Rationale for Public Intervention in Catastrophe Insurance Markets in Developing Countries

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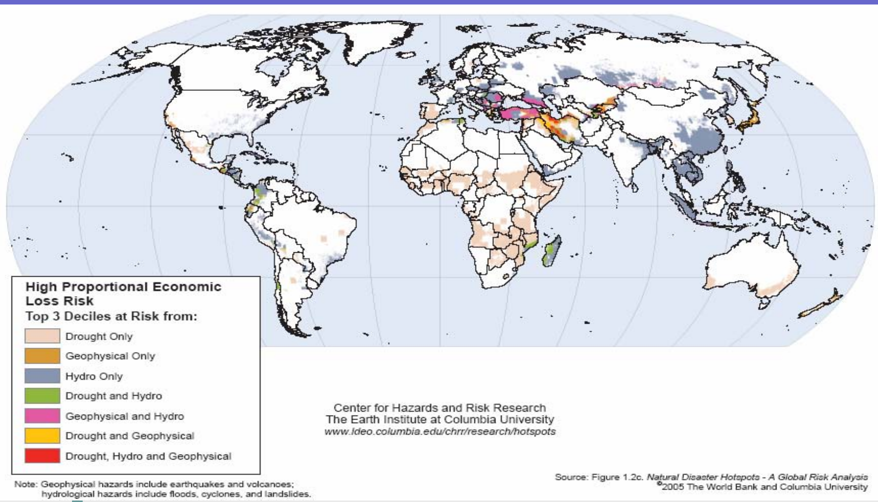
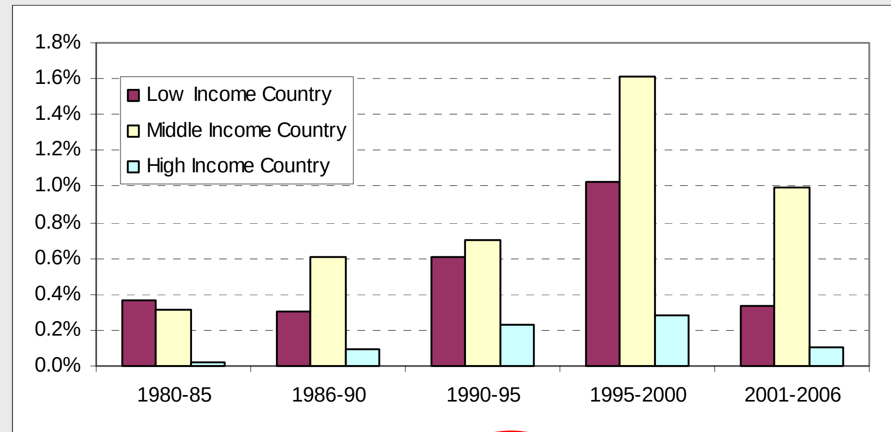
Developing countries are vulnerable to natural disasters, especially small states



Annual expected cost of natural disasters compared to GDP



year	Natural disaster	Country	Region	Damage (US$ million)	Damage/GDP[1]
2005	Hurricane Katrina	USA	North America	125,000	1.1%
1995	Earthquake	Japan	East Asia	100,000	3.2%
1998	Flood	China	East Asia	30,000	0.7%
2004	Earthquake	Japan	East Asia	28,000	0.8%
1992	Hurricane (Andrew)	USA	North America	26,500	0.4%

