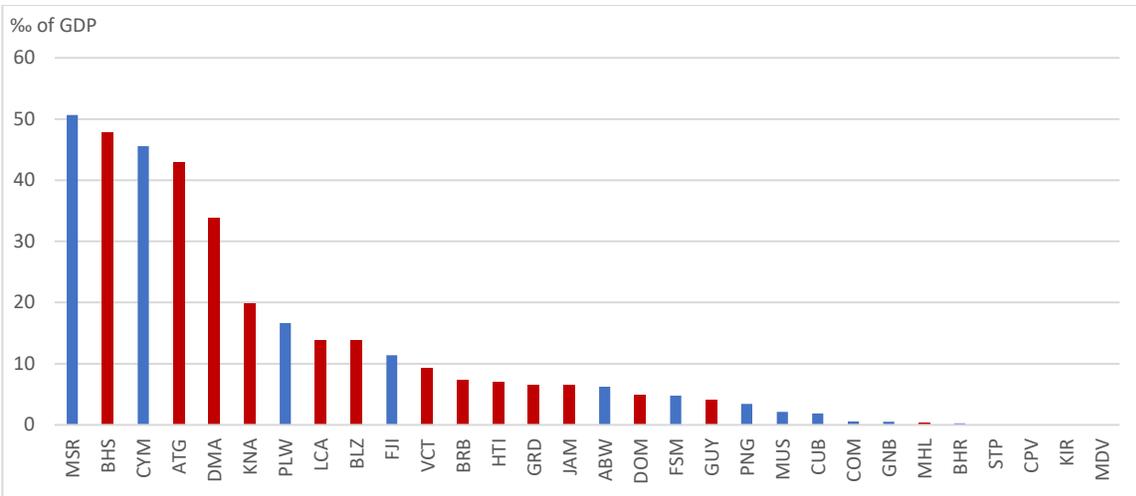
Inherent macroeconomic resilience

Under inherent macroeconomic resilience one can further differentiate between inherent economic characteristics, including economic diversification and exposure to natural disasters; as well as institutional arrangements, which feature the quality of governance and development of financial sector.

Natural disasters risks to assets

Natural disasters are one of the main drivers of economic instability in the Caribbean (Rasmussen et al, 2004). Importantly, this region is also one of the most exposed regions to these extreme events, including those arising from hurricanes, floods, droughts, and earthquakes, to name a few (Oetker and Srinivasan, 2018). A number of studies have now shown the large negative growth impact that such natural disasters can have (Bertinelli and Strobl, 2013). However, in considering the risk of a natural disaster occurring it is important to realize that this not only depends on the hazard of the natural event, but importantly also on the exposure of assets that are located in places that are subject to this risk, as well as the propensity of exposed elements to suffer consequent adverse effects (Cardona et al., 2012; Bertinelli et al, 2016).

Chart 7: Natural Disaster risk to Assets Annual Average Losses (SIDS only; % of GDP)



Source: DRM GAR (2015).

Despite similar geographical features, different countries in the region are exposed differently. UN (2015) has calculated risk from natural disasters, expressed as the annual average asset losses normalized by the value of fixed capital. Values of this measure are compiled for all SIDS, ranked from lowest to highest, and then according to its position in the distribution, each country is allocated to the top tercile (green), i.e., in the country with the lowest risk, to the middle tercile (orange), or to the bottom tercile if it is in the third of the group most at risk. The ranking and color identification of this exercise is provided in Chart 7. Three Caribbean SIDS can be found in the least at risk group, namely Haiti, Saint Lucia, and Guyana, whereas Dominican Republic, St. Kitts & Nevis, St. Vincent & the Grenadines, Trinidad & Tobago, the Bahamas, and Antigua & Barbuda were placed in the middle of the distribution of disaster risk. In contrast, Belize, Jamaica, Barbados, Dominica, and Grenada are the high-risk category. As a matter of fact, Grenada ranks as the island economy with the highest risk of all the SIDS in the sample.

Economic Diversification

Economic diversification is another component of economic resilience and is also a key aspect of sustainable development. By targeted markets, diversification can be categorized into domestic production diversification and export diversification. By ways of diversification, the most traditional way defining diversification is the emergence of new industries or products, or expanding to a growing range of exporting markets. More recent international experiences and research have pointed to several new routes. Diversification also happens within an industry via relocating resources to more productive firms, or even within a firm switching to more productive or more resilient products. This implies beyond the quantitative upgrading but qualitative upgrading of exported (or imported) products (WTO, 2019⁷). In the context the Caribbean small open economies, the focus is on export diversification. On ways of diversification, rich analysis has focused on supporting the region moving to a less concentrated, more varied production and trade structure. In addition, growing discussion has also aimed at diversifying the region by leveraging and updating tourism and the commodity resources to a more sustainable and competitive sector.

Chart 8: Tourism contribution to GDP and employment

⁷ https://www.wto.org/english/res_e/booksp_e/aid4trade19_chap5_e.pdf

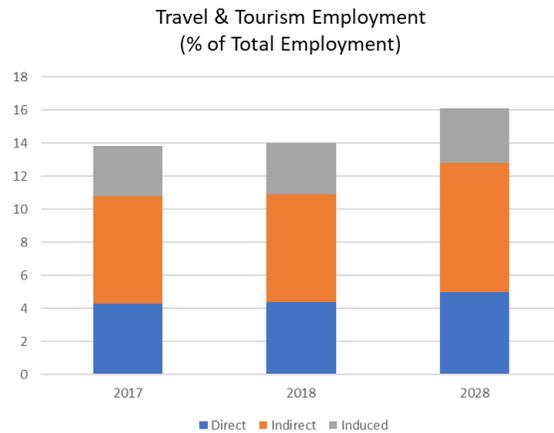
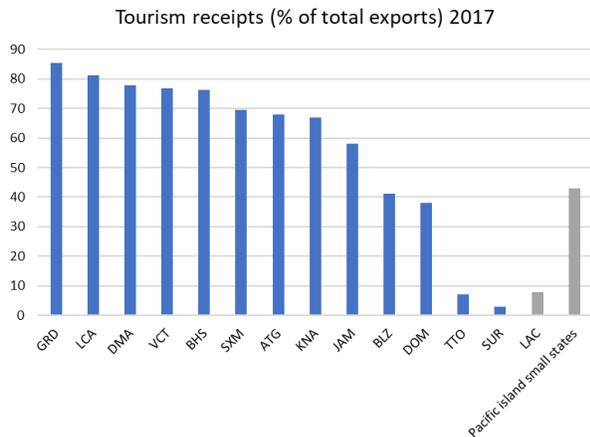
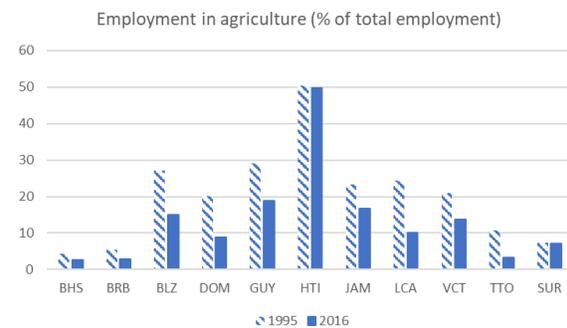
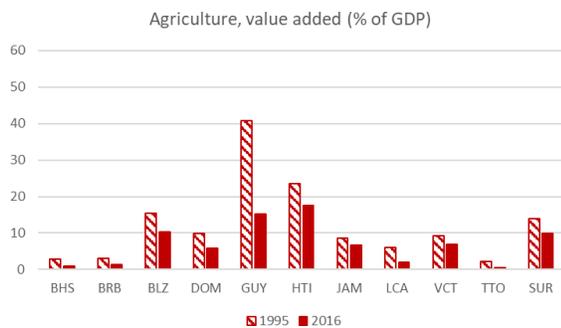


Chart 9: Agriculture contribution to GDP and employment



Source: WTTC; WDI; authors' calculation

The Caribbean region is heavily-dependent on a few sectors and the economy is exposed to a few sectoral specific shocks. In the case of the Caribbean region, despite its upper-middle income status, economies are heavily dependent on three industries, namely agriculture, commodities, and tourism (Chart 8&9). These industries, however, have often been characterized by low technology spillovers and productivity growth. Thus, we calculated the aggregate export value of agriculture, mining sector and tourism as a percentage of total export as another indicator to measure diversification. We also use the Export Diversification Index (EDI; IMF, 2014) to measure export product diversification⁸. The higher the value of EDI, the least diversified a country's export is. Chart 10 shows that the concentration on those three sectors is positively correlated with export diversification as measured by EDI.

Chart 10a: Export diversification and main exporting sectors

Chart 10b: Higher volatility is correlated with higher sectoral concentration

⁸ The indicator not only measures the extent of variety of exports of each country, which refers to the number of export products or trading partners; but also covers intensive export diversification which represents whether the export revenues of a country is driven by only a few sectors or trading partners.

