Financial Risk Management View of Disaster Risks

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Disclaimer

The views expressed in this presentation are those of the presenter and do not necessarily represent the views of the IMF, its Executive Board, or IMF Management
Financial Risk Management Approach: Catastrophe (CAT) Risk Models

Probability distribution of possible losses and risk tolerance determines insurance premium and buffers

Riverine Flooding

Source: CoreLogic
Challenge: Loss Distribution
How much could we lose once in 10, 20, 50, 100, 250, 500 years?

COVID-19 Shock—”never happened before” within the WEO data span

“Tail” disaster risk (extreme weather events)—hard to gauge

- (Recorded) historical data may not be enough (e.g., COVID)
- Cat risk models—use simulations to consider “never happened before” events
- Climate change—shifts the distribution, depending on global temperature scenarios
- “Compound risk”—multiple disasters

Higher frequency events also important

- Increase long-term economic volatility
- Reduce long-term productivity in certain sectors

Distribution of Annual Global Growth: 1980-2020
(Number of observations for a given range of growth rate)

IMF: World Economic Outlook

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Uncertainty increases over time, but the main drivers of uncertainty change over time. Not that uncertainties related to how the economy responds are in addition
How to manage the risks?

**Insurance**
- Disaster insurance (private, public)
- Global re-insurance
- Post-disaster financing from IFIs

**Mitigation**
- Strengthen infrastructures / health care systems
- Sector-specific measures (e.g., better irrigation)

**Adaptation**
- Long-term economic growth plan to increase resilience
- Relocation of economic activities
- Green investment, opportunities, and recovery (from COVID)
Carbon emissions declined as COVID-19 became a global pandemic, but it was short-lived.

Financially constrained firms have weaker environmental performance—COVID could be detrimental to environmental investments—public support?

![Graph showing change in daily CO₂ emissions in 2020 compared with 2019 mean daily emissions.](chart.png)

![Bar chart showing effects of financial constraints on environmental score.](bar_chart.png)
Thank you!