

Emerging Risks Webcast

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What are Emerging Risks

- Evolving risks (creeping, mean reverting)
 - Public pension guarantees
 - Home mortgage market
- Tail risk (recently unseen)
 - Earthquake/asteroid/black plague
- Correlations of risks
- Rumsfeld's Knowns and Unknowns

Emerging Risks

- May be internally or externally generated
 - Higher order impact (e.g., oil spill/tourism)
 - May be positive event (e.g., nanotechnology)
- Next big risk is likely to be something new

Avoiding the “Perfect Storm”

- Environmental scanning
- Mean reversion (Perfect Sunrise)
- Gaussian copout
 - Once per century events don't happen 4 days in a row
 - Is New Madrid fault frequency really independent from severity?

Survey

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

Emerging Risks

- Economic
 - Oil price shock
 - Fall in value of US \$
 - Chinese economic hard landing
 - Financial volatility
 - 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 and failing states
- Transnational crime
- Globalization fallback
- Regional instability

- Societal

- Pandemics / Infectious diseases
- Chronic diseases
- Demographic shift
- Liability regimes

- Technological

- Cyber security / Interconnectedness of critical infrastructure
- Technology / Space weather

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

October 2011

- Oil price \$79
- S&P 500 1,131
- Currency 1.34 \$/Euro

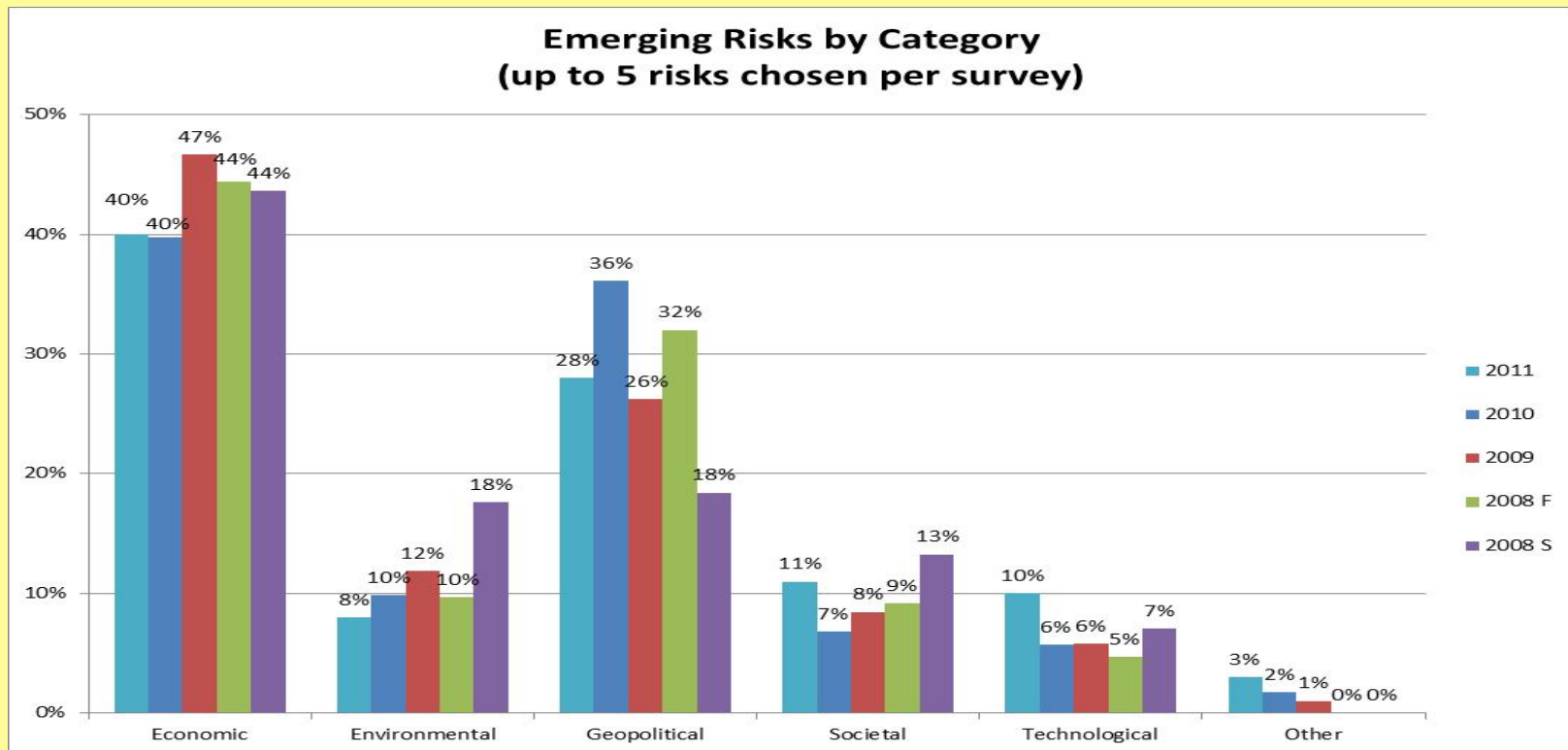
Fall 2012

- Oil price \$95-100 (now \$88)
- S&P 500 1,400-1,500
- Currency 1.31 \$/Euro

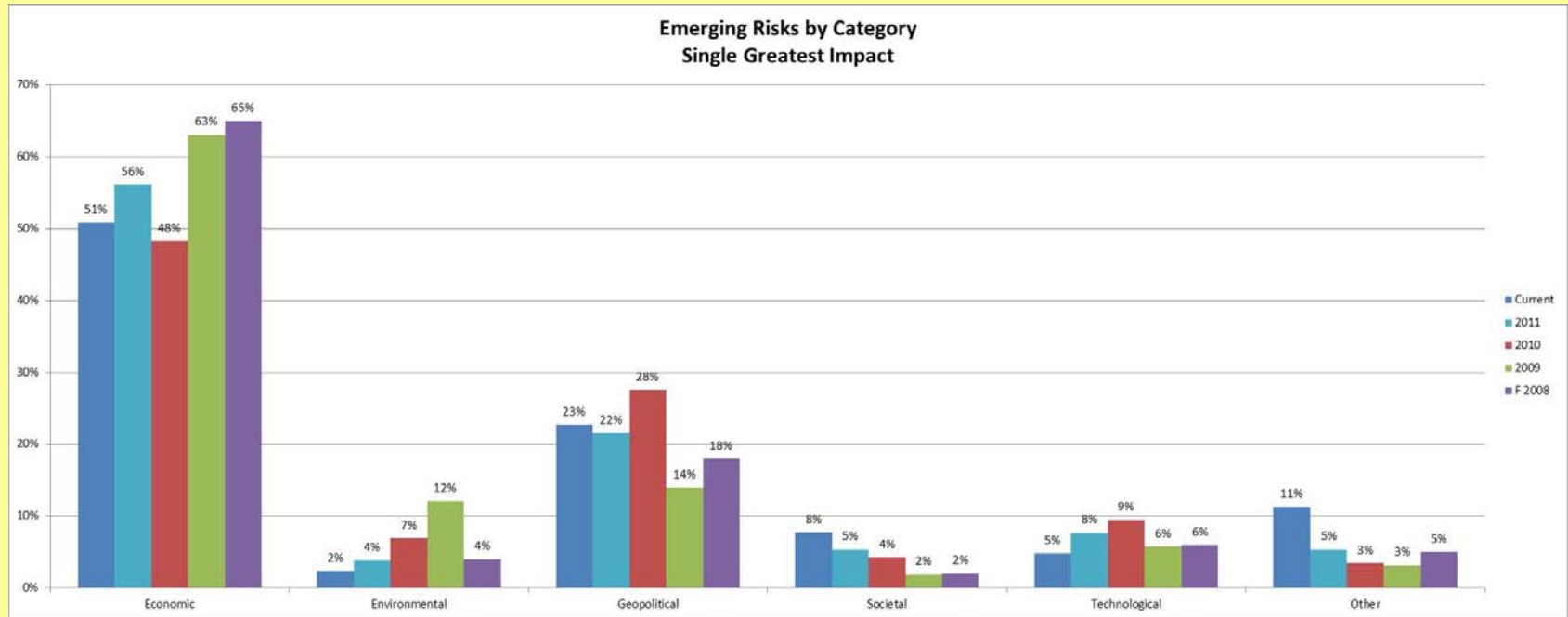
Anchoring – Behavioral Finance

- April 2008
 - 57% Oil price shock
 - 40% Climate change
 - 40% Blow up in asset prices
- October 2011
 - 68% Financial volatility
 - 42% Failed and failing states
 - 38% Cyber security/ Interconnectedness of infrastructure
 - 32% Chinese economic hard landing
 - 32% Oil price shock
 - 32% Regional instability