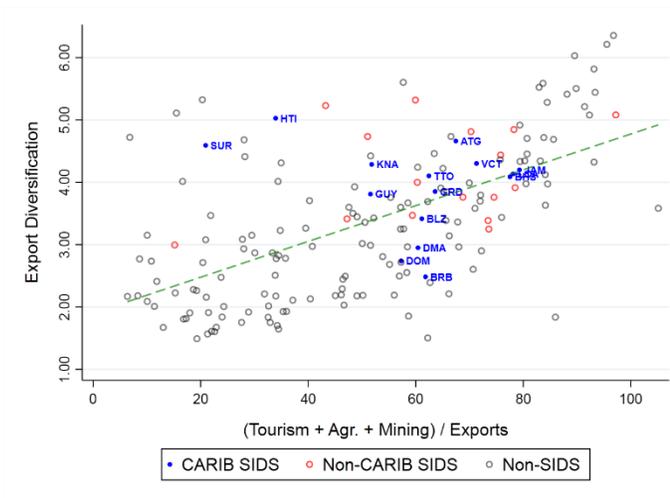


Chart 11a: Main exporting sectors: Caribbean vs SIDS*

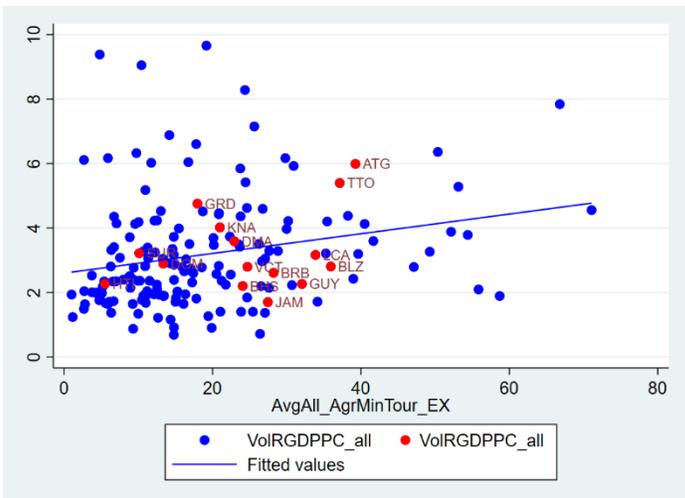
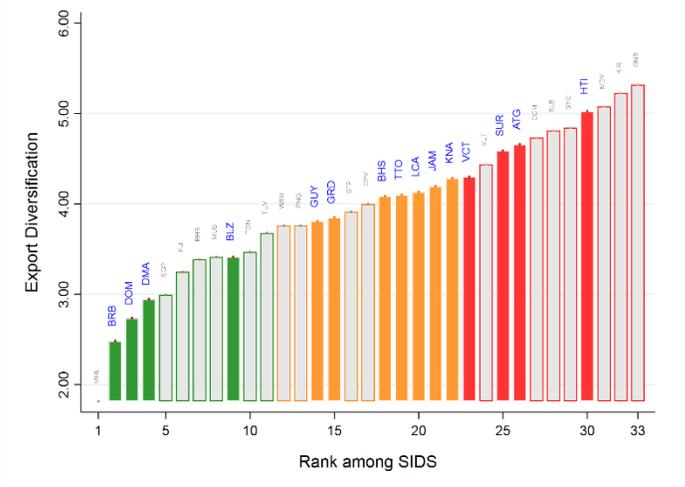
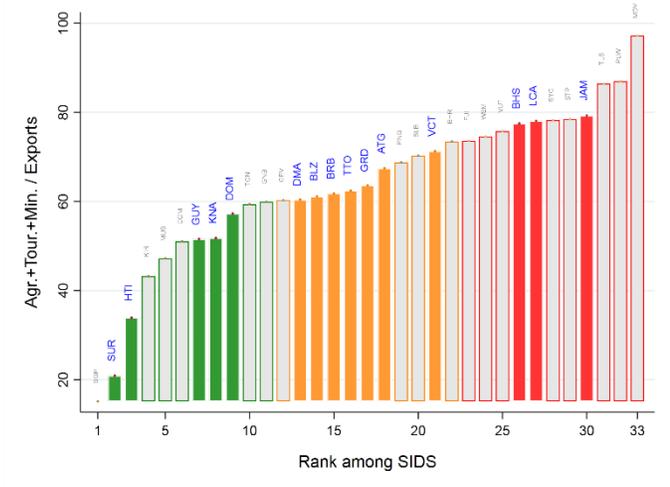


Chart 11b: Export diversification: Caribbean vs SIDS*



Source: IMF; WTO database; WB WDI; author’s calculation.

Note: * red, orange and green represent the top 1/3 centile, mid 1/3 centile and the bottom 1/3 centile respectively.

Literature shows that increased diversification is important for lower output volatility and greater macroeconomic stability (Chart 11). Economic diversification, both across exporting destinations and industries, can increase the resilience of countries to external shocks through diversifying the risks, and therefore mitigate vulnerabilities and lower economic volatilities (Koren and Tenreyro, 2007; Haddad et al., 2013; Jansen et al., 2009; and Farshbaf, 2012). It is also worth noting that the direct impacts of diversification on economic growth remains mixed given the benefits of economies of scale and comparative advantage. However, there are potential indirect positive benefits from diversification on growth by lowering economic volatility.

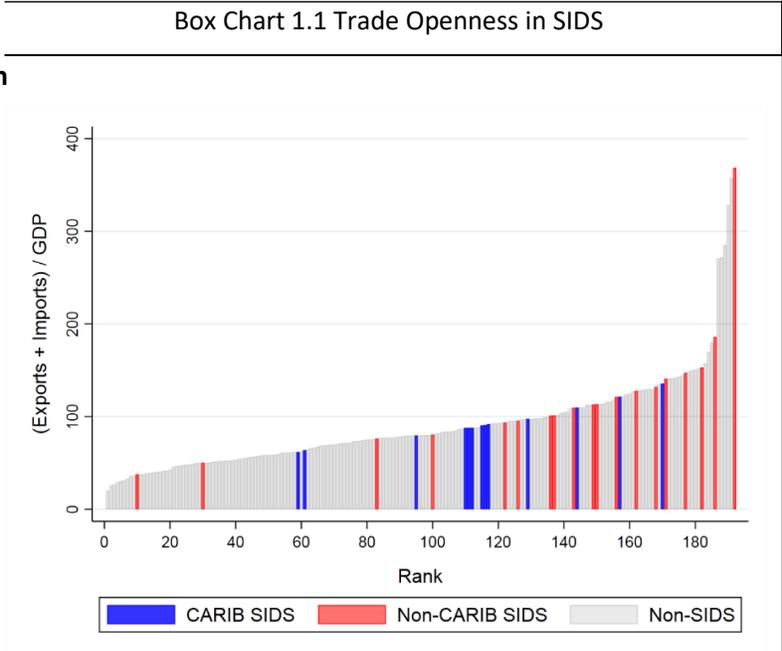
On the other hand, under a modern definition of diversification, the “qualitative updating” of the region’s product has been low as well. Given the small size of the economy, one potential risk of traditional ways of diversifying is insufficient resources and investment for each sector. It implies the importance to leverage the existing sectors with comparative advantages to higher competitiveness. In

face of external shocks, especially to the demand side, more competitiveness products and sectors are more resilient due to their less possibility of being substituted. However, the tourism sector, the main driving force of economic growth for many Caribbean countries, has been less competitive. Despite the proximity to the North America market and increased inbound flights, the product offered in the region is relatively expensive when compared with other tourist destinations globally (IMF, 2019). The price sensitivity of tourists to OECS also indicates low competitiveness. Along with these factors, the share of OECS tourism has been declining in the global market. It reflects the constraints to the whole private sector, including limited access to financing, high electricity costs and tariffs and lack of high-skilled labor. Low productivity and insufficient bankable projects in the private section, coupled with the less developed financial sector, resulted in the flat or even contracting domestic credit to private sector (negative between 2013-17 and averaged at 0.3 percent between 2018-19).

Box 1: Trade Openness and Vulnerability

Besides export diversification, another dimension of vulnerabilities through trade channel is trade openness, as measured by the overall volume of trade as a percentage of GDP. Compared with export diversification focusing on exports exposure to specific sectoral shocks, the trade openness here measures the overall connections with the international market. The discussion of the benefits from trade openness mostly focuses around economic growth. Literature on trade at early period has indicated that trade openness is critical in fostering economic growth. The positive link between the two is well established theoretically as based on both comparative advantage and the spillover effects of knowledge and technology. However, more recent and empirical studies have shown mixed results in that the benefits of trade are conditional on the income level and capacity of the trading economies. The inability to exploit knowledge accumulation or the trading products with low requirement for technology can lead to no or even detrimental effects on economic growth.

As for the impacts of trade openness on economic resilience, the results depend on several condition. It is normally assumed that a higher exposure to international trade leads to a higher vulnerability to external shocks and thus higher economic volatility. However, on the other hand, higher dependence on international economies implies exporting industries being less correlated with the rest of the domestic economy, which potentially mitigates overall volatility. Empirical research has shown the two opposing effects are based on both external and internal conditions. Several important variables have been



Source: WDI.

analyzed, including policy reactions, institutional capacity, and

economic diversification. Haddad et al. (2010) argued that export diversification (the opposite of concentration), both across products and markets, reduces growth volatility. Acemoglu et al. (2003) and Fatás & Mihov (2013) indicated that the negative impacts of trade openness on volatility can also arise from possible policy mismanagement when institutional arrangements are weak.

