Ex Ante Financing for Disaster Risk Management and Adaptation

A Public Policy Perspective

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- Mission
  - *Improve access to financial services for the rural poor through innovative approaches for transferring weather risk*

- Activities
  - Research and development
  - Technical capacity building
  - Educational outreach
- Supported by
  - Multinational donors
  - Governments
  - Nongovernment organizations

- Select Country Work
  - *Peru – El Niño*
  - *Mongolia – Livestock*
  - *Vietnam –Flood / Drought*
  - *India – Drought*
  - *Morocco – Drought*
  - *Mexico – Drought*
  - *Romania – Drought*
  - *Ethiopia –Drought*

Economic Impact of Natural Disasters

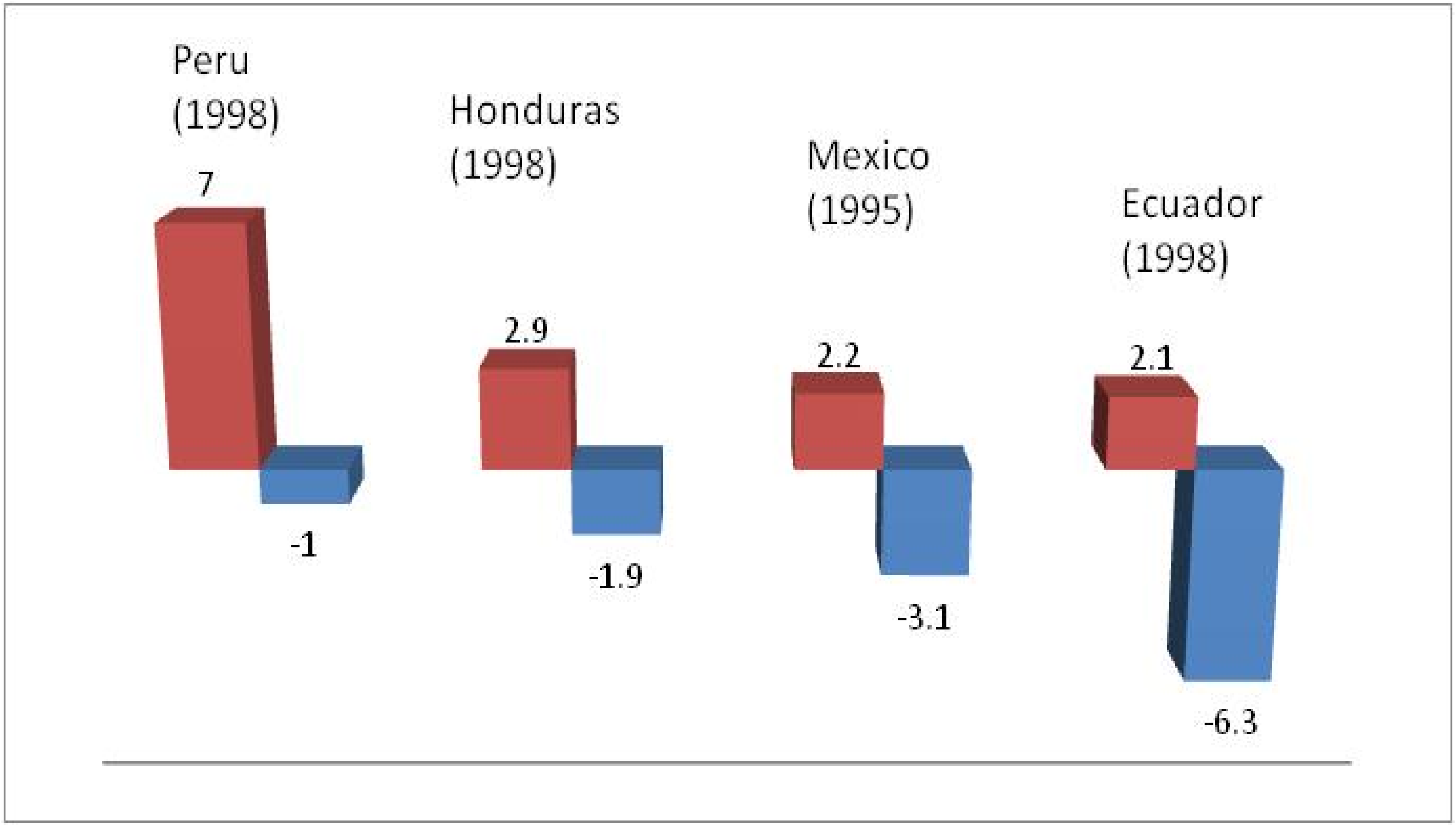
Muestra de Pérdidas Totales Asociadas a Desastres Naturales

