



SOCIETY OF ACTUARIES

**ERM Symposium
April 2009**

**RA1-Risk Regulations-Learnings from the
Industry**

**Kurt Karl
Cathy Lemieux**

**Moderator
Valentina Isakina**

Risk and Regulation at Financial Institutions: New Directions

2009 ERM Symposium
Cathy Lemieux
Federal Reserve Bank of Chicago
April 30, 2009



Outline

- Risk Management Lessons for Financial Institutions
- Supervisory Actions to Improve Risk Management
- Shaping a New Regulatory Environment
- Financial Reform to Address Systemic Risk



Risk Management Lessons for Financial Institutions

Risk Management Lessons

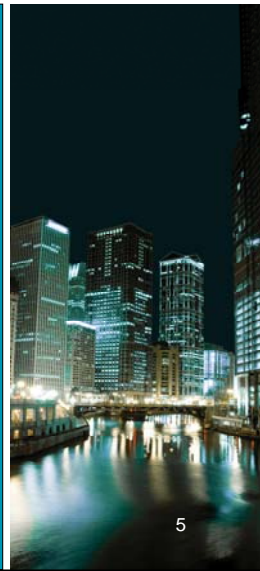
- Senior Supervisors Group
www.newyorkfed.org/newsevents/news/banking/2008/rp080306.html
- President's Working Group
on Financial Markets
www.treasury.gov/press/releases/hp871.htm
- Financial Stability Forum
www.fsforum.org/publications/r_0804.pdf

Risk Management Lessons (continued)



- Guard against overconfidence and complacency
- Properly identify, measure and understand risks
- Take a broad view of risk

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Risk Management Lessons (continued)

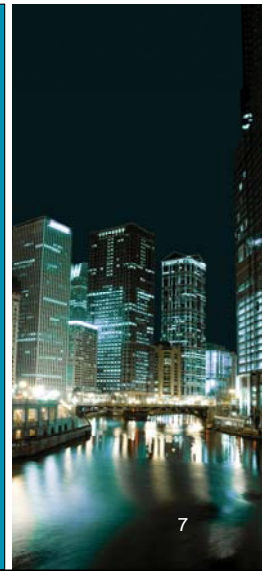


- Manage liquidity firm-wide
- Create strong and independent risk functions
- Strengthen corporate governance and compensation practices

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Supervisory Actions to Improve Risk Management



Improving Risk Management

- Liquidity risk management
 - Frequent monitoring of liquidity positions
 - Assess impact of diverse scenarios
 - Assess potential liquidity uses and needs
 - Enhanced supervisory guidance
- Capital planning and adequacy
 - Close monitoring of capital levels
 - Analysis of loss scenarios
 - Guidance on dividends, capital repurchases/redemptions
 - CPP, CAP and stress tests

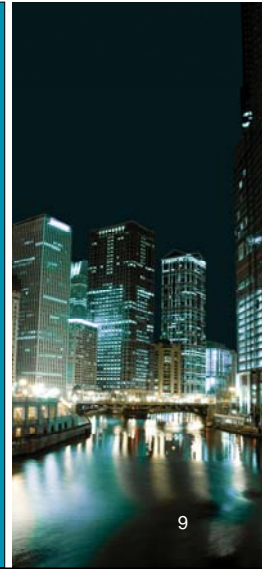


Improving Risk Management (continued)



- Firm-wide risk identification and compliance risk management
 - Need to “connect the dots”
 - Importance of communication and MIS
 - Guidance on firm-wide compliance management
- Counterparty credit risk
 - Intensified monitoring
 - Strengthen infrastructure for OTC derivatives
 - Central counterparties for credit default swaps

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Improving Risk Management (continued)



- Commercial real estate
 - Assess compliance with 2006 guidance
 - Monitor impact of declining collateral
 - Need for more / better stress testing
 - Training / outreach / market analysis
- Compensation
 - Adjust for risk
 - Symmetric with risk outcomes
 - Sensitive to time horizon of risks

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Shaping a New Regulatory Environment



New Regulatory Environment

	Treasury	C.O.P.	G-20
Systemic Risk	X	X	X
Consumer Protection	X	X	
Eliminate Gaps	X	X	X
International Coordination	X	X	X

New Regulatory Environment (continued)



Treasury Framework – Systemic Risk

- Single independent regulator for systemically important firms / payment systems
- Higher capital / risk management standards for systemically important firms
- Registration of hedge fund advisors
- Comprehensive framework for OTC derivatives
- New requirements for money market funds



