

GFDRR sponsored BBL, Washington DC

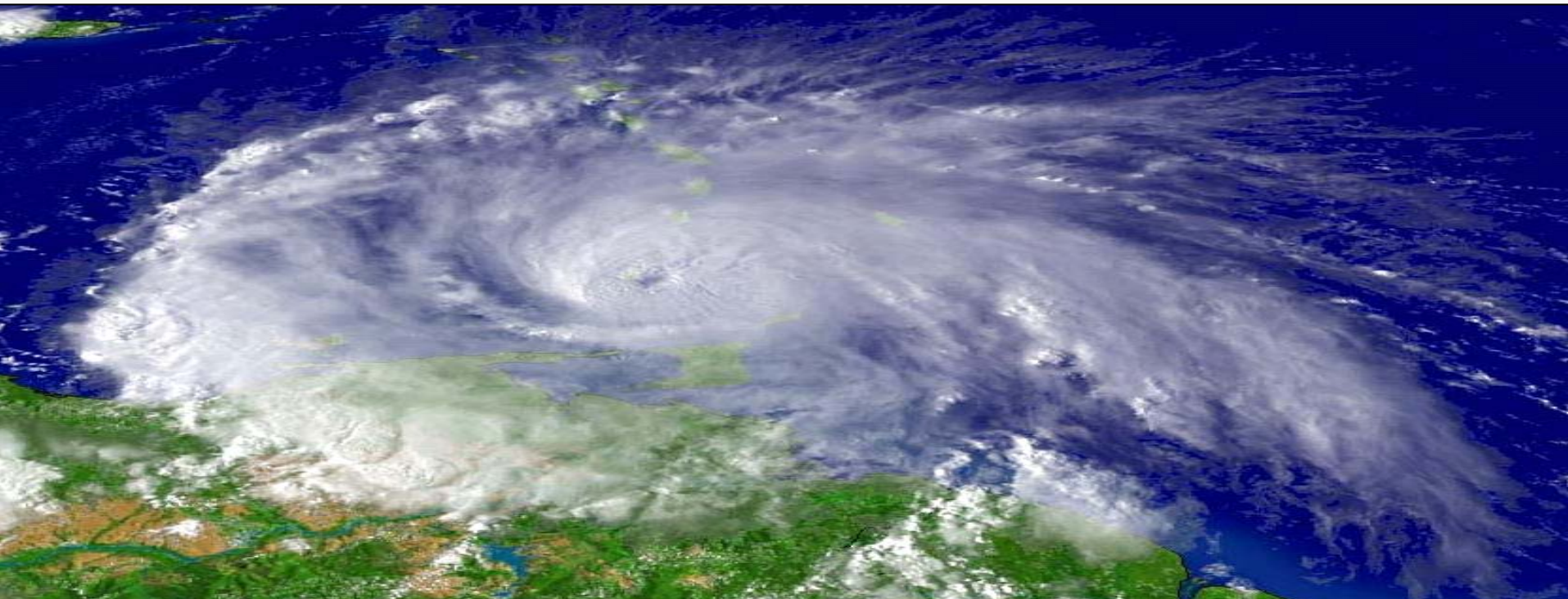


World Bank Group

## **An Overview of Disaster Risk Financing Instruments in the World Bank Operations**

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## Contents

- Disaster risk financing projects in the Bank operations
- Risk transfer solutions for governments
- Risk transfer solutions for homeowners and SMEs
- Conclusions



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## Overview of ex-ante disaster risk financing WBG projects

- Since 2000, WBG originated 40 catastrophe risk financing operations.
- These operations provide coverage to more than 3.5 million households annually and 21 governments.
- Overall sum insured under these projects is close to USD 77 billion.



## Key government disaster management functions:



Source: World Bank, 2005

Government should invest in national catastrophe risk management prior to natural disasters and provide emergency response, rescue, and emergency relief services in the aftermath of natural disasters as a pure public good.

- Key levers:
  - Enforcement of construction codes,
  - land zoning regulations
  - post-disaster
  - subsidy policies
  - investments in mitigation



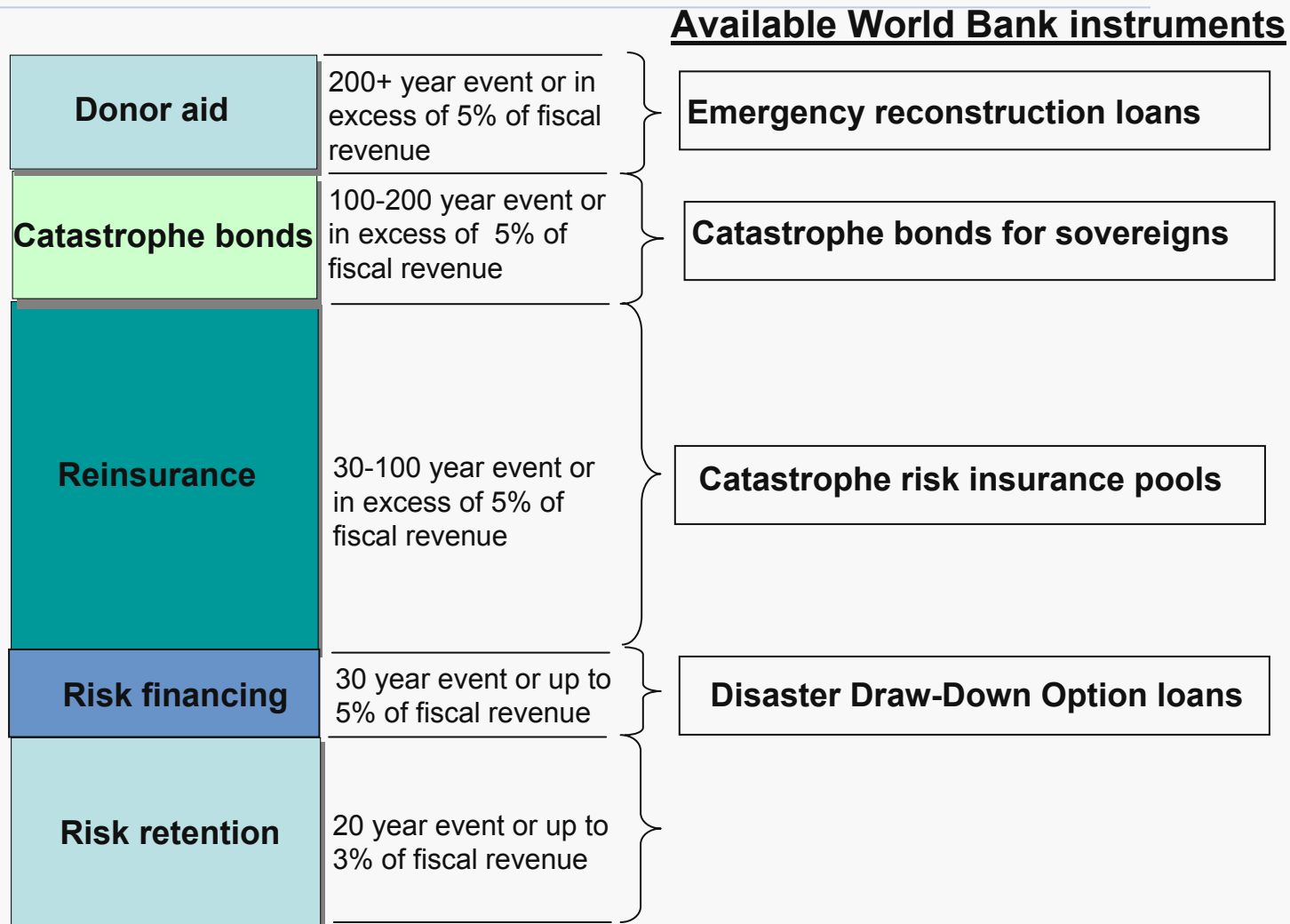
## The main types of disaster risk financing instruments?

