

Enterprise Risk Management Topics

LOMA ERM Committee

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Today's Discussion

- Overview
- Emerging Risks
- ERM Symposium takeaways
- Insurer Investment Practices
- Papers

Expectations

- ERM is built on compliance
- Goal is to make better decisions
- Contrarian thinking required
- Beware of consensus
 - Thoughts (investment strategies at hedge funds)
 - Models (Black-Scholes)
 - Methods (FHLB for liquidity)

Financial Crisis – Same Old Tune

- Culture
- Accountability
- Incentives
- Exposures/correlations in the tail
- Leverage
- Systemic risk/liquidity

Physical Crisis – Prepare?

- Asteroids no, local risks yes
 - St. Louis earthquake zone
 - California earthquake zone
 - Buildings
 - Levees
 - New York city
 - Earthquakes, water, bridges, subways
- Contrarian thinking needed

Enterprise Risk Management

- “ERM is the process by which organizations in all industries assess, control, exploit, finance, and monitor risks from all sources for the purpose of increasing the organization’s short and long term value to its stakeholders.”
 - Casualty Actuarial Society, 2003

Black Swans? – 2010 Events

- Haiti earthquake
- Iceland volcano
- Chile earthquake
- New Zealand earthquake
- Indonesian volcano
- Gulf oil spill
- Auto safety issues
- Egg recall due to salmonella
- Floods in Central Europe
- Wildfires in Russia
- Flooding in Pakistan
- Tensions on Korean peninsula
- European debt crisis (e.g., Greece, Ireland, Portugal)

Black Swans? – 2011 Events

- Australian flooding/monsoon/fires
- Pakistan earthquake
- Uprisings in Tunisia/Egypt/Libya
 - What if this moves to Saudi Arabia/China?
- Japan earthquake/tsunami
 - Nuclear implications

Japanese Life Insurance Market

- Higher demand following tsunami/radiation
- Is that good or bad?
- How will mortality change?
- Other implications?
 - Positive for US auto makers?
 - What industries are concentrated in Japan?
 - Non economic repercussions?

Unintended Consequences

- Brainstorm
 - Low rates: impact on pricing
 - New accounting regime (e.g., ORSA)
 - New regulation (e.g., health care)
 - Liquidity tools concentration

Scenario Planning – tell a story

- Deterministic scenarios
 - Worried about specific outlier event
 - Modeling constraint
 - Run-time constraint
- Qualitative scenarios
- Balance with stochastic scenarios
- Hyperinflation – impact on pensions/wages

Practical Uses of Scenario Planning

- Marginal impact
 - Organic growth
 - Project (aging) in-force
 - Introduce new product
 - Mitigation strategies (e.g., reinsurance)
 - Asset mix/investment strategy
 - Acquisition

Emerging Risks

- What are emerging risks?
 - Completely new risks (some are Black Swans)
 - New earthquake zone
 - Evolving risks (creeping)
 - Public pension guarantees
 - May be internally or externally generated
 - Competitor (e.g., oil spill)
 - Everyone focused on COSO (the next Black Swan will be something not covered in popular practices)

Perfect Storm?

- Gaussian Copout
 - Once per century events don't happen 4 days in a row
- How to avoid
 - Environmental scanning
 - Mean reversion
 - Independent thinking
 - Perfect Sunrise

Emerging Risks Survey

- Emerging risks originally developed by World Economic Forum (23)
- Top 5 emerging risks (including #1)
- Leading indicators
- Combinations of risks in general
- Current topics

Emerging Risks

- Economic

- Oil price shock
- Fall in value of US \$
- Chinese economic hard landing
- Demographic shift
- Blow up in asset prices

- Environmental

- Climate change
- Freshwater loss
- Tropical storms
- Earthquakes
- Inland flooding

