



SOCIETY OF ACTUARIES

**ERM Symposium  
April 2009**

**RI5-Emerging Risks**

**Beverly Barney**

**Moderator  
Max Rudolph**



ENTERPRISE RISK MANAGEMENT  
**ERM**  
Symposium  
Where Getting Edge Theory Meets Some of the Art Practice

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*Session RI5 - Emerging Risks  
Friday, May 1, 2009  
Max J. Rudolph, FSA CERA CFA  
Rudolph Financial Consulting, LLC*



Canadian Institute of Actuaries



Institut canadien des actuaires



PRMIA  
The International Risk Management Association



CERA

## Emerging Risks

- What are emerging risks?
  - Completely new risks
  - Evolving risks

## Perfect Storm?

- Environmental scanning
- Mean reversion
- Copout
  - Once per century events don't happen 4 days in a row

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## Surveys

- Used emerging risks developed by World Economic Forum (23)
- Top 5 emerging risks (including #1)
- Combinations of risks
  - Regional food shortage
- Current topics

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## Emerging Risks

- Economic
  - Oil price shock
  - US current account deficit
  - Chinese economic hard landing
  - Demographic shift
  - Blow up in asset prices
- Environmental
  - Climate change
  - Freshwater loss
  - Tropical storms
  - Earthquakes
  - Inland flooding

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## Emerging Risks

- Geopolitical
  - International terrorism
  - Weapons of mass destruction
  - Interstate/civil wars
  - Failed states
  - Transnational crime
  - Globalization fallback
  - Middle East instability
- Societal
  - Pandemics
  - Infectious diseases
  - Chronic diseases
  - Liability regimes
- Technological
  - Critical information infrastructure
  - Nanotechnology

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## Current Environment Matters

- INARM survey April 2008
  - Oil price \$114
  - S&P 500 1,386
  - Currency 1.56 \$/Euro
- JRMS survey November 2008
  - Oil price \$68
  - S&P 500 969
  - Currency 1.27 \$/Euro

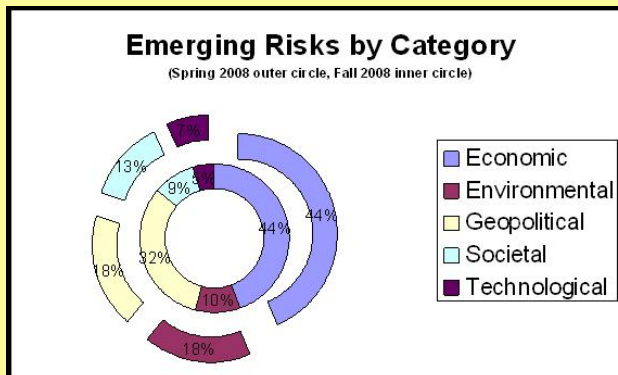
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## Anchors Away?

### Emerging Risks by Category

(Spring 2008 outer circle, Fall 2008 inner circle)



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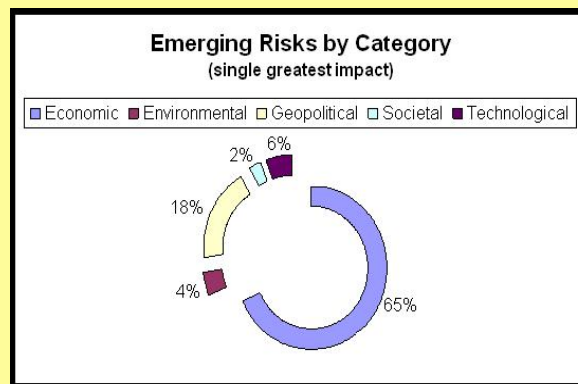
## Top Emerging Risks

- Fall 2008
  - 64% Blow up in asset prices/excessive indebtedness
  - 48% US current account deficit/fall in US dollar
  - 39% Oil price shock/energy supply interruptions
- Spring 2008
  - 57% Oil price shock/energy supply interruptions
  - 40% Climate change
  - 40% Blow up in asset prices/excessive indebtedness

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## Top Category



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## Risk Combinations

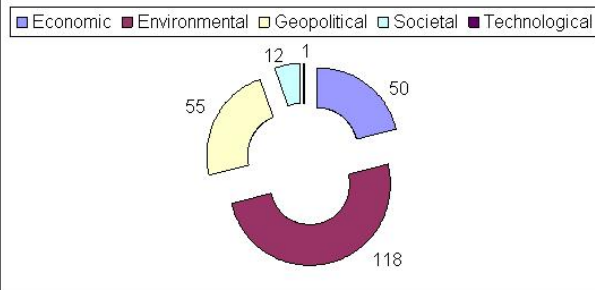
- Listed up to 3 combinations of 2 emerging risks
  - Top response 25%
    - US current account deficit/fall in US dollar
    - Blow up in asset prices/excessive indebtedness
  - 16%
    - Oil price shock/energy supply interruptions
    - Middle East instability
  - 12%
    - Oil price shock/energy supply interruptions
    - US current account deficit/fall in US dollar
  - 11%
    - Fiscal crises caused by demographic shift
    - Blow up in asset prices/excessive indebtedness

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## Specific Risk Concern

Regional Food Shortages by Category  
(up to 3 responses per participant)



