Promoting Innovative Sovereign Catastrophic Risk Financing Solutions

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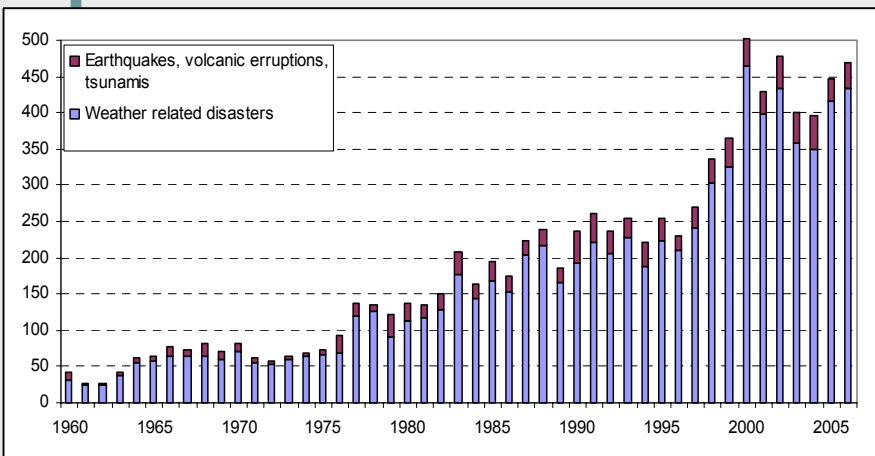Coordinator, World Bank Catastrophic Risk Insurance Working Group

UN Conference on Innovative Finance for Sustainable Development
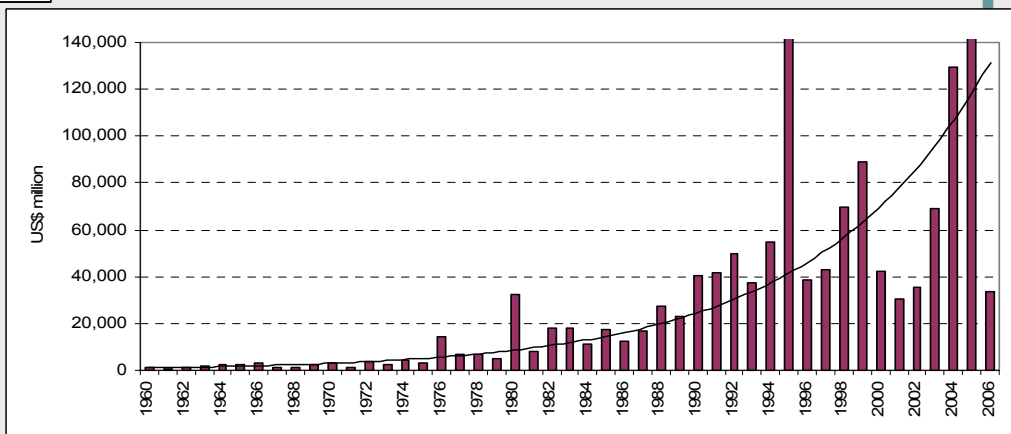October 18-19, 2007

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Natural disasters are on the rise

