

Road to 2030: Resilient Institutions and Sustainable Progress in the Caribbean

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Abstract

This study assesses the resilience of political, economic, and social institutions across 22 Caribbean countries, recognising institutional strength as essential for achieving developmental goals such as the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs). Focusing on the MDGs and SDGs periods, we develop three indices of institutional resilience and apply difference-in-means analysis to evaluate changes over both periods. Results indicate that political institutions-maintained resilience throughout both periods. The resilience of the economic and social institutions declined remarkably following the adoption of the SDGs in 2015, thus raising concerns about institutional capacity to support the region's long-term development agenda.

Keywords: institutional resilience, sustainable growth, economic development, Caribbean

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Introduction

In the aftermath of the Millennium Development Goals (MDGs)¹ that spanned the 2000–2015 period, the United Nations (UN) launched a new global initiative under the theme “*Transforming Our World*” also known as the 2030 Agenda for Sustainable Development. By September 2015, all 193 UN member states adopted the agenda that introduced 17 Sustainable Development Goals (SDGs) and 169 targets designed to extend and deepen the commitments of the MDGs, particularly as many countries had fallen short of achieving those earlier goals due to the challenges facing the resilience of institutions.

Resilience refers to the capacity of a society or system to absorb internal and external shocks, adapt to challenges, and maintain core functions while learning and evolving from disruptions Holling (1973), Gunderson and Holling (2002), Berkes *et al.* (2003). Institutions, which encompass the formal and informal rules, organisations, and norms that structure political, economic, and social interactions, play a central role in shaping this adaptive capacity. According to institutional resilience theory, strong, credible, and adaptive institutions enhance resilience by providing stability, enabling effective responses to crises, fostering trust and social cohesion, and supporting long-term transformation. In this sense, resilience and institutions are closely intertwined: resilient societies depend on robust institutions to navigate uncertainty and sustain progress towards development goals. Accordingly, the resilience of political, economic, and social institutions in Caribbean countries is a critical determinant of their capacity to achieve the SDGs.

To support member states' progress towards achieving the SDGs, the Organisation for Economic Co-operation and Development (OECD) published *The Short and Winding Road: Measuring Distance to the SDG Targets*, which organises the 17 goals into five overarching themes: People, Planet, Prosperity, Peace, and Partnerships—collectively known as the 5Ps². These themes offer a strategic framework for achieving the SDGs by 2030. By building on this framework, this study contributes to the existing literature by identifying political, economic, and social institutions as three critical “short and winding” roads through which countries must navigate to achieve the SDGs. We argue that achieving “a resilient Caribbean” requires the resilience of these three institutions because they are fundamental for effective governance and long-term sustainable development outcomes. Institutions influence daily life worldwide, from governments that formulate and enforce laws to firms that provide essential goods and services. The

¹ The MDGs committed world leaders to combat poverty, hunger, diseases, illiteracy, environmental degradation, and discrimination against women.

² See Appendix A for the 5Ps and the corresponding goals under the five groups of Ps.

resilience of these core institutions is therefore critical for sustaining stability, promoting economic development, and safeguarding societal well-being.

The pertinent research questions guiding this study are:

1. How resilient are the political, economic, and social institutions in 22 Caribbean countries during the 2000–2015 MDGs and the ongoing 2015–2030 SDGs?
2. Given that the UN set both the MDGs and SDGs across a 15-year implementation period, which road has proven to be more “winding” for the Caribbean region?

Since all Caribbean countries signed onto the 2030 Agenda, this study therefore offers an empirical framework to assess whether the political, economic, and social institutions in these countries are resilient enough to support sustainable progress towards the SDGs. The underlying rationale is grounded in the extensive literature linking institutional strength to achieving sustainable economic development. Seminal works by North (1990), Knack and Keefer (1995), Rodrik (1999, 2000), Rodrik *et al.* (2002), Pande and Udry (2005), Shirley (2005), and Bardhan (2006) emphasized the foundational role of institutions in development outcomes.

In contrast, scholars such as Bloom and Sachs (1998), Sachs (2003a, 2003b), and Démurger *et al.* (2002) have questioned the primacy of institutions, pointing to other structural and geographical factors. Despite this ongoing debate, there is an increasing consensus among economists that institutions are an indispensable part of the development process; therefore, this paper conceptualises political, economic, and social institutions as the “tripartite” system that coordinates all other critical factors necessary for achieving long-term sustainable economic growth and development.

To conduct the empirical analysis, we utilise the six governance indicators developed by the World Bank (2024) to construct three composite indices of institutional resilience: (1) the Resilience of Political Institutions (RPI) Index, (2) the Resilience of Economic Institutions (REI) Index, and (3) the Resilience of Social Institutions (RSI) Index. These indices are applied to assess institutional resilience in 22 Caribbean countries across both the MDGs and SDGs periods because the indices provide the instruments for future or decadal evaluation of the degree of institutional resilience in the Caribbean region. Following the scores provided by the World Bank, we consider scores between 0 and 2.5 as indicative of resilient institutions, while scores from 0 to –2.5 indicate weak or non-resilient institutions. Graphical representations of the RPI, REI, and RSI scores illustrate the extent to which Caribbean countries are navigating these “winding roads”

towards 2030. In addition, we use the difference-in-means estimation method to identify which countries have improved or declined in institutional resilience since the adoption of the SDGs.

The results show that 11 of the 22 Caribbean countries have significantly strengthened the resilience of their political institutions since the launch of SDGs in 2015. The political institutions provide the “shortest” and/or the least “winding road” to the SDGs in contrast to their economic and social institutions. Few countries: Cuba, the Dominican Republic, and Jamaica showed minor improvements in their economic and social institutions while still within the weak resilience path. Most notably, 17 Caribbean countries experienced statistically significant declines in the resilience of their economic institutions while 14 countries saw similar declines in social institutional resilience. These findings indicate that most Caribbean countries face increasing challenges in maintaining the institutional capacity necessary to achieve the 2030 SDGs.

While prior studies provide valuable insights, to the best of our knowledge, this study is the first to explicitly examine institutional resilience across the MDGs and SDGs periods in the Caribbean region. By integrating historical analysis, governance indicators, and a comparative index-based framework, our study addresses a critical gap in the literature. Unlike earlier descriptive assessments, we offer a nuanced and comparative evaluation of institutional trajectories, their interactions with structural factors, and their implications for sustainable development in the Caribbean region.

The remainder of this paper is organized as follows: Section 2 provides overviews of the existing literature on the relationship between institutions and sustainable development. Next, Section 3 presents the trends in institutional resilience during the MDGs and SDGs periods. Section 4 details the empirical results based on the difference-in-means analysis. Section 5 concludes with policy implications related to institutional resilience in the Caribbean region.

Literature Review

The literature on economic development has long debated the drivers of sustainable economic growth. Prior to the 1990s, research emphasised factors such as climate, geography, natural resource endowments, and trade openness as critical determinants of development outcomes. Over the past three decades, however, the focus has shifted towards the role of institutions, reflecting the recognition that “institutions matter” for shaping economic, political, and social trajectories. Despite the broad consensus on their importance, the precise mechanisms through

which institutions influence growth remain contested, thus highlighting the ongoing theoretical and empirical debate.