País	Año	Desastre	Pérdida Total/ PIB*	Emergencia/PIB**
Honduras	1998	Huracán	38.4%	6.1%
República Dominicana	1998	Huracán	13.7%	2.2%
Ecuador	1998	Inundación	12.3%	2.0%
México	1985	Terremoto	2.1%	0.3%
Argentina	1985	Inundación	1.5%	0.2%

/* Fuente: EM-DAT
/** Fuente: estimaciones propias

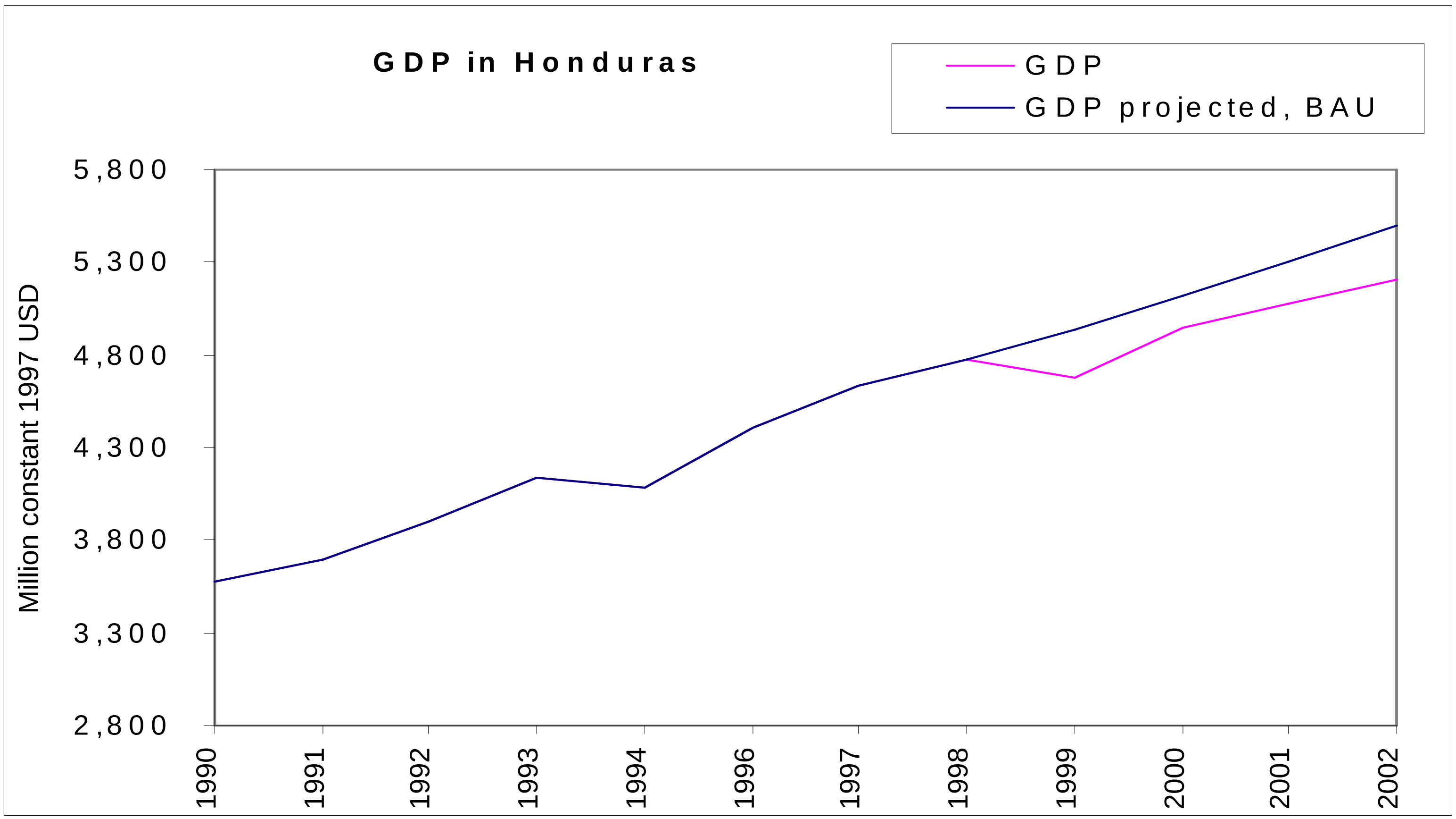
Fuente: Cardenas, 2009

GDP Growth Rate
One Year Before and in the Year of Natural Disaster



Source: Adapted from Cardenas, 2009

The Shock of the Natural Disaster Has a Longer-Term Effect as Well



Source: World Bank 2002, 2003

Somebody Always Pays for Catastrophic Risk
Who? How?

Society needs to understand the cost of natural disaster risk

Someone always pays:

- The poor pay through direct losses and long term economic impacts
- Financial institutions restrict services as they learn that the correlated losses of many of their borrowers and savers create significant banking problems
- Governments—disaster relief and recovery expenses, infrastructure investments, subsidized agricultural insurance
- Donors forgive debt and divert funds for recovery

Need incentives for proper risk management and mitigation

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The Poor Pay

Poverty Traps Created by Severe Events

- Rapid onset shocks can knock households below a minimum asset threshold, locking them into a poverty trap
- Households sell assets to maintain minimum levels of consumption — This in turn reduces future streams of income
- Households reduce consumption to protect assets — This can impact the human capital needed to generate future income streams
- Slow onset shocks can also result in poverty traps depending on the coping strategies available to and chosen by households