Number of natural disasters, 1960-2006, worldwide

Economic losses of natural disasters, 1960-2006, worldwide

Developing countries are particularly vulnerable

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

Annual average loss due to Natural disasters compared to GDP

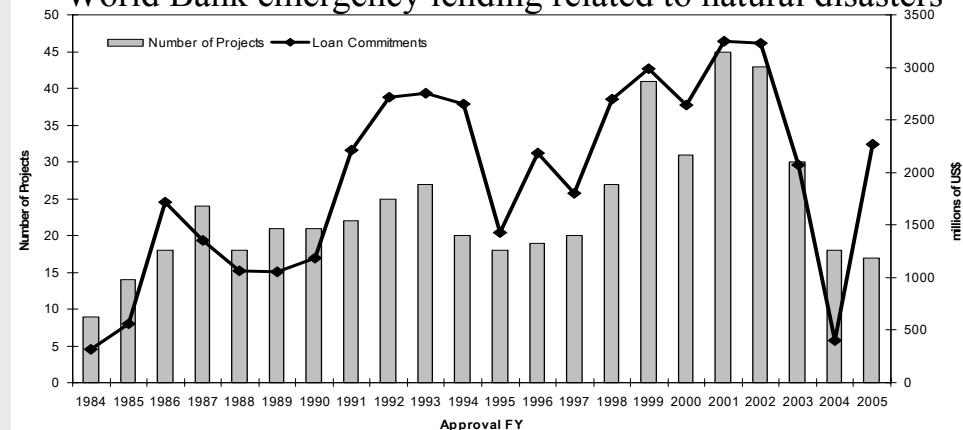- Low income
- Middle income
- High income
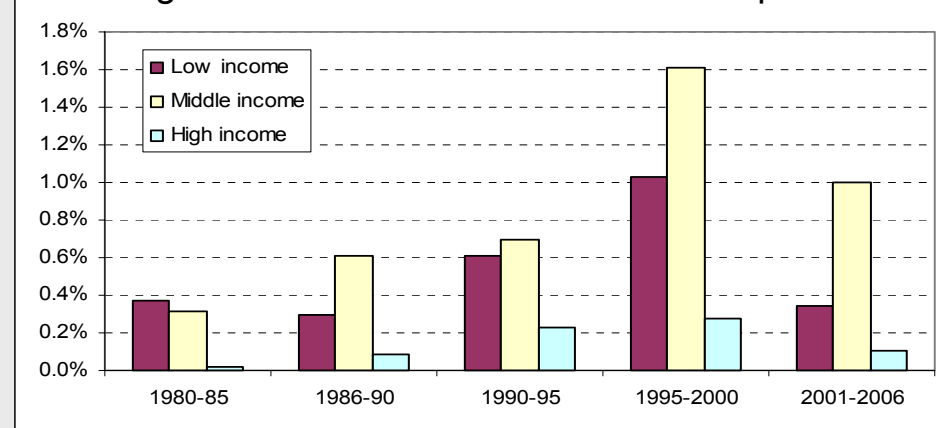
Post disaster risk financing is neither effective nor sustainable

- **Budget reallocation is limited**

- **Access to post disaster credit is slow**

- **Development lending for natural disaster is slow**

- **Donor aid for natural disaster is slow and earmarked**

Economic losses from natural disasters covered by donor aid

Year	%
1990	1.9%
1991	3.9%
1992	9.2%
1993	6.1%
1994	4.3%
1995	4.1%
1996	3.2%
1997	2.3%
1998	1.7%
1999	3.0%
2000	10.0%
2001	6.0%
2002	14.2%
2003	10.5%
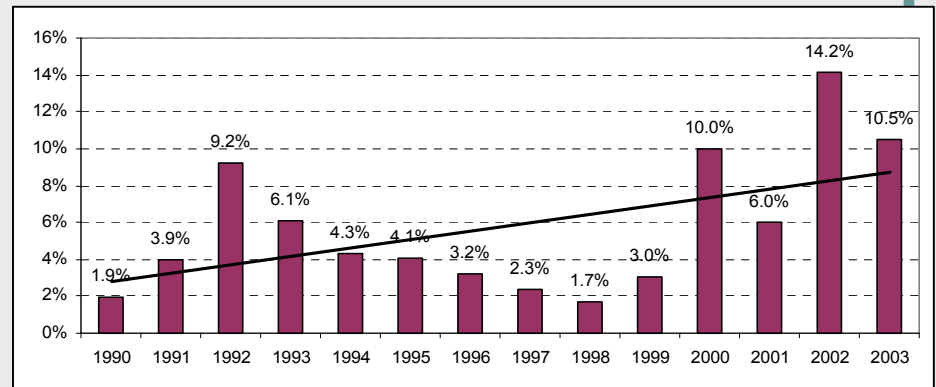
World Bank emergency lending related to natural disasters

Number of Projects — Loan Commitments

Approval FY

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Proactive Hazard Risk Management Framework promoted by the World Bank

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
- Hazard Specific Risk Mitigation (irrigation, improved seeds, drought-resistant crops, etc.)

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

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Different financial products respond to different financial needs

	Immediate hours/days	Short term 1-3 months	Medium term 3-9 months	Long term Over 9 months
Financial needs for post-disaster operations	←————————→			
Relief		←————————	————————→	
Recovery			←————————	————————→
Reconstruction				
Financing tools				
Ex post financing	Budget contingencies	Donor assis. (relief) / Budget reallocation	Domestic/ external credit	Donor assis. (reconst.) / Tax increase
Ex ante financing	Reserve fund	Parametric ins. / Cont. debt	Traditional ins.	