- **Ex-post financing**
  - Emergency budgetary appropriations
  - Donor relief
  - Budget reallocation
  - Borrowings
  - Taxation
- **Ex-ante financing**
  - Reserve emergency funds
  - Contingent debt
  - Insurance
  - Insurance Linked Securities

### Key advantages of ex-ante instruments:

- Speed of disbursement
- Certainty of funding
- Reduced debt burden

## Schematic allocation of sovereign catastrophe risk by sources of risk financing and available World Bank instruments



**A country risk financing strategy comprises a combination of disaster risk financing instruments**



## Risk financing instruments for governments

<b>Type of instruments</b>	<b>Developmental issues addressed</b>
Contingent debt (CAT DDO)	Government fiscal exposure to natural disasters; budgetary shocks; immediate liquidity needs
Government insurance	As above plus government concern about increasing the existing debt burden
Insurance linked securities	As above plus government concern about increasing the existing debt burden
Government insurance pools	As above plus concerns about the cost of direct market insurance solutions



## Emerging markets need ex-ante risk financing instruments

- Developing countries are highly vulnerable to natural disasters, which caused them average losses amounting to 7.1% of GDP over 1977-2001. The social and economic toll of natural disasters is expected to rise with climate change and growing urban density.
- Only 3% of potential loss is currently insured in developing countries vs. 45% in developed countries.
- Immediate access to liquidity is critical for governments post disaster. The international community provides ex post relief, but such funds are slow to mobilize (4-12 months) and are not always efficiently used. Government borrowings and budget reallocations take time.
- Smaller nations with high debt burdens can no longer afford to self-finance disaster risk.

**Vulnerability**

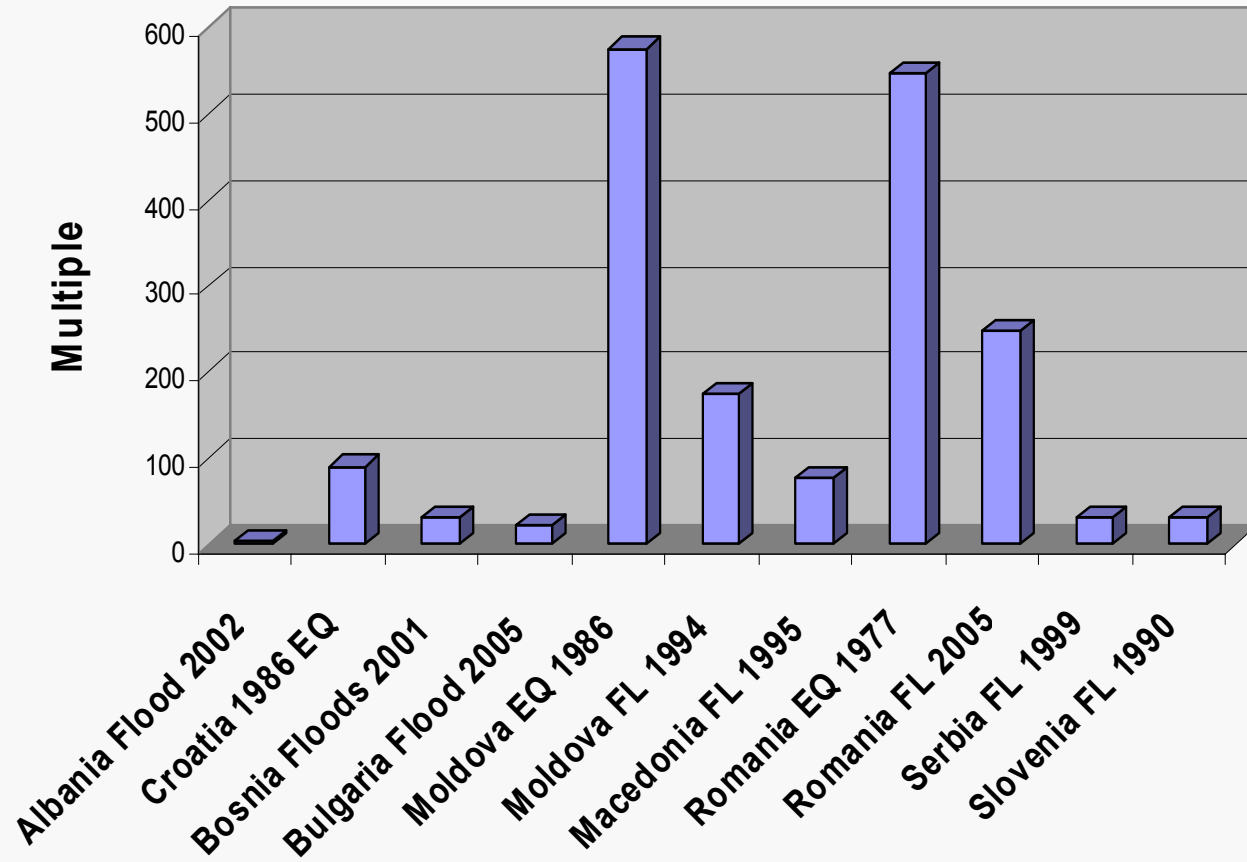
**Low Coverage**

**Liquidity**

**Debt Burden**

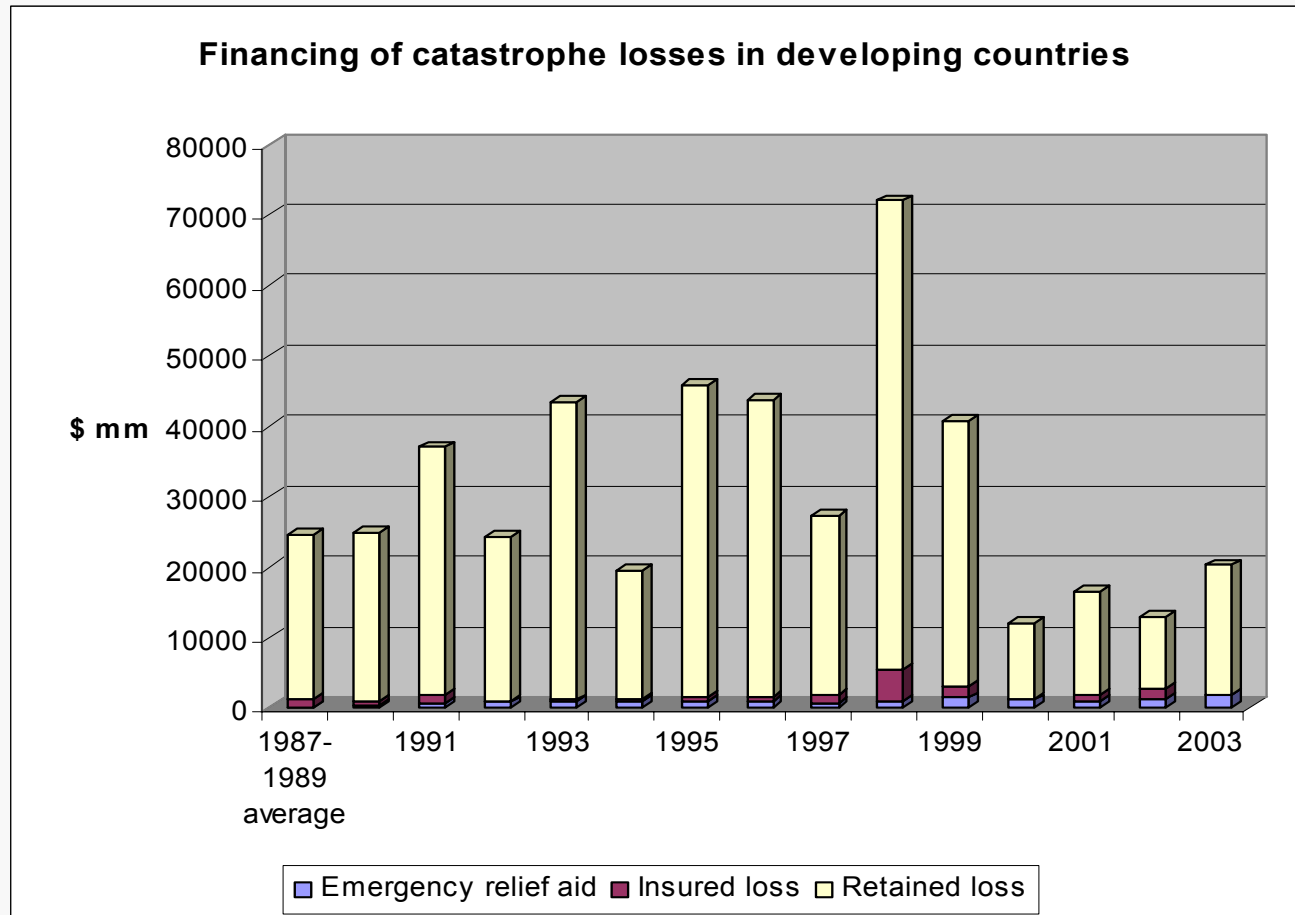
## SEE governments are fiscally unprepared to deal with catastrophic losses