New Regulatory Environment (continued)



Congressional Oversight Panel

Identify and regulate financial institutions that pose systemic risk	Executive pay structures that discourage excessive risk
Limit excessive leverage in financial institutions	Reform credit rating system
Modernize supervision of shadow financial system	Global financial regulatory floor
New system to regulate mortgages / other consumer products	Plan for the next crisis

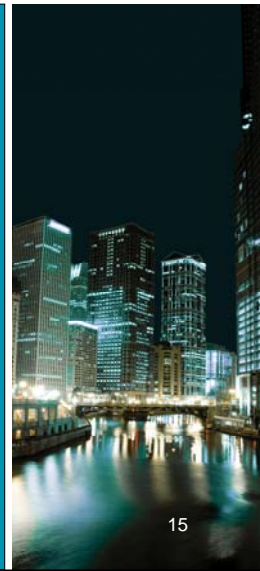


New Regulatory Environment (continued)



G-20 Planned Reforms

Establish Financial Stability Board	Improve quality and quantity of capital
Identify and respond to macro-prudential risks	Improve and harmonize accounting standards
Implement new FSF principles on executive compensation	Reform the credit rating agencies
Extend oversight to all systemically important institutions and markets	



Financial Reform to Address Systemic Risk



Addressing Systemic Risk



Too Big to Fail

- Address weaknesses in capital, liquidity and risk management
- Robust consolidated supervision for all systemically important firms
- Improved tools for resolution of large non-banks



Addressing Systemic Risk (continued)



Strengthening the financial infrastructure

- Improve clearing and settlement of CDS and other OTC derivatives
- Enhance resilience of triparty repo market
- Consider explicit Fed authority over critical payment and settlement systems
- Increase resilience of money market mutual funds

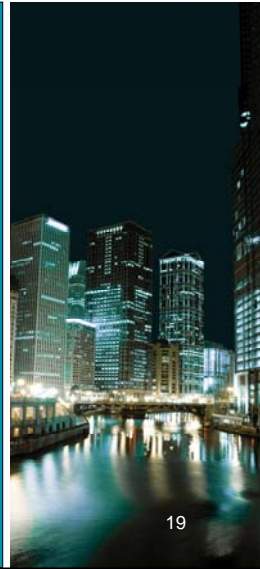


Addressing Systemic Risk (continued)



Procyclicality in the regulatory system

- Review capital regulations to ensure they are forward-looking
- Review accounting standards on fair value and loan-loss provisioning



Addressing Systemic Risk (continued)



Systemic risk authority

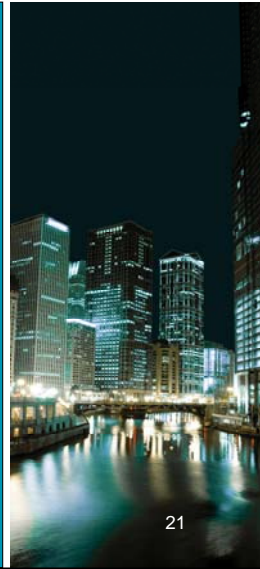
- Designate a government agency
- Resource needs and legal authority
- Which agency should fill this role?



Conclusions



- Risk management (including ERM) more critical than ever
- More regulation coming, not less
- Capital will remain king for financial institutions
- Macro-prudential focus for supervisors





Scenarios, ERM and Regulatory Issues

Kurt Karl
Swiss Re

Apr. 2009



Agenda

- What are scenarios?
- How are they used in ERM?
- The regulatory drivers of scenarios
- How can they be used for mitigating regulatory risk
- Examples
 - Solvency II
 - Nat Cat Fed backstop
 - Federal charter

Definition: What are scenarios?

