Catastrophic Risks and Insurance Problems and Perspectives

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CATASTROPHIC RISKS
Different Types

- **NATURAL** (*e.g. hurricanes, windstorms, earthquakes, floods*)
- **ACCIDENTAL MAN-MADE** (*e.g. industrial/technological accidents*)
- **INTENTIONAL MAN-MADE** (*e.g. terrorism*)
TRENDS AND DEVELOPMENT

• Trend towards:
  – INCREASED FREQUENCY
  – INCREASED SEVERITY

⇒ According to Swiss Re (Sigma, n.1/2005), 2004 is a record year for disaster losses, most of which due to natural catastrophes.
TRENDS AND DEVELOPMENT

TREND TOWARDS HIGHER LOSSES:

• *Rising population densities and value concentrations*

• *Growing urbanization of exposed areas*

⇒ INCREASED FINANCIAL BURDEN OF DISASTERS
2004 SOUTHEAST ASIA TSUNAMI

- One of the worst natural disasters recorded in the past 100 years (*over 170,000 people lost their lives*).
- Low insurance penetration in the region
- **Estimated total insured losses**: USD 4 bn
  - Property
  - *Life and health*
  - *Travel insurance*
INSURABILITY ISSUES

NATURAL CATASTROPHES

- LPHC risk
- Low predictability (*generalized uncertainty*)
- Risk of accumulation (*geographical and inter-temporal spreading problems*)
- Adverse selection
- Vulnerability
- Disaster control and mitigation strategies
INSURABILITY ISSUES
INDUSTRIAL ACCIDENTS

⇒ LPHC risk
⇒ Information asymmetries:
  ⇒ Moral hazard
  ⇒ Adverse selection
⇒ Monitoring and bonding devices (agency costs)
⇒ Evolution of liability laws (legal uncertainty)
  ⇒ recoverable damages in tort claims
⇒ Disaster control and mitigation strategies
INSURABILITY ISSUES
TERRORISM RISK

- Increased potential magnitude after 9/11 (capacity)
- Risk of accumulation (*between insurance lines*)
- High level of risk ambiguity:
  - Dynamic uncertainty (*adaptive strategies*)
  - Information issues
- Interdependent security (*externalities*)
- CBRN (chemical, biological, radiological, nuclear) attacks (*long term consequences*).
INSURABILITY ISSUES

RISK MODELING

⇒ Natural Catastrophes:
  ⇒ Computer based risk models
  ⇒ Increased predictability of natural hazards over the past decades

⇒ Terrorism:
  ⇒ Role of experts (*subjective component*)
  ⇒ Game theory (*adaptive strategies*)
  ⇒ Evaluation of possible loss scenarios **BUT**
  ⇒ Very difficult to estimate frequency
FINANCIAL MARKET SOLUTIONS
Securitization of Catastrophic Risks

⇒ CAT BONDS \((natural\ catastrophes)\):
  ⇒ Evolution of the market since 1997
  ⇒ New perils / New types of sponsors \((but\ market\ remains\ small)\)
  ⇒ Triggering events \((physical\ v.\ loss\ triggers)\)
  ⇒ Immediate payoff v. Delayed payment
  ⇒ Credit risk v. Basis risk
  ⇒ Multi-year coverage at fixed price
FINANCIAL MARKET SOLUTIONS

Special problems for terrorism risk

- Terrorism risk securitization
  - High level of risk ambiguity (*risk is changing*)
  - Multi-event triggers
  - Future securitization might mix-and-match different risks to dilute the terrorism component
    - GOLDEN GOAL FINANCE Ltd. (*FIFA World Cup – event cancellation*): very low risk
    - VITA CAPITAL Ltd. (*mortality risk*)
ROLE OF GOVERNMENTS
in disaster management and compensation

• Disaster prevention and mitigation
• *Ex ante* v. *ex post* approach to compensation
• Post-disaster aid ⇒ Samaritan’s dilemma
• Indirect v. direct forms of intervention
  – Government as direct insurer
  – Government as reinsurer of last resort
  – Government as lender of last resort
PUBLIC-PRIVATE PARTNERSHIP

in disaster management and compensation

• Roles of the public authority:
  – providing the requisite legal framework
  – subsidizing the cost of administering the disaster management scheme
  – Enforcing preventive and mitigation measures
  – Acting as reinsurer/lender of last resort

• Roles of the private insurance sector:
  – proper risk assessment and risk allocation mechanisms
  – expedite loss assessment
  – effective surrogate regulation
NATURAL CATASTROPHEs

Examples of institutional arrangements

- **CALIFORNIA**: California Earthquake Authority (CEA)
- **FRANCE**: Cat Nat
- **NEW ZEALAND**: Earthquake Commission (EQC)
- **SPAIN**: Consorcio de Compensación de Seguros
- **TURKEY**: Turkish Catastrophe Insurance Pool (TCIP)
- **USA**: National Flood Insurance Program (NFIP)
TERRORISM RISK
Examples of institutional arrangements

• FRANCE: Gareat
• GERMANY: Extremus AG
• ISRAEL: Property Tax Compensation Fund
• SOUTH AFRICA: SASRIA Ltd.
• SPAIN: Consorcio de Compensación de Seguros
• UK: Pool Re
• USA: Terrorism Risk Insurance Act of 2002 (TRIA)
CONCLUDING REMARKS

- Need for an integrated disaster risk management strategy (*public-private partnership*)
- Different institutional approaches
- Risk predictability is a key issue
- Enforcement of structural mitigation and vulnerability reduction measures is also crucial
- *Adverse selection* and *moral hazard* must be limited
- Settlement procedures should be expedite
- Capital markets solutions to increase capacity?
END OF PRESENTATION

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