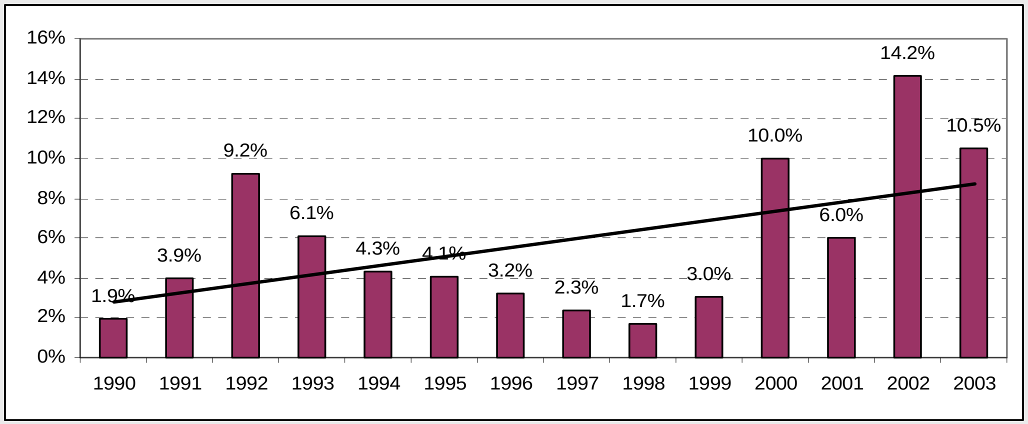
Large Economies

year	Natural disaster	Country	Region	Damage (US$ million)	Damage/GDP[1]
1988	Hurricane (Gilbert)	Saint Lucia	Caribbean	1,000	365%
1991	Cyclone (Val and Wasa)	Samoa	Oceania	278	248%
2004	Hurricane (Ivan)	Grenada	Caribbean	889	203%
1990	Cyclone (Ofa)	Samoa	Oceania	200	178%
1985	Cyclone (Eric and Nigel)	Vanuatu	Oceania	173	143%

Small Economies

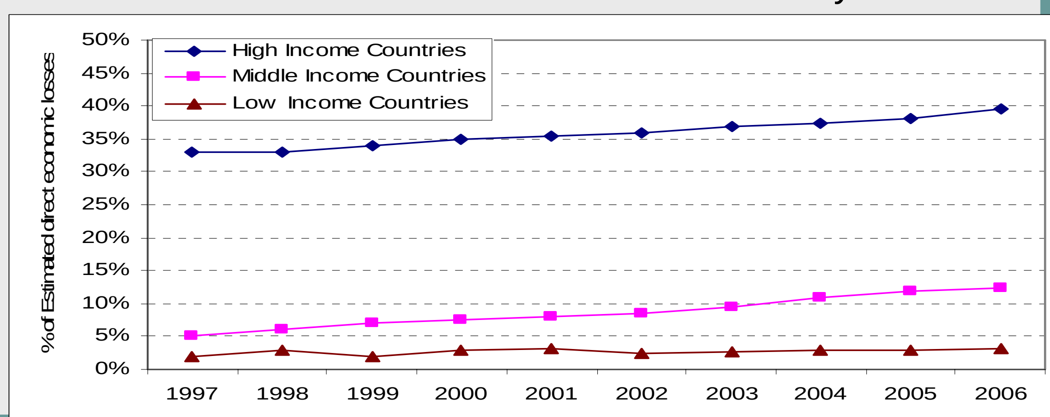
Catastrophe losses are mostly borne by governments and households in developing countries

Economic losses from natural disasters covered by donor aid



Donor aid is increasing but still insufficient

Direct Losses From Natural Disasters Covered by Insurance



Catastrophe insurance penetration is low

Towards a Proactive Disaster Risk Management Framework

Emergency Preparedness
- Emergency Response Planning
- Exercises
- Public Awareness
- Communication and Management Information Systems
- Technical Emergency Response Capacity

Institutional Capacity Building
- Decentralized Emergency Management System
- Community Participation
- Legislative Framework
- Training, Education and Knowledge Sharing

Risk Assessment

Risk Mitigation Investments
- Warning and Monitoring Systems
- Hazard Mapping and Land use mapping
- Code Refinement and Enforcement
- Hazard Specific Risk Mitigation

Catastrophe Risk Financing
- Reserve Funds
- Contingent Debt Facility
- (Parametric) Insurance
- Catastrophe Bonds
- Catastrophe Insurance Pools

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A few catastrophe insurance programs have been successfully implemented with donor support

- **Sovereign Catastrophe Risk Financing**
  - *Contingent loans*
    - World Bank CAT DDO
  - *Sovereign budget insurance*
    - Caribbean Catastrophe Risk Insurance Facility
    - Pacific Catastrophe Risk Pool (under preparation)
  - *Insurance linked securities*
    - Catastrophe bonds
    - Catastrophe swaps
  - *Weather derivatives*
    - Malawi

- **Property Catastrophe Insurance**
  - *Property catastrophe insurance programs*
    - Turkish catastrophe Insurance Pool
    - ECA Catastrophe Risk Insurance Facility
  - *Agricultural insurance programs*
    - Mongolia livestock insurance pool
    - India weather based crop insurance scheme
    - Drought insurance pilots in Malawi, Thailand, Central America, etc.