- “A scenario is a snapshot of a possible, plausible future outcome. “
- Some scenarios are deterministic, a fixed set of variables changes by a set amount
 - Based on history, eg the stock market crash of 1987
 - Hypothetical: what if the stock market fell by 50%?
- Some scenarios are created by stochastic models
 - Multiple runs of the model based on random shocks to specified input variables
- Descriptive scenarios of vastly diverse futures are not the subject of this sigma (eg, Shell Oil scenarios)

Slide 2

Four major areas of use of scenarios in insurance

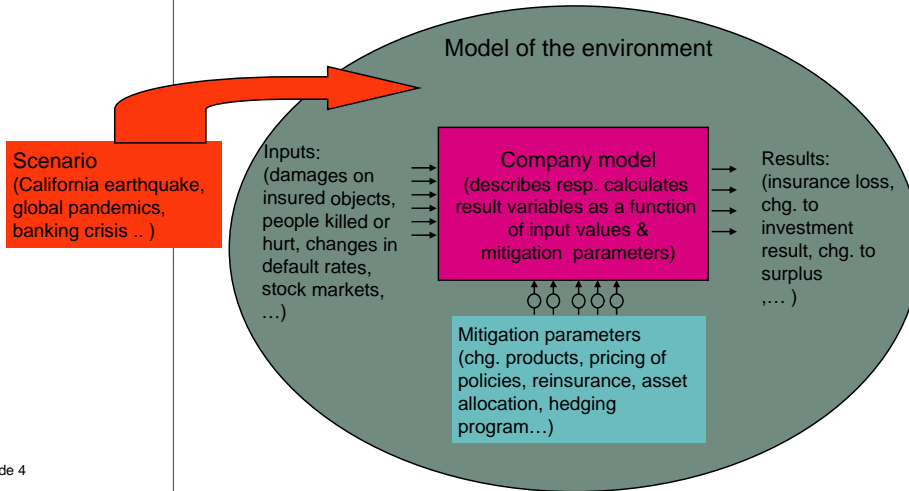
- Risk management (eg, see Pandemic example in appendix)
- Strategic planning
- Underwriting decisions
- Capital management
- See: *sigma* 1/2009, “Scenario analysis in insurance”

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& Consulting

Slide 3

Scenario modeling

Can the company change the results of the scenario by using mitigation variables?



Slide 4

The steps of scenario modeling for business decisions: Pandemic

Risk: What is the loss of the company from a pandemic and what is the best strategy to mitigate losses?

1. Define the risk	Specify the severity of the pandemic and assess what lines of business would be affected. Would financial markets be affected?
2. Recruit a team	<ul style="list-style-type: none"> ■ Actuarial experts ■ Medical experts ■ Economists ■ Asset managers
3. What affects the risk?	<ul style="list-style-type: none"> ■ Specify survival rates, morbidity, hospitalization rates, sick days lost from work ■ Assess the quality of the health care system to deal with crisis ■ Technological advances – impact of anti-virals
4. Obtain data & reports	<ul style="list-style-type: none"> ■ CDC reports ■ Medical information ■ Past events, eg SARS outbreak, 1917 flu epidemic

... continued

Risk: Pandemic	
5. Identify methodology	<ul style="list-style-type: none"> To build a model or not to build a model that is the question Brainstorming/"back of the envelop" – implicit model Mapping of impact of pandemic on workforce/economy/asset values
6. Document the analysis	<ul style="list-style-type: none"> Who participated in the project Qualifications of external experts/models Structure of model must be clear – explicit or implicit model Document the results and all the assumptions
7. Peer review	<ul style="list-style-type: none"> Sometimes experts become myopic or adopt herd mentality Always best to have some experts external from the team review the process, the model etc Probably best if done as the project progresses
8. Mitigation strategy & business decisions	<ul style="list-style-type: none"> Impact on clients/policyholders/competitors Pricing increases sensible? Reduce exposure/reinsurance/issue a mortality cat bond Develop an asset management strategy

Scenarios in the ERM framework

1. Corporate Governance Establish top-down risk management		
2. Line Management Business strategy alignment	3. Portfolio Management Think and act like a "fund manager" ✓	4. Risk Transfer Transfer out concentrated or inefficient risks ✓
5. Risk Analytics Develop advanced analytical tools ✓		6. Data and Technology Resources Integrate data and system capabilities
7. Stakeholders Management: Improve risk transparency for key stakeholders		