Institutional Perspectives

North (1981, 1990) defined institutions as “the rules of the game” that structure human interaction through formal and informal constraints. Empirical studies have reinforced the centrality of institutions in determining development outcomes. Hall and Jones (1999) and Acemoglu *et al.* (2001, 2002, 2003) provide evidence that institutional quality strongly predicts cross-country variations in income and growth. Rodrik *et al.* (2002) further demonstrated that institutions outperform geography and trade openness in explaining income disparities, suggesting that institutional development is a primary determinant of long-term prosperity.

However, this perspective has been critically challenged. Sachs (2003a, 2003b) argued that while institutions are important, they do not operate in isolation; geographic, structural, and resource-based constraints can still shape economic outcomes. This debate underscores the need to consider both institutional and structural determinants, particularly in regions such as the Caribbean, where historical legacies and external shocks interact with domestic governance.

Historical and Structural Origins of Institutions

A key strand of research emphasised the historical roots of institutional differences. Acemoglu *et al.* (2001, 2005, 2006, 2008) and Acemoglu and Robinson (2010) argued that the nature of colonial institutions, whether extractive or inclusive, has lasting consequences for post-independence development. Extractive institutions, often established in the Caribbean, Africa, and parts of Central America, prioritized resource extraction for colonising powers, limiting local participation, and fostering persistent underdevelopment. In contrast, settler colonies such as Australia, Canada, and the United States established inclusive institutions with broader property rights protections, which promoted long-term prosperity. These insights highlight how historical power structures shape institutional resilience, providing a conceptual foundation for examining contemporary Caribbean governance. Dippel and Khadan (2018) provided the historical analyses that traced the colonial roots of institutional heterogeneity across the Caribbean region.

Law *et al.* (2008, 2013) extended this analysis by demonstrating that institutional quality, measured through rule of law, bureaucratic effectiveness, and control of corruption, significantly influences economic performance, with differential impacts across low-, middle-, and high-income countries. Flachaire *et al.* (2014) and Nawaz (2015) further corroborate that political institutions shape regime

stability while economic institutions influence growth, emphasising the interdependence of institutional types. Recent studies, including Zhao *et al.* (2021) and Kouadio and Gapka (2022), underscore that institutional reforms are particularly crucial in low- and middle-income countries, and that both economic and governance reforms are necessary to reduce inequality and improve resilience.

Synthesizing the Debate: Institutional vs Structural Approaches

The literature reveals tension between institutional and structural perspectives. Institutionalists emphasise the endogenous design and evolution of rules, governance, and policy frameworks, whereas structuralists highlight exogenous constraints, including geography, resource endowments, and historical path dependencies. Our study situates itself at the intersection of these perspectives, acknowledging the structural context of the Caribbean region while critically assessing the capacity of institutions to foster resilience in the face of internal and external shocks. This approach allows us to link theoretical insights to empirical patterns, providing a framework for understanding why some Caribbean countries have demonstrated stronger institutional resilience than others.

Governance Indicators and Caribbean Context

Research scholars are increasingly focusing on the Caribbean context where the interplay of small-state dynamics, colonial legacies, and external shocks shapes institutional and developmental outcomes. Schwartz (2018) and Beuermann and Schwartz (2018, 2021) provided comprehensive analyses of institutional heterogeneity and resilience across Caribbean countries, emphasising the critical roles of the rule of law, fiscal institutions, and monetary policy frameworks. While Mooney *et al.* (2021) highlighted the weaknesses in public debt management, Ter-Minassian (2021) emphasised the role of fiscal rules and independent fiscal councils in achieving stability, and de Haan (2021) documented the low independence and transparency of their central banks, suggesting structural constraints on monetary governance. These studies collectively suggest that institutional weaknesses, not only historical legacies but also contemporary policy choices, limit economic resilience in the Caribbean region.

Our study builds directly on these insights by examining institutional resilience across the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) periods. Specifically, we investigate:

1. How political, economic, and social institutions in Caribbean countries have adapted or persisted across the MDGs and SDGs periods.

2. How institutional resilience interacts with structural constraints and external shocks to shape development outcomes.

Trends in the Resilience of Vital Institutions in the Caribbean Region

The Caribbean region continues to face persistent institutional challenges that have shaped its developmental trajectory in the 21st century. As Beuermann and Schwartz (2018, 2021) highlighted, these challenges encompass governance weaknesses, policy implementation gaps, and fragile social cohesion. To assess how institutional capacities in Caribbean countries have evolved over time, this section analyzes trends in both the resilience and fragility of political, economic, and social institutions across 22 countries in the region.

Institutional resilience is evaluated using the 6 *Worldwide Governance Indicators* (WGIs) developed by the World Bank Kaufmann *et al.* (2010), which serve as a global benchmark for assessing governance performance. We use the 6 WGIs to construct composite measures representing the resilience of political, economic, and social institutions across the MDGs and SDGs periods. To measure the *Resilience of Political Institutions (RPI)*, we use *Voice and Accountability (VA)* and *Political Stability and Absence of Violence/Terrorism (PV)*. These indicators capture the degree of citizen participation in governance and the perceived likelihood of political instability or politically motivated violence. The *Resilience of Economic Institutions (REI)* is measured using *Government Effectiveness (GE)* and *Regulatory Quality (RQ)*, which assess public-sector performance, policy independence, and the government's capacity to formulate and implement sound regulatory frameworks. Finally, we assess the *Resilience of Social Institutions (RSI)* through *Rule of Law (RL)* and *Control of Corruption (CC)* because both reflect public confidence in legal systems, property rights protection, and the extent to which public authority is exercised for private gain.

In synthesizing these measures, we construct three composite indices to evaluate the degree of institutional resilience for each country in the Caribbean region. That is:

$$\text{RPI Index} = \frac{1}{2} (\text{VA} + \text{PV}) \quad (1),$$

$$\text{REI Index} = \frac{1}{2} (\text{GE} + \text{RQ}) \quad (2),$$

$$\text{and} \quad \text{RSI Index} = \frac{1}{2} (\text{RL} + \text{CC}) \quad (3).$$

Computing the indices using two indicators specified in equations (1) – (3) avoids any perception of selection bias. For instance, selecting VA over PV, GE over RQ, RL over CC, and vice versa can lead to selection bias with erroneous inferences. Importantly, these indices adhere to the guidelines [Organization for Economic Co-operation and Development (OECD, 2008) and Nardo *et al.* (2005)] for constructing robust composite indicators.³ Specifically, the indices satisfy the key criteria of *validity*, *reliability*, *sensitivity*, and *transparency*.