Under the context of SIDS, the discussion about the relationship between trade openness and vulnerability is particularly relevant and one potential source of volatility. The “small state paradox” is highlighted in Briguglio et al. (2009) in that highly-open economies can and do generate high GDP per capita in spite of the fact that openness, by itself, tends to generate volatility, which is often considered to be harmful to an economy. Easterly & Kraay (2000) pointed out that there are no obvious disadvantages in income level and growth for small states; however, small states do experience higher economic volatility due to higher trade openness. Nevertheless, it was noted that the underlying reason is likely due to a less diversified economic structure.

Despite the potential negative impacts of trade openness on volatility, this chapter does not include it as a direct factor to macroeconomic resilience. On the one hand, Easterly & Kraay (2000) find that the impacts of trade on economic growth are significantly positive. On the other hand, the high volatility resulted from trade openness can be mitigated from adopting appropriate policies, including economic diversification, stronger governance and better developed financial market. Moreover, given the small sizes of the domestic economics in the Caribbean region, the high overall volume of trade is necessary (Box Chart 1.1).

Public Governance

This section differentiates governance quality from the actions that a government implements following external shocks. Good governance is essential for an economic system to function properly and hence to be resilient. A policy simply injecting financing into the economy after a crisis might be needed to mitigate the short-term impacts, as shown during the GFC or the COVID-19 pandemic; however, the effectiveness of such policies would be seriously compromised without good public governance, including accountable policy design, clear targeted groups, transparency, and execution following appropriate regulatory frameworks. Moreover, the credibility of public governance is critical to guide private sector responses and access international assistance.

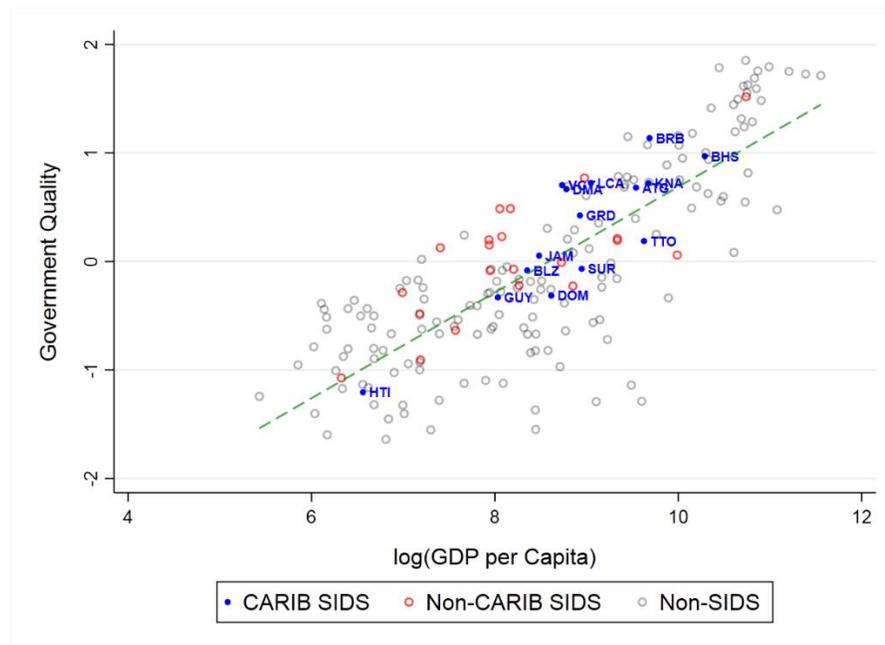
Extensive literature has shown that quality of public governance is positively correlated with economic growth, while increasing research has focused on this result under the context of external shocks. Kaufmann and Kraay (2002) argued that governance quality and long-term economic growth are positively associated. In their evaluation of the worldwide governance indicators (WGI) from 1996 to 2002, they found that “per capita incomes and the quality of governance are strongly positively correlated across countries”.

Meanwhile, a growing volume of literature focuses specifically on good governance and economic performance in the context of external shocks. The first channel takes place mostly in terms of the “macro-level” responses to crisis. Noy (2009) concludes that institutions affect the direct efficiency of public intervention following disasters or the indirect impact by shaping the private sector response. The second channel at the micro level mostly emphasizes the positive impacts of good governance on human development, which enhances the capacity to mitigate and recover from external shocks at the individual-level. Alkire (2010) concluded that not only economic growth but also good governance by the

governments is needed for human development, which supports the productivity and resilience of an economy by providing healthy and highly trained individuals.

Good and effective governance is particularly important for the Caribbean. External shocks are normally large and affect the whole economy, while the private sector is less developed to protect themselves. This leaves the Government policies to have bigger impacts on the economy, especially during a crisis. For example, during the current COVID-19 crisis, private sectors have been holding back investment due to limited liquidity and the uncertainties about outlook of the pandemic. Many Caribbean Government have increased budget expenditure to provide income support to the unemployed and expand public investment to boost economic activities. However, the quality of governance in the Caribbean especially for the tourism-dependent economies, is relatively low compared with countries of similar income level (measured by the Worldwide Governance Indicators (WGI); Chart 12). Especially taking into account the importance of public sector and the high vulnerability in the Caribbean, there exist significant gaps to improve public governance. Under-developed public Governance may not only compromise of the public policy intention to mitigate impacts, but also cause potential costs with wasted public resources and accumulated debt.

Chart 12: Governance quality and income levels



Source: The Worldwide Governance Indicators, 2019 Update;
<http://info.worldbank.org/governance/wgi/>; WB WDI.

Macroprudential Policies and Financial Development

Macroprudential policy is considered the main macro-level tool to mitigate financial volatility through preventing the excessive risk-taking behavior of the private sector and leaving sufficient cushion to external shocks, especially those affecting financial sectors directly and indirectly. It generally includes capital or liquidity requirements or credit growth limits for financial institutions. The positive impacts of macroprudential policies on lowering volatility is clearer while that with economic growth is debatable and conditional on various economic characteristics. Benefits come from macroprudential policies limiting the occurrence of crisis and mitigating the negative impacts from large volatilities especially from financial markets. However, if poorly designed, macroprudential policies may compromise the ability of the market to freely allocate financial resources, which would reduce efficiency, eventually hampering economic growth.

From the macroeconomic level, we mainly focus on macroeconomic financing cushions that a country accumulates in preparation to external shocks, as proxied using international reserves. International reserves capture the degree of liquidity constraints at the country-level. Facing an adverse external shock, sufficient reserves imply resources immediately available to make payments due in the period following the shock. This is especially important for developing countries with less financial market access. Even under a flexible exchange rate regime, the changes in the exchange rate itself, even if drastic, are unlikely to be enough to resolve external shocks. Accumulated international reserves serve as a proof of the ability to remain liquid and maintain international creditworthiness. As shown in Chart 14, the Caribbean region

on average has a lower level of foreign reserve compared to either international level or other non-Caribbean SIDS.

Chart 13: Foreign Reserves

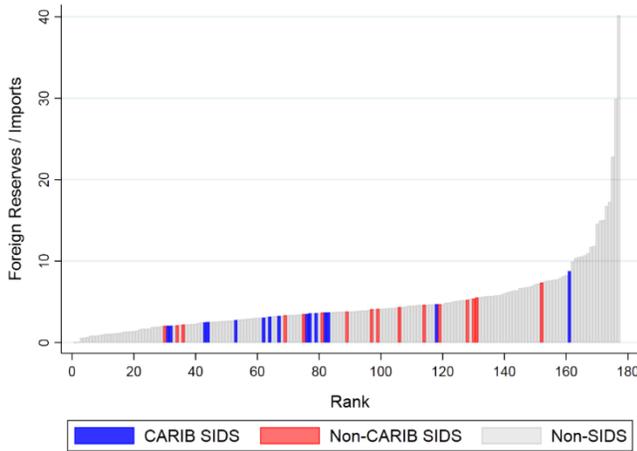
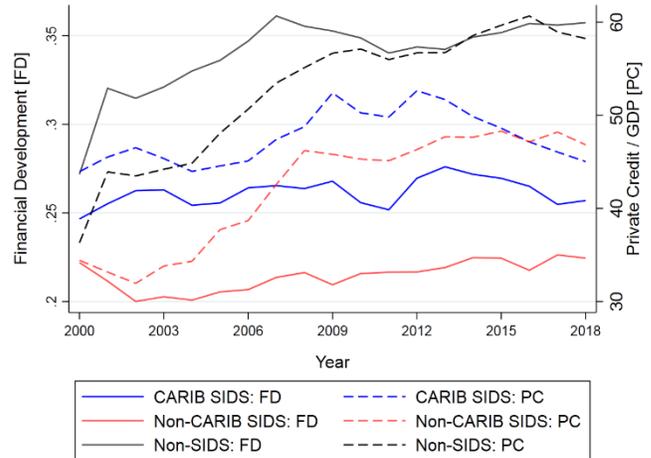