✓ Scenarios are particularly important in these parts of the ERM framework

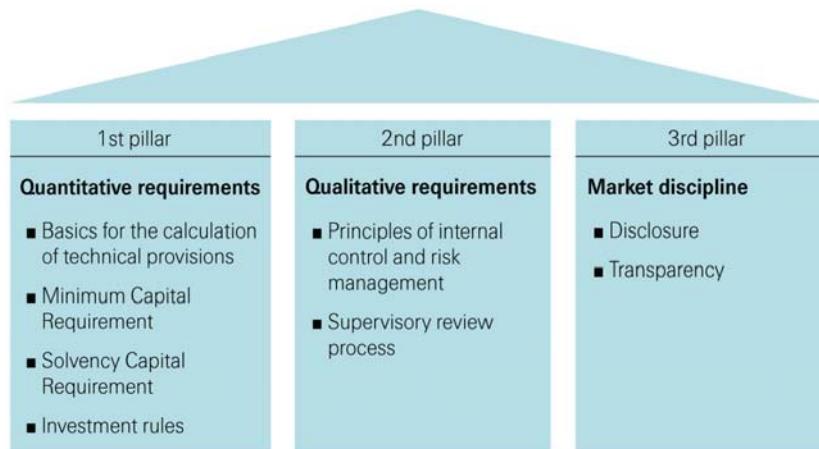
Source: Lam, James, Enterprise Risk Management, Wiley Finance, 2003, pp. 51-56

Regulatory requirements on stress tests and scenarios

	Stress tests or scenarios are effectively required for the following:						Can special scenarios be requested?	Risk report required?	CRO or Actuarial Head required?	Risk-based capital approach?
	Assets	Liabilities	Overall exposure; solvency; capital	Technical provisions	Reinsurance cover	Cat models				
Bermuda	✓	✓	✓	✓		✓				
France	✓		✓	✓	✓					
Germany	✓	✓	✓	✓	✓		✓	✓		
Japan	✓		✓				✓			
Switzerland	✓	✓	✓	✓			✓	✓		
United Kingdom	✓	✓	✓	✓						
United States	✓	✓	✓						✓	✓


Slide 8 Source: IAIS Global Reinsurance Market Report 2006, Appendix VII, pp 84-88; sigma, 4/2006; Swiss R

The three-pillar structure of Solvency II



Slide 9

Source: Swiss Re Economic Research & Consulting

Swiss Re


What is new? Solvency II Capital Requirement

1. Market-consistent valued assets and liabilities


Assets	Statutor	Close-to-market	Difference
Real estate	302	332	+10%
Bonds	1996	2056	+3%
Shares	202	222	+10%
Total	2500	2610	+4%

Liabilities	Statutor	Close-to-market	Difference
Equity	300	680	+127%
Technical provisions	2000	1730	-14%
Other liabilities	200	200	+0%
Total	2500	2610	+4%

Solvency I SST

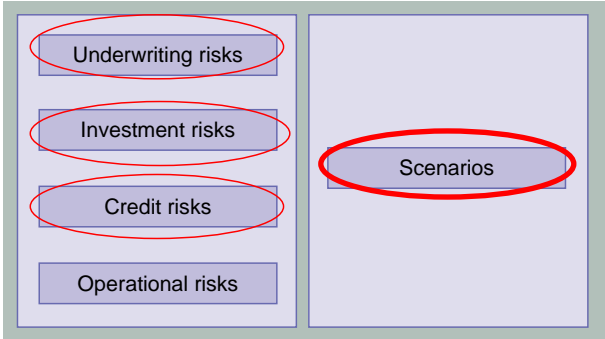
Sample non-life insurer
 Source: Baloise

Slide 10

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What is new? Solvency II Capital Requirement cont.

2. Integrated risk approach



Standard models
 or **internal models**

Slide 11

Scenarios on regulatory change

- Objective: Identify relevant regulatory scenarios arising from the current financial turmoil and assess what impact they may have on your company.
- How: This will be done by observing current regulatory discussions on political and regulatory issues
- How: Brainstorming with a dedicated team on scenarios, then worked through with the relevant experts.
- Goal: Your company must understand the potential implications of regulatory changes to mitigate them, prior to their passage

Slide 12

Summary overview of current regulatory issues

> Are there any important trends missing?
 > Which trends would affect your company the most?