# Managing the government's contingent liability

- Two step-approach
  - Transfer private risks to the private markets
    - Index-based livestock insurance in Mongolia
    - *Area yield insurance in India*
    - *Weather based insurance in India*
    - Many other: Tanzania, Malawi, Senegal, Kazakhstan, Thailand, Central America, etc.
  - Sovereign budget insurance
    - *Caribbean Catastrophe Risk Insurance Facility*

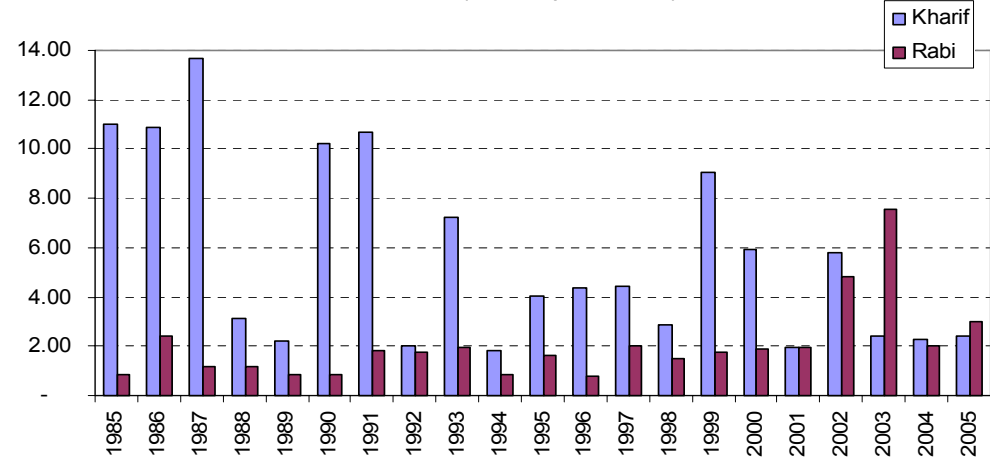# India: Market-based solutions for better risk sharing

Limited insurance penetration

NAIS penetration
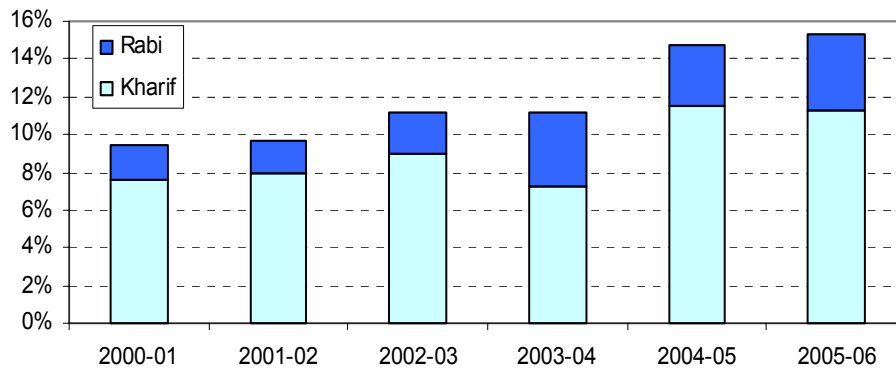
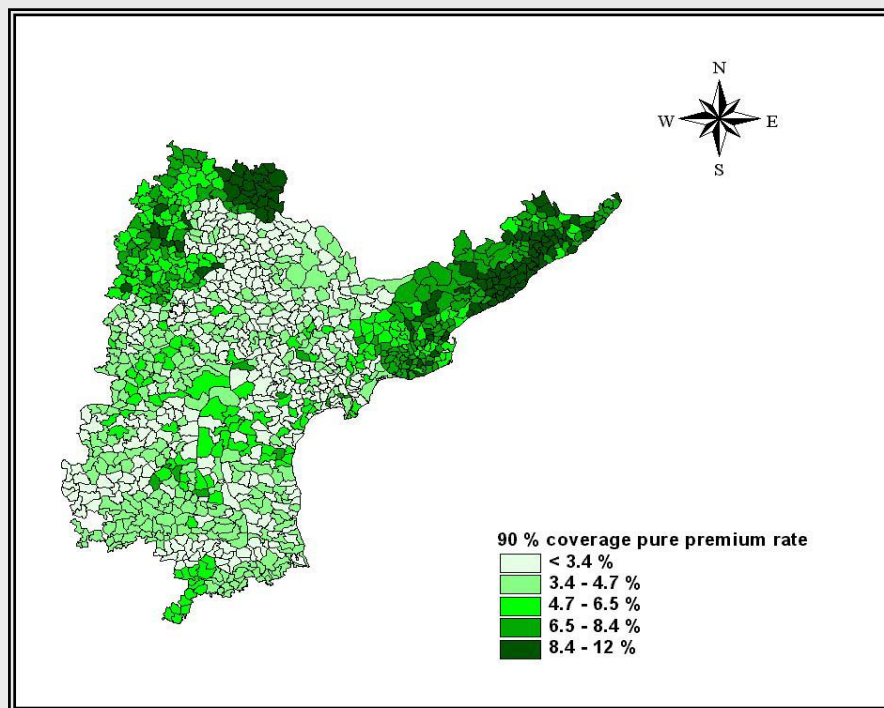
Financially unsustainable scheme

