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SPECIAL MOBILITY STRAND

Contribution of Insurance and Cat Bonds to Disaster Risk Management

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Outline of presentation:

- *FIRST PART*
  - *Risk financing instruments against disaster risks*
  - *Insurance products offered for disaster risk management*
  - *The contributions of insurance industry*
  - *Challenges of insurability in cases of disasters*

- *SECOND PART*
  - *Approaches of catastrophe bonds*
  - *The main actors in a catastrophe bond transaction*
  - *Why to invest in catastrophe bonds?*
  - *Arguments against catastrophe bonds*

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Bosnia and Herzegovina, Croatia, Serbia

May 2014

- the evacuation/displacement of over 990,000 people
- loss of tens of thousands of homes, livestock, agricultural land, schools, hospitals and businesses
- loss of 79 lives

Bosnia and Herzegovina
Economic impact € 2.04 billion

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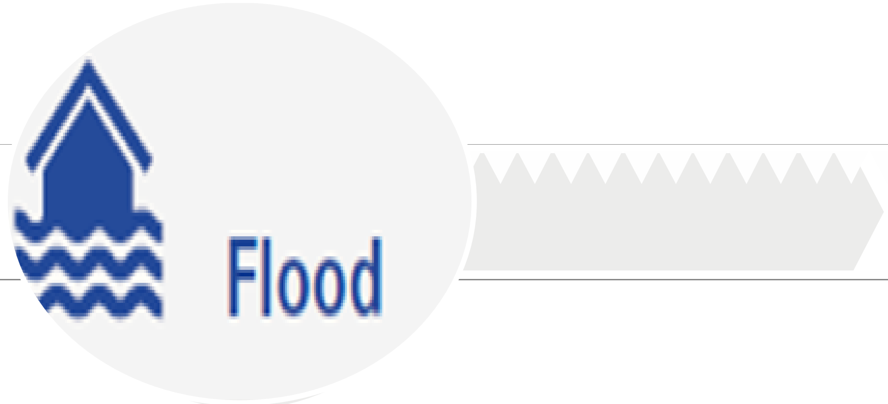

Albania
January-February 2015

- affecting 42,000 people and flooding 12,225 hectares of arable land

Economic Impact- € 31.5 million

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Storms

Macedonia
August,2015

- affecting 85,000 people

Damages- € 30 million

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First Part

Risk financing instruments against disaster risks

Insurance products offered for disaster risk management

The contributions of insurance industry

Challenges of insurability in cases of disasters

Risk financing instruments against disasters

Approaches	Examples of Instruments
Non Market Risk Transfer	*✓Government assistance (taxes) for private and public sector relief and reconstruction funding* *✓Kinship arrangements* *✓Some mutual insurance arrangements* *✓Donor Assistance*
Market Risk Transfer	*✓**Insurance and reinsurance**, Micro Insurance,* *✓Financial Market Instruments, **Catastrophe Bonds***
Inter-temporal risk spreading	*✓Contingent credit (financial market instrument),* *✓Reserve fund,* *✓Microcredit and savings*

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Non Market Risk Transfer

Ex-post instruments are sources that do not require advance planning.

Focus on response after event

- budget reallocation,
- domestic and external credit,
- tax increase,
- donor assistance.

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Inter-temporal risk spreading

- Contingent credit (financial market instrument),
- Reserve fund,
- Microcredit and savings

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Market Risk Transfer

- Insurance and reinsurance,
- Micro Insurance,
- Financial Market Instruments,
- Catastrophe Bonds

Ex-ante risk financing instruments require pro-active advance planning

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Insurance

- Premium
- Policy limit
- Deductible

catastrophic risk are insurable?

disaster risk is considered
a random event
with relatively low probability,
large number of similar exposures

Home Insurance

- Not a mandatory insurance

- Home coverage is provided in case of catastrophic events such as earthquakes, hurricanes, floods, cyclones, etc

- To recover a loss it is usually used the method of replacement costs

- The home insurance is partial and is considered a coinsurance which implies that a part of the loss is covered by the insurance company and the rest by the owner.