Emerging Risks

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

Current Environment Matters

April 2008

- Oil price \$114
- S&P 500 1,386
- Currency 1.56 \$/Euro

November 2008

- Oil price \$68
- S&P 500 969
- Currency 1.27 \$/Euro

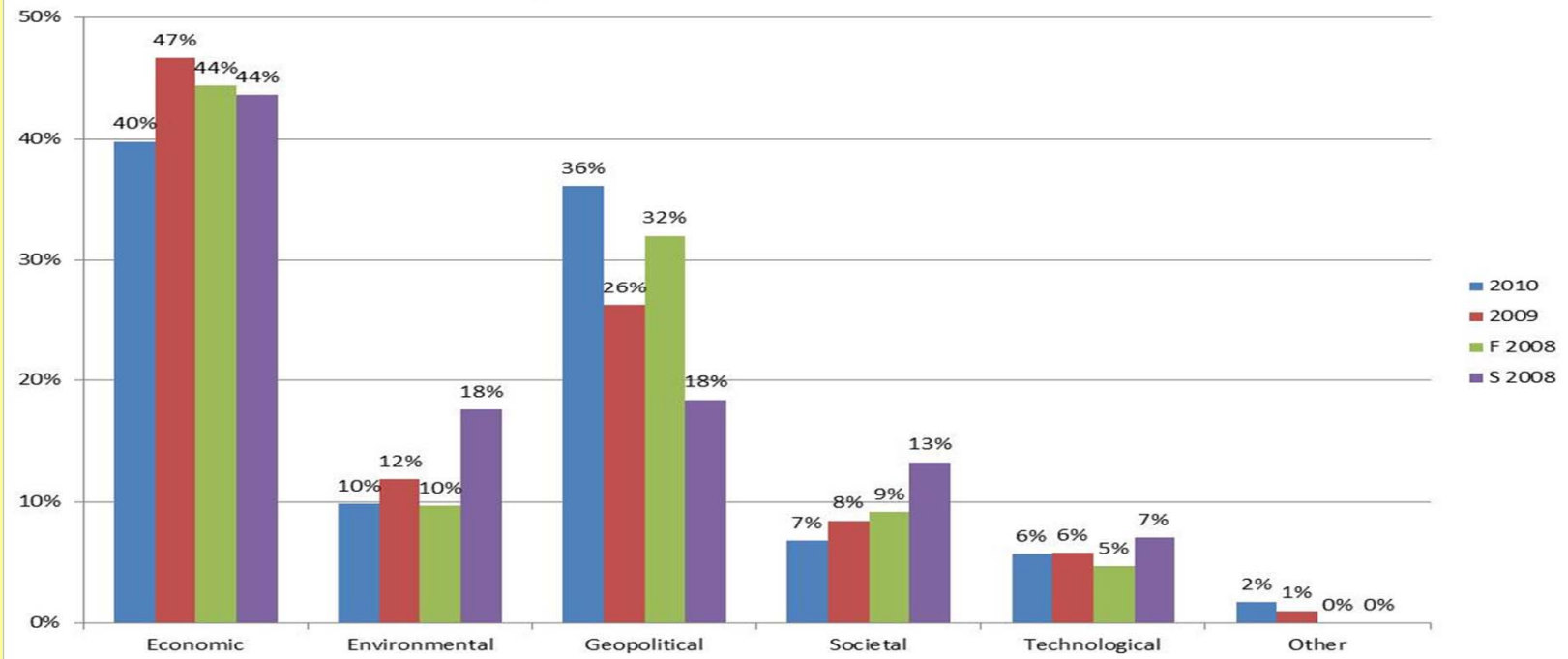
December 2009

- Oil price \$77
- S&P 500 1,106
- Currency 1.48 \$/Euro

November 2010

- Oil price \$84