1. pillar – quantitative requirements	2. pillar – qualitative requirements	3. pillar – market discipline
<ul style="list-style-type: none"> ■ Will there be suspension of m-t-m valuation in disorderly times? ■ Nat Cat Federal Backstop ■ Investment – reconsideration of security lending rules ■ Investment – higher capital reqs. for securitized products ■ Maturity mismatches in non-bank financial institutions ■ Limits on bank lending/leverage ■ Rules for ratings firms ■ New hedge funds/private equity/ mortgage market regulation ■ Taxing foreign affiliates of reinsurers 	<ul style="list-style-type: none"> ■ Centralized federal supervision in the US for insurers ■ Liquidity risk management (in particular for banks and life insurers) ■ Colleges of national supervisors ■ Integration of banking and insurance supervision ■ Tightened supervision of banks and affiliated brokers ■ EU-wide reporting formats ■ Risk management for securitised products ■ Combating regulatory arbitrage 	<ul style="list-style-type: none"> ■ Transparency of methodologies used to rate ABS etc ■ Higher transparency on banks' lending, cash holdings/securitised investments ■ Regular disclosure on liquidity risk (management) ■ Stepped-up disclosure requirements for hedge funds/private equity etc and their products

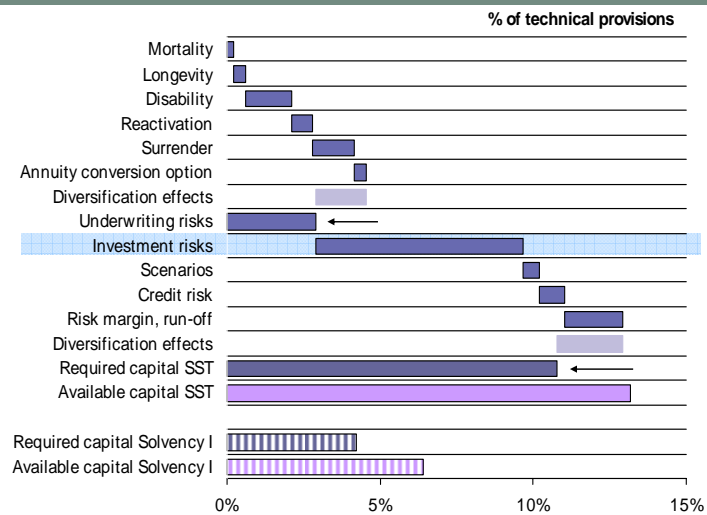
Solvency II Scenario

- Capital requirements
- Do business opportunities arise out of the new regulatory framework
- See: *sigma* 4/2006, "Solvency II: an integrated risk approach for European insurers"