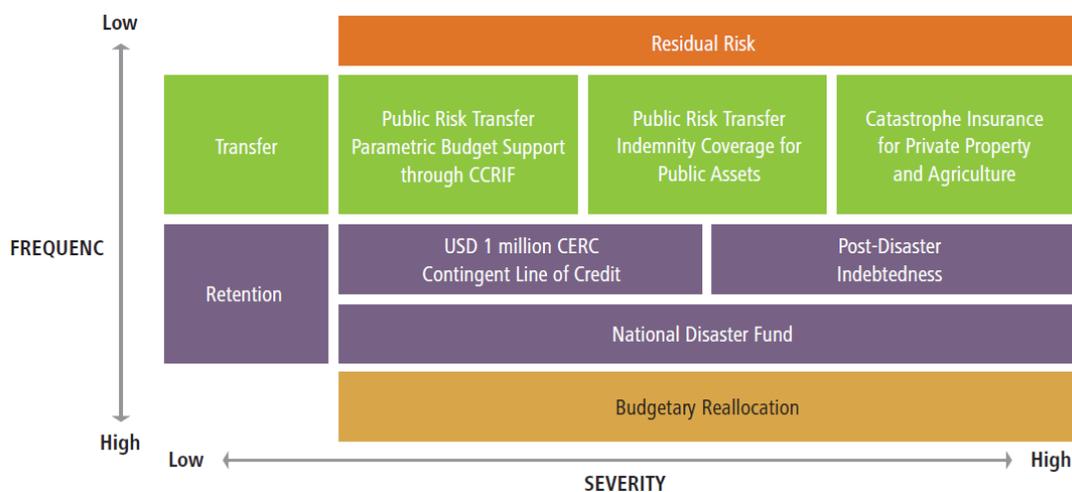
Chart 14: Financial Development



Source: IMF Financial Development Indicators Database; WDI;

One important financing cushion designed specifically to address natural disaster shocks is the Disaster Risk Financing. Depending on timing of the financing measures, risk mitigation projects can further be classified as ex-ante and ex-post. Building resilience requires both ex-ante and ex-post measures to mitigate risks and create new opportunities. Ex-post financing, including external aid and mobilization of budget after a shock, has been the main source of financing in the past and indeed played an importance and timely role. However, it normally comes with high debt and unpredictability of the government budget. With an uncertain global outlook, international aid from major donors becomes less reliable. Ex-ante measures on the other hand, which include financing arrangements and institutional design, have the strength to decrease the damage and thus help an economy rebound faster. Chart 16 illustrates the World Bank’s multi-layer risk approach—which combines different instruments for different layers of risk depending on severity and frequency of natural disasters—provides a cost-effective approach for governments to address expected funding needs in the wake of disasters. Widely used instruments include World Bank’s CAT DDO, the Inter-American Development Bank’s contingent credit line (CCL) and facility (CCF), and the Asian Development Bank’s Contingent Credit Line and contingent grants; national or regional contingency funds, and parametric insurance schemes to transfer risks, including the Caribbean Catastrophe Risk Insurance Facility (CCRIF), the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), the African Risk Capacity (ARC), the Southeast Asia Disaster Risk Insurance Facility (SEADRIF), etc.

Chart 15: Multi-Layer Risk Approach to Financing Disaster Risk



Source: World Bank staff.

As indicated in literature, the effectiveness of macroeconomic financing cushions is affected by factors including the quality of institutions; the development of the financial market; and the financing cushions under such policies. The first factor is mostly related to public governance. The second factor, a highly developed financial market, mitigates the impacts from external shocks through diversifying risks and improving financing access after negative shocks. Chart 15 presented the comparison between Caribbean and non-Caribbean countries’ Financial Development index developed by the IMF⁹, which measures both depth, access and efficiency of financial institutions and financial markets. Another empirical proxy, private credit as a percentage of total domestic credit is also presented (Chart 15 dotted lines). The chart shows that despite higher than other SIDS, the financial development in the Caribbean not only lags global averages but also lacks further improvements especially in recent years. As a double-edged sword, financial markets could also fuel risks through financial leverages and arbitrages. The discussion in the chapter “Resilience of private sector and financial institutions” complements the financial development aspects considered here from a micro-prudential perspective.

Policy induced macroeconomic resilience

Beyond the inherent characteristics of a country that determine the instantaneous impacts, the policy reaction in response to external shocks is another important factor for macroeconomic resilience. The ability to quickly react largely depends on the governments’ capacity to implement countercyclical policies, including monetary policy and fiscal policy (Rojas-Suarez, 2015).

Besides discussions of individual policies, it is important to recognize that either fiscal policy or monetary policy is only one part of the policy responses and cannot be effective unless the other policy, as well as institutional capacity and structural policies in previous section, work together. For example, central banks’ bond purchases without fiscal and structural adjustment achieve nothing¹⁰. Monetary

⁹ <https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b>

¹⁰ For example, sterilization in the foreign exchange through issuing local bonds can lead to an increase of interest rate and weakens fiscal account. Concerns over monetarization of fiscal deficit and higher inflation will further increase local rates and attract more foreign capital inflows. The result will be an ineffective monetary response.

Moreover, the effectiveness of monetary policy critically depends on the financial infrastructure, especially in response to external shocks to the real economy. Monetary policy works mainly and initially on the financial market through various tools, including forward guidance and market communication, policy rates adjustment and open market operations through selling or buying government securities. How these tools start interacting with the financial sector and reach the real economy will depend on the transmission channels. A lack of symmetric information and mature skills of market communication will lead to financial intermediaries and private sectors reacting differently from the policy intentions. The classical example is the “financial accelerator” mechanism (Bernanke, 1989; Mishkin, 2009), where a shock to either real economy or the financial sector results in significant uncertainties to assets valuation, especially when information is opaque and financial frictions are high. Devaluation of assets during downturns will further depress lending activities and generate downward pressures on the real economy, which add to uncertainties and initiate a vicious cycle. A well-developed financial sector with a modern collateral regime would mitigate the problem of asymmetric information. In the case of the Caribbean, the lending standards for small businesses, which are the most vulnerable to shocks, are high, requiring fixed assets as collaterals. For example, in the OECS region, those firms which have managed to obtain a bank loan reported collateral requirements to secure the loan sometimes well in excess of 100 percent of the loan value. Moreover, the range of assets that can be used as collateral is limited, some of which small business owners don’t have.¹² Other forms of external finance such as trade credit, equity finance or venture capital are not common as sources of both working capital. It exacerbates the financial accelerator mechanism and diminishes the effectiveness of monetary policy.

Box 2: The Other Two out of the “Impossible Trinity”

The Mundell-Fleming model suggests that an economy cannot simultaneously maintain exchange rate stability, free capital movement, and an independent monetary policy. The orthodox view by the 2000s preferred the framework of flexible inflation targeting, wherein monetary policy focuses on domestic price stability, while interest rates and exchange rates adjust to external shocks.

However, there has been discussion to revisit this conventional thinking of central banks, especially a revisit of the benefits of a flexible exchange rate regime¹³, at least in the Caribbean countries. One major assumption underpinning the choice of the flexible exchange rate regime is that central banks practice independent monetary policy and manage triumph of the “own house in order” through flexible inflation targeting. Under this assumption, economic stability under external shocks is achieved through interest-rate adjustments and associated movements in exchange rates. However, it fails to consider the practical scenario that the movements in exchange rates are not enough to offset the external shocks, or when the costs associated with drastic changes in exchange rates outweigh the benefits. It is especially true for the Caribbean region with deep connections with international markets through large capital flows and heavy dependence on international trade (Chart

¹² IDB, <https://publications.iadb.org/publications/english/document/Enhancing-Access-to-Finance-in-the-Caribbean.pdf>.

¹³ The classification is based on IMF Exchange Arrangements and Exchange Restrictions. A flexible exchange rate here refers to the floating exchange rate arrangements, meaning that the exchange rate is market-determined. The exchange rate arrangements in the Caribbean have a wide range, from floating (e.g., Jamaica), to conventional peg (e.g., Barbados and the Bahamas) and hard peg (e.g., currency board for OECS countries)

16). Another assumption behind the success of “flexible inflation targeting” is that the framework is universally adopted by central banks. Nevertheless, with two major economies, US and China, taking different approaches, misalignment of policies has led to higher costs than the theoretically predicted level.

Rey (2013) argued that the global financial cycle has transformed the trilemma into a “dilemma”. It indicates that with global interconnectedness increasing significantly, so that the trade-off is only between independent monetary policy and free capital movement, regardless of exchange rate regimes. It is recommended that the appropriate policies for a country are those targeting the main sources of external shocks. Free capital movement brings the benefits of advanced technology, higher investment, greater competition and at times smoothed domestic credit cycles. It also comes with risks of large swings in capital flows, which is particularly amplified when a country has a less credible government, a less developed financial market, and weaker macroprudential framework to withstand the financial volatility. When the downside risks materialize, the country may end up with higher economic volatility and even economic crisis. Rey (2013) recommended that the use of capital controls as a partial substitute for macroprudential measures should not be discarded, if the financial and macroeconomic structure of an economy require so (Chart 17). It is worth noting that when capital controls are seen as part of a package of policies targeted at financial stability, it is the composition of capital flows that takes center stage rather than their volume. Foreign direct investment (FDI) and portfolio equity flows are less likely to reverse direction abruptly or less affect stability when they do. Nevertheless, for example, an abrupt reversion of foreign funding to local banks would likely result in currency and maturity mismatch and build up to crisis. However, the as with other instruments, care should be taken that they are used to reduce macro-economic volatility rather than merely to suppress it, only to see it emerge in other, potentially more destructive ways.