- S&P 500 1,176
- Currency 1.40 \$/Euro

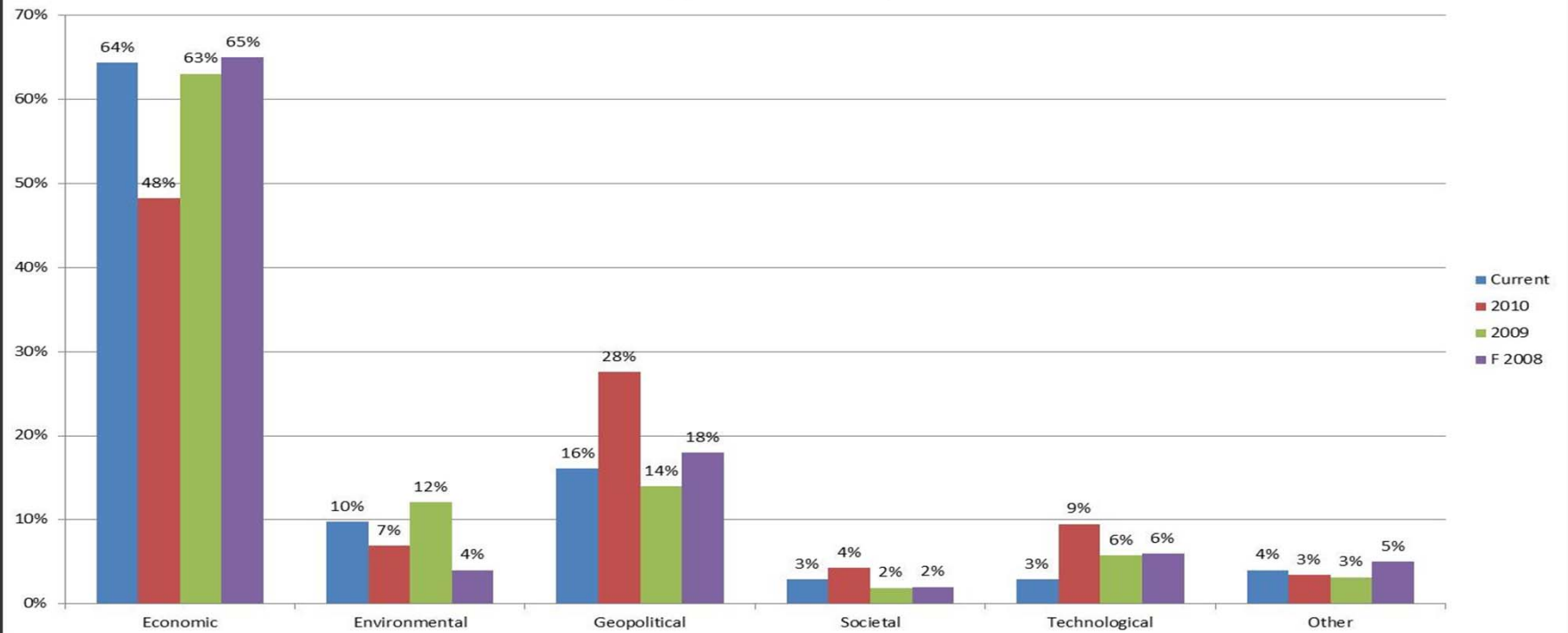
**Emerging Risks by Category
(up to 5 risks chosen per survey)**



Anchors Away?

- April 2008
 - 57% Oil price shock
 - 40% Climate change
 - 40% Blow up in asset prices
- December 2010
 - 49% Fall in value of US\$
 - 43% International terrorism
 - 41% Chinese economic hard landing
 - 40% Oil price shock

