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The Cost of Climate Change for Caribbean Economies

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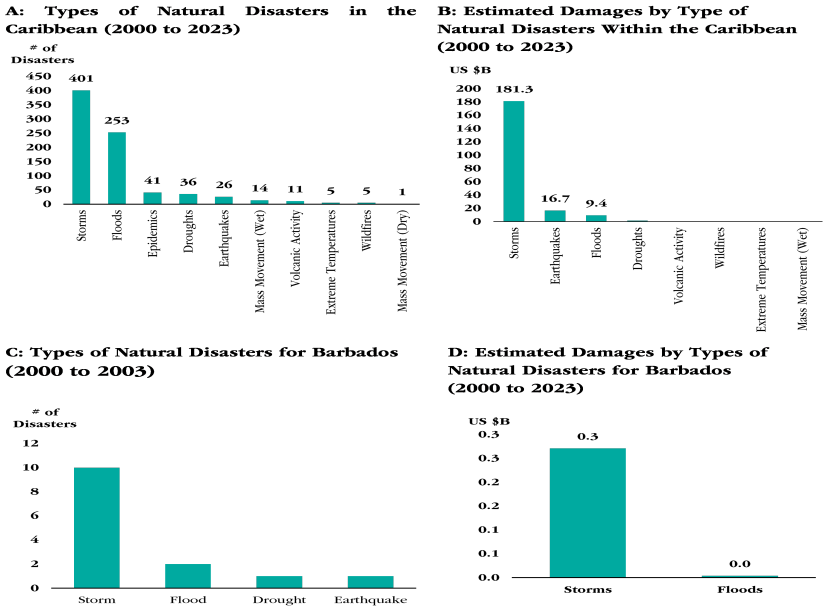
Caribbean nations are becoming increasingly concerned with the impact of climate change on their economies. According to Rudebusch (2021), climate change can be defined as the long-term shift to higher surface temperatures along with a change in environmental patterns such as rising sea levels, more severe weather systems such as storms, increased flooding, and more frequent and extreme heat waves. Economies within the Caribbean are highly vulnerable to both the direct and indirect effects of climate change, based on their location and size. Over the years, these territories have experienced the negative impacts of more severe and frequent climatic events such as hurricanes and tropical cyclones, recurring droughts, increasing floods, and declining shorelines due to increased sea levels (Fuller, Kurnoth and Mosello, 2020).

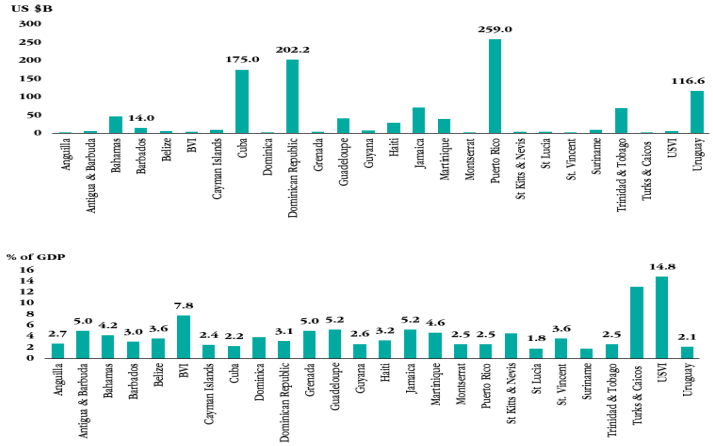
Hurricane Dorian, a category 5 hurricane, was one of the strongest hurricanes to impact any Caribbean country, reaching maximum wind speeds of 185 miles per hour. This hurricane resulted in US$3.4 billion in damages to The Bahamas in 2019, worsening the country's fiscal balance and increasing debt levels (Economic Commission for Latin America and the Caribbean 2022). In 2017, Hurricane Maria ravaged Dominica. The economic losses from this hurricane were estimated at 226 percent of GDP, compounding the US $483 million economic losses from Tropical Storm Erika in 2015 (International Monetary Fund, 2021).

The Caribbean has experienced a significant number of natural disasters over the years. **Between 2000 and 2023, there were 793 climatic events impacting the region**, with tropical storms and floods accounting for 50.6 percent and 31.9 percent of the total, respectively (Figure 1A). Tropical storms accounted for US$181.3 billion of the total estimated damages, followed by earthquakes and floods, which represented the majority of the remainder (Figure 1B). For the same period, Barbados registered 14 natural disasters, where storms represented 71.4 percent of the total (Figure 1C). For Barbados, total economic losses amounted to US$ 0.3 billion (Figure 1D).

Figure 1: Types and Estimated Cost of Natural Disasters Within the Caribbean



Based on their level of vulnerability, many countries within the region, including Barbados, are heavily exposed to the external risks that natural disasters pose. In 2020, the World Bank published natural disaster risk profiles for Barbados and many other countries across the Caribbean. The total projected economic losses to capital was US$1,127.4 billion if a natural disaster impacted each Caribbean economy (Figure 2). **For Barbados, the total macroeconomic loss to the capital stock from a natural disaster was an estimated US$14 billion** (Figure 2). Due to the diverse exposure of countries in the region, natural disasters can cause highly varied levels of economic losses (Figure 2).



Although climate change can negatively impact an economy, it also has the potential to impact the stability of the financial system. According to Battiston, Dafermos and Monasterolo (2021), the ever-increasing threats posed by natural disasters and other climate-related events have pushed central banks and other financial regulators across the globe to assess climate risks to economies.

Within the Caribbean, some central banks have started to investigate the climate-related risks to financial stability within their economies. The Central Bank of Trinidad and Tobago (CBTT) has sought to address the data gaps that exists in terms of monitoring climate risks related to financial stability (Central Bank of Trinidad and Tobago, 2023). The data gap will be strengthened through the collection of climate-related data, and the CBTT will include climate-related policies in their macroeconomic framework over the medium-term.

The Bank of Jamaica (BOJ) outlined plans to integrate climate-related financial risks into their financial stability framework, which will help with the assessment of these risks among supervised institutions (Bank of Jamaica, 2023). In the future, the BOJ wants to include climate risks in its supervisory framework and macroeconomic policy decisions.

For Caribbean islands, physical risks are the main type of climate-related financial risks. Physical risks are defined as the damage to infrastructure and the associated financial losses caused by events such as tropical storms, hurricanes, floods, extreme heat, and wildfires (Kirova, 2021). This type of risk can be either acute or chronic in nature, but still has an impact on the economy in either scenario. Physical risks from climate change can translate into some of the following effects on financial markets: "decline in real estate prices, increase in risk premiums, increase in non-performing loans (NPLs), revenue losses, reduced profits, contraction in the prices within the equity and bond markets, and carbon asset write-offs." (Rudebusch, 2021; Oesterreichische Nationalbank, 2019). Therefore, the impact on the financial sector is dependent on the severity of the damage caused, especially in terms of the capital stock.

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