"Did the three little pigs have enough insurance to rebuild their home?"

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Automobile Insurance

- A mandatory insurance
- Car insurance in a natural disaster is often overlooked because people assume the plan they have will cover any damages.
- Common auto insurance policies typically cover costs associated with driving: collisions, injuries, and property damage.
- Comprehensive auto insurance- including high winds, floods, and earthquake

"What do you mean you don't think our insurance will cover this?!"

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Life Insurance

•*Life insurance gives you a second chance at life even after you are gone*.

•Does it cover accidental deaths resulting from natural calamities?

•In the case of group life insurance may pose additional cost to the insurer if the insured are all located in the same area of the disaster.

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Health insurance and employee insurance.

•This type of insurance covers the risks of health damage from disasters and it provides coverage for medical expenses, diagnosis, hospital service, medication, etc.

•It also covers the payments to the insured in the event that income is interrupted by his/her disability.

"Your policy does cover wind damage, but not from huffing and puffing."

Liability insurance

- Include coverage of elements from catastrophic events.
- Building liability and rented buildings
- Damages caused by lack of protective measures or negligence related to technical regulations.

"Yes, all our flambé dishes come with injury, liability insurance."

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Business Interruption Insurance

•Covers the loss of income that a business suffers after a disaster

•The income loss covered due to disaster-related closing of the business facility or due to the rebuilding process after a disaster

•Differs from property insurance - physical damage to the business

•Covers the profits that would have been earned.

"Hey, do you sell flood insurance?"

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Commercial and industrial property Insurance

- Commercial property insurance is used to cover any commercial property

- This insurance essentially provides the same kind of protection as property insurance for consumers.

- How much a company should pay for commercial property insurance, the value of a business' assets, including the building, is the primary factors.

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Agricultural Insurance

•Agriculture is one of the sectors experiences numerous natural catastrophic disasters.

•Protects against loss of or damage to crops or livestock

•provides value to low-income farmers by protecting farmers when shocks occur and by encouraging greater investment in crops.
•difficulty of designing good products and by demand constraints.

“Don't worry, the first 30 years of farming are the hardest.”