For the case of the Caribbean, we thus only discuss monetary policy among the “trinity” as part of macroeconomic resilience building. In the discussion of macroeconomic resilience, we consider that there is no “good” or “bad” policies, but only “appropriate” policy choices for the exchange rates and capital account controls, given the country context. Specifically, the benefit-cost analysis of a flexible exchange rate regime and free capital flows depends on the level of other variables discussed in this chapter, including governance quality, financial market development, diversification, etc.

Fiscal Policy and Fiscal Space

The Government’s ability to implement effective fiscal stimulus has shown its importance after the Global Financial Crisis and during the ongoing global pandemic. Without effectively flexible exchange rate as the first line defending the economy, fiscal policy is the only lever left for the islands to mitigate the impact of external shock. Countercyclical fiscal policy has gained increasing attention to respond to external shocks. Compared to monetary policy, though traditionally considered to be less timely, fiscal policy can be more targeted than the “blunt tool” of monetary measures. Aghion et al (2014) finds that procyclical fiscal policies reduce growth, while countercyclical fiscal policies appear to boost it. In other words, properly conducted fiscal policy can support growth by smoothing the business cycle. Banerjee and Zampolli (2016) concluded that fiscal policy is able to dampen credit growth without compromising output. Given the pegged exchange rate and open capital account in most Caribbean countries, monetary policy is relatively passively set to maintain stable exchange rate and aligned with

the international market. Fiscal policy, at the other hand, becomes more essential in a government's toolbox.

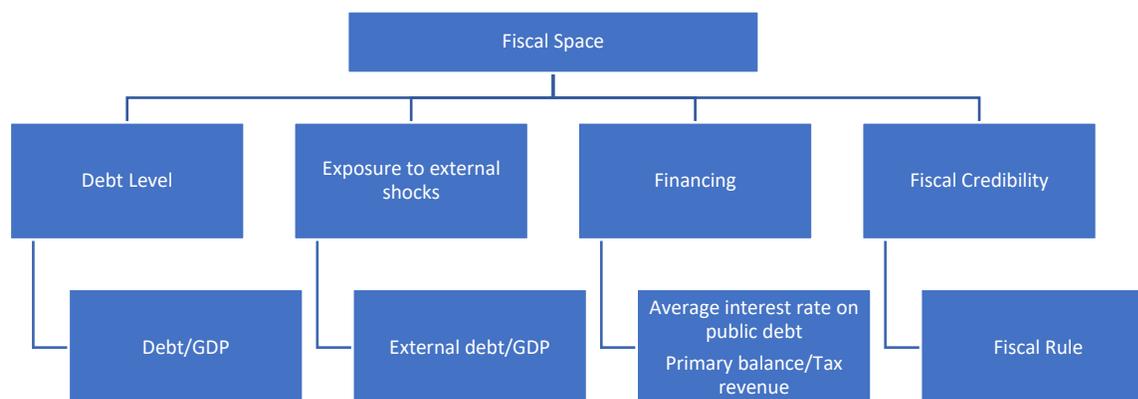
This section focuses on ability of a government has to use fiscal policies to address economic challenges. Resilience calls for fiscal space that is large enough to respond effectively to a financial downturn. Fiscal policy affects the overall economy during downturns through two channels, including reducing taxes and increasing spending; or taking two forms, including providing targeted relief that sustains businesses and individuals, and “traditional” stimulus aimed at generating aggregate demand, for example, public infrastructure projects. The optimal fiscal responses to external shocks have drawn extensive research, the results of which depend on various conditions, including the composition of a government's balance sheet; the fiscal multiplier; the sources of the shocks; data availability; and the behavior of the private sector and international markets.

Fiscal space, which broadly measures such ability, is a complex concept. Fiscal space is defined by IMF¹⁴ as the room for undertaking discretionary fiscal policy relative to existing plans without endangering market access and debt sustainability. However, borrowing ability and financing needs are forward-looking and dynamic, which require multi-dimensional assessment. It not only involves on the demand side – how much the Government need and borrow at maximum; but also the supply side -- how much financing the market can provide given the Government's institutional quality, growth potential and other future structural challenges. For example, for Korea, where fiscal space is abundant with good market access and relatively low debt level, demographic pressures are significant and narrow fiscal space.

Multiple indicators have been proposed in literature. The public debt level is one of the most important indicators for a government's debt sustainability and capacity to repay external debt (Abbas et al. 2011; Jaimovich and Panizza 2010; Panizza 2008). It's also linked with high debt service which narrows fiscal space. Composition of government debt and data on contingent liabilities, revenues, and government investment and consumption are also important to predict debt sustainability; however available for a limited number of countries. Market perception of sovereign risk is also an important aspect for market access, which is usually measured by sovereign spreads or sovereign ratings (Kose, M. Ayhan, et al. 2017). However, rich literature has investigated multiple determinants of sovereign ratings. For example, membership in a currency union affect CDSs (Ghosh et al. 2013); climate change vulnerability has adverse effects on sovereign credit ratings (Cevik and João, 2020). Moreover, the causality between fiscal space and market perception seems to be indecisive – abundant literature has found that fiscal space is one of the determinants of sovereign risks (Aizenman et al. 2013). Fiscal rule is also considered when assessing fiscal space (see detailed discussion in Box. 3). To keep the focus of the section, we focus on “fiscal space” with proxies within the realm of fiscal variables.

Chart 18: Measuring Fiscal Space

¹⁴ <https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/06/15/pp041118assessing-fiscal-space>



Given the data availability and context of the Caribbean region, this section uses 5 indicators to measure fiscal space. It covers 4 dimensions (Chart 18): (1). Public debt level, as proxied by the ratio of public debt to GDP; (2). Exposure to external shocks, measured by external debt as a percentage of GDP; (3). Financing, including the average costs of public financing (average interest payment divided by total debt of the previous year) and relative revenue base (fiscal balance divided by average tax revenues, or “*de facto* fiscal space”); and (4) Fiscal credibility using the IMF Fiscal Rule database. The indicators not only indicates the financing space a government has to conduct countercyclical measures in, but also relates to a governments’ capacity to backstop banks once private loss-absorbing capacity – in the form of equity or bail-in-able debt – has been used (BIS, 2016).

Availability of fiscal space is also threatened by the presence of contingent liability associated with large public bodies and state-owned enterprises (SOEs), with which several countries have made significant progress. In terms of revenues, expenditures, and employment, the public bodies and SOE sector, which includes statutory entities and authorities as well as government-owned limited liability companies, plays an important role in Caribbean economies. The sector encompasses a wide range of activities, including developmental, regulatory, social, and commercial activities. In quite a number of cases, PBs perform quasi-fiscal activities, that is, public functions on behalf of the government, including regulatory functions and service delivery at subsidized tariffs (for example, for public transport). Many entities incur losses and are heavily indebted and therefore could represent a call on the budget and may sharply increase debt level. Financial difficulties in SOEs may also imply that core public services fail, such as the provision of water and electricity, or impact the financial sector if they default. Management of the sector is generally characterized by major weaknesses. While most countries have recognized risks from the sector, systematic country data to evaluate SOEs and to incorporate SOE contingent liabilities into fiscal or debt risk analysis remains limited. For example, in Grenada, SOEs contingent liabilities include non-guaranteed SOE debt, which amounted to EC\$501.1 million (or 16.5 percent of GDP) as of end-September 2018, and other liabilities, including from the national pension scheme. The quarterly reporting and recognition of contingent liabilities of SOEs have improved significantly. However, the SOE debt haven’t been incorporated in the calculation of “public debt”, which, nevertheless, is required under the Fiscal Responsibility Framework (FRF). In Barbados, the 58 SOEs exhibited suboptimal levels of liquidity, high levels of debt, and low-cost recovery. Transfers to SOEs amounted to 8 percent of GDP in 2017, and a 6

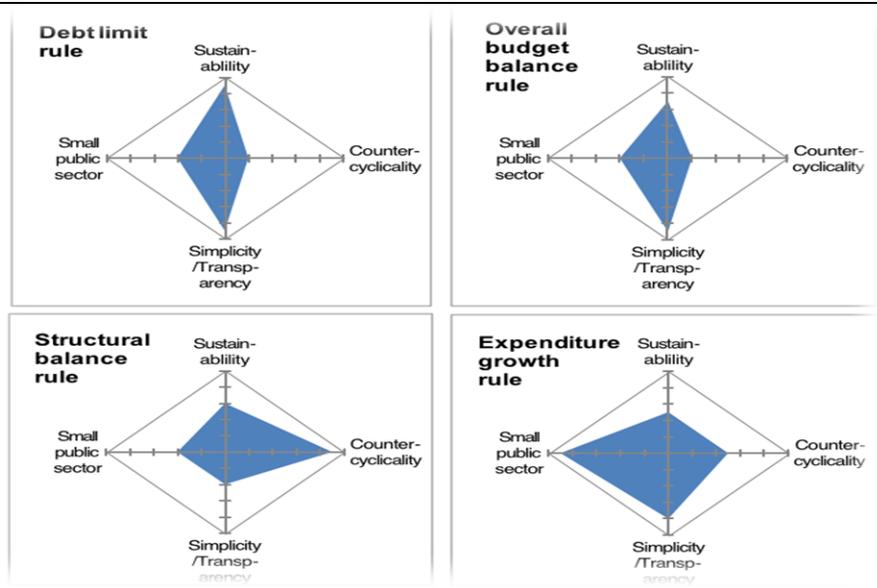
percent target was set for 2021. Government subventions accounted for 20 to 30 percent of revenue. The Government adopted the new Financial Management and Audit Act (FMA) in January 2019 and granted the Ministry of Finance greater authority to oversee SOEs. The Act, together with other reforms, is expected to reduce the burden of SOEs on the budget through a combination of stronger oversight, improved reporting, cost reduction and revenue enhancement.