Regarding *validity*, each index aggregates two conceptually distinct but complementary WGIs, thus capturing multiple dimensions of institutional performance. For example, VA and PV jointly assess political participation and stability; GE and RQ capture administrative quality and policy implementation; RL and CC measure societal adherence to rules and institutional integrity. With respect to *reliability*, the WGIs are standardised across countries and time, expressed in standard normal units, with a mean of zero and a standard deviation of one, typically ranging between -2.50 and 2.50 , thus enabling consistency and comparability. Regarding *sensitivity*, the use of paired indicators enables detection of nuanced shifts in institutional performance, thus mitigating selection bias that could arise from reliance on a single indicator. Finally, for *transparency*, the normalization, equal weighting, and aggregation methods applied in equations (1)–(3) are explicitly defined to ensure replicability and interpretability.

The indices provide a credible and methodologically sound framework for evaluating institutional resilience across the Caribbean. They enable both cross-country and longitudinal analyses spanning the 2000-2015 MDGs and the 2015-2030 SDGs periods. Using World Bank (2024) scores as the benchmarks, Caribbean countries with RPI, REI, or RSI scores between 0 and $+2.50$ are classified as having *resilient institutions*, while those with scores between 0 and -2.50 exhibit *weak or fragile institutions*. Persistent institutional fragility is likely to impede progress towards achieving the 2030 SDGs. Importantly, these indices serve as the quantitative instruments with which to evaluate institutional resilience in the Caribbean region, thus the computed indices provide the framework to assess country-specific change over time.

As illustrated in Figure 1, there is considerable variation in RPI across the Caribbean countries. These differences are not random but reflect enduring historical and structural factors rooted in the region's colonial past. During the

³ The arithmetic mean is adopted to ensure mathematically valid and interpretable aggregation while the geometric mean is often preferred to temper the influence of outliers, but it cannot be applied in this case because the WGIs include negative values (ranging from -2.50 to $+2.50$).

colonial era, European powers—British, French, Spanish, and Dutch—imposed governance systems designed for extraction rather than self-determination [Beckford (1972), Rodney (1981)]. The plantation economy entrenched rigid hierarchies of race, class, and power that weakened participatory governance and institutional accountability. After independence, many states inherited highly centralized bureaucratic structures that, while maintaining order, limited the adaptability and inclusiveness required for strong political institutional resilience Girvan (2012).

These imperial legacies have been compounded by the continuing economic and political dependencies. Postcolonial Caribbean economies remain highly integrated into asymmetrical global systems, relying on a narrow range of exports, tourism revenues, and external financial flows. Such dependence often constrains policy autonomy and subjects domestic decision-making to the influence of international financial institutions and donor conditionalities [Best and Levitt (2009), Payne and Sutton (2001)]. Consequently, the adaptive capacity of political institutions, captured by the RPI index, has been shaped by both inherited administrative constraints and ongoing structural dependencies.

The data reveal that some Caribbean countries such as Anguilla, Aruba, Barbados, Bermuda, Dominica, Belize, and Cayman Islands tend to record relatively higher RPI scores. In contrast, countries like Cuba and Haiti, where historical dependence and centralized governance structures remain deeply entrenched, continue to occupy the lower end of the political resilience spectrum. These patterns underscore how historical path dependence still shapes the capacity of political institutions to withstand and adapt to contemporary challenges.

Crucially, as of 2023, no Caribbean country has yet approached the upper threshold of a political institutional resilience pathway. This finding underscores the substantial institutional strengthening still required across the region as it advances towards 2030 SDGs and beyond. Building greater political institutional resilience will necessitate confronting the enduring legacies of imperialism through far-reaching reforms that promote inclusiveness, transparency, and regional policy coordination and collaboration, while simultaneously reducing external dependency by fostering greater domestic autonomy.

Regarding the resilience of economic institutions, the declining trends in REI illustrated in Figure 2 indicate that the capacity of economic institutions to sustain growth and respond to crises show weakness since 2014. Cuba, the Dominican Republic, Guyana, and Haiti have consistently demonstrated weak economic resilience throughout the study period, while most other countries, despite moderate resilience during the MDGs era, show a pronounced decline since 2014—

2015 with no recovery to pre-2014 levels. Similarly, Figure 3 shows that social institutional resilience (RSI) remains weak and uneven in several countries, notably Cuba, the Dominican Republic, Guyana, Haiti, Jamaica, and Trinidad and Tobago. As shown in Figure 3,

Figure 1: Resilience of Political Institutions in Caribbean Countries During MDGs and SDGs

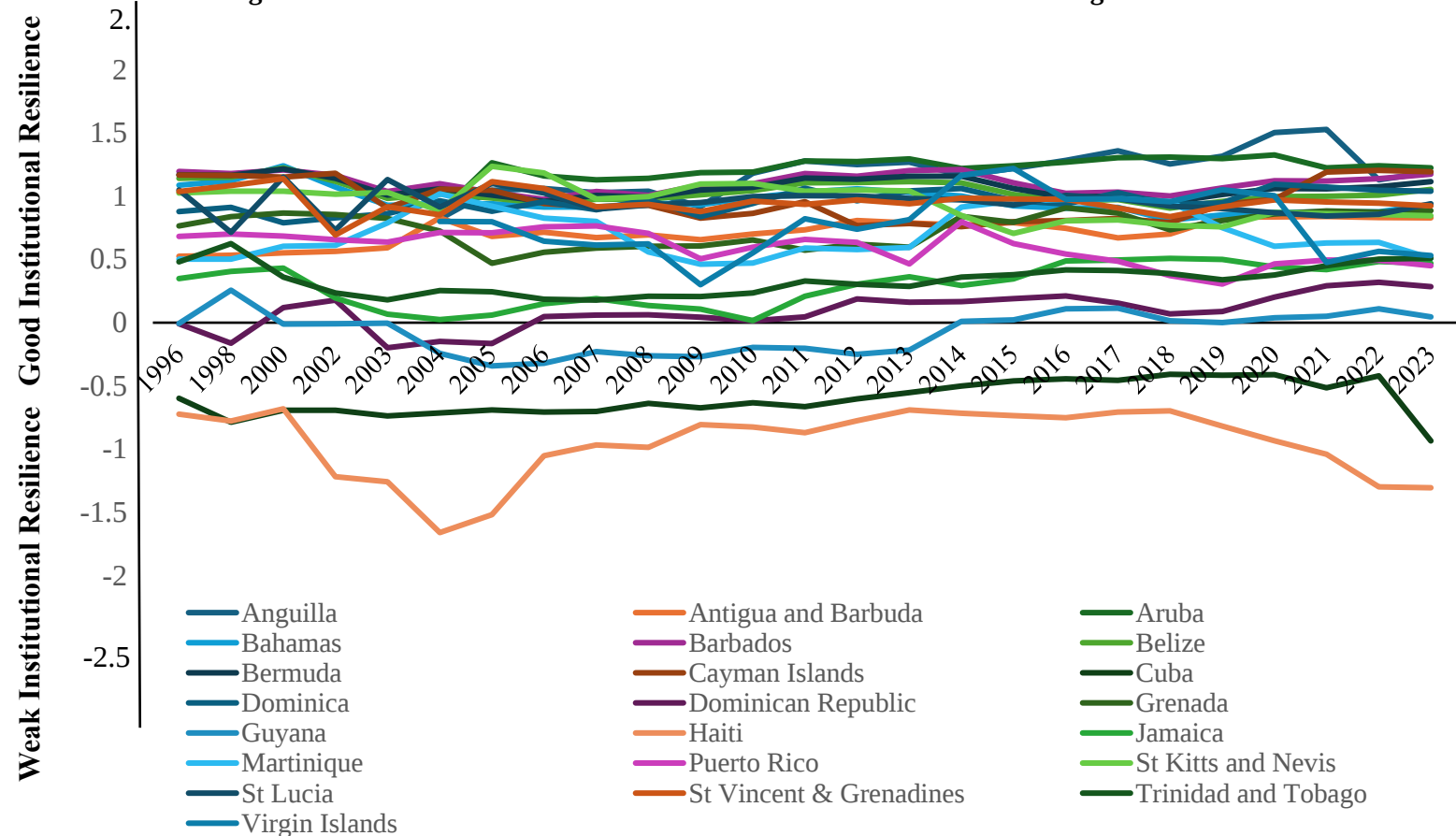


Figure 2: Resilience of Economic Institutions in Caribbean Countries During MDGs and SDGs