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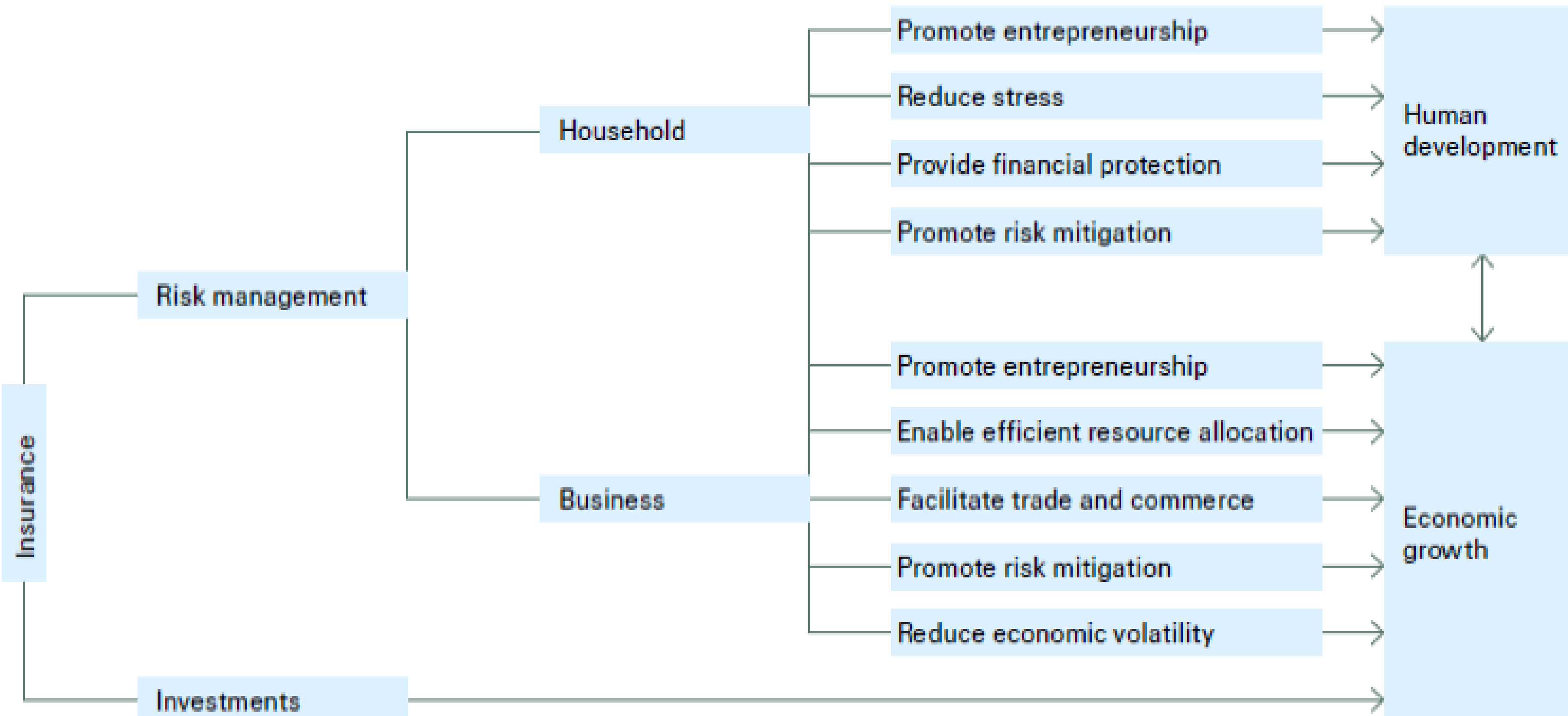
The contributions of insurance industry



Source: Swiss Re Institute.

Various barriers caused by demand insurance

•Affordability: Yet in emerging markets demand for insurance remains very low even when subsidies are provided

•Liquidity constraints:. Lack of finance is one of the most serious barriers for consumers as individuals

•Trust: Another serious barrier to insurance demand is the lack of trust in insurance providers. This is even more evident in emerging markets because the legal system does not function properly.

•Awareness: Insurance demand is also influenced by lack of awareness and low financial literacy

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Various barriers caused by supply concerning insurance

•Transaction Cost: All these costs result in the increase of the insurance price, and as a consequent the market size is reduce

•Institutional setting: If the legal system and regulatory environment are weak and ineffective they have a negative effect on the insurance market.

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Challenges of insurability in cases of disasters, Savitt, 2017

1. How insurance companies can calculate and diversify risk?

•Calculation of the risk to a property- as the probability of loss can be multiplied by the amount of loss upon occurrence.

•Infrequency of historical disaster losses.

•The climate changes are affecting the calculation of the probability of the disasters which makes it difficult to consider historical data as a source of disaster estimation. (geographically correlated)

•Covariance risk

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Challenges of insurability in cases of disasters Savitt, 2017

2. How can insurance companies provide coverage?

The availability of funds for the payout and decision making whether to insure a certain disaster risk or not depend on factors like:

1. the amount of money the insurance company has in reserve
   Inability of an insurance company to accumulate financial reserves ends up in the reduction of financial capacity of the entire insurance industry
2. the reinsurance available (the insurance purchased by the insurers to protect their contracts)
   To cover large damages of serious disasters it is necessary that reinsurance industry provide funds to the insurance companies as the latter have inadequate financial reserved to cover damages.
3. the amount of damage of the insured events
   if the insurance company fails to encourage mitigation and prevent losses then it is more difficult for insurance companies to continue providing insurance for hazard risks

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Challenges of insurability in cases of disasters, Savitt, 2017

3. How do insurance companies obtain profitability?

profitability is what motivates insurance companies to insure disaster risks

Insurance premiums constitute primarily the insurance revenues for disaster risks.