Top Emerging Risks



Top Category

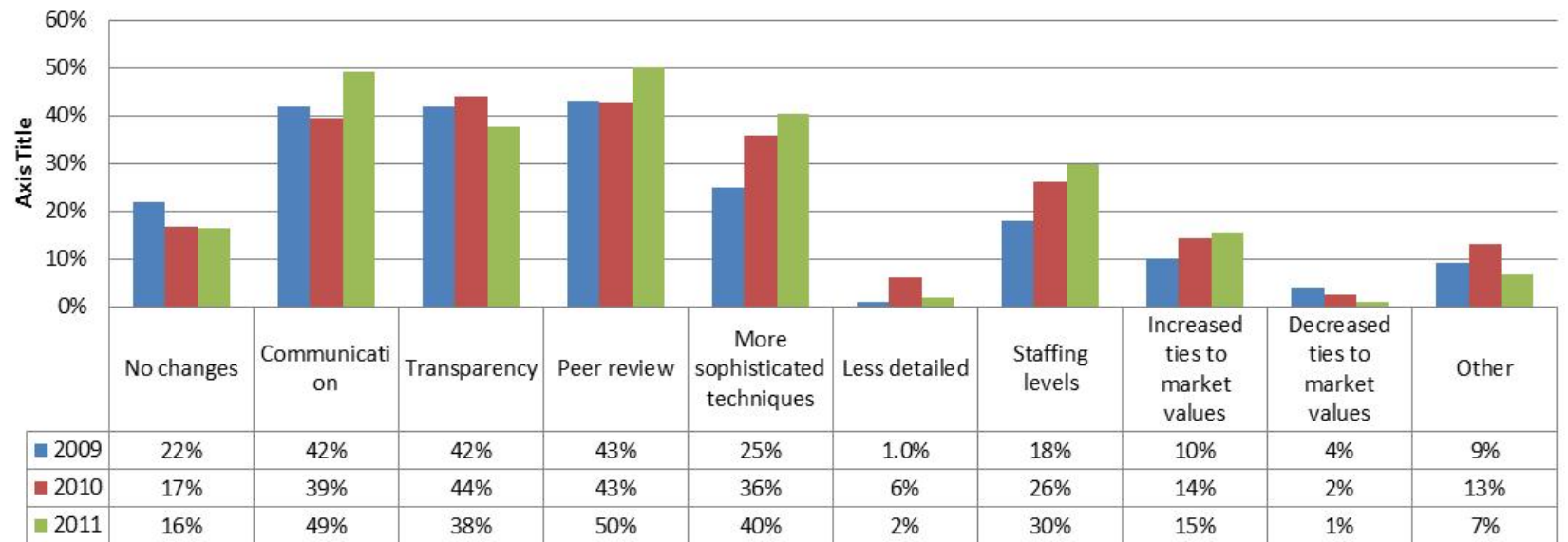


Leading Indicators

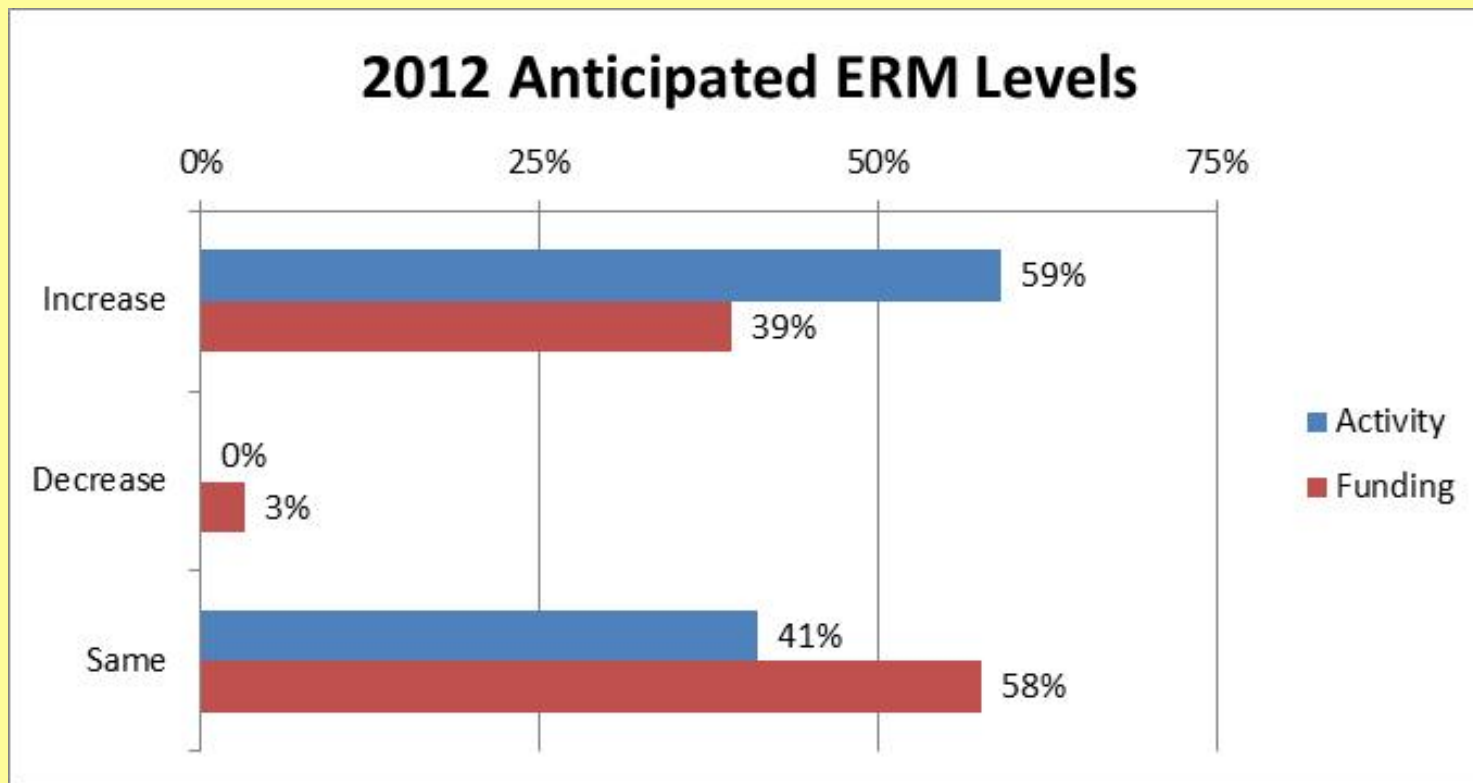
- Over 50% identify leading indicators
 - sea surface temperatures
 - WHO pandemic alert level
 - CO₂
 - CPI, GDP, value of the dollar, gold price, oil price, US deficit, US debt, CDS rates, unemployment, interest rates
 - solar activity
 - water supplies
- **“mostly by the seat of our pants”**

