

ENTERPRISE RISK MANAGEMENT

ERM

Symposium

Where Cutting Edge Theory Meets State of the Art Practice



2012 ERM Symposium
April 18-20, 2012

Washington Marriott Wardman Park
Washington, D.C.

Emerging Risks

April 19, 2012 2:30 - 3:45 pm

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What are Emerging Risks

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

Emerging Risks

- May be internally or externally generated
 - Secondary impact (e.g., oil spill/tourism)
 - May be positive event (e.g., nanotechnology)
- The next big risk will 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

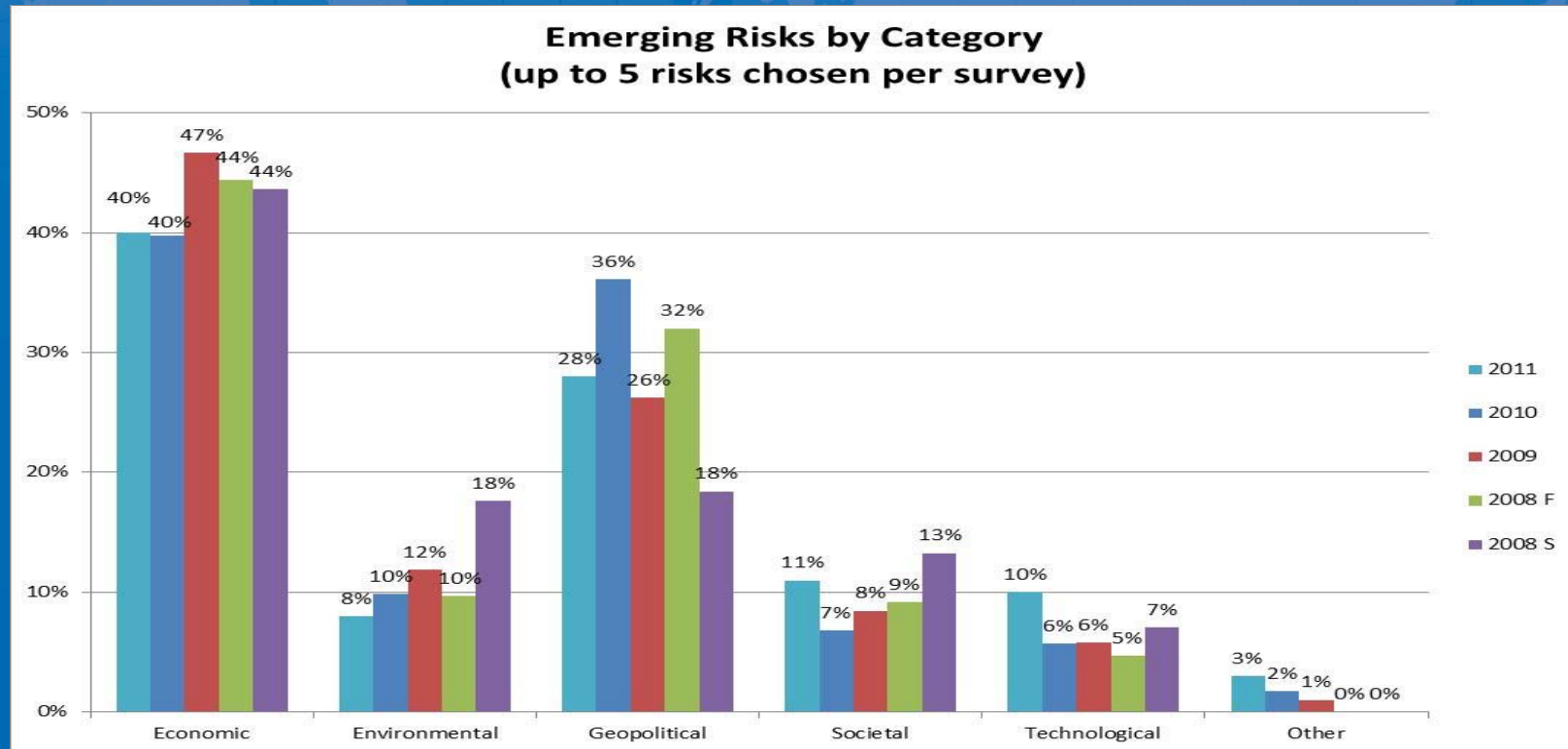
Spring 2012

- Oil price \$105
- S&P 500 1,400
- Currency 1.33 \$/Euro

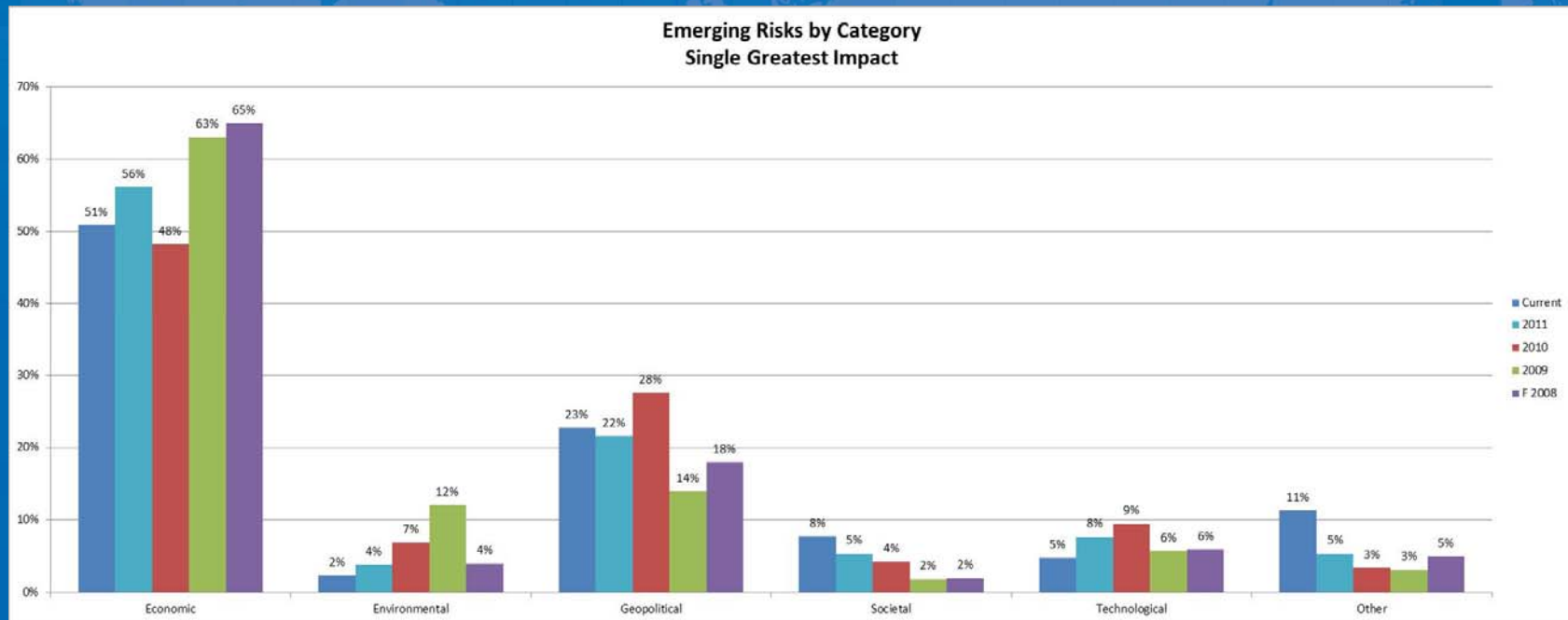
Anchoring – Behavioral Finance

- 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

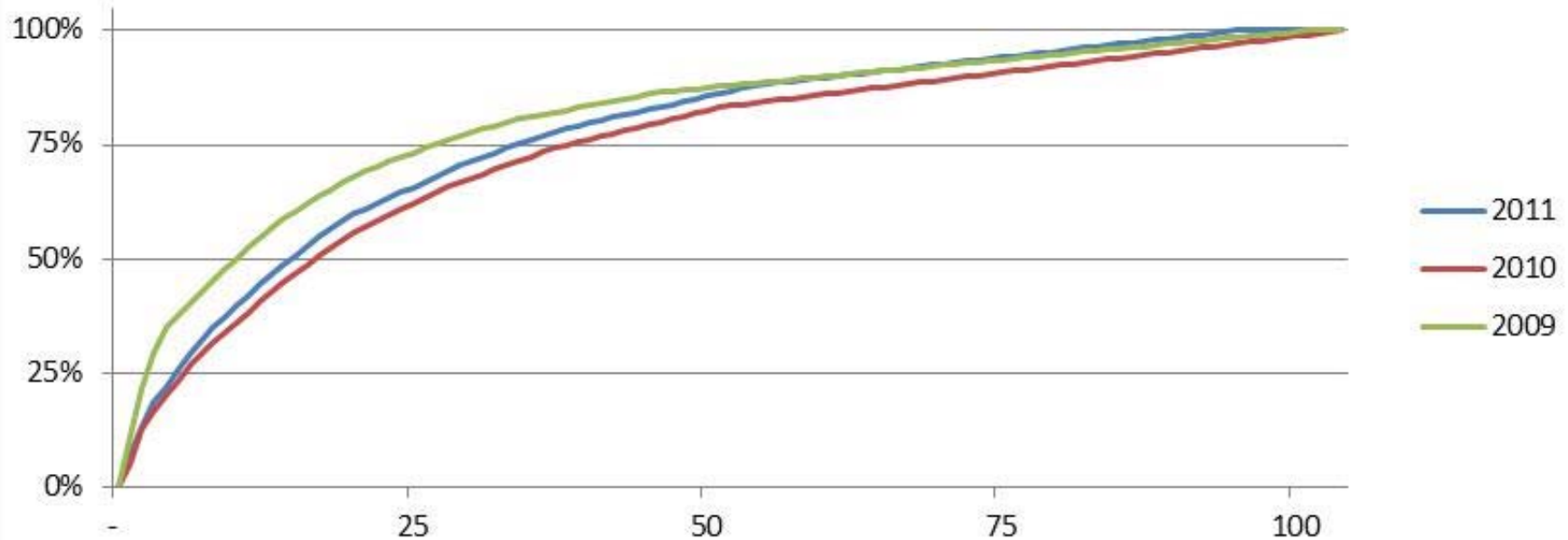