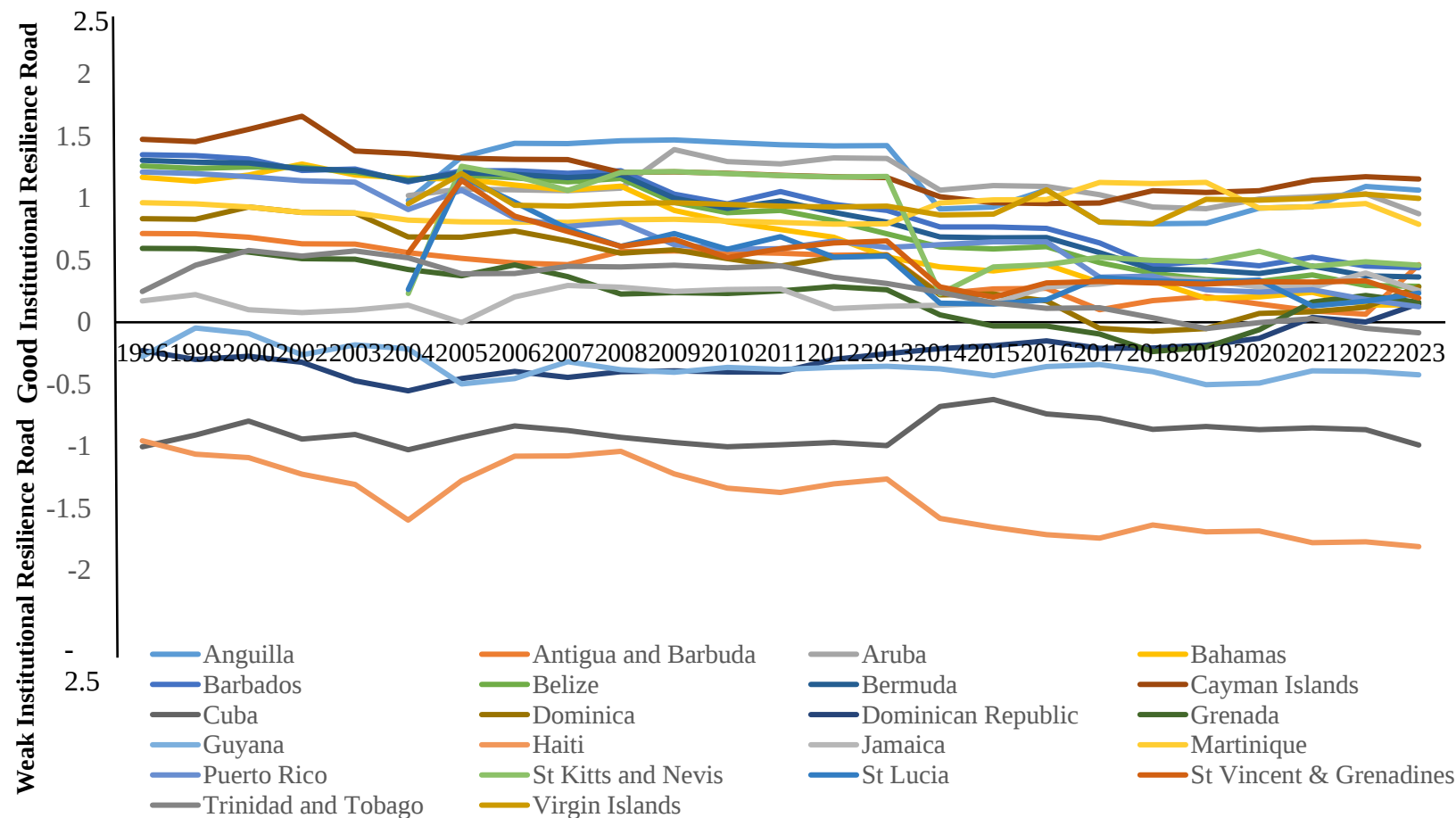
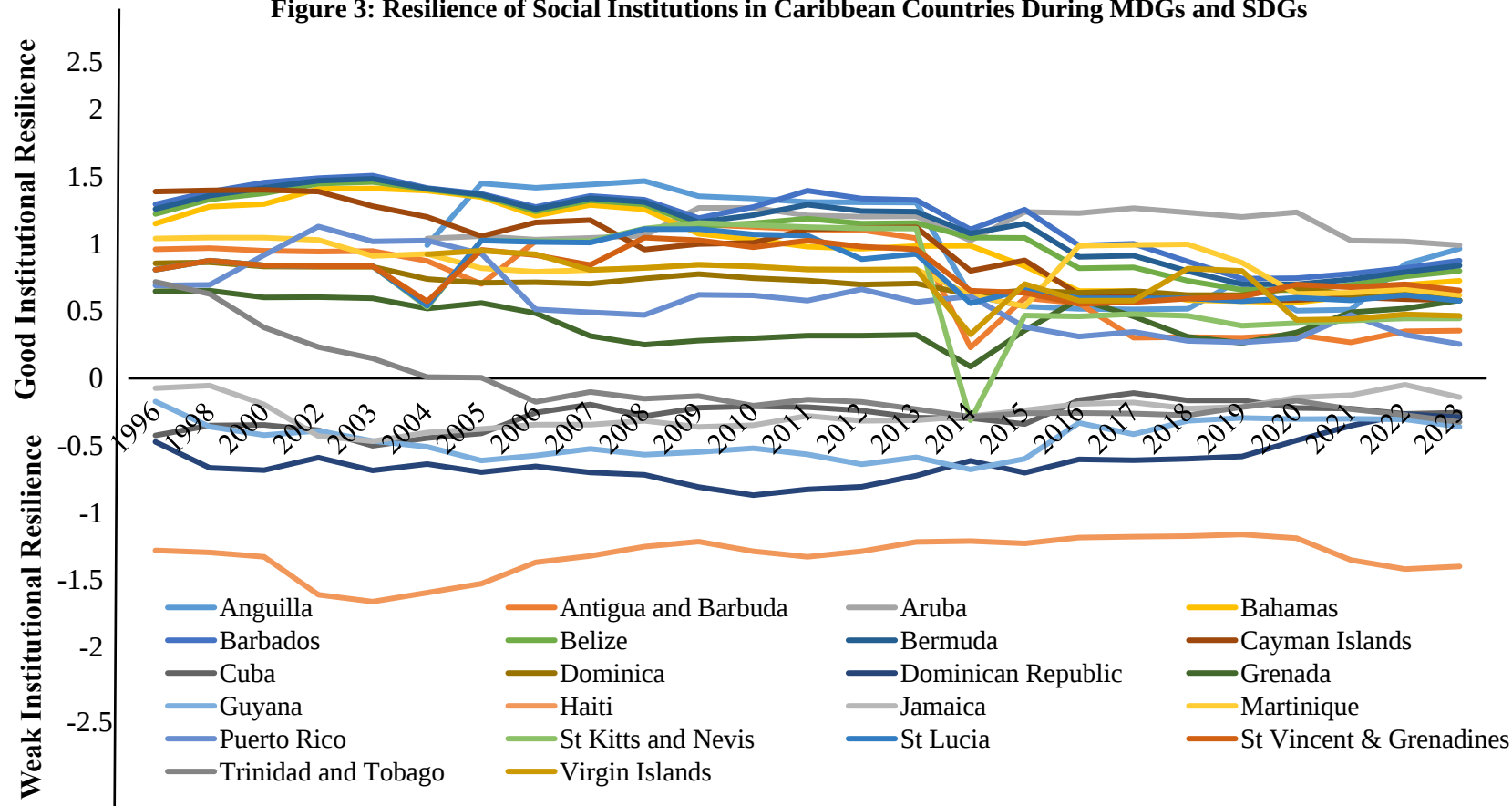