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 Slide 14

Capitalization

SST solvency capital requirements for sample life insurer

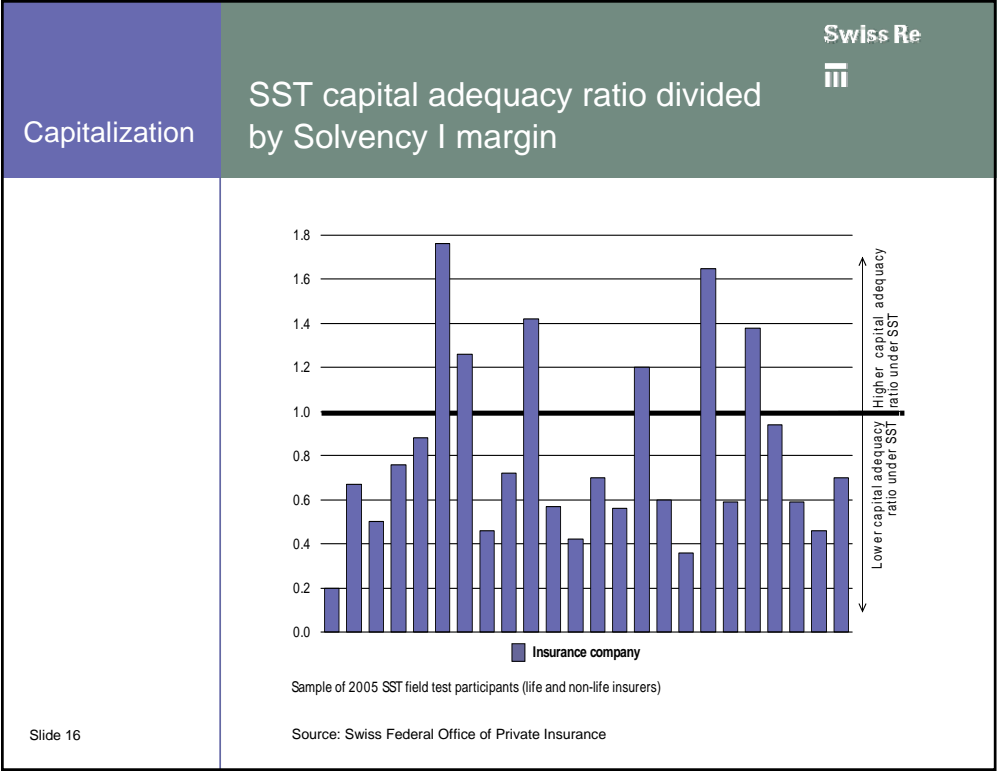


Capital adequacy ratios	
Solvency I	152%
SST	122%

Slide 15

Sources: Swiss Life, Swiss Re Economic Research & Consulting

Scenarios are required historical financial scenarios



- Capitalization
- Swiss Re
- Impact on capital adequacy
- More complete picture of an insurer's solvency position
 - No major under- or overcapitalisation in the industry
 - Effect on some insurers may be substantial
- Slide 17

Pricing & product design

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Opportunity: Volatile lines require more capital

	Property	Liability	Motor	Accident	Other
Germany	+	-	-	+	+
France	+	+	-	-	+
United Kingdom	+	-	-	-	+
Italy	+	-	-	+	+

Lower capital requirements

Higher capital requirements

"Other" includes inter alia credit, aviation and marine
 Sources: Supervisory authorities, Swiss Re

Slide 18

Nat Cat Fed backstop


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Federal backstop to cover natural catastrophe risks


See Swiss Re research reports:
 "The economic case against a federal backstop for natural disaster risks"
sigma No 2/2009 – "Natural catastrophes and man-made disasters in 2008"


- Insured losses from US weather-related natural catastrophes grew at 12% compound rate since 1978, double every 6 years
- In response to this trend, some have proposed that the federal government:
 - cover wind damage from hurricanes
 - reinsure states' exposures to large-scale cat losses
 - support state reinsurance programs with low-rate loans
- Some states have capped premiums on catastrophe insurance
- These policy responses are counterproductive because they
 - distort economic incentives
 - create large government liabilities
 - thwart efficient operation of private insurance markets

Slide 19

<p>Nat Cat Fed backstop</p>	<p style="text-align: right;">Swiss Re </p> <h2 style="text-align: center;">Unintended consequences of intervention</h2>
<p><i>Moral Hazard</i></p> <p><i>Adverse Selection</i></p> <p><i>Moral Hazard</i></p> <p>Slide 20</p>	<ul style="list-style-type: none"> ■ Private insurers send market signals about risk through: price (premiums), deductibles, limits, underwriting restrictions ■ Government insurance plans distort these signals, promoting: <ul style="list-style-type: none"> – excessive development in disaster-prone areas – reduced risk mitigation efforts ■ Capping premium rates encourages: <ul style="list-style-type: none"> – the most at-risk to buy the most coverage – risky behavior that increases losses ■ Government insurance programs can incur large liabilities <ul style="list-style-type: none"> – NFIP was \$17 billion in deficit as of June 2008 – Under current proposals, a hurricane season like 2005 would cause government losses of some \$150 billion – Taxpayers living outside high-risk zones would foot the bill

<p>Nat Cat Fed backstop</p>	<p style="text-align: right;">Swiss Re </p> <h2 style="text-align: center;">Government and industry have complementary roles</h2>
<p>Slide 21</p>	<ul style="list-style-type: none"> ■ Government (through FEMA): <ul style="list-style-type: none"> – Manage natural catastrophe risks – Mitigate risk through appropriate zoning, land planning, building codes – Insuring nat cats would needlessly expose taxpayers to further financial burden ■ Industry <ul style="list-style-type: none"> – Insurers and reinsurers underwrite nat cat risk expertly and rigorously – Provides growing capacity through traditional market mechanisms, new entrants, and new financial instruments (eg, cat bonds, industry loss warranties) – Sets premiums that are actuarially sound and reasonable given the risk

<p>Nat Cat Fed backstop</p>	<p style="text-align: right;">Swiss Re </p> <p style="text-align: center;">Scenarios and Nat Cat Fed backstop</p>
<p>Swiss Re Economic Research & Consulting Slide 22</p>	<ul style="list-style-type: none"> ■ Assess the impact/cost on your company under various versions of the bill – range of estimates given the scenarios. Finance/accounting/actuaries ■ If it is a high impact, develop mitigation strategy: <ul style="list-style-type: none"> – Join lobby efforts against the proposal <ul style="list-style-type: none"> – Does the US govt really want more contingent liabilities at this time? – Develop second-best solution – less onerous proposal – Develop set of business decisions, should the proposal be adopted