Why should donors intervene in catastrophe risk markets?

- Insurance requires sophisticated financial infrastructure
- Market imperfections can impede the emergence of competitive catastrophe insurance markets
- Catastrophe insurance market imperfections can justify intervention by the public sector, supported by the development community

Table 1 Summary of Market Imperfections in Low- and Middle-Income Countries

Market Imperfections	LIC (Challenges faced by donors)	MIC (Challenges faced by donors)	Comments
Demand Side			
Low non-life insurance penetration	H	M	Budget constraints and underdeveloped local insurance markets.
Low awareness of catastrophe risk exposure	H	M	Database and models need to be developed.
Low insurance education	H	M	Limited financial literacy.
Limited ability to pay	H	M	Health and life insurance has higher priority to buyers on limited budgets.
Weak institutional capacity	H	M	Need for institutional capacity building at national and sub-national levels.
Post-disaster assistance	H	H	Post-disaster assistance takes time to materialize and is usually earmarked to specific projects. Reliance on post-disaster assistance also creates a moral hazard problem by providing disincentives for disaster mitigation and risk management.
Low business volume	H	M	Private reinsurers do not want to invest when potential business volumes are expected to be low.
Unstable demand for catastrophe insurance	H	M	Government programs are unpredictable due to changing political leadership
Inadequate government attention to catastrophe risk management	H	M	Catastrophe risk management often is not part of the political dialogue. IFIs and donors have a major role to play in raising government and public awareness.

Table 1 Summary of Market Imperfections in Low- and Middle-Income Countries *(continued)*

Market Imperfections	LIC (Challenges faced by donors)	MIC (Challenges faced by donors)	Comments
Supply Side			
Limited access to international capital markets	H	M	Recent experience (e.g., Mexico, the Caribbean, India) supported by donors, shows that innovative solutions can facilitate access to international capital markets.
Insufficient domestic insurance capacity	H	M	Domestic insurance markets have limited financial capacity to be allocated to catastrophe insurance.
International reinsurance capacity	L	L	Capacity is increasingly available in low- and middle-income countries if programs are well structured and properly priced.
Reinsurance cycles	M	M	Less sensitive in developing countries than in high-volume developed markets when not correlated with peak risks in developed markets.
Agency & monitoring costs	H	H	Can significantly impact the cost of risk financing. Index-based products can lower these costs.
Limited technical capacity of the domestic insurance industry	H	M	Many domestic insurers lack actuarial, modeling, and financial skills to effi ciently manage catastrophe risks. There is a need for capacity building.
Regulatory impediments	M	M	Arbitrary reinsurance rules may impede the adequate supply of catastrophe insurance or inflate the premium rates.
Informational costs	H	M	They can significantly increase the commercial (re)insurance premium through the uncertainty load.
Excessive cat risk transfer pricing	M	L	Pricing is competitive when programs are well structured. It tends to decrease because of new capital inflow on reinsurance and capital markets.

Source: Authors.
Note: The challenges faced by donors are rated H (high), M (medium), and L (low).
LIC = Low-Income Countries; MIC = Middle-Income Countries.

Is Catastrophe insurance too expensive?

Technical Catastrophe Insurance Premium Decomposition

Total Cost of Capital

Portfolio cost of capital
Frictional costs
Uncertainty costs

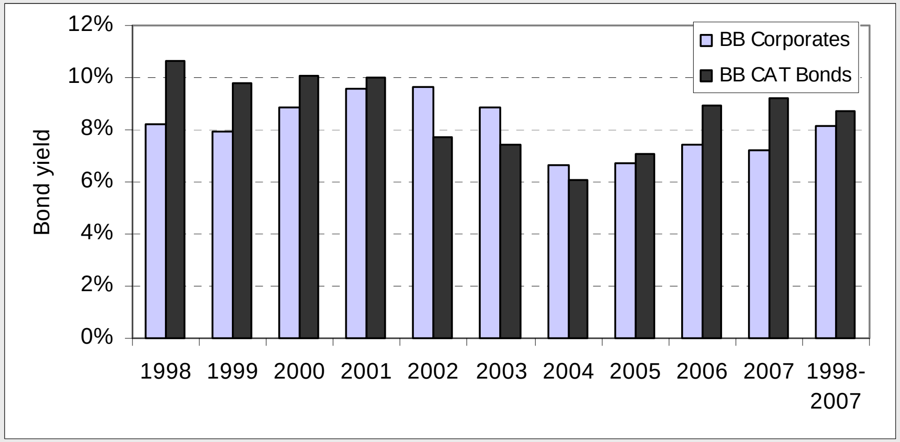
Expense Load

Start-up costs
Underwriting costs
Costs of risk transfer
Administrative costs
Loss adjustment costs
Marketing and delivery costs