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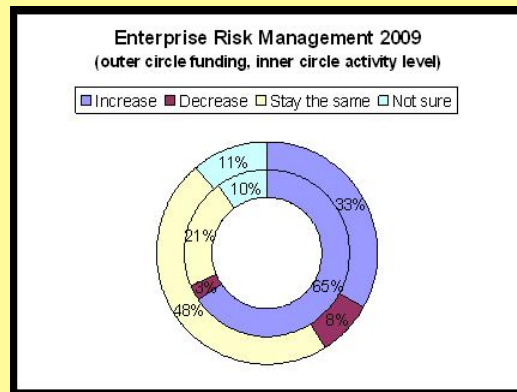
## Regional Food Shortages

- 47% Climate change
- 36% Loss of freshwater services
- 35% Oil price shock/energy supply interruptions
- 30% Natural catastrophe: Inland flooding
- 27% Interstate and civil wars

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## Activity in 2009



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## Other Questions

- CTE vs. VaR
  - Conditional tail expectation
  - Value at Risk
- Time horizon
- Modeling improvements
- Accounting regimes

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## To access the survey

- <http://soa.org/research/risk-management/research-2009-emerging-risks-survey.aspx>
- <http://soa.org/library/newsletters/risk-management-newsletter/2009/march/jrm-2009-iss15.pdf>
- <http://soa.org/library/newsletters/international-section-news/2008/august/isn-2008-iss45.pdf>

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Where Cutting Edge Theory Meets Some of the Art Practice



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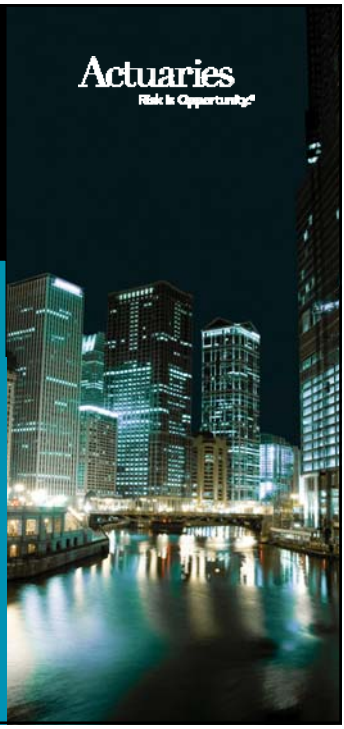
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ENTERPRISE RISK MANAGEMENT  
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**Developing an  
Emerging Risk Strategy**

*Session RI5 – Emerging Risks*

May 1, 2009

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## Agenda

- What are emerging risks?
- Haven't we been monitoring emerging risks?
- Why do we need a strategy to manage them?
- How do we identify what we don't know?
- What is everyone else doing?
- What does success look like?
- What are some of the challenges?
- Where are we now?

## What are Emerging Risks?

- **Difficult Concept:**
  - Webster defines “risk” as “The possibility of loss”
  - And “emerging” as “To come into being”
  - Is an emerging risk already on our radar screen or unknown?
- **Our Definition:**
  - A condition, situation or trend that could impact the Company’s financial strength, competitive position or reputation within the next 5 years.
- **Common Theme:**
  - Emerging risks involve a high degree of uncertainty because, unlike other risks, they don’t have a track record which can be used to estimate likely probabilities and expected losses.

## Haven't We Been Monitoring Emerging Risks?

- Monitoring emerging risks is not new.
- Examples:
  - Analyze quarterly trends in mortality, persistency, morbidity.
  - Monitor credit risk profile of our investment portfolios.
  - Review business unit operating risks.
  - Monitor changes in legal and regulatory environment.
  - And many more.....

## Why Do We Need a Strategy to Manage Them?

- **Our Objective:**

- To establish a forward looking, comprehensive framework to manage emerging risks that could, at some point in the future; impair the Company's financial strength, competitive position or reputation.
- Achieving this objective would:
  - Strengthen the company for our shareholders by controlling downside risk.
  - Minimize surprises and volatility.
  - Enable early recognition of risks which could impact multiple areas.
  - Recognize rating agency considerations.



## How do We Identify What We Don't Know?

- Senior Management brainstorming pilot.
- Brainstorming with associates closer to the work.
- Presentations to many internal areas to raise awareness and collect thoughts on emerging risks.
- Advisory Group formed.
- Piloted systematic identification process with one of our businesses.



## What is Everyone Else Doing?

- Contacted Think Tanks.
- Met with consultants.
- Perform media scan.
- Attend Risk Management conferences and symposiums.
- Joined International Network of Actuarial Risk Managers – including Google sub-group on emerging risks.
- Obtain published surveys and newsletters.

## What Does Success Look Like?

- We can't manage what we don't know.
- What could we do?
  - Identify leading indicators to minimize surprises and allow early mitigation.
  - Ensure process is in place to collect exposure and impact information across Enterprise quickly.
  - Develop process to identify secondary effects.
  - Identify key management group to manage through event.
  - Explore alternative mitigation techniques.
  - Define content and format of reporting.
  - Perform after action review.

## What are Some of the Challenges?

- How do we know we're looking at the right risks?
- How much time and resources should we invest?
- How do we incorporate this strategy into existing risk management activities?
- Should management of emerging risks be centralized or decentralized?
- Who should identify and monitor leading indicators; how often?
- When monitoring leading indicators, when should we take action?
- How do we identify and monitor emerging risks without legal liability for foresight?
- How much structure should we put on this process?
  - Too much → ERM is “creating work”.
  - Too little → hard to aggregate.
- We don't know what we know.

## Where Are We?

- Brainstorming continuing.
- Advisory Group continues.
- Broadening discussions.
- Working through Risk Officers.
  - Annual Report
  - Developed and provided Emerging Risk Discussion Guide



# Questions and Answers

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