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**INSURABILITY OF (MEGA-) TERRORISM RISK :
CHALLENGES AND PERSPECTIVES**

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Powerpoint presentation

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Insurability of (Mega-)Terrorism Risk: Challenges and Perspectives

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Motivating Questions

What is the nature of terrorism risk today and how does it differ from other extreme events?

What roles can the public and private sectors play in reducing terrorism risk and providing financial protection to victims of terrorist attacks?

What are the challenges facing the private sector in offering terrorism insurance?

Who will pay for future losses should the terrorists be successful?

Joint initiatives: How do we move forward?

Major Insured Terrorist Attacks Prior to 9/11

Insured property (US\$ million)	Event	Date	Location
907	Bomb explodes near NatWest tower (City)	24 Apr. 93	UK (London)
744	Explosion of IRA car bomb near shopping mall	15 Jun. 96	UK (Manchester)
725	Bomb explodes in garage of World Trade Center	26 Feb. 93	USA (New York)
671	Bomb explodes in financial district	10 Apr. 92	UK (London)
398	Rebels destroy 3 airliners, 8 military aircraft and heavily damage 3 civilian aircraft	24 Jul. 01	Sri Lanka / Colombo airport
259	IRA bomb attack in South Key Docklands	09 Feb. 96	UK (London)
145	Truck bomb attack on government building in Oklahoma City	19 Apr. 95	USA (Oklahoma City)
138	PanAm Boeing 747 crashes due to bomb	21 Dec. 88	UK (Lockerbie)
127	Hijacked Swissair DC-8, TWA Boeing 707 and BOAC VC-10 dynamited	06 Sep.70	Jordan (Zerqa)
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Sources: Swiss Re -- (US\$ million, indexed to 2001 ; excluding liability and life)

Nature of Commercial Terrorism Insurance Prior to Sept 11, 2001

Named peril in several countries that suffered terrorist attacks

Spain (Conсорcio; est. 1954) -- UK (Pool Re; est. 1993)

France (included in all fire coverage policies since 1986)

Unnamed peril in others

Terrorism coverage in the United States was included in standard commercial insurance policy packages as an unnamed peril; Coverage cost = negligible

(Re)-Insurers: Risk was ambiguous but insurers were not worried

Ignored past events in making their decisions

WTC Bombings of 1993

Insured: Were covered against terrorism

May not have known it until after Sept. 11th

Result: Private market functioned well in the U.S., but huge accumulation of unknown exposure