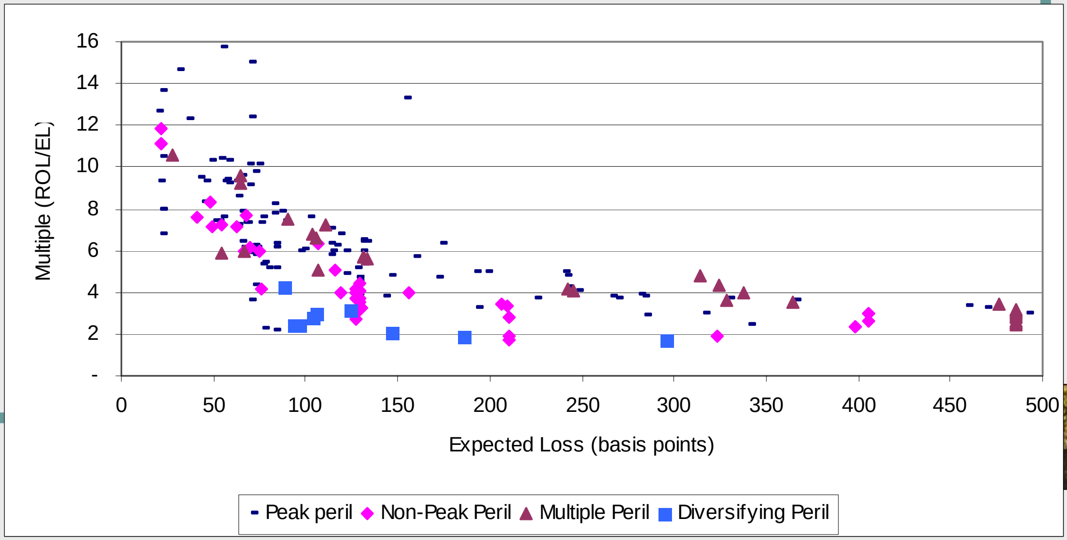
Annual Expected Loss

Expected loss frequency
Expected loss severity

Pricing of Catastrophe Bonds and Comparable Corporate Bonds



Comparison of Peak, Non-peak, Multiple, and Diversifying Peril Transactions



How should donor intervene in catastrophe risk markets?

- **Five key principles for public intervention**
  - Promote catastrophe risk financing in the dialogue on DRM with developing countries
  - Enhance competitive catastrophe risk markets
  - Use risk-based price signal to encourage catastrophe risk management
  - Limit public subsidy programs to those that minimize distortions of market price signals
  - Develop customized catastrophe risk solutions

What roles for the donor community?

- **Four complementary roles for the donor community**
  - Convening Power
  - Promoter of Public Goods
  - Provider of Technical Assistance for Innovative Catastrophe Insurance Solutions
  - Financiers

Catastrophe Risk Financing in Developing Countries provides a detailed analysis of the imperfections and inefficiencies that impede the emergence of competitive catastrophe risk markets in developing countries. The book demonstrates how donors and international financial institutions can assist governments in middle- and low-income countries in promoting effective and affordable catastrophe risk financing solutions.

The authors present guiding principles on how and when the governments, with assistance from donors and international financial institutions, should intervene in catastrophe insurance markets. They also identify key activities to be undertaken by donors and institutions that would allow middle- and low-income countries to develop competitive and cost-effective catastrophe risk financing strategies at both the macro (government) and micro (household) levels. These principles and activities are expected to inform good practices and ensure desirable results in catastrophe insurance projects.

Catastrophe Risk Financing in Developing Countries offers valuable advice and guidelines to policy makers and insurance practitioners involved in the development of catastrophe insurance programs in developing countries.

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Catastrophe Risk Financing in Developing Countries

PRINCIPLES FOR PUBLIC INTERVENTION

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