Loss ratio (claims/premiums)

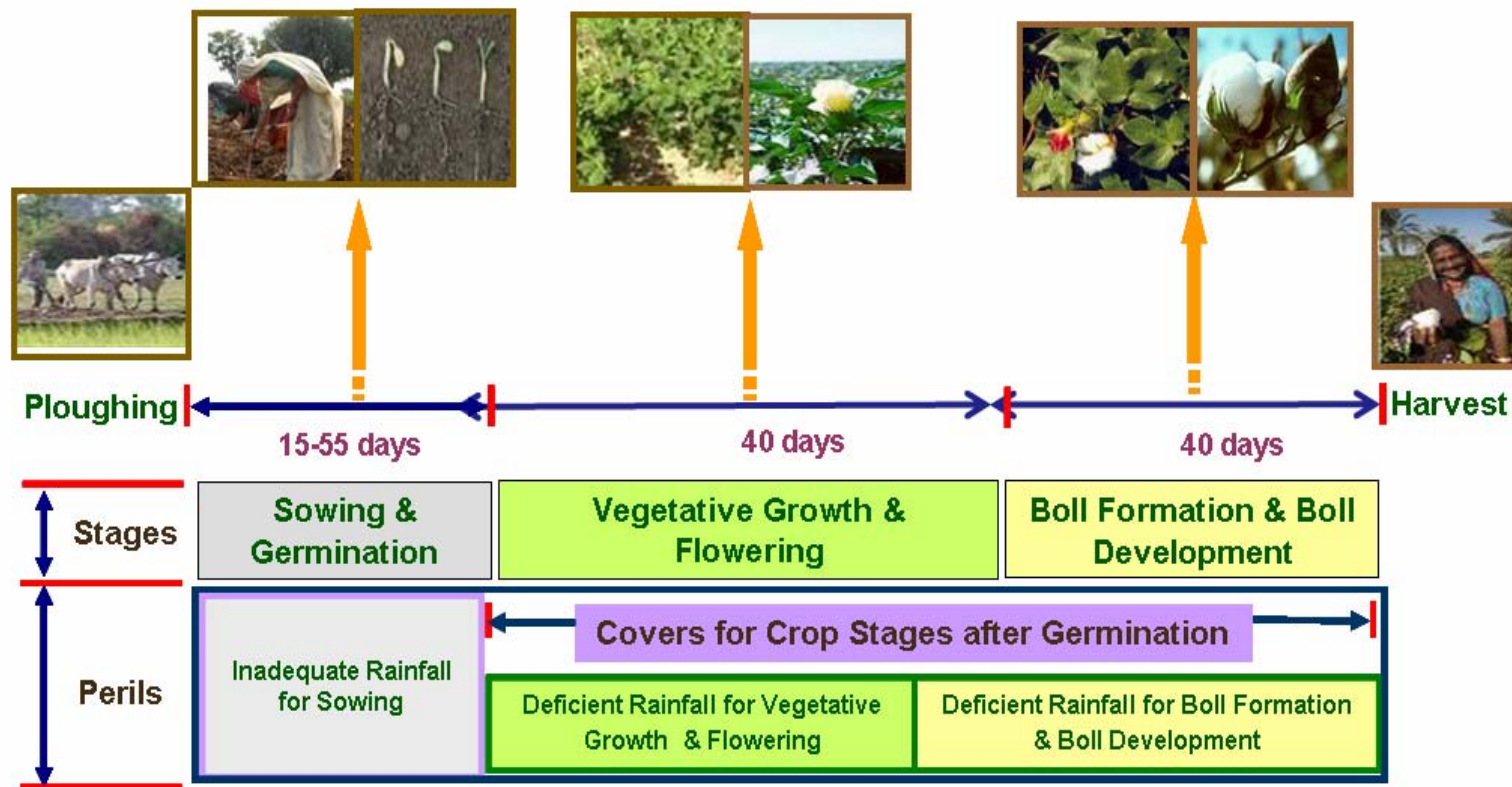# Moving toward an actuarially sound regime