9/11 Terrorist Attacks: The Most Costly Event in the History of Insurance

***\$5 billion* paid by the Federal Victim Compensation Fund to victims and their family**

Insured damage currently estimated at *\$32 billion*

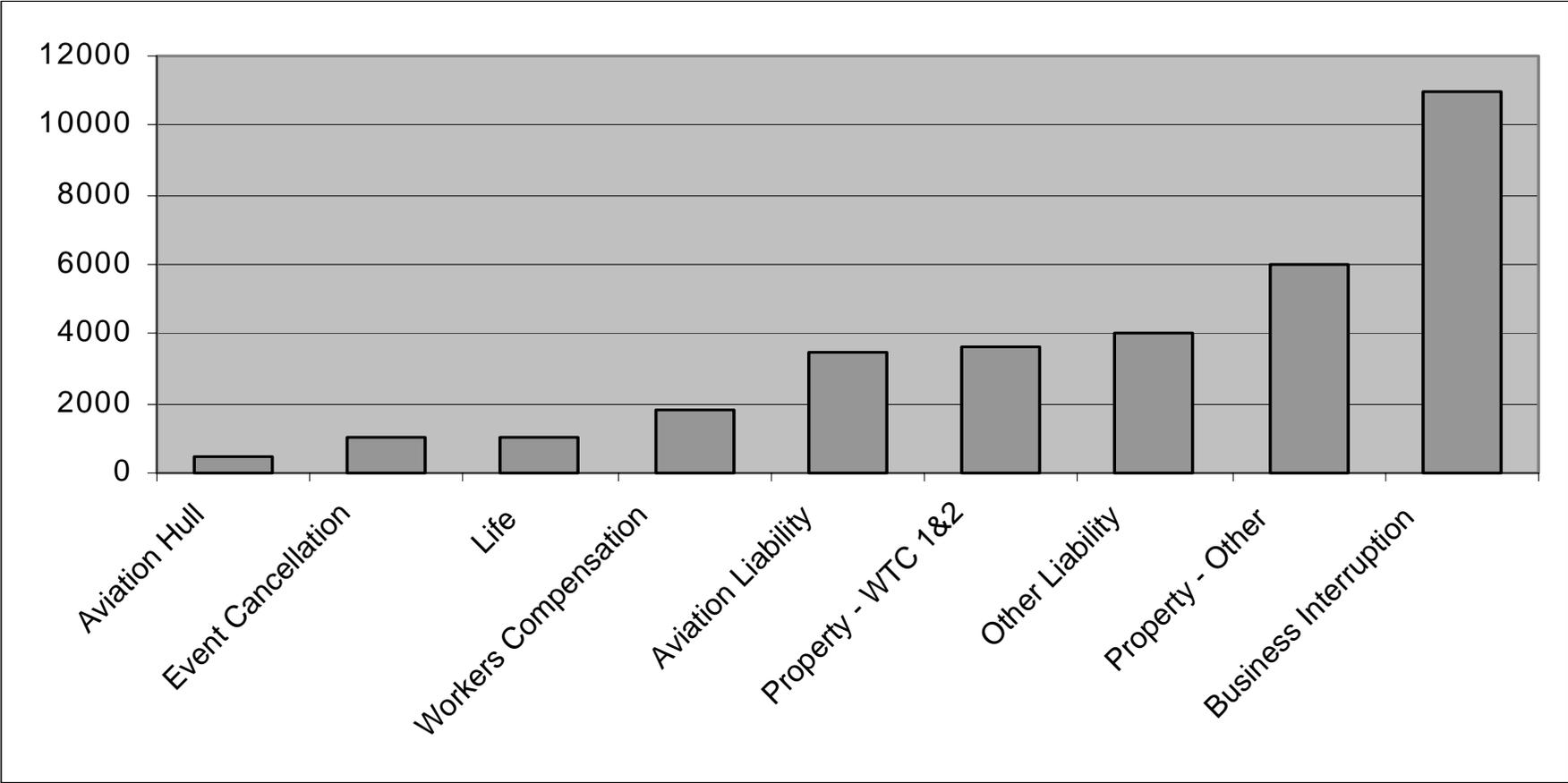
Loss sharing: covered by 150 insurers and reinsurers worldwide

estimations: Lloyd's (\$2.9bn); Munich Re (\$2.4bn); Swiss Re (\$2.4bn)
Allianz (\$1.3bn); AIG (\$0.8bn); Axa (\$0.5bn)