Emerging Risks by Category Single Greatest Impact



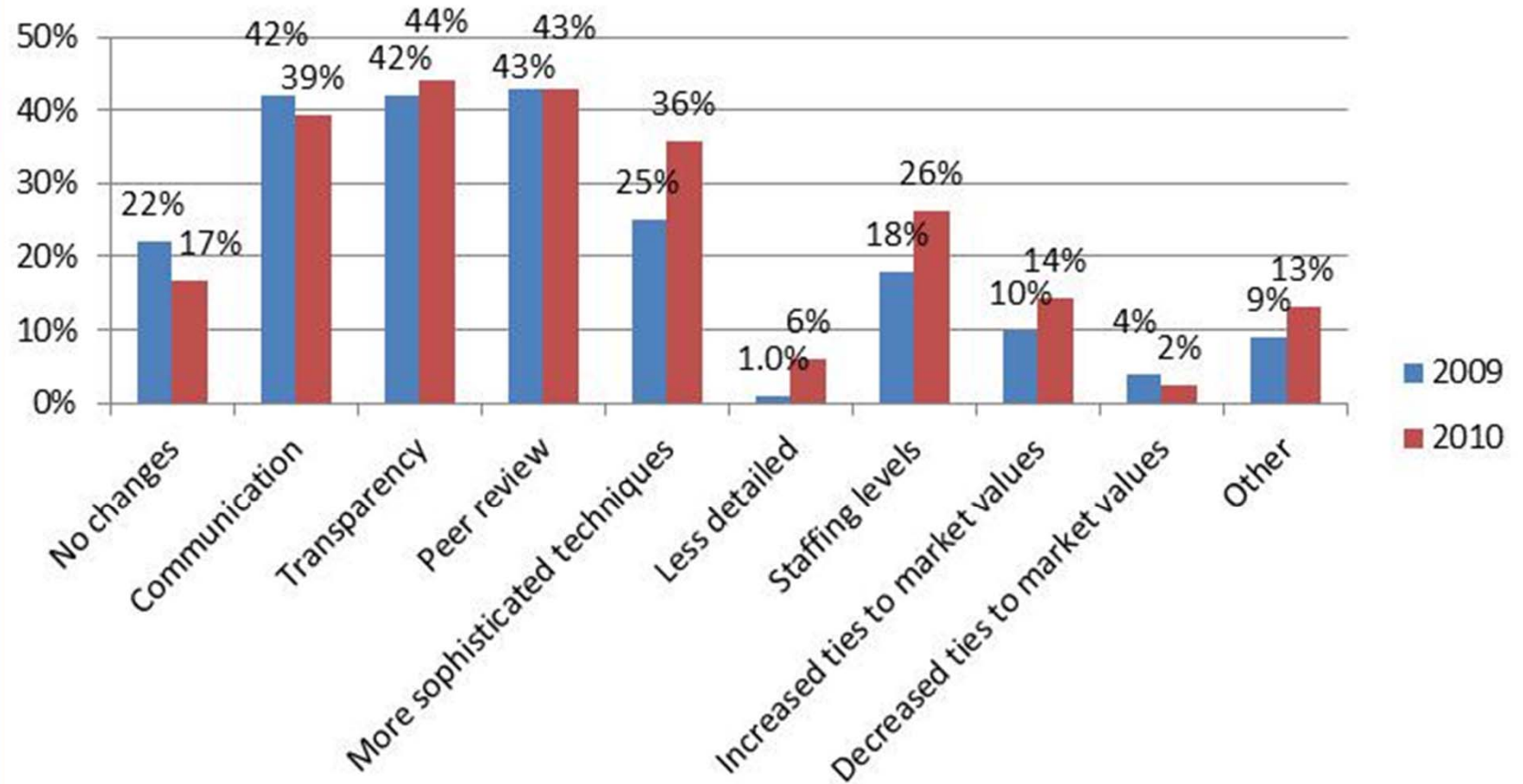
Top Emerging Risk

- 14% Chinese economic hard landing
 - 4% last year
- 11% Fall in value of US dollar
 - 26% last year
- 10% Blow up in asset prices (22% last year)
- 9% Breakdown of critical information infrastructure (4% last year)
- 9% Oil price shock (6% last year)

Leading Indicators

- Over 50% identify leading indicators
 - sea surface temperatures
 - WHO pandemic alert level
 - CO₂
 - CPI, GDP, value of the dollar, gold price, oil price, US deficit, US debt, CDS rates, unemployment, interest rates
 - solar activity
 - water supplies
- **“mostly by the seat of our pants”**