- Assess the true cost of crop risk
- Benefits all key stakeholders
  - *Government*
    - Better management of its fiscal exposure
    - Shift from ex post financing to ex ante financing made possible by reliance on actuarial rates
    - Allows for more cost-effective subsidy programs
    - Better economic signaling as part of agriculture policy
  - *AICI*
    - Build adequate technical reserves
    - Facilitate access to private reinsurance
  - *Farmers*
    - More timely payments
    - More equitable premium subsidy scheme

**Pure premium rate at 90 % coverage level
Rice crop, Andhra Pradesh**

90 % coverage pure premium rate
- < 3.4 %
- 3.4 - 4.7 %
- 4.7 - 6.5 %
- 6.5 - 8.4 %
- 8.4 - 12 %

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Weather based crop insurance scheme

Coverage of Weather Risks – Cotton Mahabubnagar

Ploughing — 15-55 days — 40 days — 40 days — Harvest

Stages
Sowing & Germination	Vegetative Growth & Flowering	Boll Formation & Boll Development

Perils

Covers for Crop Stages after Germination

Inadequate Rainfall for Sowing | Deficient Rainfall for Vegetative Growth & Flowering | Deficient Rainfall for Boll Formation & Boll Development

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India: macro risk financing strategy

- Managing catastrophic risk exposure of the Central Government and State Governments

- Public crop insurer AICI operating as a private insurance company
  - Building adequate reserves
  - Accessing reinsurance capacity

The Caribbean Catastrophe Risk Insurance Facility

A pooling mechanism that allows Caribbean governments to access liquidity at short notice in case of a catastrophe (hurricane and earthquake)

- <u>Quick disbursing</u> in case of a major earthquake or hurricane;

- <u>Transparent rules</u> – parametric instrument;

- <u>No cross subsidization</u> – contribution are based on each island's specific risk;