<p>Optional Federal Charter</p>	<p style="text-align: right;">Swiss Re </p> <p style="text-align: center;">Optional Federal Charter</p>
<p>Swiss Re Economic Research & Consulting Slide 23</p>	<ul style="list-style-type: none"> ■ Latest proposal from Paulson, when he was Treasury Secretary ■ Provides for the option to choose a federal charter to allow insurers and reinsurers to operate in all US locales <ul style="list-style-type: none"> – Regulated by a single federal entity – Not subject to rate regulation – No prior approval for policy forms ■ State supervision pre-empted, except: <ul style="list-style-type: none"> – State unclaimed property and escheat laws, – State taxes and premium taxes, – States laws relating to assigned risk and residual market plans – Compulsory coverage requirements for workers' compensation and motor vehicle insurance


<p>Optional Federal Charter</p>	<p style="text-align: right;">Swiss Re</p> <h2 style="text-align: center;">Current state vs. Optional Federal Charter</h2>
<p>Reports:</p> <p>"The Case for an Optional Federal Charter for Insurance," Swiss Re Economic Research & Consulting;</p> <p>"Consumer Ramifications of an Optional Federal Charter for Life Insurers," Ibsen School of Management, University of Massachusetts, report prepared for ACLI, 2004.</p> <p>Swiss Re Economic Research & Consulting</p> <p>Slide 24</p>	<ul style="list-style-type: none"> ■ Current state of the market: 50+ regulators <ul style="list-style-type: none"> – Complex and expensive, eg, rules & regs differ by state – Inhibits entry into the industry – Delays new product launches – Creates difficulties with dealing with external regulators – Set rates, rather than markets setting rates ■ Proposed optional federal charter <ul style="list-style-type: none"> – Saves money — estimated to be 7% of profits for some lines of life business (ACLI, SR ER&C) – Focus regulatory resources on solvency – Market-based pricing – Continues to provide effective customer protection – Improve competitiveness of US insurance industry – Particularly useful for commercial insurers and reinsurers


<p>Optional Federal Charter</p>	<p style="text-align: right;">Swiss Re</p> <h2 style="text-align: center;">Scenarios and Optional Federal Charter</h2>
<p>Swiss Re Economic Research & Consulting</p> <p>Slide 25</p>	<ul style="list-style-type: none"> ■ Assess the impact/cost on your company under various versions of the charter – range of estimates given the scenarios. Finance/accounting/actuaries ■ If it is a high impact, develop mitigation strategy: <ul style="list-style-type: none"> – Join lobby efforts for the proposal <ul style="list-style-type: none"> – In this financial crisis, the US cannot really co-ordinate regulatory insurance policy with foreign governments, nor manage any potential systemic risk – Is there a proposal that involves NAIC and also allows for the federal option? – Develop set of business decisions, should the proposal be adopted: Opportunities?

	<p data-bbox="1133 226 1230 298">Swiss Re III</p> <h2 data-bbox="561 323 724 365">Summary</h2>
<p data-bbox="341 865 470 949">Swiss Re Economic Research & Consulting Slide 26</p>	<ul data-bbox="561 428 1263 932" style="list-style-type: none">■ Use of scenarios increasingly required and increasingly useful<ul style="list-style-type: none">– A part of ERM– Regulatory authorities– Rating agencies■ Dramatic time of regulatory change and scenarios useful for this<ul style="list-style-type: none">– Systematic focus on the regulatory risk (ERM)– Explores the range of impacts from versions of the regulations– Strives to mitigate the risk from regulations

<h2 data-bbox="337 1239 457 1272">Appendix</h2>	<p data-bbox="1133 1138 1230 1209">Swiss Re III</p> <h2 data-bbox="561 1188 945 1272">Appendix: How to do a scenario</h2>
<p data-bbox="341 1776 470 1860">Swiss Re Economic Research & Consulting Slide 27</p>	<div data-bbox="548 1398 1247 1545" style="border: 1px solid blue; background-color: #e6f2ff; padding: 10px;"><ul data-bbox="561 1411 1185 1537" style="list-style-type: none">■ Risk management (eg, Pandemic example)■ First, read: <i>sigma</i> 1/2009, "Scenario analysis in insurance"</div>