**Reinsurers (most of them European) responsible for 2/3 of claims;
most of them left the market afterwards**

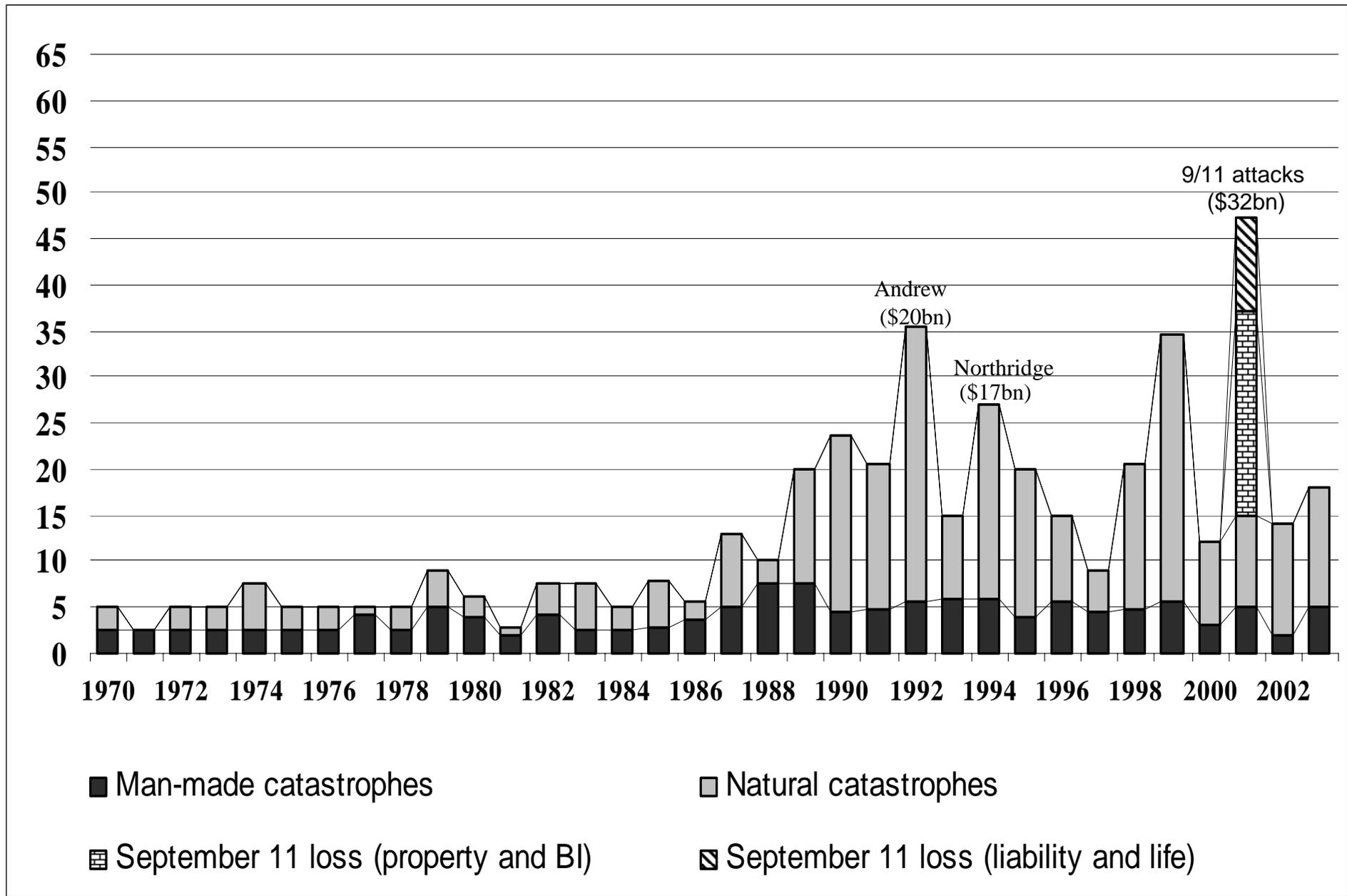
Result: very little reinsurance capacity available for insurers

The events inflicted catastrophic losses to multiple insurance lines (in \$million)



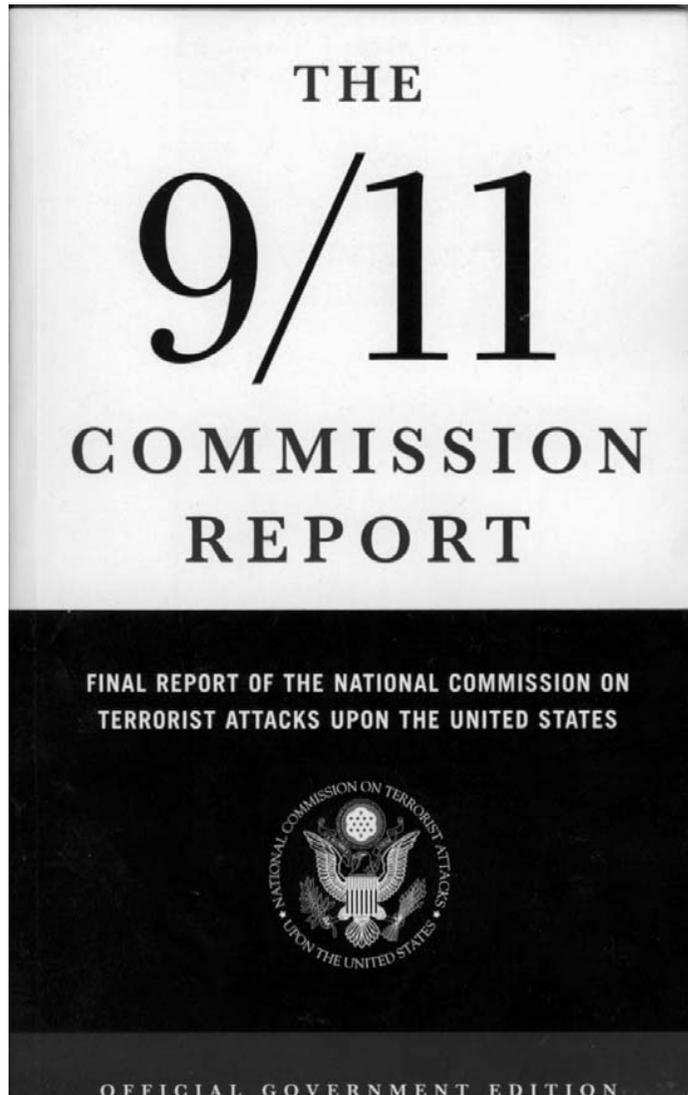
Business interruption: \$11bn - 33% of the insured losses

