 Rudolph
Emerging Risks
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Emerging Risks

- What are emerging risks?
 - Completely new risks
 - Geomagnetic storm activity
 - Evolving risks
 - Climate change, geopolitical landscape
 - Recently unseen risks
 - Asteroid/black plague
- Donald Rumsfeld’s Knowns and Unknowns

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Avoiding the “Perfect Storm”

- Environmental scanning
- Mean reversion (Perfect Sunrise)
- Gaussian copout
 - Once per century events don’t happen 4 days in a row

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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

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Emerging Risks

| | |
|--|---|
| <ul style="list-style-type: none">• Economic<ul style="list-style-type: none">– Oil price shock– Fall in value of US \$– Chinese economic hard landing– Demographic shift– Blow up in asset prices | <ul style="list-style-type: none">• Environmental<ul style="list-style-type: none">– Climate change– Freshwater loss– Tropical storms– Earthquakes– Inland flooding |
|--|---|

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Emerging Risks

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|---|--|
| <ul style="list-style-type: none">• Geopolitical<ul style="list-style-type: none">– International terrorism– Weapons of mass destruction– Interstate/civil wars– Failed states– Transnational crime– Globalization fallback– Regional instability | <ul style="list-style-type: none">• Societal<ul style="list-style-type: none">– Pandemics– Infectious diseases– Chronic diseases– Liability regimes• Technological<ul style="list-style-type: none">– Critical information infrastructure– Nanotechnology |
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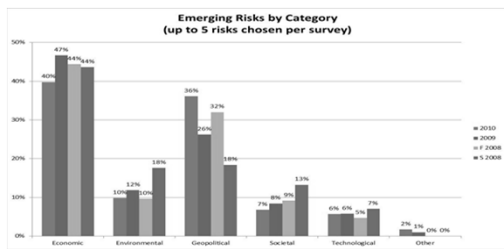
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Current Environment Matters

- | | |
|--|--|
| <p>April 2008</p> <ul style="list-style-type: none"> - Oil price \$114 - S&P 500 1,386 - Currency 1.56 \$/Euro | <p>December 2009</p> <ul style="list-style-type: none"> - Oil price \$77 - S&P 500 1,106 - Currency 1.48 \$/Euro |
| <p>November 2008</p> <ul style="list-style-type: none"> - Oil price \$68 - S&P 500 969 - Currency 1.27 \$/Euro | <p>November 2010</p> <ul style="list-style-type: none"> - Oil price \$84 - S&P 500 1,176 - Currency 1.40 \$/Euro |

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Top Emerging Risks

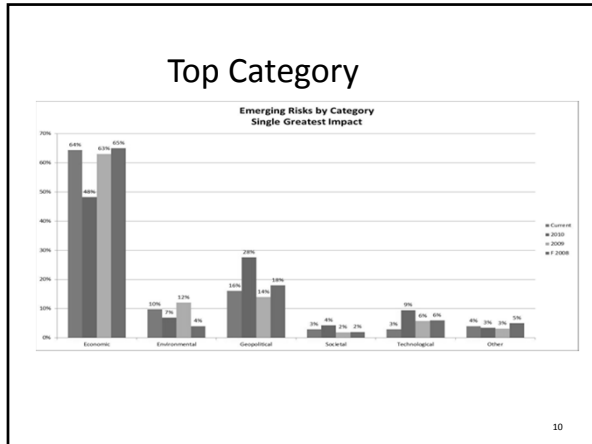


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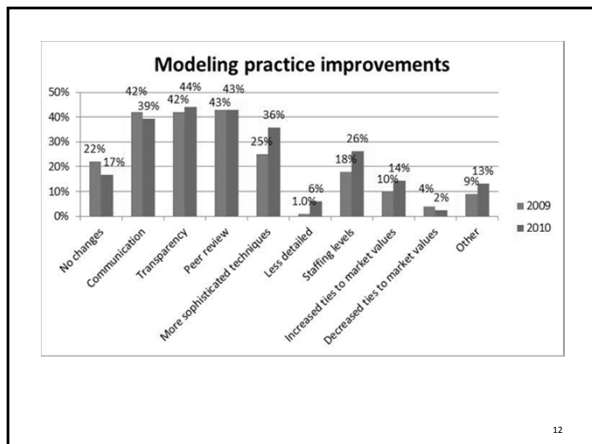
Anchors Away?

- | | |
|--|---|
| <ul style="list-style-type: none"> • April 2008 <ul style="list-style-type: none"> - 57% Oil price shock - 40% Climate change - 40% Blow up in asset prices | <ul style="list-style-type: none"> • December 2010 <ul style="list-style-type: none"> - 49% Fall in value of US\$ - 43% International terrorism - 41% Chinese economic hard landing - 40% Oil price shock |
|--|---|

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- ### 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”**
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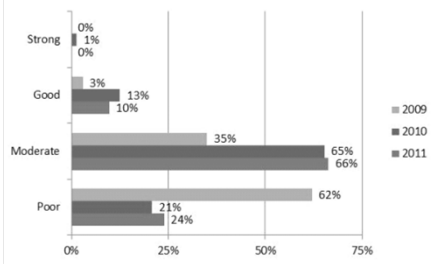


Predicting the Future

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

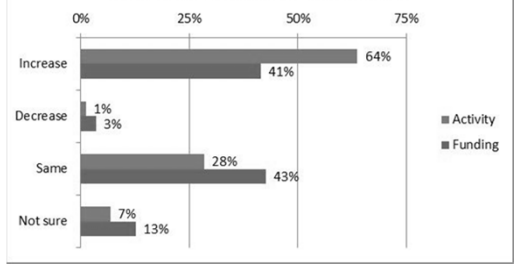
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Global Economic Expectations



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2011 Anticipated ERM Levels



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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
- Higher staffing in 2010

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To access prior surveys

- 2009 research
- <http://www.soa.org/research/research-projects/risk-management/research-2009-emerg-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>

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Thanks!
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