Figure 3: Resilience of Social Institutions in Caribbean Countries During MDGs and SDGs



St. Kitts and Nevis exhibited a noticeable negative resilience score (-0.31) in 2014 and recovered back to a positive score (0.47) in 2015 but still remained below its positive score of 1.11 in 2013.

These patterns underscore the lasting influence of historical dependencies, including externally oriented economic structures and reliance on foreign capital and imports, which heighten vulnerability to external shocks and limit institutional adaptability. The RPI, REI, and RSI indices collectively demonstrate that weak resilience is not randomly distributed but reflects entrenched structural and historical factors. Taken together, the trajectories of political, economic, and social resilience suggest that many Caribbean countries navigate uneven and volatile institutional pathways. Without targeted reforms to diversify economies, enhance governance inclusiveness, and reduce dependency, Caribbean countries will face ongoing challenges in achieving sustainable development by 2030. Therefore, two pertinent research questions emerge: Are these Caribbean countries following the same institutional resilience pathways during the MDGs and SDGs periods? More specifically, have the political, economic, and social institutions in the Caribbean region become resilient over the past two decades since the United Nations launched the MDGs and SDGs initiatives?

Empirical Appraisal of the Institutional Resilience Pathways During MDGs and SDGs

This section empirically examines whether the 22 Caribbean countries maintained consistent institutional resilience trajectories during the 2000–2015 MDGs and the 2015–2030 SDGs periods. To this end, we employ the difference-in-means (DIM) statistical approach based on its transparency, interpretability, and suitability for assessing temporal variation in institutional resilience.

Methodological Rationale

In the absence of a natural control group, the difference-in-means (DIM) technique provides a conceptually and empirically sound framework for evaluating shifts in institutional resilience over time. By comparing average resilience scores between the MDGs and the SDGs periods, the DIM approach aligns with the study's objective of assessing institutional evolution rather than estimating causal effects. While the difference-in-differences (DID) estimator is a well-established tool for causal inference, it requires identifiable treatment and control groups that satisfy the parallel trends assumption Athey and Imbens (2006, 2017), Bertrand *et al.* (2004), Lechner (2010). In this study, no such counterfactual or control group exists, thus rendering this assumption untestable and potentially violated. As a result, applying DID would risk generating misleading inferences about

institutional change Stock and Watson (2019), Wooldridge (2016). Given these methodological constraints, the DIM approach is the appropriate tool for descriptive comparison. It facilitates a clear and direct assessment of mean differences across two well-defined time periods measured on the same scale [Statistics How To (2024)]. Although the DIM framework does not permit causal attribution, it robustly identifies patterns, magnitudes, and directions of institutional change between the MDGs and the SDGs periods [Mailman School of Public Health (2024)]. Furthermore, its simplicity and interpretability make it particularly effective for capturing macro-level trends in institutional performance across the Caribbean region.

Empirical Implementation

The DIM estimator is widely utilised in economics and the social sciences, especially in meta-analyses, as a summary statistic for comparing outcomes measured across distinct time intervals. In this study, data for the RPI, REI, and RSI indices cover 15 years for the MDGs period and 10 years for the SDGs period since the adoption in 2015.

To formally test for the significant differences in institutional resilience for each of the 22 Caribbean countries, we formulate three sets of null (H_0) and alternative (H_A) hypotheses, which are specified separately for the RPI, REI, and RSI measures.

(i) Resilience of Political Institutions (RPI)

Null hypothesis (H_{0rpi}): There is no significant difference in the mean RPI scores between the 2000–2015 MDGs and the 2015–2025 SDGs periods.

Alternative hypothesis (H_{Arpi}): There is a significant difference in the mean RPI scores between the 2000–2015 MDGs and the 2015–2025 SDGs periods.

That is:

$$H_0: \overline{RPI}_{SDGs} = \overline{RPI}_{MDGs} \text{ versus } H_A: \overline{RPI}_{SDGs} \neq \overline{RPI}_{MDGs},$$

(ii) Resilience of Economic Institutions (REI)

Null hypothesis (H_{0rei}): There is no significant difference in the mean REI scores between the 2000–2015 MDGs and 2015–2025 SDGs periods.

Alternative hypothesis (H_{Arei}): There is a significant difference in the mean REI scores between the 2000–2015 MDGs and the 2015–2025 SDGs periods.

That is:

$$H_0: \overline{REI}_{SDGs} = \overline{REI}_{MDGs} \text{ versus } H_A: \overline{REI}_{SDGs} \neq \overline{REI}_{MDGs},$$

(iii) Resilience of Social Institutions (RSI)

Null hypothesis (H_{0rsi}): There is no significant difference in the mean RSI scores between the 2000–2015 MDGs and the 2015–2025 SDGs periods.

