

The background features a world map composed of white dots on a blue field. A horizontal teal banner with a slight gradient is positioned across the middle of the slide, containing the main title in white serif font.

# Building Resilience in Countries Vulnerable to Natural Disasters

**Krishna Srinivasan**

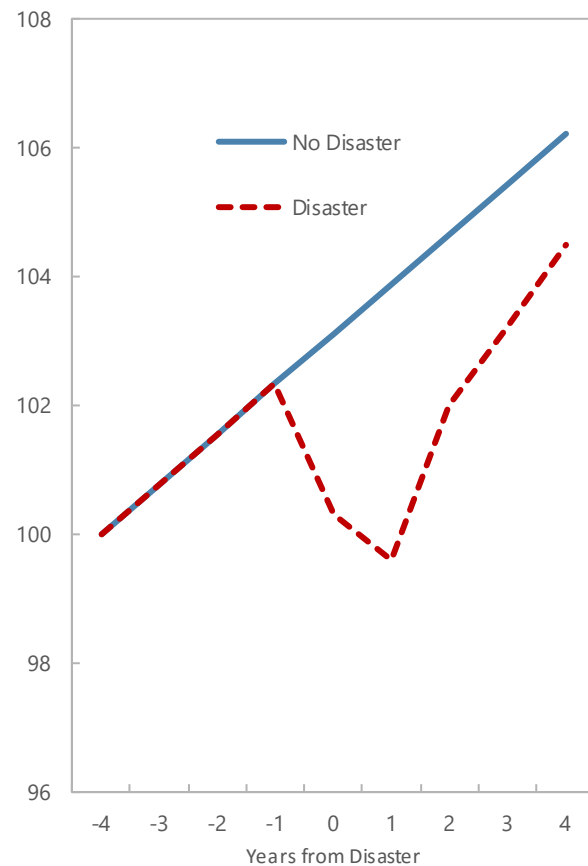
**International Monetary Fund**

**January 2019**

# Natural Disasters Have Large Economic and Fiscal Costs

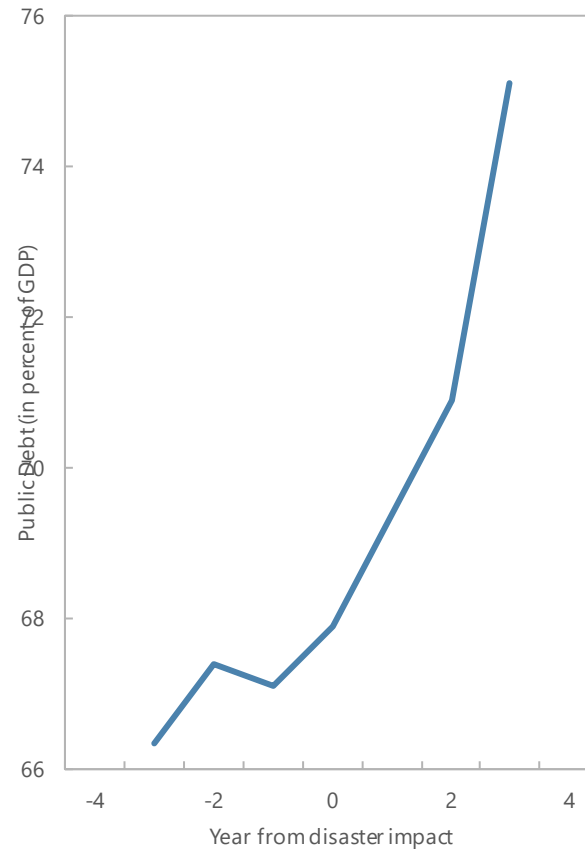
## Small States Most Vulnerable

**Impact of Large Disasters on Per Capita GDP**  
(index)



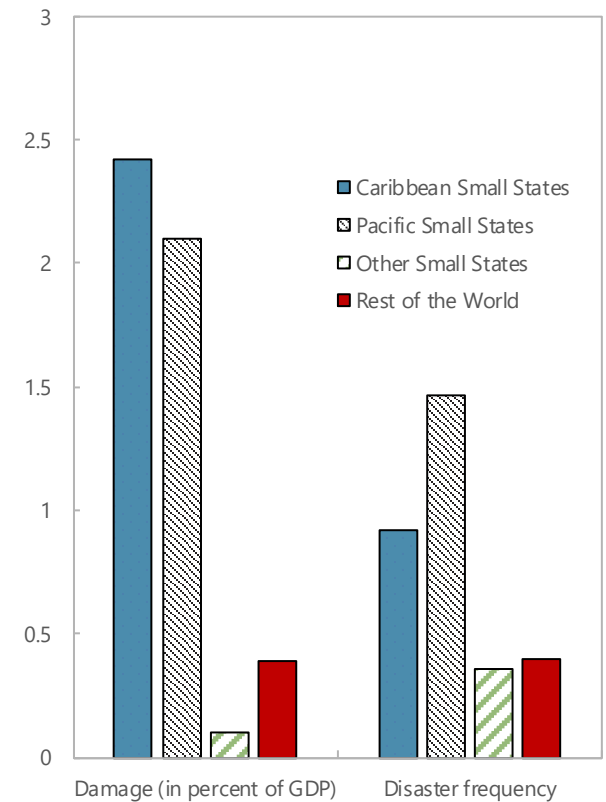
Source: IMF staff estimates based on EM-DAT. Note: Based on average growth of GDP per capita around 15 episodes in developing countries between 1991 to 2016 for which data is available.