Sufficient fiscal space would help fiscal response in a crisis, however, the overall fiscal strategy should be considered in a long-term framework, in accordance to its goal and the country context. As an economic stabilizer, fiscal policy is used more proactively during crisis, as shown after the great depression, GFC and the recent pandemic. In normal times, countries scale back the size and function of government, with markets taking on an enhanced role in the allocation of goods and services. Outliving fiscal programs beyond the initial intention of crisis responses can turn into distortion to the market and affect long-term growth. Thus, within given fiscal space, more components of fiscal policy need to be considered. For example, the responsiveness and scope of the fiscal auto-stabilizer, i.e., tax rates and transfer payments mechanism, can be enhanced to decrease the use of discretionary policies during crisis. Also the timing of fiscal responses affects the effectiveness and efficient use of fiscal space. For implementation of a program or access to financing, the speed could be different. For example, access to Government contingency fund might be faster than disbursement from commercial insurance. Different fiscal programs can have impacts with various timespans. When a crisis is expected to be pro-longed, large infrastructure projects, which may take years, might be used. Otherwise, “shovel-ready” projects are often preferred for more immediate impacts. Overall, caution should be deployed when using secured fiscal space to respond in a crisis.

Box 3: The Fiscal Rules in the Caribbean

Well-designed fiscal rules, which impose long-lasting numerical limits on fiscal policy, can provide the discipline needed to sustain fiscal space. Depending on the specific country context, there are generally four types of fiscal rules that fit the institutional capacity and government sizes (Chart 20). Whichever rule is adopted, the primary objective is to ensure debt sustainability, though the effectiveness depends on a government’s commitment and public governance quality. Aaskoven and Rasmus (2018) showed that fiscal rules, both national and supranational, have a larger effect on sustained debt reduction if implemented within an appropriate institutional framework (Chart 19). Nerlich and Wolf (2015) also presented strong evidence of fiscal rules being associated with higher fiscal space. Moreover, empirical studies found that the fiscal rules contribute to higher market confidence and fiscal policy predictability, which also lower output volatility (Fatás and Ilian, 2006), lower sovereign interest rates spreads (Iara and Guntram, 2014), and result in greater fiscal maneuverability (Nerlich and Wolf, 2015).

Chart B3-1: Four Types of Fiscal Rule



Source: World Bank Staff

However, despite its benefits, when evaluating fiscal space alone, risks exist associated with fiscal rules. A rules-based fiscal policy also indicates less fiscal flexibility, even with certain consideration of exceptional shocks. It is especially prominent when prolonged economic depression, deflationary pressures and new investment opportunities are hard to incorporate in the rule-designing *ex ante* (IMF, 2016). To allow more flexibility to the increasingly complex environment, fiscal rules have been revised with steady modifications. But literature has shown some perverse effects. For example, limiting the scope of fiscal support in the recovery from the Global Financial Crisis (European Fiscal Board, 2019), which may lower potential GDP and compromise debt sustainability. Blanchard etc. (2020)¹⁵ proposed that no fiscal rule can be flexible enough for the EU and a “standard”, instead of “rule”, should be adopted.

Chart B3-2: Fiscal Rule

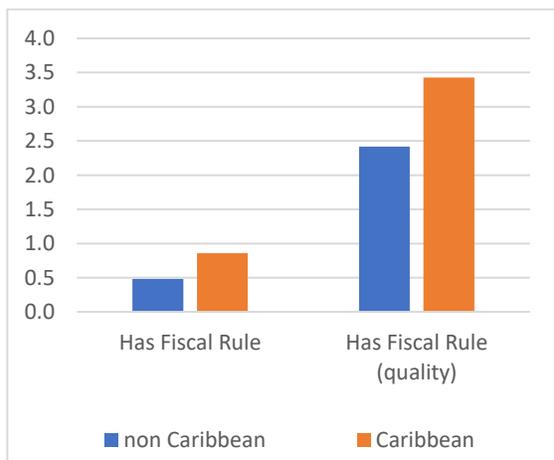
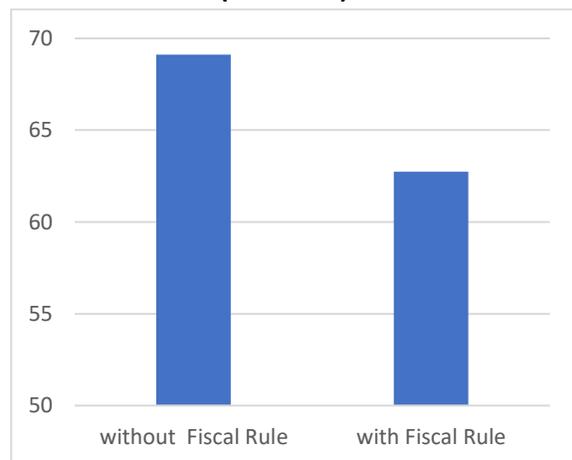


Chart B3-3: Debt (% of GDP)



Source: IMF Fiscal Rule Database; WDI; and author’s calculation.

¹⁵ https://www.economic-policy.org/wp-content/uploads/2020/10/9100_Redesigning-EU-Fiscal-Rules.pdf

In weighing the benefits and costs of fiscal rules, anchoring fiscal credibility over the medium term and accessing financing is a key factor for fiscal space for most Caribbean countries. The domestic financial market is relatively less developed and the region is less able to tap international capital market sufficiently. The challenges are coupled with the frequent events of natural disasters and threats from climate change. The factors either increase significantly financing costs or compromise investment prospects for investors. A consistent and rules-based fiscal policy will help maintaining policy credibility and market confident.

In this context, adopting and strengthening the design and effectiveness of the appropriate rule should be the priority for the Caribbean. The Caribbean countries have made significant progress in adopting fiscal rules. Using IMF’s Fiscal Rule database, Chart 18 shows that on average, there is a higher percentage of Caribbean countries having adopted fiscal rules; even after considering the qualities of the fiscal rules, including enforcement, escape clauses and oversight, Caribbean countries are still the forerunners in the area. The benefits following the rules are also prominent. Following the enforcement of the fiscal rule in 2010, Jamaica reduced debt from 151 percent of GDP in 2010 to 94 percent by 2019. Grenada also saw the debt reduced by 48 percent of GDP to 60 percent in 2019, thanks to the Fiscal Responsibility Law implemented in 2014.

Macroeconomic Resilience Indicators and Discussion

The qualitative and quantitative analysis above provided the background within which to identify the factors that are likely to determine the level of macroeconomic resilience in the Caribbean region. This section presents the relative performance of the Caribbean countries in different macroeconomic dimensions, as measured by representative indicators respectively (see Data Description in Annex). Moreover, a composite indicator is calculated.