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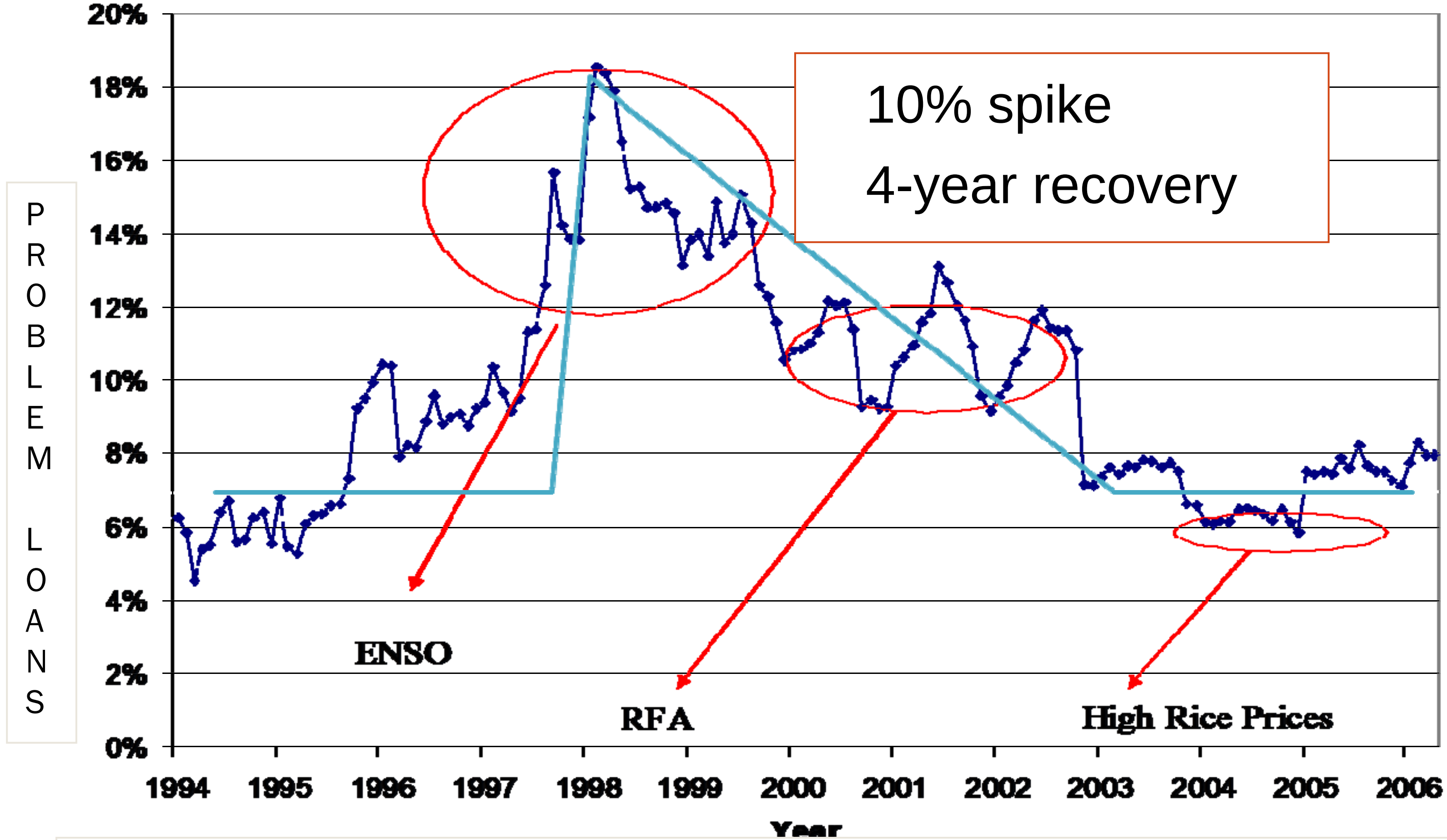
Lenders Pay

1997–1998 El Niño Spike and Recovery



With this event every 1 in 15 years, 300 basis points must be added

Governments Pay

- Disaster relief
- Infrastructure repairs
- Debt forgiveness
- Lost revenues
- Hinders economic growth
- Social programs for those thrust into poverty by the disaster
- Opportunity costs of diverted budget resources

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Problems with *Ad Hoc* Responses to Natural Disasters

- Responses that are not planned are also not targeted to the proper groups
- Acting without a plan and under political pressure will also mean the response is done with little oversight; increasing the opportunity for corruption
- Working to deploy resources after a disaster without a plan generally involves higher administrative costs
- Putting public money into the sectors without a plan also means that there is a lower economic return from the public expenditure

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More Problems with *Ad Hoc* Responses to Natural Disasters

- Ineffective
  - It takes too long to deliver and results in extended waiting periods for disaster victims
- Inequitable
  - The poorest segments of population most affected by disasters generally receive only a small fraction of the assistance
- Insufficient
  - Governments rarely have enough resources to help everyone in need, meaning resources are allocated on first-come-first-served basis

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Why Governments Need Risk Management Strategies

- The benefits from catastrophe risk management at the country level, regionally and local can be significant
- Public financing can be improved with catastrophe risk management that uses capital and reinsurance markets
- It is possible to create strategies in the short, medium and long term that will give results in the short run

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Risk Management Policy Framework

A Systematic Approach to Risk Management

1. Identify goals and priorities
2. Perform a risk assessment
3. Design a risk management strategy
4. Implement risk reduction and risk transfer