**Public Debt around Large Disasters**  
(in percent of GDP, for disasters greater than 20 percent of GDP)



Source: IMF staff estimates based on EM-DAT. Note: Average public debt for 11 episodes in developing countries between 1992 to 2016 for which data is available.

**Annual Average Effects of Natural Disasters, 1990-2014**



Source: IMF staff estimates based on EM-DAT. Note: Frequency is the average of all natural disaster incidents during 1990-2014 per 10,000 Square Kilometers.

# Underinvestment in (Financial) Resilience

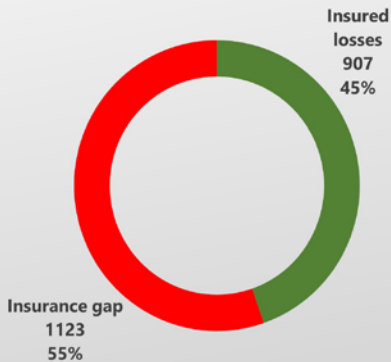
## There are Good Reasons

Countries are underinsured

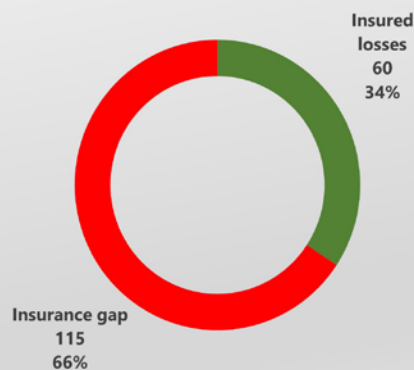
As they seek to balance the macro costs and benefits

### Limited Risk Transfer Through Insurance: Large Share of Uninsured Losses (Meteorological Loss Events)

**Worldwide**  
(US\$ 2,030 billion, 1980-2017)

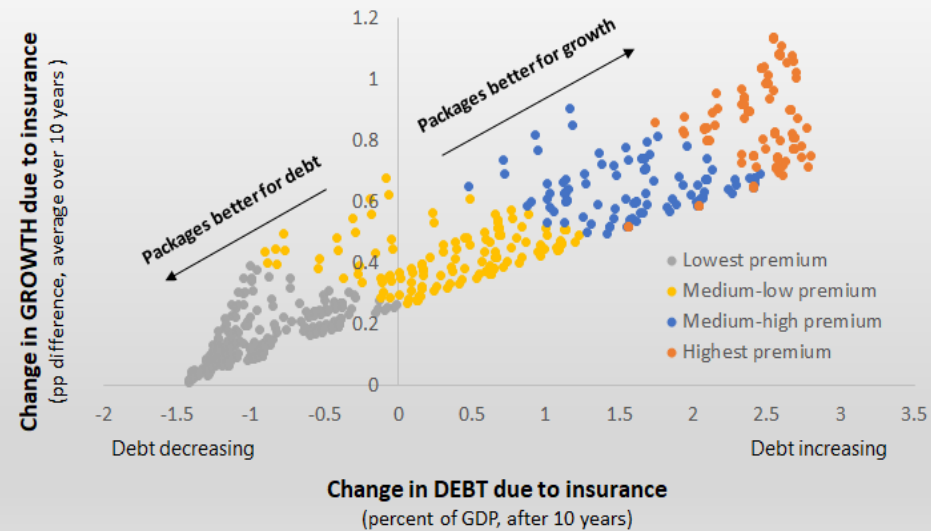


**Caribbean**  
(US\$ 175 billion, 1980-2017)



Source: Munich RE; Note: Meteorological loss events include tropical cyclones extratropical storms, convective storms, and local storms

### CHOOSING OPTIMAL RISK TRANSFER: THE TRADEOFFS (each dot=insurance package with different risk transfer<sup>1/</sup>)



<sup>1/</sup> Each dot shows the average, for a given insurance package, of the difference in debt and growth outcomes between insurance and no insurance scenarios over 1,000 simulations.

# Building Resilience—Three Complementary Pillars

## PILLAR I

### **1. Structural or physical resilience**

2.

- 3.- Resilient infrastructure
- 4.- Appropriate building codes
- 5.- Proper land use/zoning rules
- 6.- Early warning systems

## PILLAR II

### **Financial resilience**

- Fiscal and reserve buffers, including dedicated saving funds
- Contingency loans
- Insurance of public and private assets
- Grant/concessional lending
- State contingent debt instruments

## PILLAR III

### **Ex-post resilience**

- Effective systems for emergency response, reconstruction and smooth recovery after a disaster
- shock-responsive safety net programs

# A Framework for Coordinated Action

- Case for coordination (several stakeholders and fragmented approach).
- Assessment of vulnerabilities and costing of resilience building needs.
- Disaster Resilience Strategy (DRS)-- costed and integrated resilience building plan within a sound macroeconomic framework
- Consensus across all stakeholders in support of the planned course of actions
- Donor and IFI coordination to fill financing gaps

## **Fund continues to work on:**

- Integrating cost-benefits tradeoffs within a sustainable macro framework (insurance, investment)—e.g. ECCU
- Creating fiscal room for resilience investment and insurance
- Innovative state-contingent debt instruments for financial protection (hurricane clauses, insurance for debt service)
- Structural reforms to facilitate management of fiscal risks (capacity building)

The background features a world map composed of white dots on a blue field. A semi-transparent teal horizontal band is centered across the map. Within this band, there is a faint, light-colored line graph showing an upward trend. The text "Thank you" is written in a white, serif font, centered within the teal band. Faint, semi-transparent text "annualized percent change" is visible in the background behind the teal band.

Thank you