Chart 19: Rank-based composite indicator for macroeconomic resilience

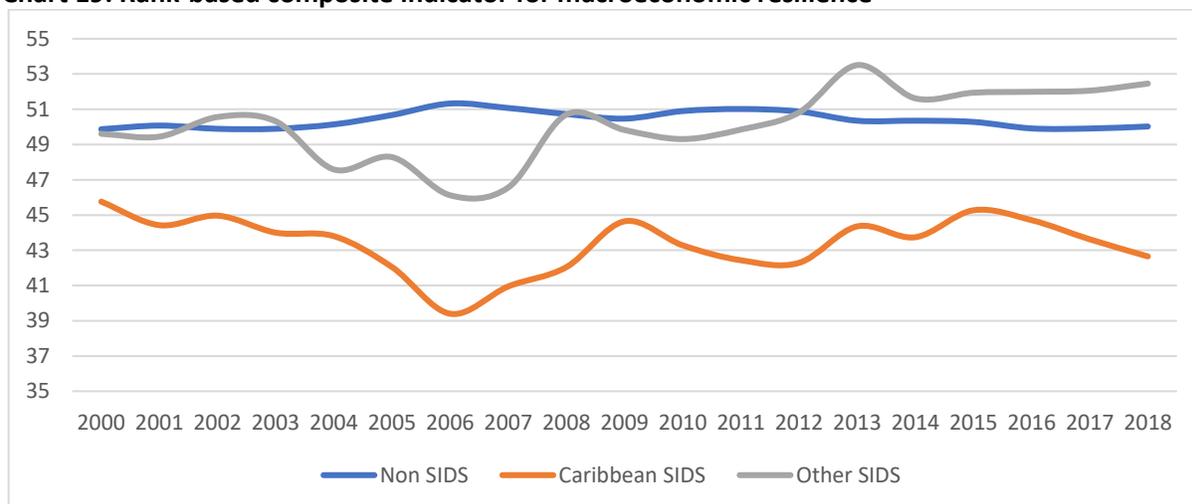
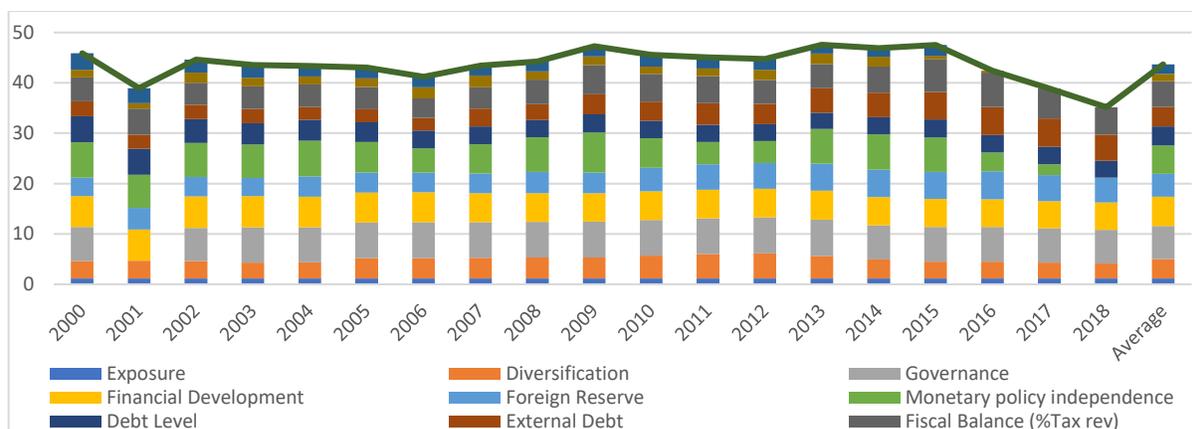


Chart 20: Decomposition of the composite indicator for the Caribbean region



Source: authors' calculation

As the uniqueness of the SIDS, the various indicators have shown that the Caribbean countries are less macroeconomic resilient compared to the rest of the world. Chart 21 present the level associated with each dimension of macroeconomic resilience, which is based on the international ranking. Each indicator is ranked within each year among countries with available data and then the rankings are normalized between 1-100 for each year to avoid the impacts of data missing. The risks are categorized into three levels. Risk is “Low” if a country’s ranking is among the top one third countries in the year; “High” risk if the ranking is among the bottom one third countries in the year; “Moderate” risk otherwise. This methodology of benchmarking places the Caribbean region in the same framework as the rest of countries. By benchmarking with the rest of the world, the results highlight the key vulnerabilities of the region. A composite indicator is generated by averaging the rankings of all sub-indicators (Chart 19&20). As expected, the region is highly vulnerable or with low overall macroeconomic resilience as shown in the last column. It is in particularly driven by three main areas, including high exposure to natural disasters, low economic diversification and high debt level. Nevertheless, monetary policy and Governance offer certain level of assurances that the governments are capable of independently using monetary policy with a relatively high level of governance.

Given the constraints faced by the SIDS, it is also important to understand the relative performance of each country, compared with the respective regional peers and aspirational countries. Using the averages of the most recent data after 2015 within the Caribbean, Chart 22 presents the different dimensions of macroeconomic resilience in the Caribbean region. The resilience level is compared with the regional top-performer and the top one-third and the bottom one-third are rated as “high” and “low” resilience, respectively. Overall, the top three performers in the region – Trinidad and Tobago, Saint Lucia and St Kitts & Nevis – benefit from relatively less exposure to natural disasters; debt level and financial development.

Chart 21: Traffic Light System – Macroeconomic Resilience (International Benchmark)

Country	Exposure	Diversification	Governance	Financial Development	Foreign Reserve	Monetary policy independence	Debt Leve	External Debt	Fiscal Balance (% Tax revenue)	Average Interest Rate	Fiscal Rule (score)
ATG	0.4	77.4	0.5	0.3	3.6	0.6	95.2	43.6	-16.2		4.0
BHS	0.5	78.8	0.7	0.4	2.4	0.4	51.0	22.0	-32.1	4.3	
BLZ	0.1	62.0	-0.2	0.2	3.6	0.5	88.9	74.7	-15.4	3.4	
BRB	0.1	50.1	1.0	0.5	2.3	0.6	143.1		-24.5	5.2	
DMA	0.3	72.5	0.6	0.2	5.2	0.6	76.6	53.4	0.3		4.0
DOM	0.0	52.9	-0.2	0.2	2.9	0.4	47.0	38.4	-20.0		
GRD	0.1		0.4	0.3	3.7	0.6	86.0	58.7	-2.9		5.0
GUY	0.0	48.4	-0.3	0.2	3.2	0.5	52.5	42.3	-13.7		
HTI	0.1	37.8	-1.2	0.1	5.7	0.4	37.2	23.5	-27.8		
JAM	0.1	81.1	0.1	0.3	4.5	0.6	120.1	99.9	0.5	6.1	5.0
KNA	0.2	59.2	0.6	0.3	6.8	0.5	69.5		28.8	5.2	4.0
LCA	0.1	84.5	0.6	0.3	3.3	0.6	61.3	29.6	-14.1	5.3	4.0
SUR	0.1	30.0	-0.1	0.2	2.5	0.3	53.7	70.5	-44.5		
TTO	0.1	52.3	0.1	0.3	10.1	0.2	32.9	60.4	-29.0		
VCT	0.1	81.8	0.6	0.2	4.4	0.5	77.7	44.3	-8.9	3.6	4.0

Note: the traffic light is based on the ranking of average values of each indicators between 2013-2018; the higher the more resilient for the corresponding indicator. If the ranking is within the highest one third of all countries with available data, the indicator of the country shows green; orange if between one third and two third; red if the lowest one third. The figures in the table are the respective values of each indicator, instead of the rankings.

Chart 22: Traffic Light System – Macroeconomic Resilience (Caribbean Aspiration Benchmark)

Country	Exposure	Diversification	Governance	Financial Development	Foreign Reserve	Monetary policy independence	Debt Leve	External Debt	Fiscal Balance (% Tax revenue)	Average Interest Rate	Fiscal Rule (score)
ATG	0.4	77.4	0.5	0.3	3.6	0.6	95.2	43.6	-16.2		4.0
BHS	0.5	78.8	0.7	0.4	2.4	0.4	51.0	22.0	-32.1	4.3	
BLZ	0.1	62.0	-0.2	0.2	3.6	0.5	88.9	74.7	-15.4	3.4	
BRB	0.1	50.1	1.0	0.5	2.3	0.6	143.1		-24.5	5.2	
DMA	0.3	72.5	0.6	0.2	5.2	0.6	76.6	53.4	0.3		4.0
DOM	0.0	52.9	-0.2	0.2	2.9	0.4	47.0	38.4	-20.0		
GRD	0.1		0.4	0.3	3.7	0.6	86.0	58.7	-2.9		5.0
GUY	0.0	48.4	-0.3	0.2	3.2	0.5	52.5	42.3	-13.7		
HTI	0.1	37.8	-1.2	0.1	5.7	0.4	37.2	23.5	-27.8		
JAM	0.1	81.1	0.1	0.3	4.5	0.6	120.1	99.9	0.5	6.1	5.0
KNA	0.2	59.2	0.6	0.3	6.8	0.5	69.5		28.8	5.2	4.0
LCA	0.1	84.5	0.6	0.3	3.3	0.6	61.3	29.6	-14.1	5.3	4.0
SUR	0.1	30.0	-0.1	0.2	2.5	0.3	53.7	70.5	-44.5		
TTO	0.1	52.3	0.1	0.3	10.1	0.2	32.9	60.4	-29.0		
VCT	0.1	81.8	0.6	0.2	4.4	0.5	77.7	44.3	-8.9	3.6	4.0

Note: the traffic light is based on the ranking of average values of each indicators between 2013-2018; the higher the more resilient for the corresponding indicator. If the ranking is within the highest one third among the Caribbean countries, the indicator of the country shows green; orange if between one third and two third; red if the lowest one third. The figures in the table are the respective values of each indicator, instead of the rankings.