Appendix	<div style="text-align: right;">  </div> <h2 style="text-align: center;">The eight steps in building a scenario</h2>
Slide 28	<ol style="list-style-type: none"> 1. Define the risk or issue 2. Recruit a team with appropriate skills to analyze the scenario 3. Identify the factors affecting the risk 4. Obtain and review the data/information needed 5. Develop a methodology for how to technically answer the question – eg build a model or use a “back-of-the-envelope” technique 6. Document the results of the analysis, making explicit all assumptions and how they were derived

Appendix	<div style="text-align: right;">  </div> <h2 style="text-align: center;">The eight steps in building a scenario (2)</h2>
Slide 29	<ol style="list-style-type: none"> 7. Set up a peer review process for verifying the robustness of the methodology, models and procedures 8. Use the results of the scenario analysis to make a business decision

Swiss Re



Appendix **Example: Severe pandemic, key assumptions (1)**

Step 6: Assumed characteristics of the pandemic

	France	Germany	Japan	UK	US
Deaths ('000)	61	83	127	60	300
Population, %	0.1%	0.1%	0.1%	0.1%	0.1%
Total ill (m.)	18	25	38	18	90
Population, %	30%	30%	30%	30%	30%

Sources: United Nations population data (2005), Swiss Re's epidemiological model

Slide 30

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Appendix **Example: Severe pandemic, key assumptions (2)**


Step 6: Assumed financial impact of the pandemic

Speculative grade, bp	BBB Bonds, yield, bp	Equity markets, %	Real estate prices, %	Long-term government bond yields, bp	Short-term government bond yields, bp	Inflation
+500	+200	-25.0%	-5.0%	-150	-300	-2.0%

Sources: Swiss Re Economic Research & Consulting

Slide 31

Appendix	<p style="text-align: right;">Swiss Re </p> <h2 style="text-align: center;">Example: Severe pandemic, mitigation issues (1)</h2>		
	<table border="1" style="width: 100%;"> <tr> <td> <p>Interpandemic period</p> <ul style="list-style-type: none"> • Phase 1: No new influenza virus subtypes have been detected in humans. • Phase 2: Same as 1, but a circulating animal influenza virus subtype poses a substantial risk of human disease. </td> </tr> <tr> <td> <p>Pandemic alert period</p> <ul style="list-style-type: none"> • Phase 3: Human infection, but no human-to-human spread. (WHO states that the world is presently in this phase.) • Phase 4: Human-to-human transmission, but contained and localised spreading, indicating the influenza is not well-adapted to human contagion, eg clusters are less than 25 cases and last less than 2 weeks. • Phase 5: Larger clusters of human-to-human transmission, but still fairly localised and cases are not increasing rapidly, eg clusters are 25 to 50 cases and last 2 to 4 weeks. </td> </tr> <tr> <td> <p>Pandemic period</p> <ul style="list-style-type: none"> • Phase 6: This is the pandemic phase with the influenza spreading to the general global population. </td> </tr> </table> <p>Slide 32 Sources: World Health Organization</p>	<p>Interpandemic period</p> <ul style="list-style-type: none"> • Phase 1: No new influenza virus subtypes have been detected in humans. • Phase 2: Same as 1, but a circulating animal influenza virus subtype poses a substantial risk of human disease. 	<p>Pandemic alert period</p> <ul style="list-style-type: none"> • Phase 3: Human infection, but no human-to-human spread. (WHO states that the world is presently in this phase.) • Phase 4: Human-to-human transmission, but contained and localised spreading, indicating the influenza is not well-adapted to human contagion, eg clusters are less than 25 cases and last less than 2 weeks. • Phase 5: Larger clusters of human-to-human transmission, but still fairly localised and cases are not increasing rapidly, eg clusters are 25 to 50 cases and last 2 to 4 weeks.
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Appendix	<p style="text-align: right;">Swiss Re </p> <h2 style="text-align: center;">Example: Severe pandemic, mitigation issues (2)</h2>
	<ul style="list-style-type: none"> ■ Investments during the pandemic alert period can be instrumental in mitigating risk <ul style="list-style-type: none"> – During phase 3, there may be opportunities to buy shares of companies that will benefit from sales supported by pandemic risk mitigation – To mitigate losses, investment strategies would need to be implemented during phases 4 and 5 – By phase 6, it is too late to purchase a hedge at a reasonable price, or hedges may simply not be available ■ Other: Reinsurance, raise rates on mortality, reduce exposure <p>Slide 33</p>



Questions?

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