Top Category



Risk Concentration Ratio

Cumulative Distribution of Combinations



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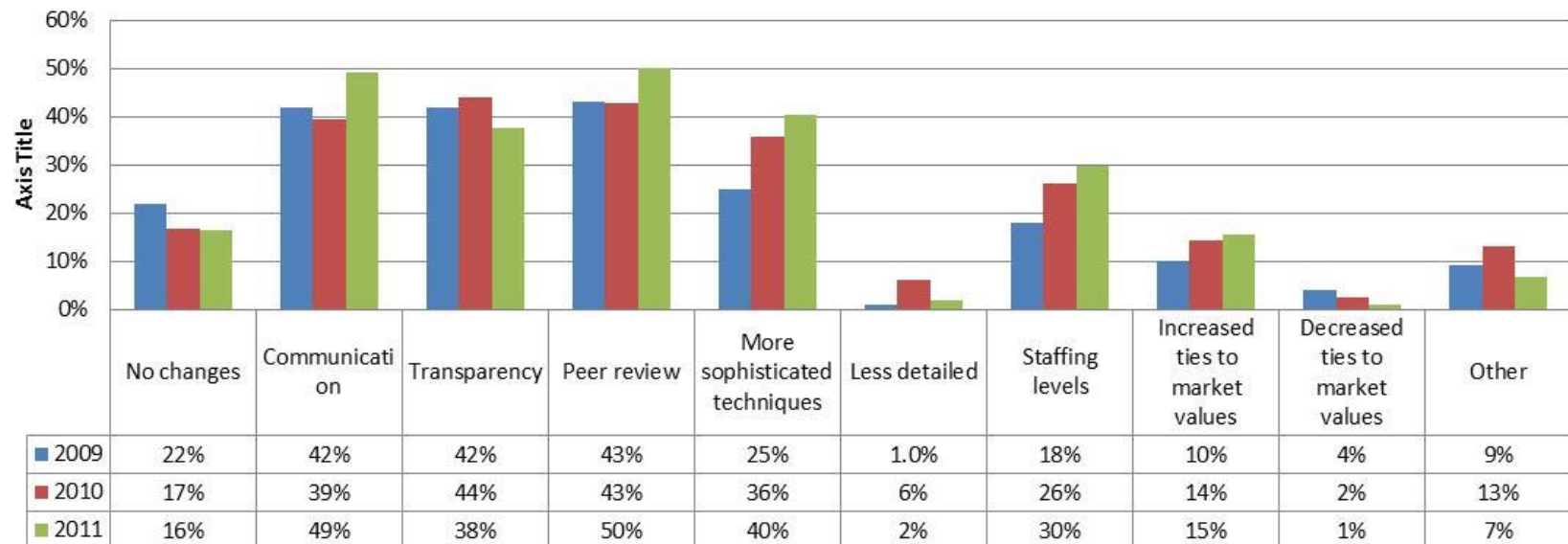
Risk Concentration Ratio

Risk Concentration Ratio					
	2009	2010	2011	Avg prior to Current Yr	Avg/Curr Yr
First quartile	3	6	5	4.5	0.90
Second quartile	10	17	15	13.5	0.90
Third quartile	27	38	34	32.5	0.96
Total	101	104	95	102.5	1.08
Remaining	152	149	158		
					96