Alternative hypothesis (H_{Arsi}): There is a significant difference in the mean RSI scores between the 2000–2015 MDGs and the 2015–2025 SDGs periods. That is:

$$H_0 : \overline{RSI}_{SDGs} = \overline{RSI}_{MDGs} \text{ versus } H_A : \overline{RSI}_{SDGs} \neq \overline{RSI}_{MDGs}.$$

For each of the 22 Caribbean countries in the sample, the mean scores, standard deviations, and t -statistics are computed for the MDGs and the SDGs periods. To compute the means for assessing changes across the MDGs and SDGs periods, we compute the following sums: $\sum RPI_{MDGs}$ and $\sum RPI_{SDGs}$, $\sum REI_{MDGs}$ and $\sum REI_{SDGs}$, and $\sum RSI_{MDGs}$ and $\sum RSI_{SDGs}$ as the total values of each index during the MDGs and SDGs periods. The difference (D) for each index is expressed as: $D|_{RPI} = RPI_{SDGs} - RPI_{MDGs}$; $D|_{REI} = REI_{SDGs} - REI_{MDGs}$; and $D|_{RSI} = RSI_{SDGs} - RSI_{MDGs}$ while $D^2|_{RPI}$ and $\sum D^2|_{RPI}$, $D^2|_{REI}$ and $\sum D^2|_{REI}$, and $D^2|_{RSI}$ and $\sum D^2|_{RSI}$ are the square difference and the sum of the square difference, respectively; and the corresponding test statistics are estimated following standard parametric procedures [Wooldridge (2016), Stock and Watson (2019)].

Next, to facilitate meaningful comparisons between the MDGs and the SDGs periods, we estimate the standard deviations, standard errors, and corresponding t -values as follows:

$$S_{D_{RPI}} = \sqrt{\frac{1}{N} \sum D_{RPI}^2 - (\Delta \overline{RPI})^2}; S_{D_{REI}} = \sqrt{\frac{1}{N} \sum D_{REI}^2 - (\Delta \overline{REI})^2}; \text{ and } S_{D_{RSI}} = \sqrt{\frac{1}{N} \sum D_{RSI}^2 - (\Delta \overline{RSI})^2} \quad (4),$$

$$S_{\overline{D}_{RPI}} = \frac{S_{D_{RPI}}}{\sqrt{N-1}}, S_{\overline{D}_{REI}} = \frac{S_{D_{REI}}}{\sqrt{N-1}}, \text{ and } S_{\overline{D}_{RSI}} = \frac{S_{D_{RSI}}}{\sqrt{N-1}} \quad (5),$$

and

$$t_{RPI} = \frac{\Delta \overline{RPI}}{S_{\overline{D}_{RPI}}}, t_{REI} = \frac{\Delta \overline{REI}}{S_{\overline{D}_{REI}}}, \text{ and } t_{RSI} = \frac{\Delta \overline{RSI}}{S_{\overline{D}_{RSI}}} \quad (6)$$

for each of the 22 Caribbean countries in the sample with the degrees of freedom given as $df=N-2$.

Estimated Results for Institutional Resilience in Caribbean Countries

The results of the hypotheses tests for RPI are presented in Table 1. Based on the estimated t -values, the null hypothesis of no significant difference is confirmed for six countries—Barbados, Cayman Islands, Haiti, Martinique, St. Lucia, and St. Vincent and the Grenadines—while the alternative hypothesis is confirmed for 16 countries. Among these 16 countries, 11 countries: Anguilla, Antigua and Barbuda, Aruba, Cuba, Dominica, the Dominican Republic, Grenada, Guyana, Jamaica, Trinidad and Tobago, and the Virgin Islands experienced the strengthening of their political institutional resilience following the launch of the SDGs in 2015. Conversely, five countries: Bahamas, Belize, Bermuda, Puerto Rico, and St. Kitts and Nevis experienced the weakening in the resilience of their political institutions.

Table 1: Resilience of Political Institutions in Caribbean Countries During MDGs and SDGs

Countries	$\overline{RPI}_{SDGs}$	S^2_{SDGs}	$\overline{RPI}_{MDGs}$	S^2_{MDGs}	$\Delta \overline{RPI}$	t -Stats
1. Anguilla	1.31	0.02	1.10	0.02	0.21	3.37*
2. Antigua and Barbuda	0.79	0.00	0.68	0.01	0.11	3.35*
3. Aruba	1.27	0.00	1.18	0.01	0.09	2.31*
4. Bahamas	0.89	0.00	1.01	0.01	-0.12	-4.76*
5. Barbados	1.09	0.00	1.12	0.01	-0.03	-1.04
6. Belize	0.99	0.00	1.06	0.01	-0.07	-3.13*
7. Bermuda	1.04	0.00	1.09	0.01	0.05	-2.06*
8. Cayman Islands	0.97	0.03	0.96	0.02	0.01	0.08
9. Cuba	-0.50	0.03	-0.67	0.01	0.17	3.46*
10. Dominica	1.01	0.00	0.93	0.01	0.08	2.72*
11. Dominican Republic	0.21	0.01	0.03	0.02	0.18	4.02*
12. Grenada	0.85	0.00	0.69	0.02	0.16	4.30*
13. Guyana	0.06	0.00	-0.14	0.03	0.20	4.61*
14. Haiti	-0.92	0.06	-0.97	0.09	0.05	0.45
15. Jamaica	0.46	0.00	0.21	0.02	0.25	6.67*
16. Martinique	0.78	0.04	0.67	0.03	0.12	1.40
17. Puerto Rico	0.47	0.01	0.67	0.01	-0.20	-5.27*
18. St. Kitts and Nevis	0.81	0.00	1.04	0.01	-0.23	-6.60*
19. St. Lucia	0.92	0.00	0.97	0.01	-0.05	-1.30
20. St. Vincent and Grenadines	0.93	0.00	0.96	0.01	-0.03	-0.76
21. Trinidad and Tobago	0.42	0.00	0.29	0.01	0.13	2.96*
22. Virgin Islands	0.86	0.07	0.72	0.05	0.14	2.36*
Caribbean Islands	0.67	0.00	0.60	0.00	0.07	3.60*

Note: * = statistical significance at the 5 percent level.

Similarly, the results for the resilience of economic institutions (REI), reported in Table 2, indicate that we confirm the null hypothesis of no significant difference during the MDGs and SDGs periods only in the Virgin Islands. For the remaining 21 countries, we reject the null hypothesis in favor of the alternative. Among these, four countries recorded minor improvements:

Cuba and the Dominican Republic achieved this improvement in the weak resilience category while Jamaica and Martinique achieved the minor progress within the minimum and moderate resilience category, respectively. The remaining 17 countries: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Guyana, Haiti, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago experienced statistically significant declines in the resilience of their economic institutions since the launch of the SDGs as indicated by the results in Table 2.