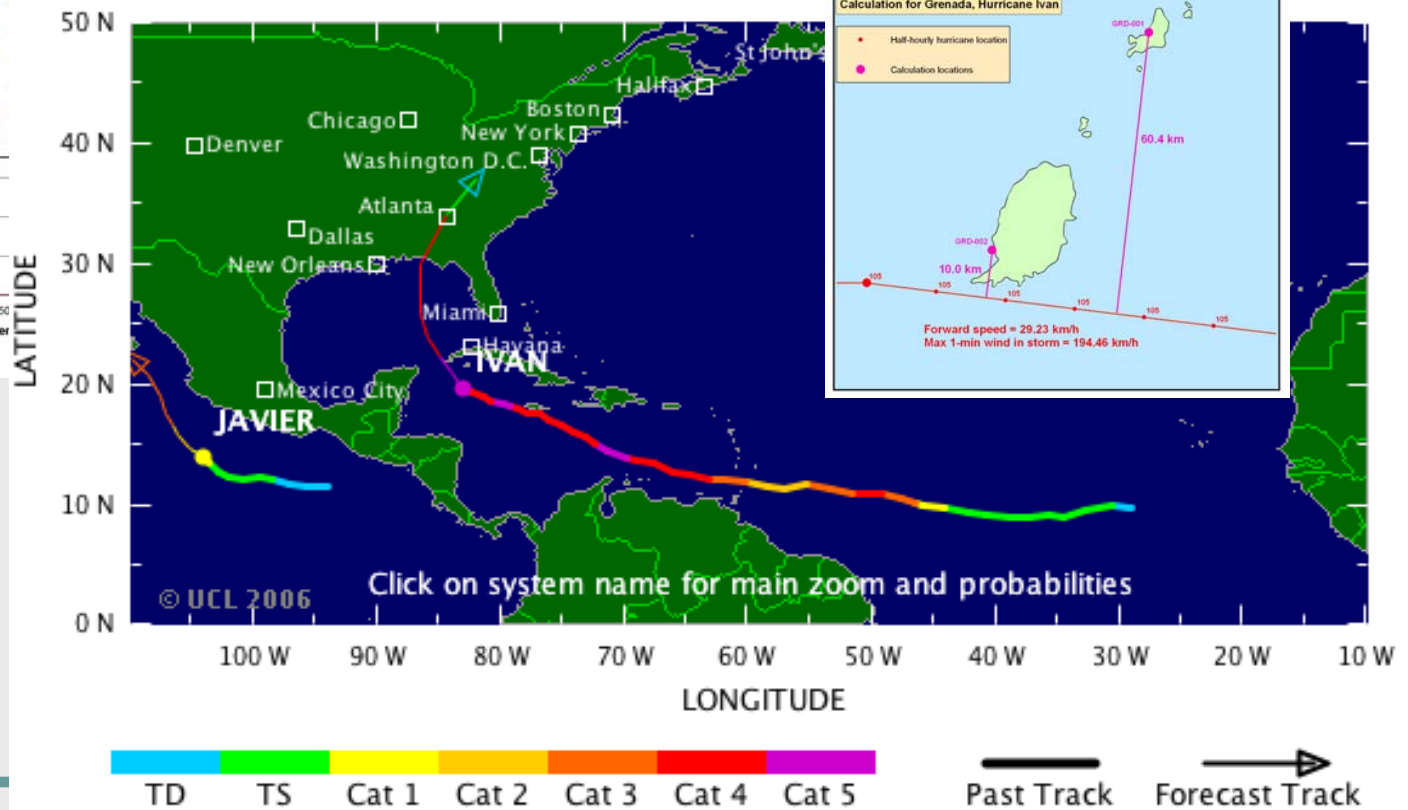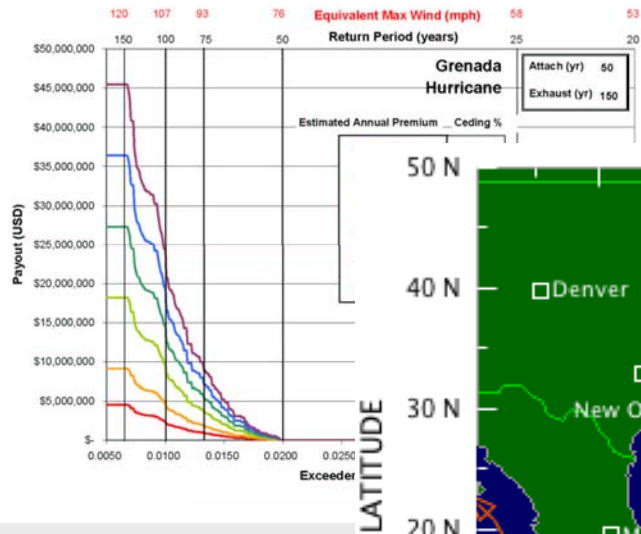- <u>Lowest possible cost</u> – leveraging the capacity of the financial markets.