Step One
Identify Goals and Priorities

1. Identify Goals

- Who are the target beneficiaries?
- What is the intended outcome?
- What are the potential benefits of risk management?
- Identify roles for public and private sector in creating markets to aid in risk management
- Consider how to spur development
- Consider how to keep those on the margin from falling into poverty traps

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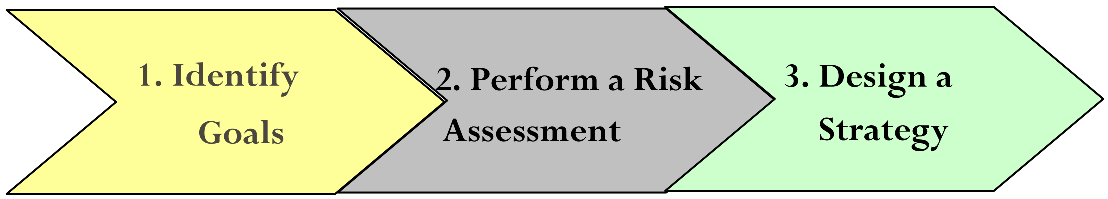
Step Two
Understand the Risk Profile

1. Identify Goals
2. Perform a Risk Assessment

- Identify risks that impact livelihoods and assets
- Distinguish between micro- and macro-level risks
- Consider seasonal and geographical variations
- Model the risk with historic data and existing infrastructure to understand how the same even will impact various segments of the population
- Consider current risk-coping strategies

Step Three
Design a Risk Management Strategy



- Plan with careful attention to needs and constraints
- Emphasize *ex ante* approaches that enhance existing risk-coping systems
- Invest in risk mitigation to lesson the impacts
- Clearly delineate public and private roles for risk mitigation, risk financing, and emergency response
- Design risk management solutions that support the financial sector and the market
- Encourage incentives for good management practices
- Decrease opportunities for fraud and abuse

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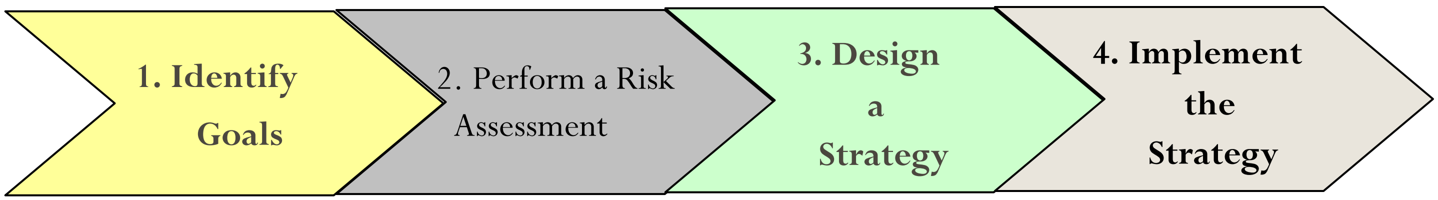
Step Four
Implement the Risk Management Strategy



When implementing the use of market-based risk transfer instruments the following questions must be addressed:

- Who will use the instruments?
- Who will deliver the instruments?
- Who will underwrite the risk — who pays?
- Who will provide the expertise and expense to develop and maintain the instruments?
- Who will pay for education of potential users?
- Who will develop needed laws and regulations?

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Advantages of Risk Transfer via Capital and/or Global Reinsurance Markets (Ex Ante *Risk Financing*)

- Financial risk transfer provides access to global capital markets that can absorb the financial exposure of catastrophic events
- Better planning and resilience to economic impact of catastrophe: Smoothing of budgets
- Faster response to disaster
- More structured rules: reducing corruption
- Better planning for more effective, efficient and equitable responses
- Potentially better targeting
- Improved incentives for risk reduction systems

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More on Advantages of *Ex Ante* Financing of Catastrophic Risk