Table 2: Resilience of Economic Institutions in Caribbean Countries During MDGs and SDGs

Countries		$\overline{REI}_{SDGs}$	S^2_{SDGs}	$\overline{REI}_{MDGs}$	S^2_{MDGs}	ΔREI	<i>t</i> -Stats
1.	Anguilla	0.93	0.01	1.34	0.04	-0.41	-5.34*
2.	Antigua and Barbuda	0.20	0.02	0.56	0.01	-0.36	-7.30*
3.	Aruba	1.00	0.01	1.18	0.02	-0.18	-3.48*
4.	Bahamas	0.27	0.01	0.98	0.07	-0.71	-7.22*
5.	Barbados	0.55	0.02	1.13	0.03	-0.58	-8.73*
6.	Belize	0.41	0.01	1.06	0.04	-0.65	-8.36*
7.	Bermuda	0.48	0.02	1.10	0.04	-0.62	-8.61*
8.	Cayman Islands	1.06	0.01	1.31	0.03	-0.25	-4.24*
9.	Cuba	-0.82	0.01	-0.92	0.01	0.10	2.48*
10.	Dominica	0.09	0.02	0.66	0.04	-0.57	-7.98*
11.	Dominican Republic	-0.10	0.02	-0.36	0.01	0.26	5.81*
12.	Grenada	-0.01	0.03	0.37	0.03	-0.38	-5.82*
13.	Guyana	-0.41	0.0	-0.31	0.02	-0.10	-2.59*
14.	Haiti	-1.73	0.00	-1.26	0.03	-0.47	-9.55*
15.	Jamaica	0.31	0.00	0.17	0.01	0.14	4.95*
16.	Martinique	1.00	0.01	0.85	0.00	0.15	3.21*
17.	Puerto Rico	0.31	0.03	0.84	0.06	-0.53	-6.50*
18.	St. Kitts and Nevis	0.49	0.00	1.01	0.15	-0.52	-4.00*
19.	St. Lucia	0.25	0.01	0.63	0.08	-0.38	-3.89*
20.	St. Vincent and Grenadines	0.29	0.00	0.66	0.05	-0.37	-4.99*
21.	Trinidad and Tobago	0.03	0.01	0.96	0.01	-0.93	-24.70*
22.	Virgin Islands	0.95	0.01	0.96	0.01	-0.01	-0.28

Caribbean Islands	0.25	0.00	0.53	0.01	-0.28	-10.05*
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Note: * = statistical significance at the 5 percent level.

Finally, Table 3 presents the estimated results for the resilience of social institutions. We confirm the null hypothesis (H_0) in three countries: Aruba, Grenada, and Martinique. In contrast, we reject the null hypothesis in favor of the alternative hypothesis (H_A) in 19 countries.

Among the 19 countries, five showed minor progress in the resilience of their social institutions. For instance, while Cuba, Dominican Republic, Guyana, and Jamaica showed minor progress within the weak resilience pathway, Haiti's minor progress occurred in the weaker resilience pathway during both the MDGs and SDGs periods. The remaining 14 Caribbean countries: Anguilla, Antigua and Barbuda, Barbuda, the Bahamas, Barbados, Belize, Bermuda, the Cayman Islands, Dominica, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad

Table 3: Resilience of Social Institutions in Caribbean Countries During MDGs and SDGs

Countries	$\overline{RSI}_{SDGs}$	S^2_{SDGs}	$\overline{RSI}_{MDGs}$	S^2_{MDGs}	ΔRSI	$t\text{-Stats}$
1. Anguilla	0.63	0.03	1.27	0.06	-0.64	-6.46*
2. Antigua and Barbuda	0.37	0.01	0.95	0.05	-0.58	-7.17*
3. Aruba	1.16	0.01	1.13	0.01	0.03	0.64
4. Bahamas	0.65	0.01	1.19	0.03	-0.54	-8.96*
5. Barbados	0.90	0.03	1.35	0.01	-0.45	-8.36*
6. Belize	0.78	0.01	1.27	0.02	-0.49	-9.61*
7. Bermuda	0.84	0.02	1.31	0.01	-0.47	-9.23*
8. Cayman Islands	0.62	0.01	1.16	0.03	-0.54	-8.31*
9. Cuba	-0.21	0.00	-0.32	0.01	0.11	2.88*
10. Dominica	0.63	0.00	0.76	0.00	-0.13	-5.15*
11. Dominican Republic	-0.50	0.03	-0.70	0.01	0.20	3.92*
12. Grenada	0.43	0.01	0.43	0.03	0.00	0.09
13. Guyana	-0.33	0.00	-0.53	0.01	0.20	7.40*
14. Haiti	-1.25	0.01	-1.37	0.02	0.12	2.96*
15. Jamaica	-0.16	0.00	-0.32	0.01	0.16	5.06*
16. Martinique	0.80	0.03	0.86	0.01	-0.06	-0.91
17. Puerto Rico	0.32	0.00	0.72	0.05	-0.40	-6.59*
18. St. Kitts and Nevis	0.44	0.00	0.89	0.13	-0.45	-3.64*
19. St. Lucia	0.60	0.00	0.91	0.03	-0.31	-5.23*
20. St. Vincent and Grenadines	0.63	0.00	0.88	0.02	-0.25	-5.42*
21. Trinidad and Tobago	-0.25	0.00	0.03	0.09	-0.28	-5.71*
22. Virgin Islands	0.59	0.02	0.80	0.03	-0.21	-3.01*

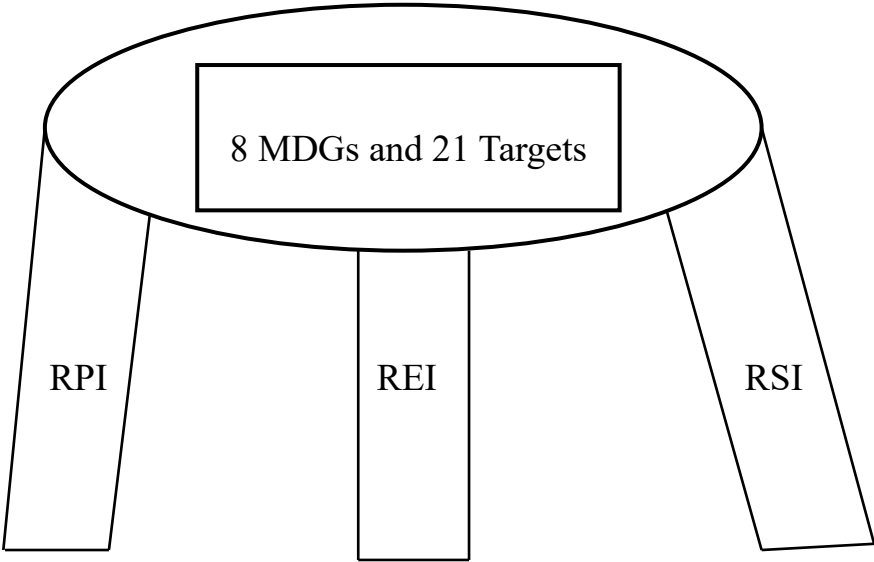
Caribbean Islands	0.35	0.00	0.56	0.00	-0.21	-8.64*
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Note: * = statistical significance at the 5 percent level.