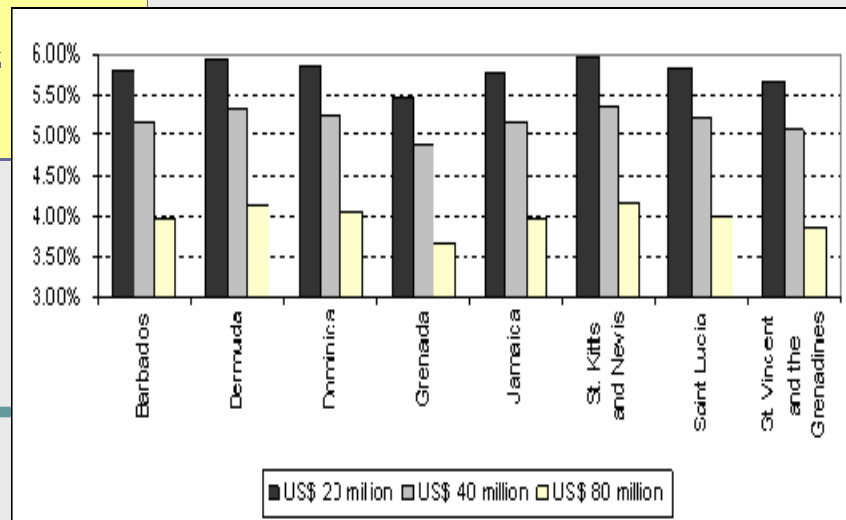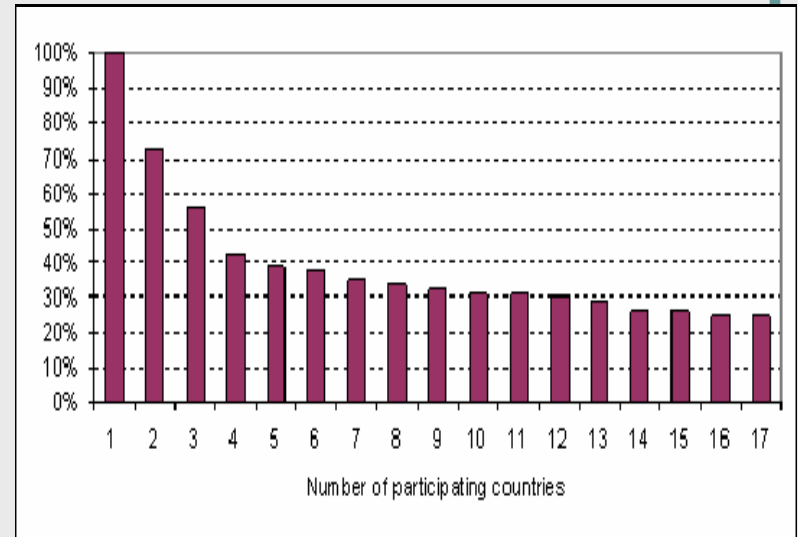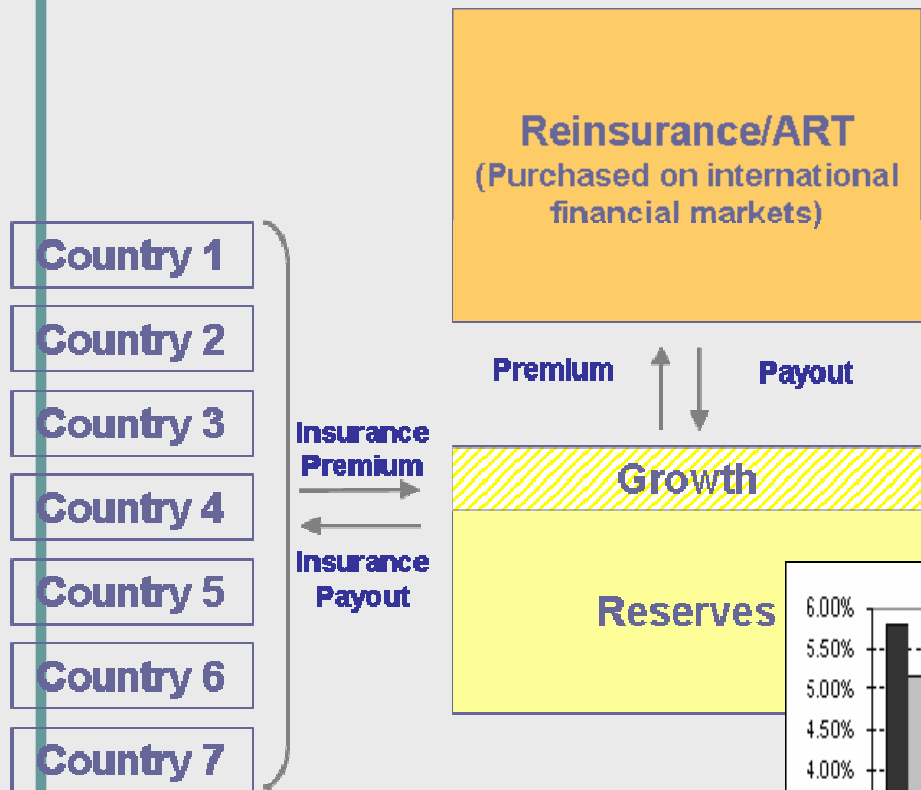# Necessary conditions for the emergence and long-term viability

➢ Simple instrument
  ➢ Tailored to a specific need
  ➢ Good financial engineering