- Financing corresponds to magnitude of loss—opportunity for better allocation of resources
- Ex ante financing can help households, communities, governments mitigate the financial impacts of risk and longer term impacts on development
- Can strengthen rural financial services—removes some of the risk of providing services to vulnerable populations
- Can facilitate disaster planning, risk mitigation, and strategies for adaptation

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Public Policy Recommendations for *Ex Ante* Risk Financing

- National/regional budgets should plan for the contingent liabilities associated with natural disasters
- Develop plans and linkages for efficient public expenditures that flow from central government to appropriate public agencies and local and regional governments
- Promote development of insurance markets to transfer catastrophic risk and to develop new financial products
- Have professionals *inside* government who understand risk management from the public and *private* perspective

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Types of Risk Financing

- **Reserves / Savings**
  - Covers low severity, high frequency events
  - Viability depends on opportunity cost of capital
- **Contingent credit**
  - Stand-by line of credit drawn down immediately after a pre-defined disaster
  - Annual commitment fee
- **Indemnity-based insurance**
  - Loss specific
  - High deductible/high administrative costs
- **Index-based insurance / Catastrophe Bonds**
  - Payments based on an index (e.g., rainfall level, hurricane intensity, area yield losses)
  - Quick disbursement
  - Lower transaction costs
  - Imperfect coverage (basis risk)

Source: Mahul, 2005

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Layering the Risk
Public & Private Sector Roles