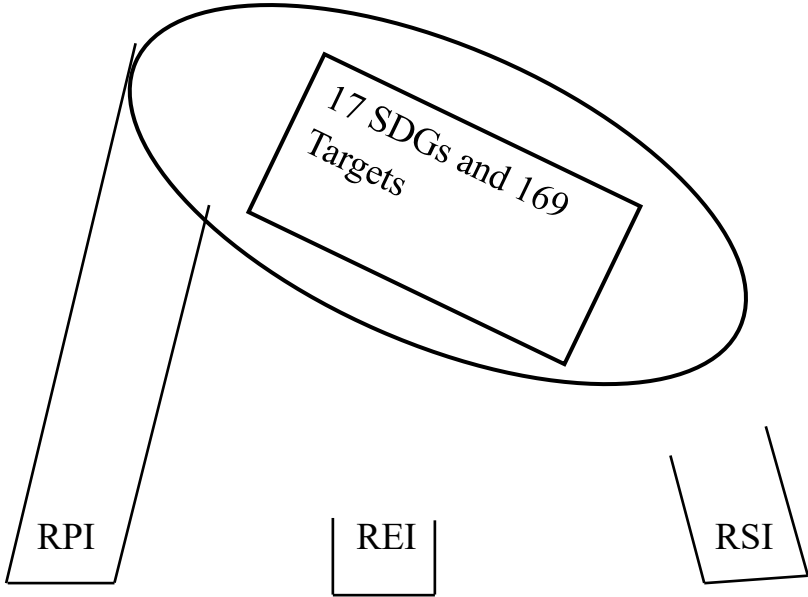
and Tobago, and the Virgin Islands experienced statistically significant declines in the resilience of their social institutions since the launch of SDGs in 2015.

To enhance understanding of the statistical estimates reported in Tables 1–3, Figure 4 provides simplified graphical illustrations of the key results. Conceptually, we interpret the three resilience indices: RPI, REI, and RSI as the institutional pillars or the "three legs of the stool" that support effective policy formulations and implementations towards achieving developmental goals, such as the MDGs and the SDGs. During the 2000–2015 MDGs period, we found the average values of the three institutional resilience indices to be 0.60, 0.53, 0.56 for RPI, REI, and RSI, respectively. These values indicate that political, economic, and social institutions in many

Figure 4: The Stability and Fragility of Caribbean Institutional Resilience: A Conceptual Three-Legged Stool



Panel A: Solid and Stable RPI, REI, and RSI During the MDGs



Panel B: Fragile and Fractured REI and RSI During the SDGs

Caribbean countries exhibited sufficient resilience to support sustainable progress towards the 8 MDGs and the associated 21 targets. This relatively stable institutional foundation is visually represented by the three firm and balanced legs of the stool illustrated in Panel A of Figure 4.

However, the pattern shifted since the adoption of the SDGs in 2015. The RPI increased modestly to 0.67, suggesting the strengthening of political institutions. Interpretatively, this may be indicative that many Caribbean countries cherish their identification as democratic states with high degree of political rights and civil liberties, thus their willingness to build and strengthen their political institutions into the near future. In contrast, REI and RSI experienced sharp declines. The observed fragility and fractured REI and RSI in the Caribbean region since the launch of 2030 SDGs can be attributed to the absence of a combination of factors necessary to build and maintain robust institutional resilience. For example,

nurturing collaboration and coordination among the vital institutions and across other relevant private and public agencies is essential in building institutional resilience. The adaptability of the vital institutions in handling and/or mitigating both internal and external shocks is also essential. These factors are difficult to quantify for statistical analysis, however, the lack of collaboration, coordination, and institutional adaptability may provide a good explanation as to why many Caribbean countries are likely to remain on the “fragile-fractured-winding” roads for REI and RSI in their pursuit to achieve the 2030 SDGs.

Conclusion and Policy Implications

This paper contributes to the growing body of research highlighting the importance of institutions in shaping economic growth and development outcomes in less developed countries by examining the resilience of political, economic, and social institutions across 22 Caribbean countries during the 2000–2015 MDGs and the 2015–2030 SDGs periods. Using indices of institutional resilience and difference-in-means estimation, we evaluated whether institutional trajectories remained stable, improved, or weakened under these global development frameworks.

The results reveal a mixed pattern. Political institutions demonstrated moderate resilience, with countries such as Anguilla, Antigua and Barbuda, Aruba, Cuba, Dominica, the Dominican Republic, Grenada, Guyana, Jamaica, Trinidad and Tobago, and Virgin Islands showing notable improvements in their RPI scores after 2015. These gains indicate enhanced political stability and democratic continuity despite fiscal constraints and external pressures. Nonetheless, persistent fragility in countries with centralised or clientelist governance underscores uneven institutional development and resilience.

In contrast, economic and social institutions weakened across most countries. Declines in government effectiveness, regulatory quality, and public trust in the rule of law and anti-corruption mechanisms reveal structural vulnerabilities that hinder SDGs implementation. Global shocks have also amplified these weaknesses. This divergence between political continuity and socio-economic fragility highlights a structural imbalance in some Caribbean countries where political order persists, but administrative and economic foundations required for inclusive growth remain fragile. Colonial legacies of centralised bureaucracy, extractive governance, and economic dependence continue to constrain institutional adaptation. Countries with diversified economies and robust governance exhibit better institutional resilience while those with narrow production bases and weaker governance, such as Cuba and Haiti, remain vulnerable.

With respect to policy implications, it is obvious that strengthening resilience requires integrated reforms, coordination, and collaboration across political, economic, and social institutions. Political resilience can be enhanced through participatory and inclusive governance supported by regional organisations such as Caribbean Community (CARICOM) and the Organisation of Eastern Caribbean States (OECS). Economic resilience requires fiscal discipline, structural diversification, and the development of small and medium-sized enterprises, which expand production bases, generate employment, and foster innovation, thereby reducing vulnerability to external shocks. Social resilience requires investments in education, health, social protection, and the rule of law to rebuild public trust and promote equity. Across all domains, evidence-based policymaking, digital innovation, and capacity-building should replace externally imposed conditionalities, fostering adaptive governance that is locally grounded and responsive to emerging challenges.

Given the importance of institutional resilience in achieving developmental goals, future research should examine the dynamic interactions among political, economic, and social resilience, particularly under the pressures of climate change, external shocks, and globalisation. Longitudinal studies integrating governance indicators, structural factors, and policy interventions could provide actionable insights for context-specific resilience strategies in small states. In conclusion, while Caribbean political institutions demonstrate moderate resilience the ongoing fracture and fragility of the economic and social institutions threaten sustainable progress. Confronting historical legacies, embedding adaptive governance, and reinforcing regional cooperation and collaboration are essential to transform vulnerability into opportunity. Institutional resilience is not merely a policy target but a developmental imperative for securing equitable and lasting prosperity beyond 2030.

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Appendix A: The Five Broad Themes (“5Ps”) of the SDGs 2030

- **People**
 - Goal 1: End poverty in all its forms everywhere.
 - Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
 - Goal 3: Ensure healthy lives and promote wellbeing for all at all ages.
 - Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunity for all.
 - Goal 5: Achieve gender equality and empower all women and girls.
- **Planet**
 - Goal 6: Ensure availability and sustainable management of water and sanitation for all.
 - Goal 12: Ensure sustainable consumption and production patterns.
 - Goal 13: Take urgent action to combat climate change and its impacts.
 - Goal 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.
 - Goal 15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably, manage forests, combat desertification, and halt and reverse, land degradation and biodiversity loss.
- **Prosperity**
 - Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all.
 - Goal 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all.

- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- Goal 10: Reduce inequity within and among countries.
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

- **Peace**

- Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels.

- **Partnerships**

- Goal 17: Strengthen the means of implementation and revitalize the Global Partnerships for Sustainable Development.