Worldwide Evolution of Insured Losses, 1970-2003 *(in 2003 USD billion)*



Source: Swiss Re, Economic Research and Consulting

Change in the Nature of International Terrorism



Radical change in the nature of international terrorism risk over the past 20 years

Fewer politically-oriented attacks;
Increasing number of extremist religious-based groups seeking to inflict mass casualties

The 15 worst terrorist attacks (casualties) all occurred after 1982
80% in the last ten years (1993-2004)

Implications for Terrorism Threat

High exposure for the insurance industry

In most OECD countries, densely populated areas are also those with high concentration of economic activities

Radical change in the nature of the attacks

Non- “traditional” terrorist attacks such as car or luggage bombings against the infrastructures (aircraft, airports)

Reversing the diffusion capacity of our own critical networks against ourselves can have large-scale social and economic impacts

Other cases since: Autumn of 2001 (Anthrax crisis; postal network)
March 2004 (Madrid; transportation network)

Economic Impact:

- high degree of uncertainty associated with what is really at risk;
- major interdependency effects;
- potential for extreme disruption/business interruption

Challenges in Dealing with Low Probability High Consequence (LP-HC) Events

Have severe long-term economic and social consequences

Difficult to assess quantitatively---experts disagree

limited historical data

no scientific models to settle differences

Insurability issues by private sector (supply side)

Lack of concern with protection by firms (demand side)

Can we learn from the experience of other disasters?

Example 1: Floods

Discontinued after 1927 Mississippi floods / Led to formation of National Flood Insurance Program in 1968

Major floods in France in 1981 led to the creation of the French Cat.Nat System in 1982

Example 2: Earthquakes

Insurers refused to write new homeowners policies following Northridge earthquake (94)

Formation of California Earthquake Authority (96)

Example 3: Hurricanes

Insurers wanted to withdraw homeowners coverage following Hurricane Andrew (1992)

Insurance commissioner put a moratorium on withdrawals

State legislature created Florida Hurricane Catastrophe Fund

Why is Terrorism Different from Other Extreme Events?

Catastrophic Risk Correlation:

Multi-lines simultaneously affected (business interruption; property, liability; worker's compensation, etc)
Terrorist attacks may impact on a wide region

Potential for Mega-terrorism

Using large critical network against us
Use of CBRN weapons (direct or using networks to spread the threat)
e.g. Anthrax spread over NYC scenario: \$90bn insured workers' comp
Credit risk; risk of ruin; indirect economic and social implications (unemployment)

Unpredictability of future events

Nature of terrorism has changed; past data are not very helpful in predicting future
Limited publicly available data (different than natural hazards)
Symmetry of *non-information* between insureds and insurers
Elements leading to a terrorist attack are generally not readily observed
May be difficult or impossible to determine (cf. anthrax)

Why is Terrorism Different from Other Extreme Events? (Cont.)