Economic Loss from Cat Event/Total Emergency Funds





## Major sources of disaster finance



Sources: OECD, Munich Re

**•On average, 92,6% of economic loss was retained by developing countries.**

- Loss retention was on average \$31 bn per year
- Loss retention has been highly variable – 50% coefficient of variation



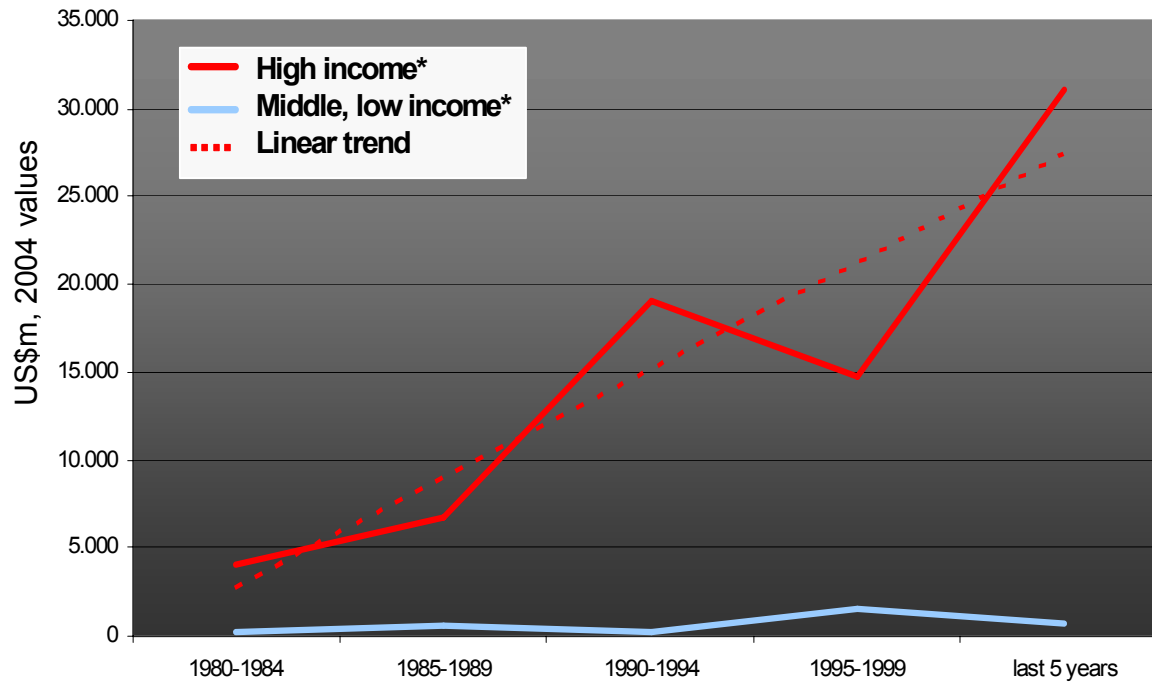
## Risk financing instruments for homeowners and SMEs

Instruments	Problems they address
Catastrophe insurance pools	<p>Low catastrophe insurance penetration in private market;</p> <p>Questionable quality of coverage;</p> <p>Inadequate risk pricing (too high or low)</p> <p>Lack of access to insurance for hhs and SMEs</p>
Innovative private insurance contracts	<p>High distribution and claim settlement costs; lack of access</p>
Insurance derivatives	<p>Long loss settlement time</p> <p>Moral hazard</p>