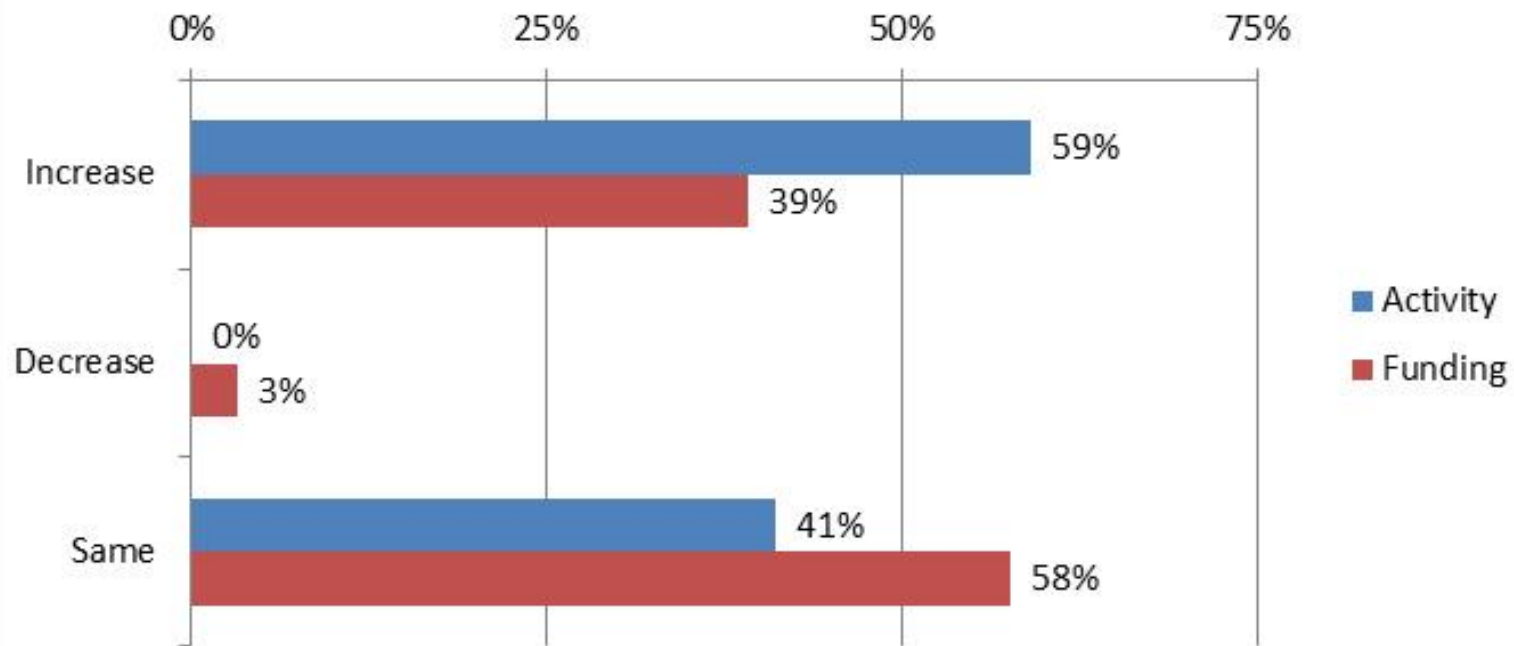
Leading Indicators

- 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



2012 Anticipated ERM Levels



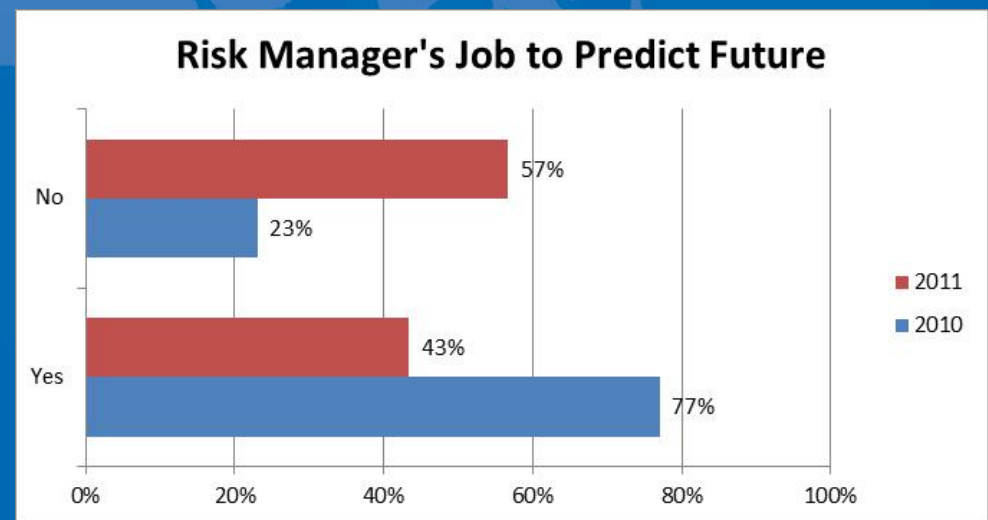
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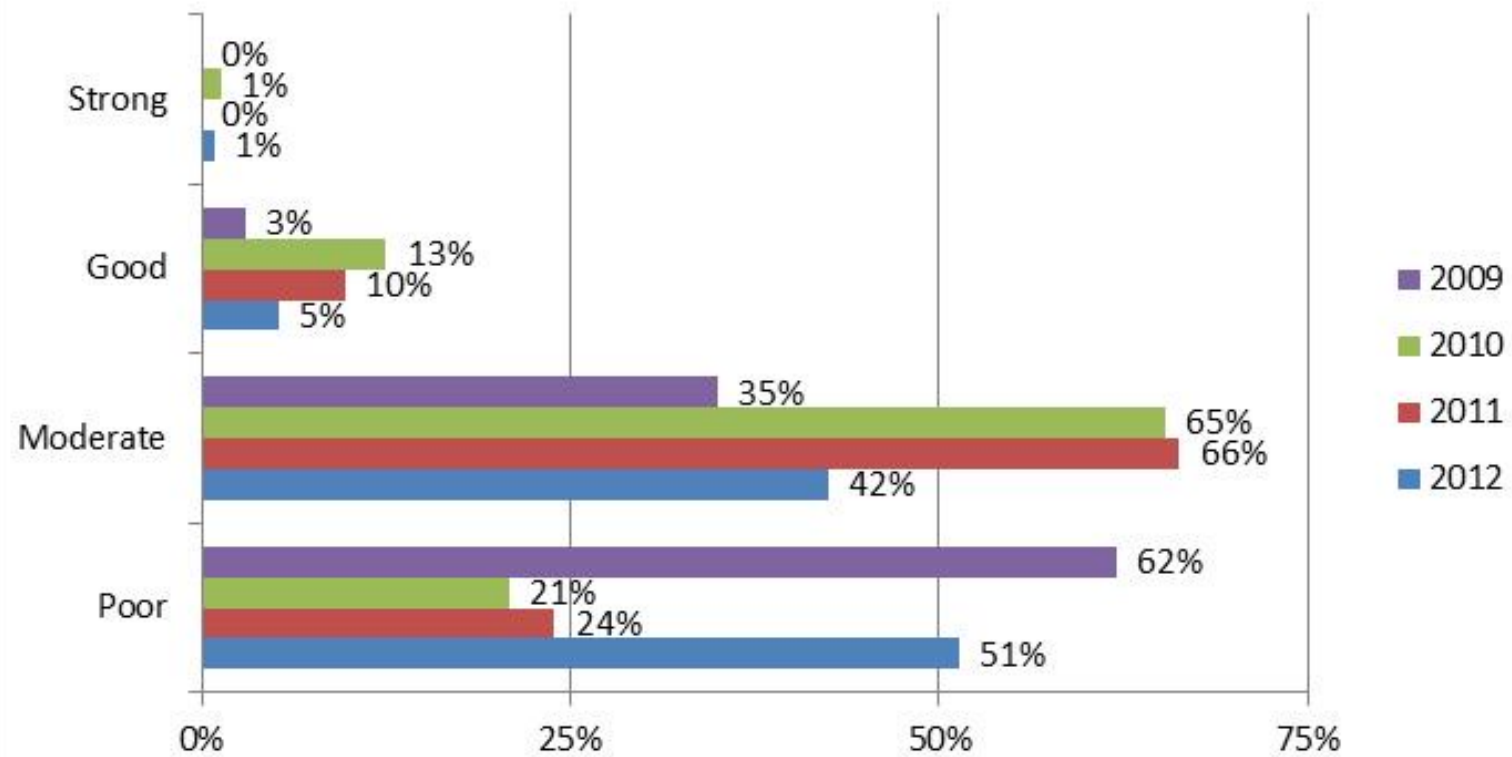
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Predicting the Future

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



Global Economic Expectations



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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

To access prior surveys

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



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Thanks!

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