Preparing for ORSA

Modeling practice improvements

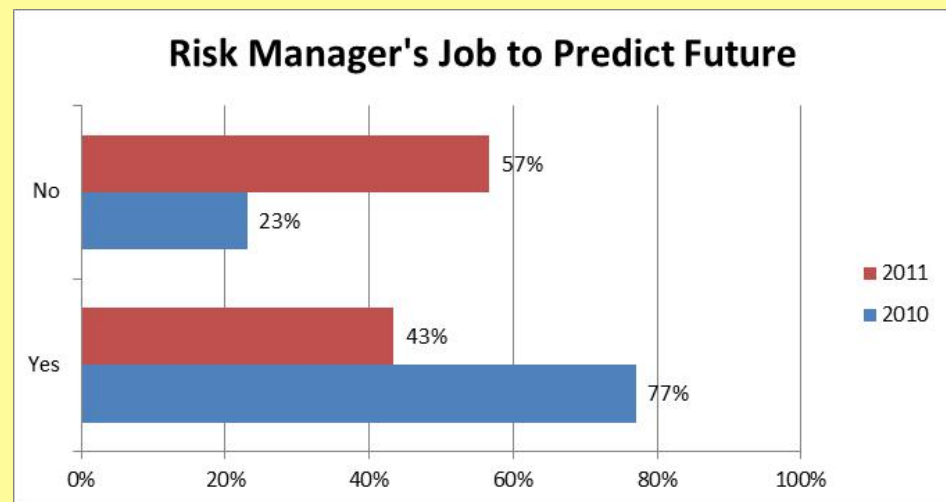


Doing more with less?



Predicting the Future

- Predicting potential outcomes
- Not predicting actual future events
- **“to be prepared to react is the goal”**
 - Flexibility
 - Common sense



Interesting Revelations

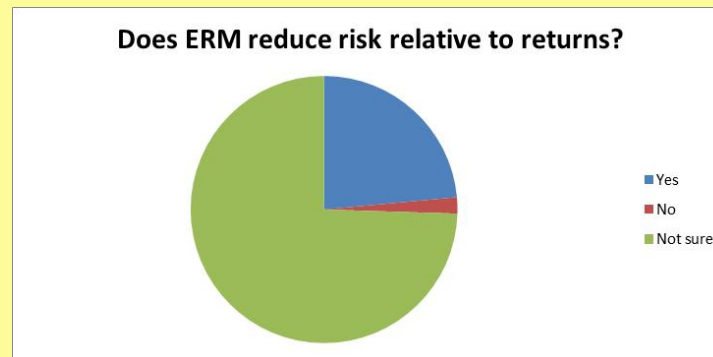
- Geopolitical risk evolving from terrorism to failing states and regional instability
- Financial volatility dominance (40% pick #1)
- Worried about China
- Cyber security becoming a concern but not space weather
- Climate change trending down

Predicting the Future

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- Not predicting actual future events
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2012 Survey Highlights

- Greater participation rates (more pension and health) – thanks!
- Geopolitical category up, Economic down
 - Regional instability, international terrorism
- ERM reduces risk relative to returns – jury out?



Comments

- Emerging Risk definition – disruption in my grandchildren's wellbeing
- Leading indicator – mortgages, number of days in delayed payment
- Model review by wider array of experts, utilize broad general knowledge, focus on order of magnitude

Comments

- Staff cutbacks left remaining staff buried in reporting
- ERM was thought to be excessive. Now thought to be too little attention.
- ERM gives an illusion of activity without much substance.
- Product derisking
- Makes the reader think

Specific uses of ERM

- 2006 low interest rates and RMBS concerns
 - Slowed fixed annuity sales and sold mortgage exposure
- Watch actions of those you respect
 - Avoided FRE and FNM equity after Buffett sold position in 2000, noted for further review
- Look for concentrated exposures and herd behavior!

To access prior surveys

- <http://www.soa.org/research/research-projects/risk-management/research-2011-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>
- 2010 survey article
<http://www.soa.org/library/newsletters/risk-management-newsletter/2011/august/jrm-2011-iss22-rudolph.pdf>

Thank you!

MAX J. RUDOLPH, FSA CFA CERA MAAA

- Rudolph Financial Consulting, LLC
 - Design/peer review ERM and ALM strategies
 - Leverage ORSA and Risk Focused Exams to add internal value
 - Continuing education and research: modules, seminars, newsletter, predictions
 - Facilitate board level ERM sessions
- Professionalism
 - SOA Board of Governors
 - Investment Section Chair
 - Actuarial Standards Board, ERM Task Force
 - SOA President's Award



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