# Role of insurance in developed vs. developing countries

### Insured Losses (in 5-year-average)



\*Classification as per World Bank, 2004

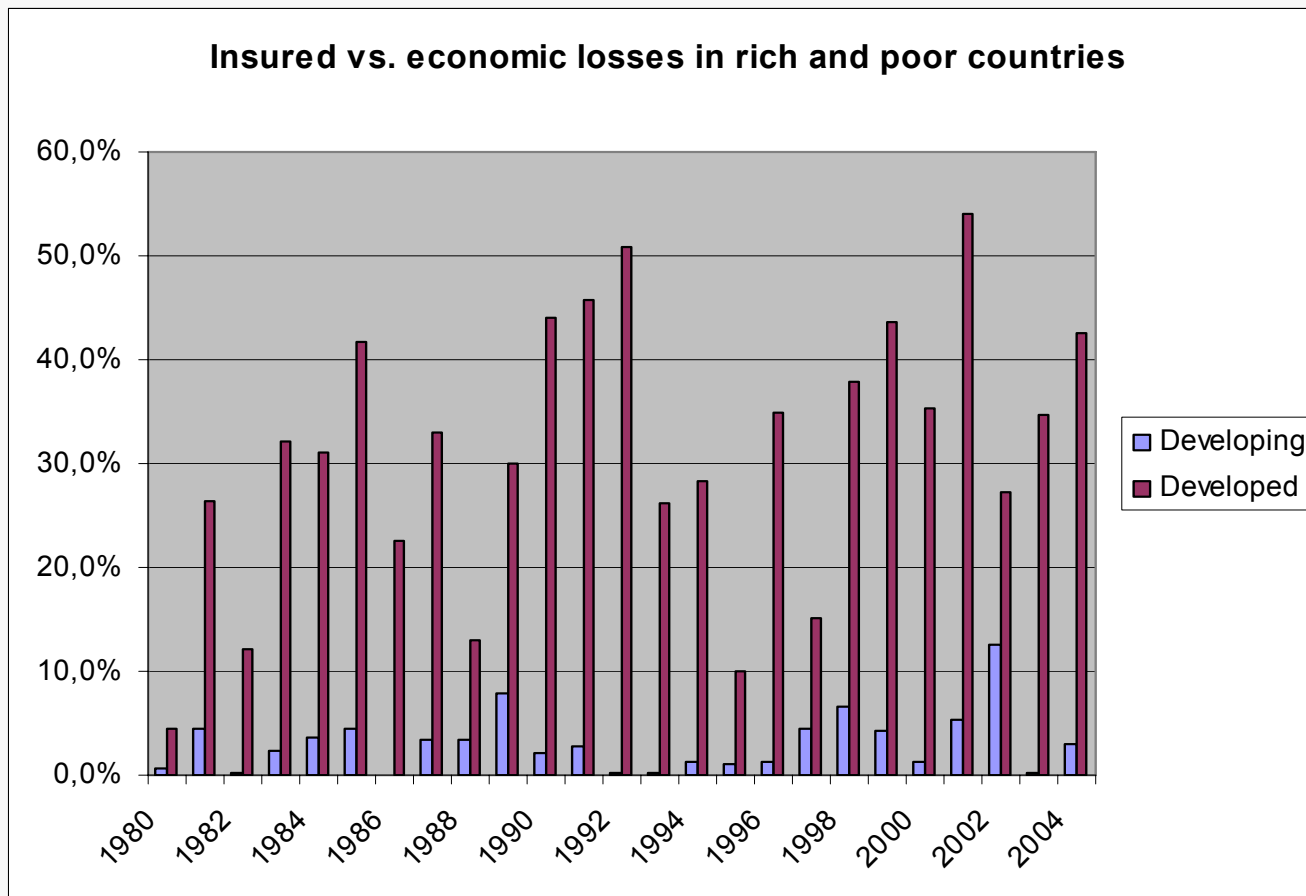
© 2005 Munich Re Geo Risks Research

GDP per capita > 9385 US\$

GDP per capita < 9385 US\$



## Insured and economic damages from natural disasters (%)



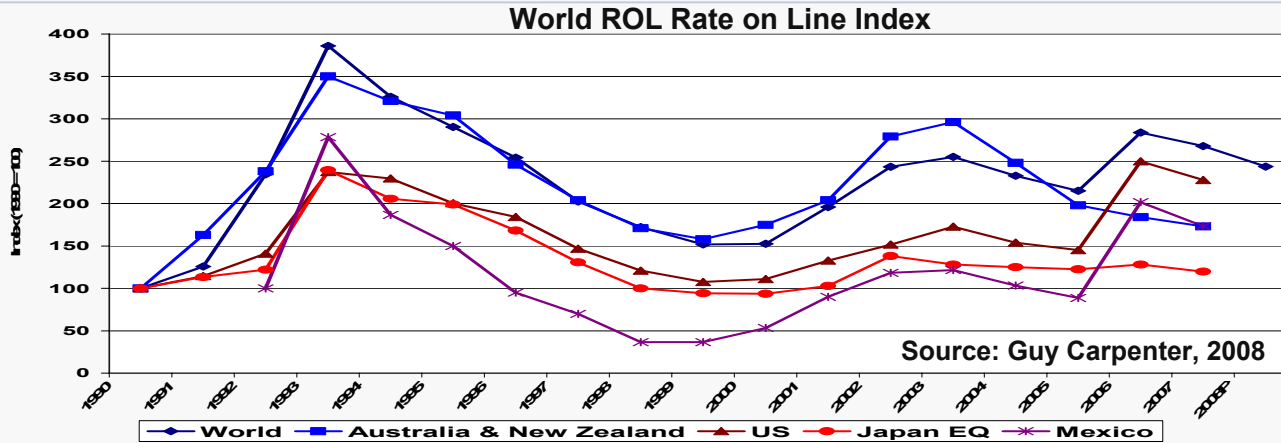
Source: Munich Re NatCatService database, 2005

- More than 40% of economic damages covered by insurance in rich countries
- Less than 3 percent covered in developing countries

**Over 25 years the share of economic loss covered by insurance in developed Markets increased considerably while remaining stagnant in poorer countries.**



# Catastrophe reinsurance rates can be rather volatile



## Insurance premium rates for hurricane insurance cover in Mexico (2004/2006)

**Premia 2004**

	Zoning (Insured Property Location)				
	Zone Alfa 1				Zones Alfa 2-3
	Yucatan Peninsula	South Pacific	Gulf of Mexico	Interior	
<b>Interior</b>					
Homes	0.35%	0.12%	0.15%	0.08%	0.02%
Buildings	0.35%	0.13%	0.15%	0.12%	0.04%
Industrial Property	0.60%	0.25%	0.30%	0.14%	0.06%

**Premia 2006**

	Zoning (Insured Property Location)				
	Zone Alfa 1				Zones Alfa 2-3
	Yucatan Peninsula	South Pacific	Gulf of Mexico	Interior	
<b>Beach Front */</b>					
Homes	0.60%	0.30%	0.30%	0.08%	0.02%
Buildings	1.40%	0.50%	0.50%	0.12%	0.04%
Industrial Property	1.60%	0.80%	0.80%	0.14%	0.06%
<b>Rest</b>					
Homes	0.35%	0.20%	0.20%	0.08%	0.02%
Buildings	0.50%	0.30%	0.30%	0.12%	0.04%
Industrial Property	0.80%	0.50%	0.50%	0.14%	0.06%

\*/ - 500 m from high tide on the beach de la línea de rompimiento de las olas en marea alta  
 - 250 m from lake or river water line

Source: Mexico MoF



## A TTL check-list for a risk financing project:

- Is a country prone to natural disasters (geo-hazards and climate related perils)?
- Are country public finances vulnerable to natural disasters?
- Do homeowners and SMEs (and farmers) have insurance coverage or have access to affordable and reliable insurance products?
- What is the status of government post-disaster subsidies?
- What government agency/ministry could be the champion for my project?
- Who can finance the preparatory feasibility work (e.g. risk assessment, survey of the insurance market and government finances, institutional capacity building)?



## Who can help a TTL to develop a disaster risk financing project?

- GCMNB –comprehensive insurance and reinsurance expertise
- Treasury – capital markets products expertise
- CRMG – agricultural risk management/weather derivatives
- IFC – capital participation in individual insurance companies
- GFDRR – a focused provider of grant assistance for disaster risk financing work at regional VPs and a venue for knowledge dissemination