Probability of Occurrence

Government Assistance

100 years

Reinsurance/Capital Markets

20-30 years

Insurance

5-7 years

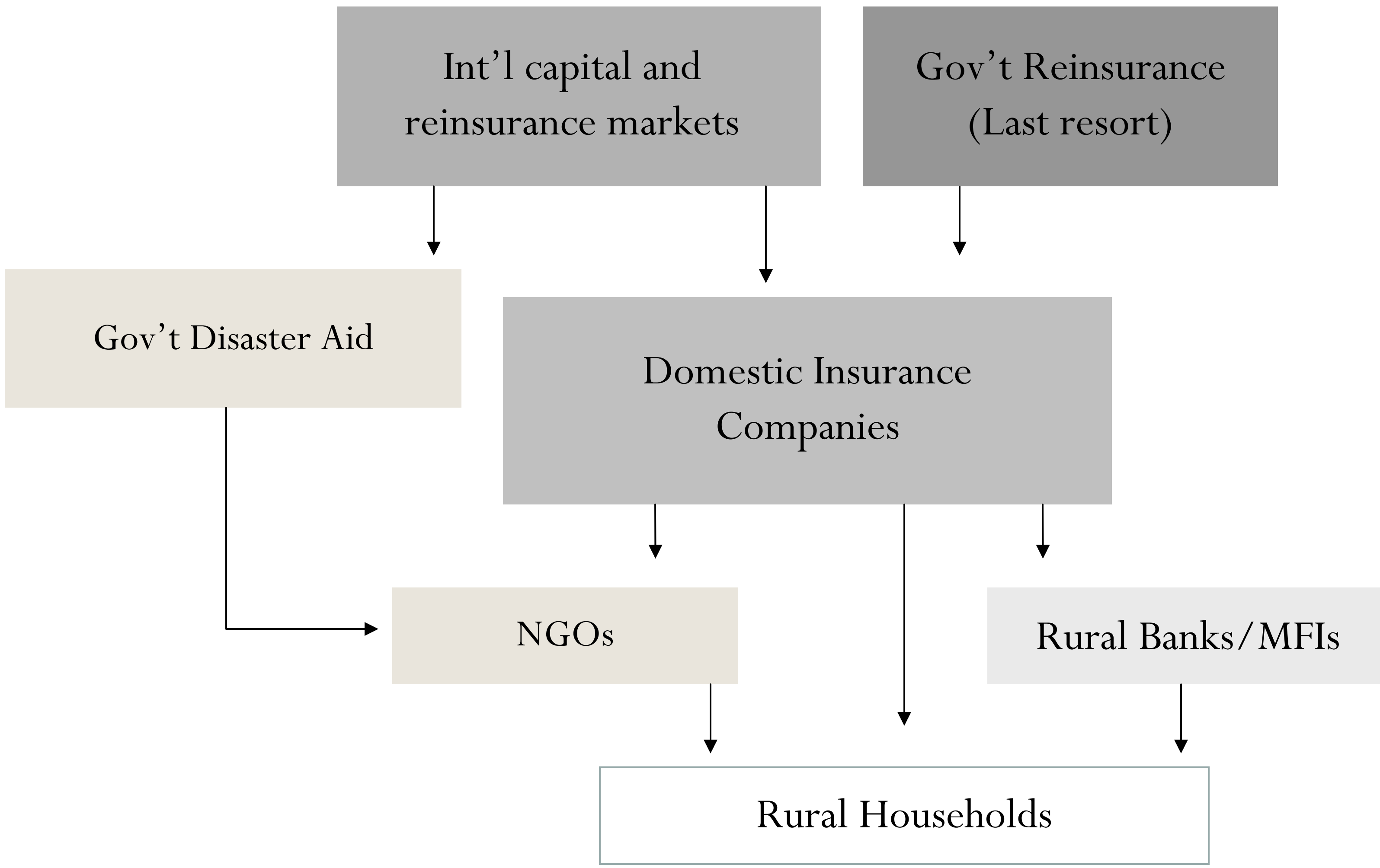
Contingent Credit

3-5 years

Self-retention

Source: Mahul, 2005

Possible Risk Financing Channels

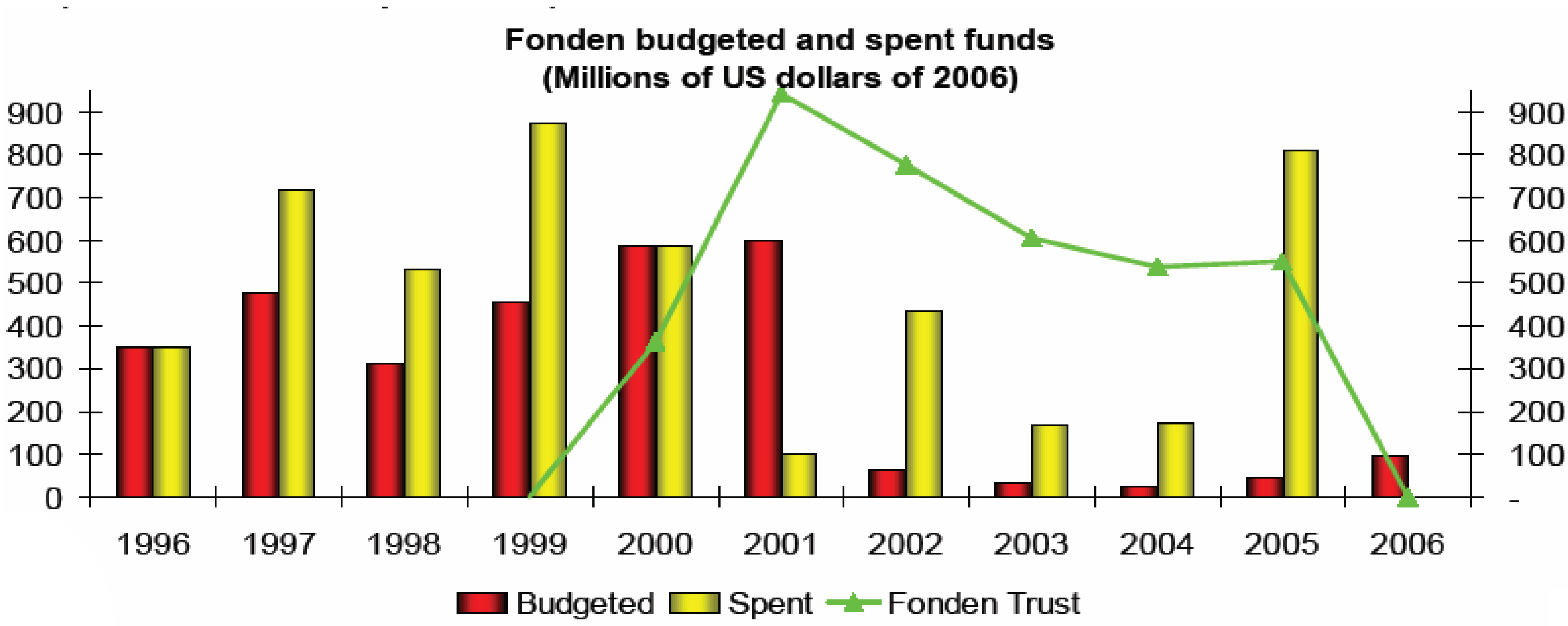


Adapted from Mahul, 2005

Mexico: Natural Disaster Financing

Mexican government created a natural disaster fund “FONDEN” in 1996 to set aside designated disaster financing

However, contributions to disaster funds can be unreliable



Source: Cardenas, 2006

Mexican Experience with *Ex Ante* Financing of Natural Disaster Risk

2006: Mexican government applied blend of CAT bond and Index Insurance to finance earthquake risk

- The goal is to enhance the capacity of FONDEN, a disaster relief fund, without tying up capital
- Underwritten by Global Reinsurers
- Payments based on earthquake of 8.0 or greater on Richter scale
  - US$160 million in contingent disaster financing from CAT Bonds in one zone of Mexico
  - US$290 million in financing from index insurance in 2 other zones of Mexico

Mexico also has a FONDOS program where states (regional governments) purchase drought insurance to fund assistance for small farmers

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Comprehensive Approach to Risk Management