➢ Political economy
  ➢ One off donor intervention
  ➢ No cross subsidization
  ➢ Peer pressure among countries
  ➢ Local ownership
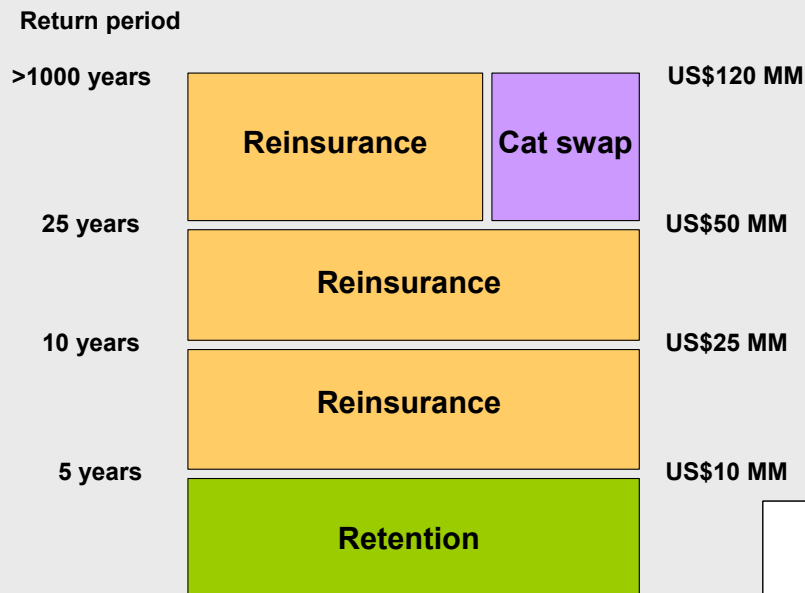 ➢ Win-Win-Win deal between clients, donors and reinsurers

Parametric Insurance

Catastrophe Insurance Pool

Reinsurance/ART
(Purchased on international financial markets)

Country 1
Country 2
Country 3
Country 4
Country 5
Country 6
Country 7

Insurance Premium

Insurance Payout

Premium

Payout

Growth

Reserves

Number of participating countries

US$ 20 million US$ 40 million US$ 80 million

CCRIF risk financing capacity

Return period

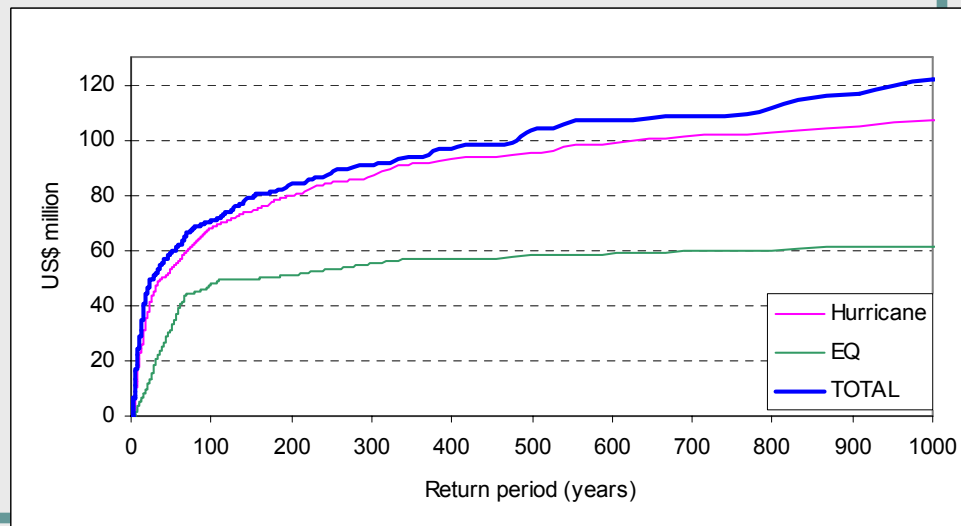|			
>1000 years	Reinsurance	Cat swap	**US$120 MM**
25 years	Reinsurance		**US$50 MM**
10 years	Reinsurance		**US$25 MM**
5 years	Retention		**US$10 MM**

The CCRIF can sustain a 1-in-1000 year adverse event

2007-08 CCRIF Portfolio - Loss Exceedance Curve

Conclusion

- Developing countries are more vulnerable to natural disasters than developed countries
- Post-disaster risk financing is no longer sustainable
- Moving towards ex ante country catastrophic risk financing
  - Effective transfer of private risks to the private markets
  - Financing of public assets
  - Budget risk financing
- Innovative financial solutions, including index-based products and risk transfer/pooling vehicles can help developing countries to manage catastrophic risks more efficiently

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