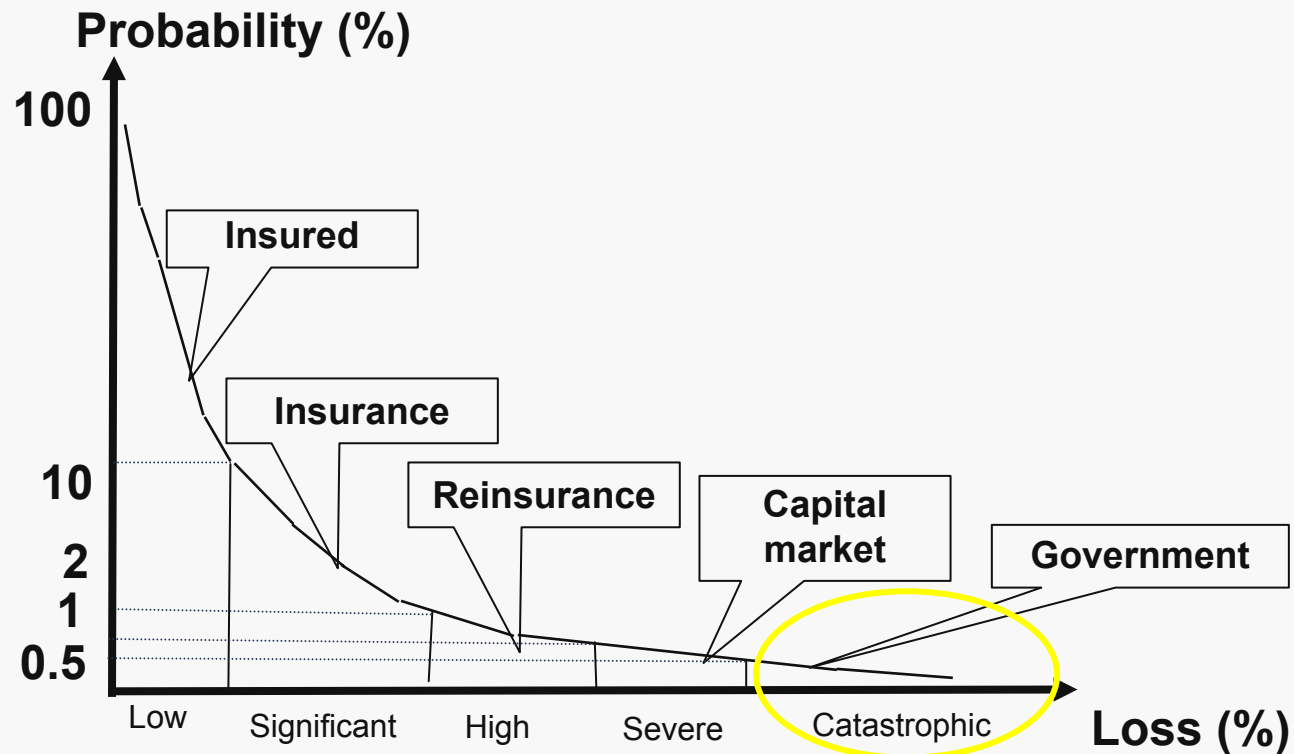


## Objectives of a typical disaster risk financing project

- Assess country's risk exposure to natural disasters, including public and private sector financial vulnerabilities.
- Enable a client country (e.g. government, homeowners, SMEs or farmer) to access international reinsurance and capital markets on attractive terms.
- Reduce government fiscal vulnerabilities to natural disasters.
- Financially protect livelihoods and property of private citizens from consequences of natural disasters.
- Provide access to immediate post-disaster liquidity (CAT DDO).
- Develop institutional capacity for catastrophe risk management within governments.
- Raise public awareness of catastrophe risk and available risk management solutions through consumer education
- Assist governments in developing an optimal disaster risk management strategy, with an element of risk financing.



## Role of government in national catastrophe risk insurance programs



Governments should be reinsurers of last resort only for highly unlikely catastrophic events with return period of 1 in 200 or higher.



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## CCRIF: Problem and Solution

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### The Problem

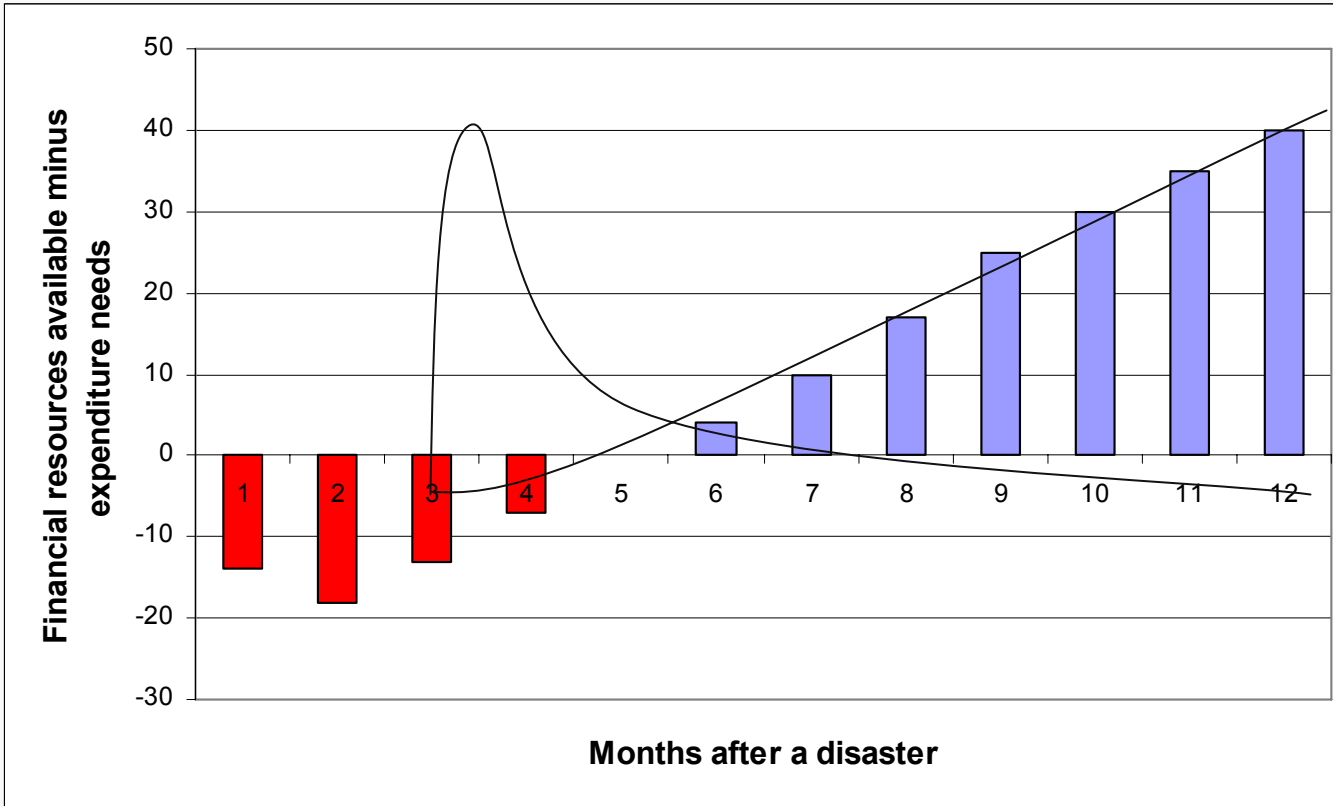
- After a catastrophe event governments need money quickly to provide emergency relief and keep services running
- But aid only arrives slowly, often months later
- Traditional insurance requires proof of loss – again causing timing delays
- Direct risk transfer to reinsurance markets can result in volatile premium rates

### The Solution

- A Facility to provide immediate **post-loss liquidity** to Caribbean
- Insurance but based upon defined events allowing **rapid payment**
- Caribbean wide to allow benefits of **diversification**
- Protected by international reinsurance and capital markets to give **stability**
- Backed by donor capital to guarantee **sustainability and stability of premium rates**



## Liquidity gaps often emerge in the early days after a disaster



Need for an instrument to provide liquidity early on until other sources of funds can be accessed