Shifting attention to unprotected targets

Terrorists respond to security measures by attacking more vulnerable targets
Existence of negative externalities (interdependencies)

“Dynamic Uncertainty”

Likelihood and consequences of terrorist attack determined by mix of strategies and counterstrategies developed by a range of stakeholders ; major difference from major natural hazards - - Terrorism risk is continuously changing over time

Result: Impossible to price the risk using traditional actuarial tools

Government influencing the risk of future attacks

Developing counter-terrorism policies and international cooperation.
Some decisions made by government as part of foreign policy can affect the will of terrorist groups to attack this country or its interests abroad

Nature of Externalities

Limiting Role Insurance Can Play

Expectation of government aid--- Samaritan's dilemma

Disaster relief

Airlines relief after 9/11

Concept of “Interdependent Security”--- Interactions between parties (agent, firms, or even countries)

Contamination by one firm to another

Less incentive for any firm to invest in protection

Insurers will not offer high premium reductions to reward protection

Interdependencies due to crisis management

Impact of shutting down the whole commercial airline network on 9/11?

Business interruption not covered unless entity is prime target of the attack

Supply and Demand

The insurability issue has been temporarily resolved in several countries through creation of national terrorism insurance programs based upon private-public partnerships with government protection against catastrophic losses

UK (Pool Re; co-reinsurance pool; 93) – France (Gareat; co-reinsurance pool; 01/02)
Germany (Extremus; insurance pool; 09/02) – US (TRIA; 11/02)

Problem: Three years after 9/11 most firms are not insured

In the U.S., less than half of firms are purchasing coverage
3rdQ04 take-up rate: 43% (Marsh Inc. survey to be released)

In Germany, the level of demand is even lower: only 2.5% of eligible policies are covered by Extremus (Wharton Risk Center Study)

Contributing Factors

Inadequate coverage given the nature of the risk

Importance of risk perception - - « It will not happen to us » syndrome

Insurance is only one strategy a firm can use to protect itself 15

Open Question 1: Should Terrorism Insurance Coverage Be Mandatory?

How would mandatory coverage operate?

Banks and financial institutions could require coverage as a condition for loans and mortgages

Property owners would cover their risk through insurance

Insurers can diversify their risks across structures and geographical areas

Alleviates pressure for public sector involvement after next terrorist attack

Challenges of mandatory coverage

Voluntary market is viewed as preferable

Until another terrorist attack occurs there will be no pressure for required coverage by public or private sector

Lessons from French, Spanish and Israeli Systems

Open Question 2:

How Do We Price Terrorism Coverage?

Terrorism Risk Modeling

First generation of catastrophe models developed in 2002 (AIR, EQECat, RMS)
Built on large data-set on infrastructures from natural catastrophe models
Hundreds of thousand of different terrorist attack scenarios
Mainly used in the U.S.

Advantage

Better understanding of the exposure (firm, affiliate, zip code)

Limitations

Technically: Direct losses only – no interdependencies – no correlation of attack
Unable to provide good estimate of probability/Frequency of a specific scenario

Issues for Future Joint Work: How Do We Move Forward?

Public-private arrangements for pooling data and assessing future risks

Information that can be released without compromising national security

Impact of public sector initiatives on private insurance market

Distributional and equity issues as to who should pay for losses.

Short-term initiative:

Evaluating Private-Public Partnerships for Protection Against Terrorism in the post-TRIA (2006) environment in the US?

How Do We Move Forward?

A 3-prong Approach for Addressing Terrorism Insurance Crisis

- **Alternative Strategies**

Private sector initiatives: private insurance, capital market involvement, debt equity strategies by corporations

Pool arrangements: mutual insurance, reinsurance pools, captives

Government protection: specific lines considered uninsurable (CBRN), state protection, government reinsurance for catastrophic losses

- **Evaluation Criteria**

e.g. equity, efficiency, nature of funding; incentive for undertaking risk reducing measures; credit risk; effect of uncertainty; interdependencies

- **Scenarios and Stakeholders Analysis**

terrorism vs. other extreme events (chemical accidents, natural disasters)

impact on residences, corporations, insurers, reinsurers, banks, state and local government, fed government, taxpayers, employment

How Do We Move Forward? (Cont.)

Wharton Risk Center activities over past 18 years on low-probability/high-consequence events ---

- Initiative with industry partners and trade associations

- Coordination with policy community and other research centers (e.g. RAND Center for Terrorism)

Recommendations by the OECD Task Force on Terrorism Insurance

Future joint work on Managing and Financing Extreme Events

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