Insurance companies find it difficult to adjust rates because of climate change and increase of population in areas of disaster risks, which result in lower profits and decreased insurability.

An immediate step to be undertaken by insurance companies is to set prices for premiums on disaster insurance contract with the consumers.

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Challenges of insurability in cases of disasters, Savitt, 2017

4. What challenges do insurance companies face negotiating with consumers?

Some of the challenges which make negotiations of the customers with the insurers difficult are:

1. unrealistic optimism and expectations

   more optimistic about their damages caused by disasters than the insurance companies

   The consumers do not rate their disaster risks accurately

2. unwillingness to maintain relationships with the insurers

   So the disaster insurance is ineffective because of the failure to negotiate long-term contracts

3. beliefs about the role of governments after disasters

   government assistance may result in charity for disaster because people believe that they will be helped by the government in case of a disaster and they do not have to purchase insurance

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Challenges of insurability in cases of disasters, Savitt, 2017

5. Why do consumers hesitate to purchase insurance?

1. Economic considerations

   Disaster insurance is a normal good; demand increases as price increases; when price for insurance or income change this does not result in considerable change of demand for insurance.

2. Psychological characteristic

   They have proven also to be irrational as they do not understand considerably what is the appropriate amount of insurance they should purchase.

3. Risk preferences and perceptions

   A consumer's interest to purchase insurance increases due to his/her belief that a disaster is expected to affect him/her as an individual.

   Apart from that insurance purchase increases in relation to geographical proximity to disasters

4. Demographic characteristics:

   Being females or older ages the level of insurance purchase is lower

   disaster insurance purchase is likely to increase in the case of higher social classes