## CCRIF – Parametric Basis

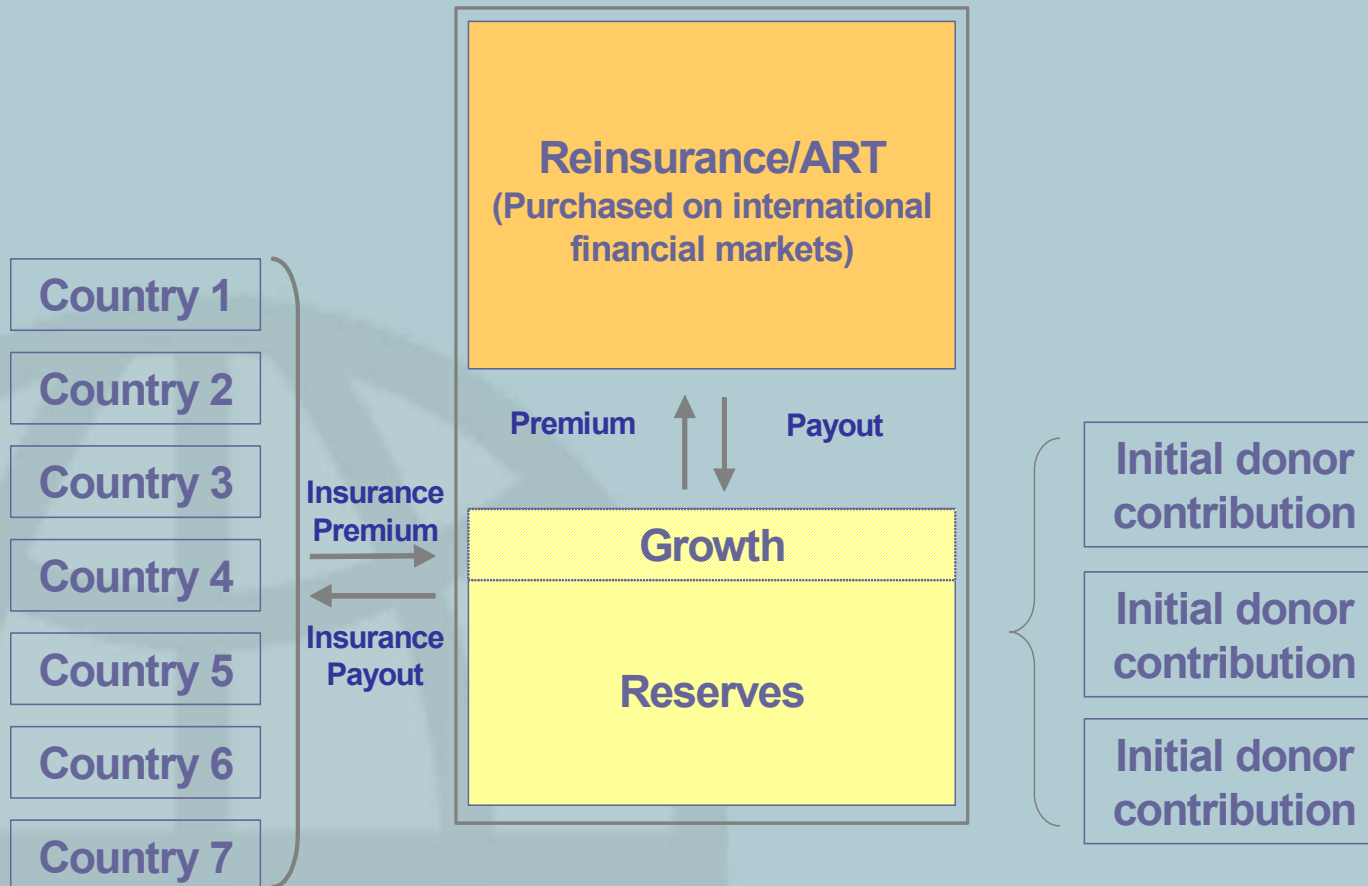


- CCRIF works on a parametric basis, that is recoveries are triggered by calculations from publicly available data
- Advantages
  - “Loss” can be determined quickly after (or during) an event
  - Therefore money can be delivered to the insured quickly
  - No need to collate loss data to prove loss, low cost
  - Insurers/capital markets avoid any moral hazard
- Disadvantages
  - Risk of a real loss without recovery (e.g. unusual event)
  - But also “risk” of recovery if no real loss



## CCRIF: Overall structure

# CCRIF: An Insurance Vehicle



- CCRIF secured \$90 million of reinsurance.
- \$20 million swap between IBRD and CCRIF
- \$47 million own reserves
- \$10 million risk retention



## CCRIF: Outcome

- CCRIF successfully created before 1/6/07 start of wind season (less than a month from presentation of final data to interested parties)
- 16 participating island states, mutual interest
- Reinsurance protection on fund exceeds 1 in 1,000 modelled loss
- Reinsurance cost only 42% of annual premium income allowing safe fund growth
- Annual Net Premium exceeds reinsurance deductible, so fund can only be wiped out if it suffers a modelled loss worse than 1 in 1000 event
- CCRIF additionally backed by up \$47m of donor funds



- Will provide immediate liquidity to fill the budget gap in the aftermath of a natural disaster
- Disbursed under pre-defined conditions such as declaration of national emergency by government
- Prerequisites:
  - Sustainable debt level
  - Satisfactory macroeconomic framework
  - Satisfactory emergency budget appropriation legislation/system in place
  - Completion of a risk assessment program and preparation of a hazard risk mitigation strategy
  - Could be used to support gov't recovery programs or gov't backed insurance

**Countries with  
CAT DDO:**

- Costa-Rica
- Columbia

**Countries  
requested CAT  
DDO:**

- Croatia
- Albania



## CAT DDO: Key Features

### **Pricing:**

- 0.25% origination fee
- Stand-by fee has been waived
- Standard IBRD pricing once disbursed

### **Maturity:**

- 3 years renewable up to 5 times
- Repayment – 30 years from disbursement

### **Disbursement automaticity:**

- IBRD has no right to suspend disbursements once approved

### **Country borrowers:**

- IBRD only (IDA not eligible)

### **Disbursement trigger:**

- Declaration of natural disaster by the government

### **Conditions:**

- Government commitment to a national risk reduction strategy

### **Main limitation:**

- Committed loan amount fully counts toward country borrowing limit

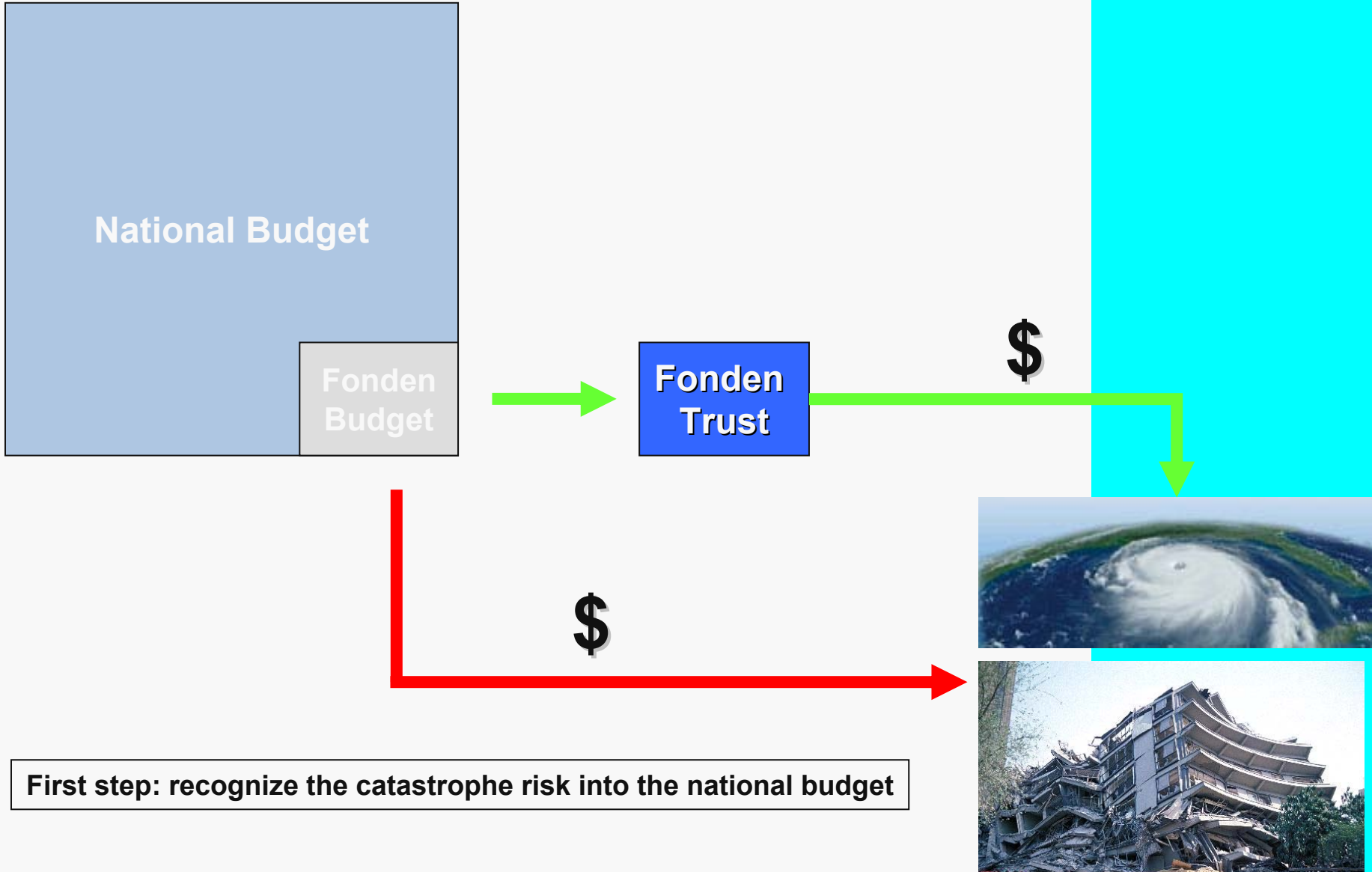
## Sovereign Catastrophe Bonds: Illustrative Summary