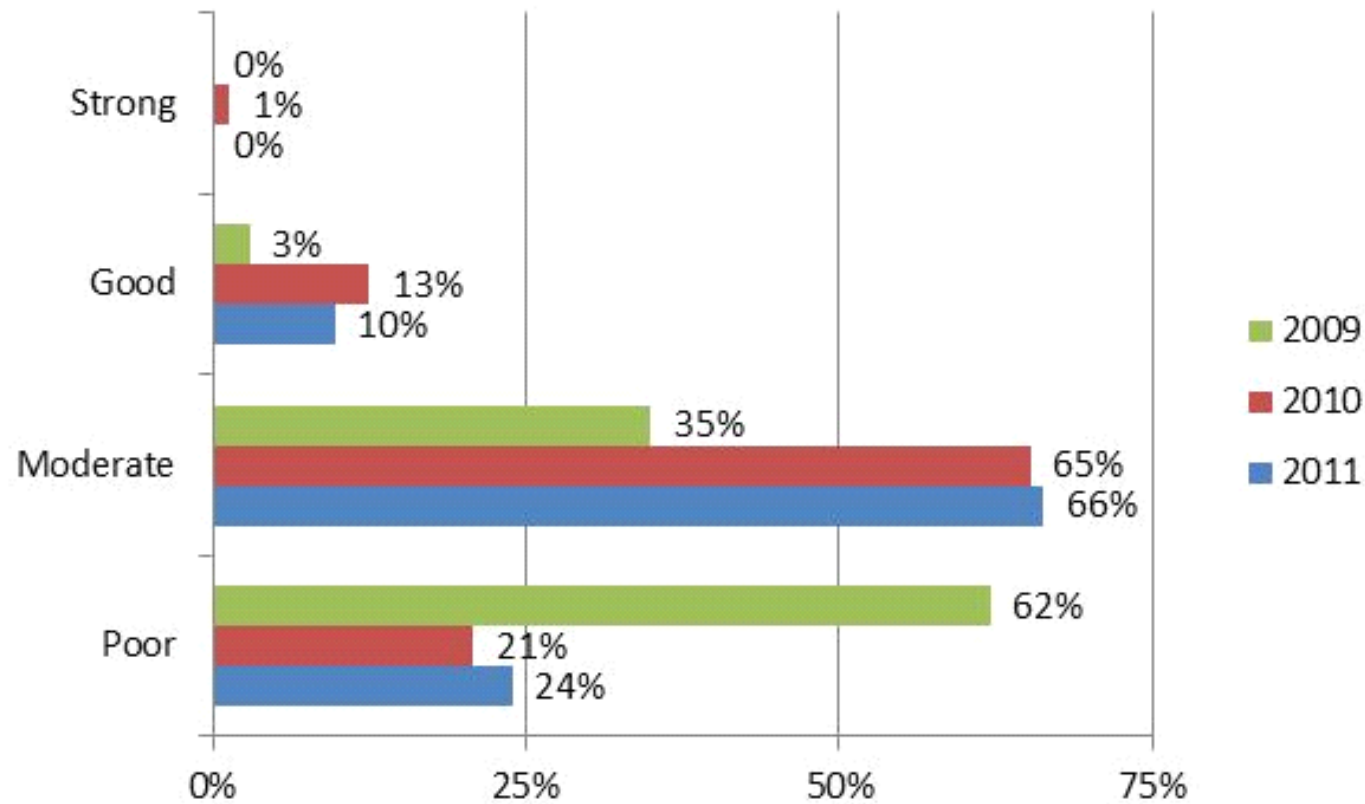
Modeling practice improvements



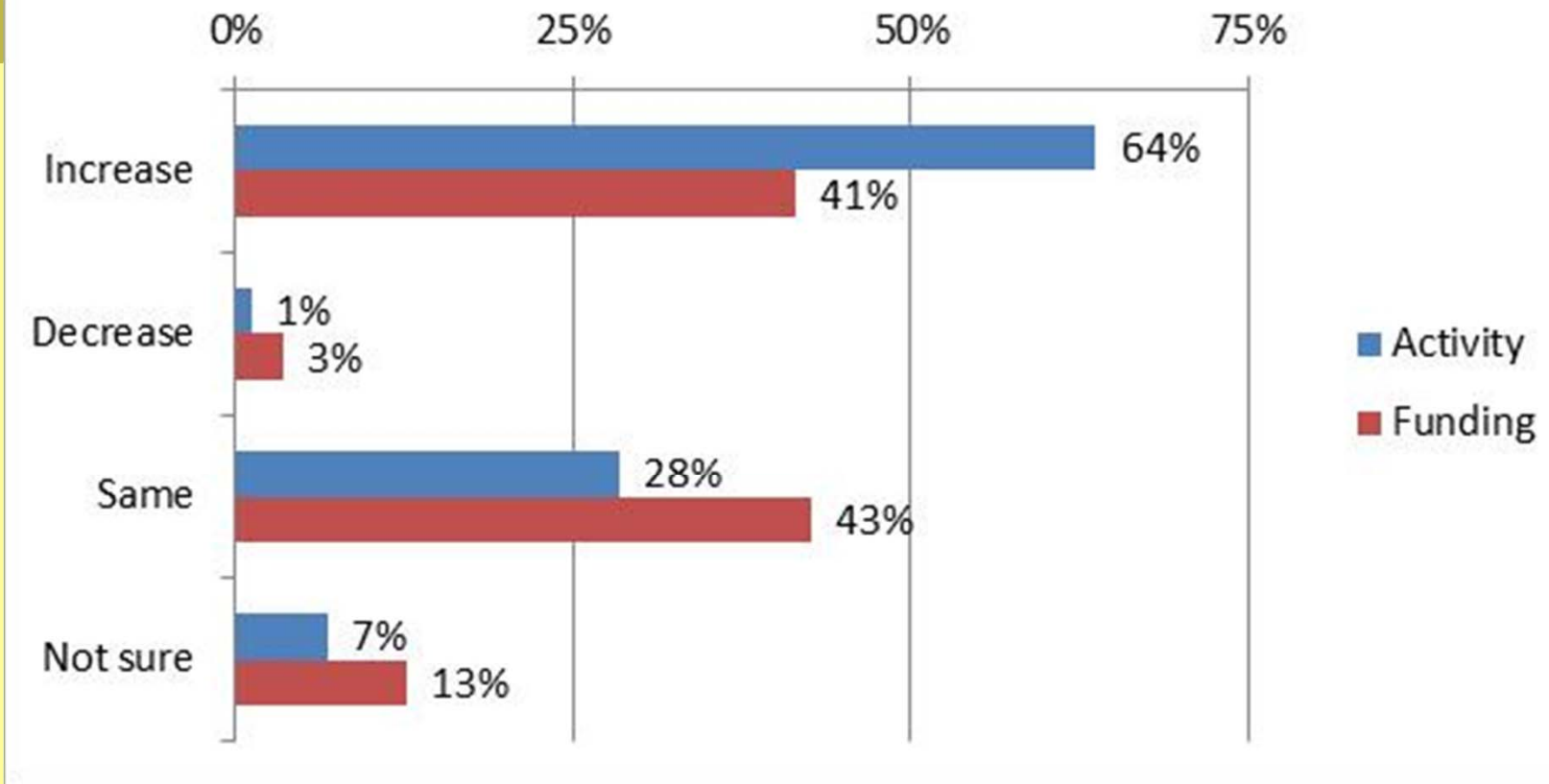
Predicting the Future

- 77% say yes
- predicting potential outcomes
- Not predicting actual future events
 - oracle or soothsayer
- **“to be prepared to react is the goal”**

Global Economic Expectations



2011 Anticipated ERM Levels



Interesting Revelations

- Geopolitical risk resurgence
- Economic categories down but still 1st
- Worried about China
- Infrastructure becoming a concern
- Combinations have higher dispersion
- Movement toward leading indicators, analysis
- Higher staffing in 2010
- ERM used to identify opportunities