References

- Noy, I., 2009, "The Macroeconomic Consequences of Disasters." *Journal of Development Economics* Vol. 88(2), pp. 221-231.
- IMF Board Policy Paper "Sustaining Long-Run Growth and Macroeconomic Stability in Low-Income Countries—The Role of Structural Transformation and Diversification", March 2014.
- Koren, M., and S. Tenreyro, 2007, "Volatility and Development," *Quarterly Journal of Economics*, Vol. 122, pp. 243–287.
- Haddad, M., J. J. Lim, and C. Saborowski, 2013, "Trade Openness Reduces Growth Volatility when Countries are Well Diversified," *Canadian Journal of Economics*, Vol. 46, pp. 765–790.
- Jansen, M., C. Lennon, and R. Piermartini, 2009, "Exposure to External Country Specific Shocks and Income Volatility," WTO Staff Working Paper ERSD-2009–04.
- Farshbaf, A., 2012, "Does Geographical Diversification in International Trade Reduce Business Cycle Volatility?" Working paper, University of Southern California.
- Imbs, Jean. "Growth and volatility." *Journal of Monetary Economics* 54.7 (2007): 1848-1862.
- V. Ramey, G. Ramey, Cross country evidence on the link between volatility and growth, *American Economic Review*, 85 (5) (1995), pp. 1138-1159
- Pallage, Stephane and Michel A. Robe, "On the Welfare Cost of Economic Fluctuations in Developing Countries," *International Economic Review*, May 2003, 44 (2), 677{98}.
- Barlevy, Gadi, "The Costs of Business Cycles Under Endogenous Growth," *American Economic Review*, September 2004, 94 (4), 964{90}.
- Gavin, Michael and Ricardo Hausmann, "Growth with Equity: The Volatility Connection," in Nancy Birdsall, Carol Graham, and Richard H. Sabot, eds., *Beyond tradeo®s: Market Reforms and Equitable Growth in Latin America*, Washington, DC: Inter-American Development Bank and the Brookings Institution, 1998, pp. 91{109}
- Laursen, Thomas and Sandeep Mahajan, "Volatility, Income Distribution, and Poverty," in Joshua Aizenman and Brian Pinto, eds., *Managing Economic Volatility and Crises: A Practitioner's Guide*, Cambridge University Press New York 2005, pp. 101{36}
- Briguglio (2016). Exposure to external shocks and economic resilience of countries: evidence from global indicators. *Journal of Economic Studies*, Vol. 43(6)
<http://www.emeraldinsight.com/doi/pdfplus/10.1108/JES-12-2014-0203>
- Briguglio, L., Cordina, G., Farrugia, N. and Vella, S. (2009). 'Economic Vulnerability and Resilience: Concepts and Measurements', *Oxford Development Studies*, Vol. 37(3): 229-247.
<http://www.tandfonline.com/doi/abs/10.1080/13600810903089893>.
- Haddad, M., Lim, J.J. & Saborowski, C. (2010) .Trade Openness Reduces Growth Volatility When Countries are Well Diversified World Bank Policy Research Working Paper No. 5222 .
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1565983
- Acemoglu, D., S. Johnson, J. Robinson, & Y. Thaicharoen (2003). „Institutional Causes, Macroeconomic Symptoms: Volatility, Crises and Growth“, *Journal of Monetary Economics*, 5(1): 49-123 http://dev.wcfia.harvard.edu/sites/default/files/903_jr_JMEpublishedversion.pdf
- Fatas, A. & Mihov, I. (2013). Policy Volatility, Institutions and Economic Growth. *Review of Economics and Statistics* Vol. 45(2): 362-376 <http://faculty.insead.edu/fatas/volgrowth.pdf>
- Easterly, William, and Aart Kraay. "Small states, small problems? Income, growth, and volatility in small states." *World development* 28.11 (2000): 2013-2027.
- Rey, H (2013) "Dilemma not Trilemma: The global financial cycle and monetary policy independence", paper presented at the Jackson Hole Symposium, August 2013. Available at <http://www.kansascityfed.org/publications/research/escp/escp-2013.cfm> Revised version forthcoming as a CEPR Discussion Paper.
- Kraay, Aart, and Daniel Kaufmann. *Growth without governance*. The World Bank, 2002.

Alkire, S. (2010). Human Development: Definitions, Critiques, and Related Concepts. Human Development Reports (Research Paper 2010/01). Retrieved 06-20-2011 from http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_01.pdf

Rojas-Suarez, Liliana, Emerging Market Macroeconomic Resilience to External Shocks: Today versus Pre-Global Crisis (February 24, 2015). Available at SSRN: <https://ssrn.com/abstract=2569238> or <http://dx.doi.org/10.2139/ssrn.2569238>

Bank for International Settlements, Economic resilience: a financial perspective, 2016.

Mishkin, Frederic S. "Is monetary policy effective during financial crises?." *American Economic Review* 99.2 (2009): 573-77.

Bernanke, Ben S., Mark Gertler, and Simon Gilchrist. 1996. "The Financial Accelerator and the Flight to Quality." *Review of Economics and Statistics*, 78(1): 1–15.

Rojas-Suarez, Liliana. "Emerging Market Macroeconomic Resilience to External Shocks: Today versus Pre-Global Crisis." Available at SSRN 2569238 (2015).

Banerjee, R and F Zampolli (2016): "What drives the short-run costs of fiscal consolidation? Evidence from OECD economies", BIS Working Papers, no 553, March.

Aaskoven, Lasse, and Rasmus Wiese. "How fiscal rules matter for government debt reduction: Theory and evidence." https://www.peio.me/wp-content/uploads/2019/01/PEIO12_paper_14.pdf

Fatás, Antonio, and Ilian Mihov. "The macroeconomic effects of fiscal rules in the US states." *Journal of public economics* 90.1-2 (2006): 101-117.

Iara, Anna, and Guntram B. Wolff. "Rules and risk in the euro area." *European Journal of Political Economy* 34 (2014): 222-236.

Nerlich, Carolin, and Wolf Heinrich Reuter. "Fiscal rules, fiscal space and procyclical fiscal policy." (2015).

Montoro, Carlos, and Liliana Rojas-Suarez. "Credit at times of stress: Latin American lessons from the global financial crisis." (2012).

Abbas, S. M. A., N. Belhocine, A. El-Ganainy, and M. Horton. 2011. "Historical Patterns and Dynamics of Public Debt—Evidence from a New Database." *IMF Economic Review* 59 (4): 717-742.

Jaimovich, D., and U. Panizza. 2010. "Public Debt around the World: A New Data Set of Central Government Debt." *Applied Economics Letters* 17 (1): 19-24.

Panizza, U. 2008. "Domestic and External Public Debt in Developing Countries." UNCTAD Discussion Paper 188, United Nations Conference on Trade and Development, Geneva.

European Fiscal Board. 2019. Assessment of EU fiscal rules with a focus on the six and two-pack legislation. Brussels.

Kose, M. Ayhan, et al. A cross-country database of fiscal space. The World Bank, 2017.

International Monetary Fund. Strategy, Policy, and Review Department. Assessing Fiscal Space: An Update and Stocktaking. International Monetary Fund, 2018.

International Monetary Fund. Strategy, Policy, and Review Department. Assessing Fiscal Space: An Initial Consistent Set of Considerations. International Monetary Fund, 2016.

Ghosh, Atish R., Jonathan D. Ostry, and Mahvash S. Qureshi. "Fiscal space and sovereign risk pricing in a currency union." *Journal of International Money and Finance* 34 (2013): 131-163.

Cevik, Serhan, and João Tovar Jalles. "Feeling the Heat: Climate Shocks and Credit Ratings." (2020).

Aizenman, Joshua, Michael Hutchison, and Yothin Jinjark. "What is the risk of European sovereign debt defaults? Fiscal space, CDS spreads and market pricing of risk." *Journal of International Money and Finance* 34 (2013): 37-59.

Annex: Data description

Var Name	Definition	Source
Exposure	Average annual loss (AAL) as a percentage of GDP, including earthquake, tropical cyclones, tsunami and floods.	WB WDI & United Nations Global Assessment Report on Disaster Risk Reduction (2015)
Diversification	Agriculture, mining & fuel and tourism exports as a percentage of total exports	WDI, WEO & WTO
Governance	Average of the six dimensions of the Worldwide Governance Indicators, including (i) Voice and Accountability; (ii) Political Stability and Absence of Violence/Terrorism; (iii) Government Effectiveness; (iv) Regulatory Quality; (v) Rule of Law; (vi) Control of Corruption. Range ~ [-2.5, 2.5]	The Worldwide Governance Indicators, 2019 Update; http://info.worldbank.org/governance/wgi/ ; WB WDI.
Financial Development	A relative ranking of countries on depth, access and efficiency of their financial institutions and financial markets; it's an aggregate of Financial Institutions index and the Financial Market index.	IMF Financial Development. https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b
Foreign Reserve	Foreign reserve/month of import of good Domestic credit to private sector as a percentage of GDP	WDI
Monetary policy independence	$1 - \frac{corr(i,j) - (-1)}{1 - (-1)}$ i is the home country policy rate; j is the base country policy rate; the higher the more independent.	http://web.pdx.edu/~ito/w14533.pdf
Debt Level	Public debt/nominal GDP*100	WDI
External Debt	External debt/nominal GDP*100	WDI
Fiscal Balance	Overall fiscal balance as a percentage of GDP	WDI
Average effective Interest Rate on loan	Total interest payment divided by total public debt from last year	WEO
Fiscal Rule (score)	if a country doesn't have a fiscal rule, $FR Score_{i,t} = 0$; if a country has a fiscal rule, depending on whether the FR design covers Monitoring, Enforcement, Coverage, Legal, Escape Clause, Institution, $FR Score_{i,t} = 1 \sim 7$, where "1" means only has a fiscal rule while no other institutional design; "7" indicates incorporation of all 6 aspects.	IMF Fiscal Rules Dataset, 2016; Schaechter, Kinda, Budina, and Weber (2012)