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<b>Insured</b>	<ul style="list-style-type: none"><li>▪ Governments of developing countries; Government-sponsored institutions</li></ul>
<b>Covered Perils</b>	<ul style="list-style-type: none"><li>▪ May include Earthquake, Hurricane, Tropical wind and other catastrophe risks</li></ul>
<b>Trigger</b>	<ul style="list-style-type: none"><li>▪ Parametric insurance, with pre-defined amounts of coverage per country/peril</li></ul>
<b>Transaction Size</b>	<ul style="list-style-type: none"><li>▪ \$ [ ] mm</li></ul>
<b>Limits of Coverage</b>	<ul style="list-style-type: none"><li>▪ The event limit will be selected based on projected post disaster fiscal liquidity needs</li></ul>
<b>Term</b>	<ul style="list-style-type: none"><li>▪ Up to three years when appropriate, to contribute toward better price stability</li></ul>
<b>Escrow services</b>	<ul style="list-style-type: none"><li>▪ Can be provided by the Bank Treasury – WBG remains among a few AAA rated credit entities</li></ul>



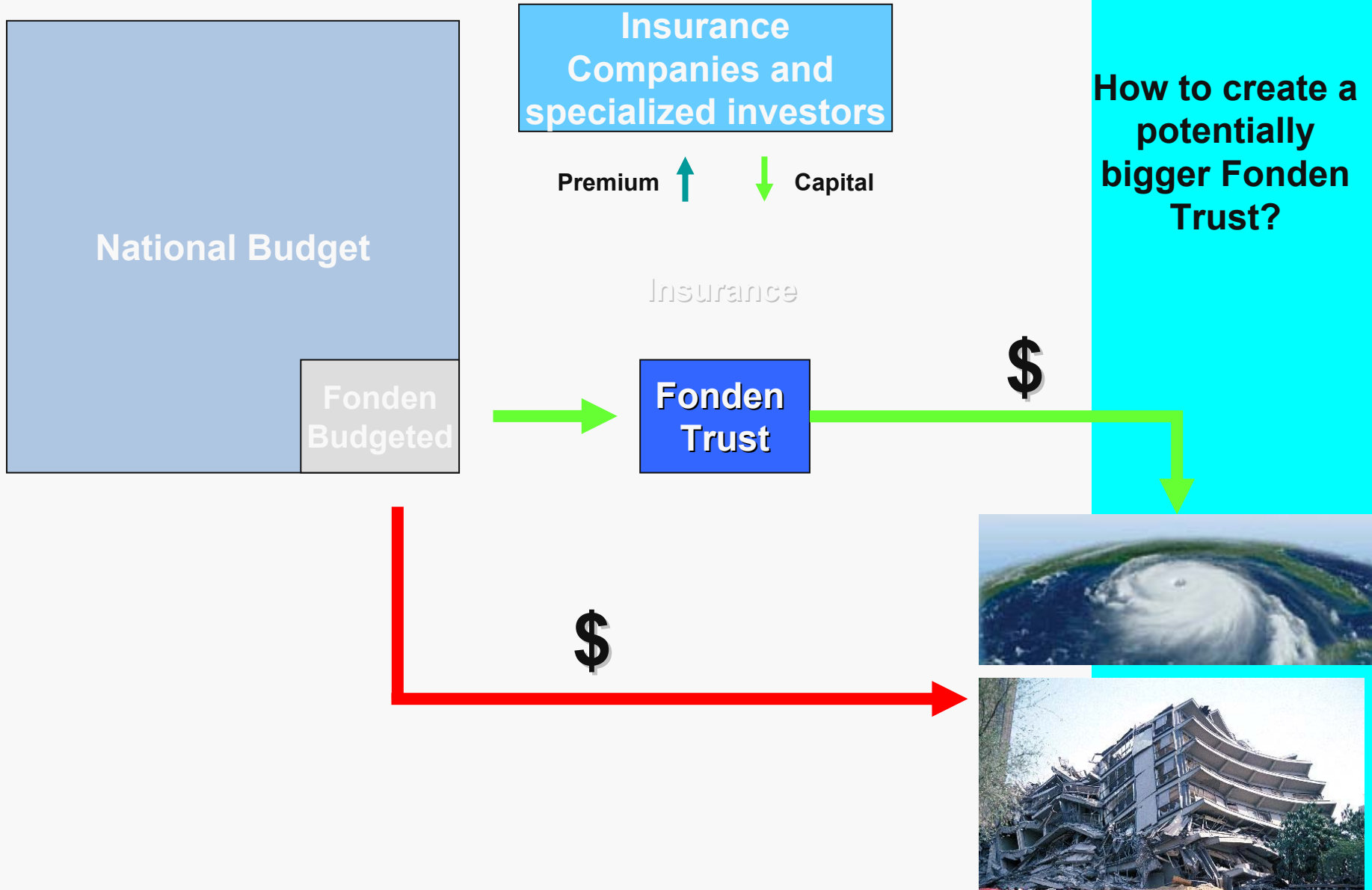
# Mexico's Fonden: toward sustainable national catastrophe risk management



First step: recognize the catastrophe risk into the national budget



As in other countries, the self-insurance fund like Fonden is unfunded

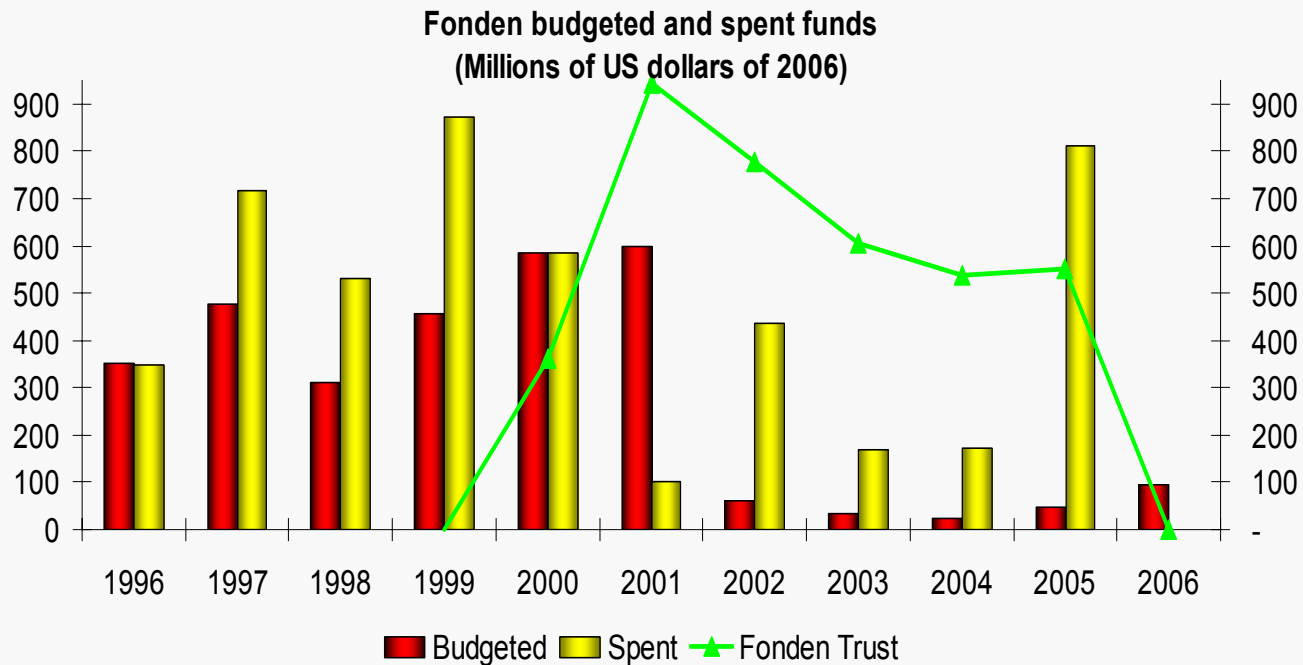


How to create a potentially bigger Fonden Trust?