To access reports/articles

- 2010 research
- <http://www.soa.org/research/research-projects/risk-management/research-2010-emerging-risks-survey.aspx>
- Article in August 2010 issue of The Actuary
 - Challenging the Herd
- <http://www.soa.org/library/newsletters/the-actuary-magazine/2010/august/act-2010-vol7-iss4.pdf>

ERM Symposium Impressions

- Lots of references to emerging risks
- ERM standards – are they needed?
- Country risk officer
 - Great idea but no one knows how to implement
 - Is government the largest creator of systemic risk?
- Smaller companies are running more scenarios

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- Regulators accept little blame for the financial crisis
- Compliance culture for ERM is problem
- Leverage is sometimes hidden by innovation
- Need to get past “too stupid to ask a question” complex
- Are bank stress tests realistic
 - Where is the scenario for sovereign defaults?

ERM Symposium - WordPress

- Regulatory consolidation (international) would increase systemic risk
 - As does consistent ERM practices
- How do you address “Things that people say will never go wrong will go wrong”? Or do we shoot the messenger?
- CRO role to minimize required capital?

Financial Predictions

- Stocks will outperform bonds over next 10 years – use dividends as coupons
- Cash will be used for industry consolidation
 - Led by concentration of large consultants
- Oil volatility – if prices drop
Russia/Venezuela
- Credit risk – covenants are weakening
- Food shortages

Investment Research Project

- Ongoing research sponsored by Society of Actuaries
- Online survey
- Follow up phone discussion
- Literature search
- Conclusions

Survey

- Large/small companies
- Companies
 - P/C
 - Life
 - Health

Preliminary Results

- Investment Policy Statements (IPS) are common
 - Most are formally approved by board
 - 75% have updated their IPS
 - Not due to financial crisis
 - Often minor issues like renaming benchmarks

Preliminary Results

- Most think insurers weathered the storm better than others
 - Conservative investment strategy
 - Limited leverage
 - Focus on core offerings
 - Recurring premiums

Preliminary Results

- Investment risk tolerance metrics are board approved
 - Statutory equity
 - Rating
 - Duration
 - Statutory earnings
- Stress tests added post crisis

Preliminary Results

- Portfolio changes
 - Avoided/reduced specific asset classes
 - **Sought out specific asset classes**
 - Some slow to rebalance due to fear/anticipated meltdown

Preliminary Results

- Outsourcing
 - Many insurers use outsourcing
 - Small firms outsource all assets
 - Large firms outsource satellite classes
 - Continues to evolve

Preliminary Results

- Additional learnings
 - Securities lending stopped by many
 - Operating cash flows provided buffer
 - FHLB programs relied on
 - Some for the first time

Follow up Questions

- What should we ask?
 - What asset classes are you worried about now?
 - Japan, municipal bonds, junk bonds, Treasuries
 - Do capital requirements provide good incentives in a low interest rate environment?
 - How does the dynamic nature of liabilities impact an IPS?

Follow up Questions

- What should we ask?
 - If an IPS does not need to be updated after a severe stress period, does this mean
 - It was effective
 - It was too broad
 - Should metrics be tied to exposures?

Outsourcing Trend

- More firms are using outsourcing for at least part of their portfolio
 - Core
 - Satellite

Question

- Does the insurance industry pose a systemic risk?
 - Why or why not?
 - What are your biggest worries?
 - How do emerging risks fit in?

Systemic Risks?

- Reinsurer concentration
 - Few options
- Interest rates
 - Low rates continue
 - Rates spike (hyperinflation? 20%?)
- New regulations
 - Internationally consistent
 - Unintended consequences

Papers

- Do you need a Chief Skeptical Officer?
- http://www.rudolphfinancialconsulting.com/200812_-_Chief_Skeptic.pdf
- Perfect Sunrize
- <http://www.rudolphfinancialconsulting.com/fin-crisis-essay-2011-rudolph.pdf>

Thank you!

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