Risk Assessment

Identify risks, vulnerabilities, strategies

Capacity Building & Education

Technical and institutional capacity, risk education

Ex Ante Risk Management

Risk Financing (Insurance, Risk Transfer), Adaptation,

Disaster Planning, Risk Mitigation

Ex Post Risk Management

Coping strategies, disaster relief, recovery, reconstruction

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Linking Insurance and Risk Adaptation

Combining insurance with adaptation strategies can reduce risk exposure and protect livelihoods against severe events

- Encourage risk management *and* appropriate adaptation
- Smooth cash flow following a disaster
- Targeted, timely payments
- Build on existing network for education and access to reduce cognitive failure and reduce transaction costs
- Stakeholders may use payouts to finance adaptation investments (e.g., infrastructure, livelihoods transitions, etc.)

Insurance is not a solution to climate change

- *Insurance can protect against weather extremes, but adaptation is necessary to adjust to changing climate trends*

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Consider the Widespread Effects of El Niño in Piura

- Disruptions in major markets
  - Financial services (about 3 percentage points of interest rates tied to El Niño
  - Agricultural value chain — fertilizer sales down 27% in 1998
- Damaged infrastructure
  - Transportation sector — accounted for 59% of losses in 1998
  - Poechos Reservoir – capacity was reduced by ½ in last El Niño
- Disruptions in small trade
- Significant declines in exports
- Loss of GDP and tax base of government
- Destruction of homes and other private property
- Significant declines in the anchovy catch
- Disruptions in the livelihoods of smallholder households

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Our Work in Peru

ENSO Insurance: a new Catastrophe Insurance Product that is designed to transfer extreme catastrophe risk associated with strong El Niño

Product would provide early payments *before* the onset of the El Niño rainfall and flooding

- Early payments could be used to mitigate losses, encourage adaptation
- Research and feasibility work to identify how advance payments from ENSO insurance can support risk management and mitigation activities for:
  - Government agencies (disaster management & relief)
  - NGOs (household adaptation to climate change)
  - Infrastructure (mitigation measures & repairs)
  - Improve markets (value chain, micro finance, lending to agriculture, products for farmer associations and households exposed to this risk)

Thank You!

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