## The Fonden resources have been reduced since 2001

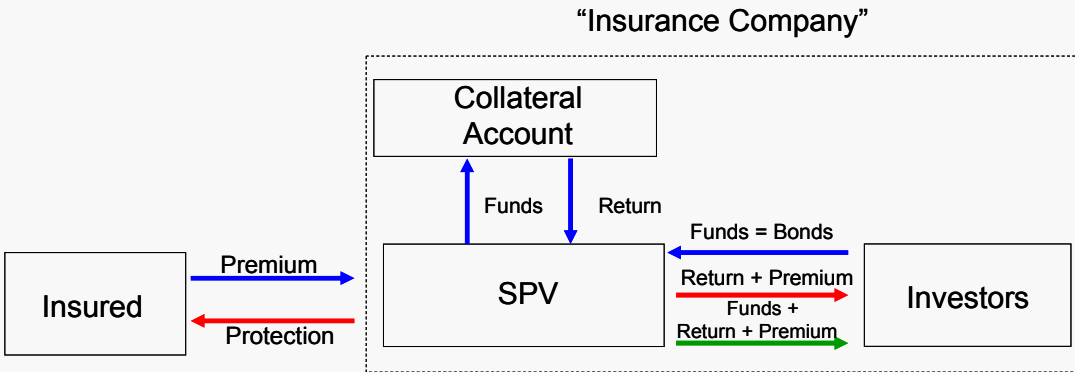
- There is a political economy problem: there are always good reasons not to “save for a rainy day.”
- The federal government expenses have implicated a total layout of \$ 4,739 millions from 1996 to 2003 (2006 USD prices)



# Conceptual Financial design



## Cat-Bond Concept



## Insurance Concept



Annual Expected Loss Probabilities		
Zone A	Zone B	Zone C
0.63%	0.96%	0.30%

The FONDEN through an international public bid process, hired Swiss Re Capital Markets, Swiss Reinsurance Company and Deutsche Bank Securities.

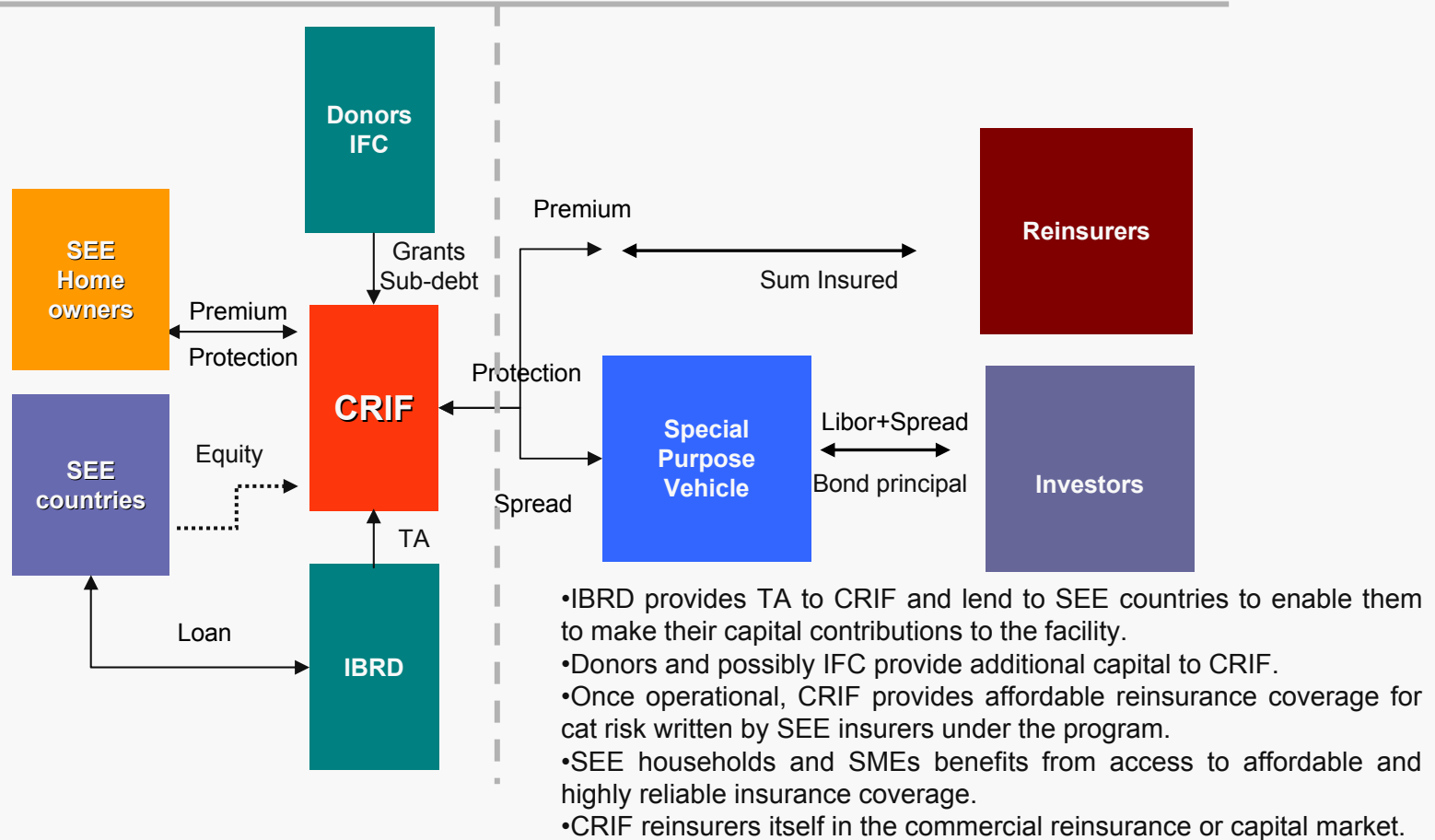


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## Proposed South Eastern Europe Regional Catastrophe Risk Insurance Facility

### Catastrophe insurance coverage against the risks of flood and quake for homeowners and SMEs



**6 countries so far expressed interested in becoming SECE CRIF shareholders**



## The Turkish Catastrophe Insurance Pool (TCIP)

- Lowest long-term average premium compared to similar international programs
- Premium rate stability for homeowners
- Quick settlement to permit speedy relief to victims
- Coverage of multiple events
- Low 2% deductible and rather high level of coverage (up to \$60,000).
- No government subsidies
- Program is run by the private insurance industry
- Sufficiently diversified (country-wide through national pooling) and globally (through reinsurance).
- Has enough claims-paying capacity to withstand a 1-in-350 year event (with most of it coming from reinsurance) without resorting to government aid.

**TCIP offers consumers highly attractive coverage on affordable terms**



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## Conclusions

- Emerging market economies are financially vulnerable to the growing risk of natural disasters.
- Governments are no longer able to finance the risk out of their annual budgets.
- Reinsurance and capital markets provide the needed risk financing capacity.
- World Bank can now provide cost efficient ex-ante risk financing instruments (CAT DDO).
- World Bank can also enable countries to access these risk markets in a cost-effective manner by acting as an interface between the countries and the markets and developing institutional capacity for catastrophe risk management within governments.