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Second Part

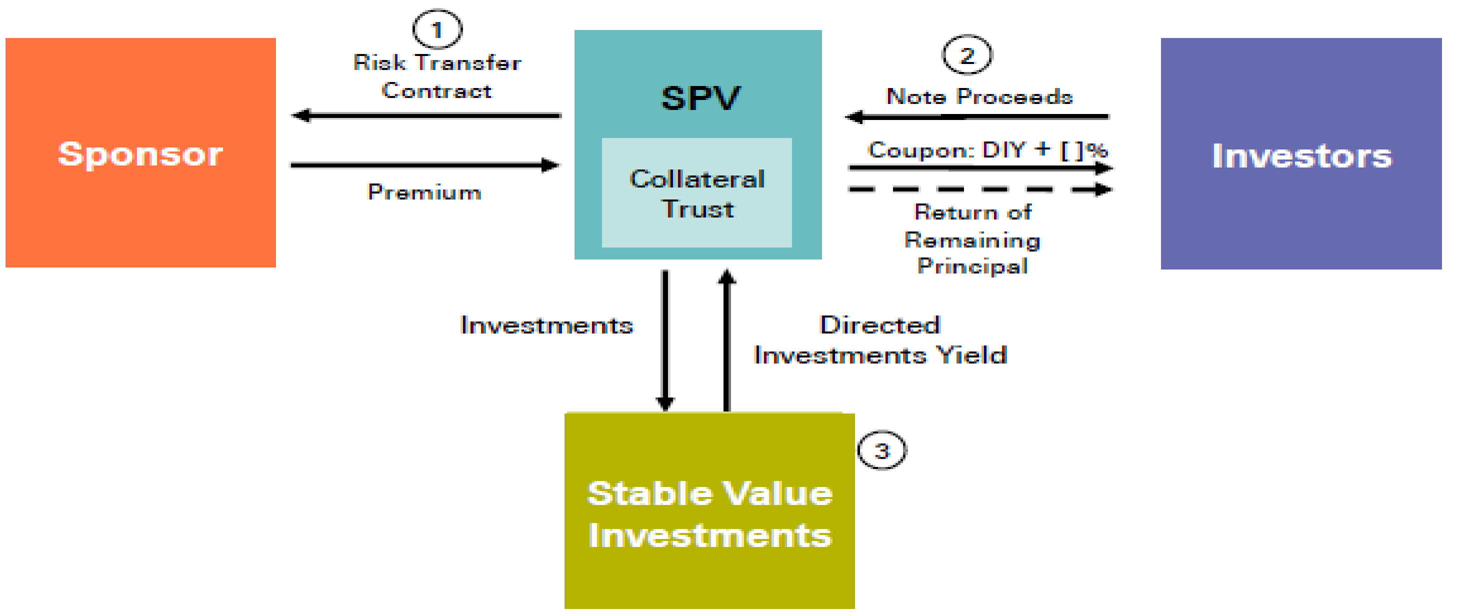
Approaches of catastrophe bonds

The main actors in a catastrophe bond transaction

Why to invest in Catastrophe bonds?

Arguments against Catastrophe Bonds

How do Cat Bonds Work?



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The main actors in a catastrophe bond transaction

Main Actors

- **Issuers** → government entity, corporation or a pension fund intending to cover an unexpected extent of longevities.
- **Structuring agents** → Investment banks or the capital markets sections of a major broker or insurer
- **Ratings agencies** → Standard & Poor (S&P)
- **Performance index compilers** → rates of returns on investment over historical time periods
- **Investors** → Pension funds, endowment funds and hedge funds

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Other Actors

Other Actors

Industry loss index compilers

PERILS in Europe are the main compliers of the industry loss estimates which conduct confidential surveys “insurers, agents, adjusters, public officials, and others.

Media

The news on CAT bonds, insurance-linked securities, and reinsurance capital and investment are covered by the Bermuda-based online web site ARTEMIS (www.artemis.bm)

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Why to invest in catastrophe bonds?

1. Return from them is not correlated with macroeconomic factors in this way it enables profitable diversification qualities to portfolios of more traditional asset classes.

2. The poor performance is likely to be self-correcting
   The investors are enabled to recover from some of their losses after a natural disaster as the insurance premium increases (and thus the potential returns to catastrophe risk securities) in a relatively short period

3. Investing in catastrophe bonds is that the likelihood of incurring extreme losses is far lower than the chance of benefitting from extreme returns

Critiques of Catastrophe Bonds

1. Their ability to contribute in addressing climate change risk or increased systemic risk

   It is argued that the least likely to be insured through this system are the most vulnerable. The poorest regions are the most exposed to the risk of climate disasters and they have to pay the most for financial protection because of the climate insurance tools

2. Cat bonds as a source of systemic risk

   this kind of business operates in offshore areas where there are less strict regulations on capital requirements and discloser of financial information

3. Catastrophe modeling and the pricing of cat bonds

   The complexity of catastrophe models needs the contribution of meteorologists, geologists, structural engineers, and actuaries to create the models and as a result the final outcome may be unreliable and ineffective

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CAT Bonds-MEXICO

•The Mexican government has chosen to insure its catastrophe reserve fund, FONDEN, against earthquakes with a mix of reinsurance and a catastrophe bond.
•The FONDEN's objective is to prevent imbalances in the federal government finances derived from outlays caused by natural catastrophes.

•The fundt grants financial support only to those private individuals that, due to their poverty status, require government assistance.

•In 2006, FONDEN issued a USD 160 million catastrophe bond (CATMEX) to transfer Mexico's earthquake risk to the international capital markets.
•It was the first country that issue a multi-peril multi-region cat bond using the World Bank's Multicat Program.

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Concluding remarks

"I think we need to take another look at your risk-management strategy."

- Disaster risk finance is a challenging issue, especially in developing countries

- Risk transfer instruments, as a mean of risk management that should be considered and implemented in developing countries .

- In addition to traditional insurance and reinsurance, there is emerging interest in other alternative risk transfer instruments, e.g.

  catastrophe bonds

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