SOCIETY OF ACTUARIES

Article from:

Risk Management

August 2011 – Issue 22

Evolution of Emerging Risks

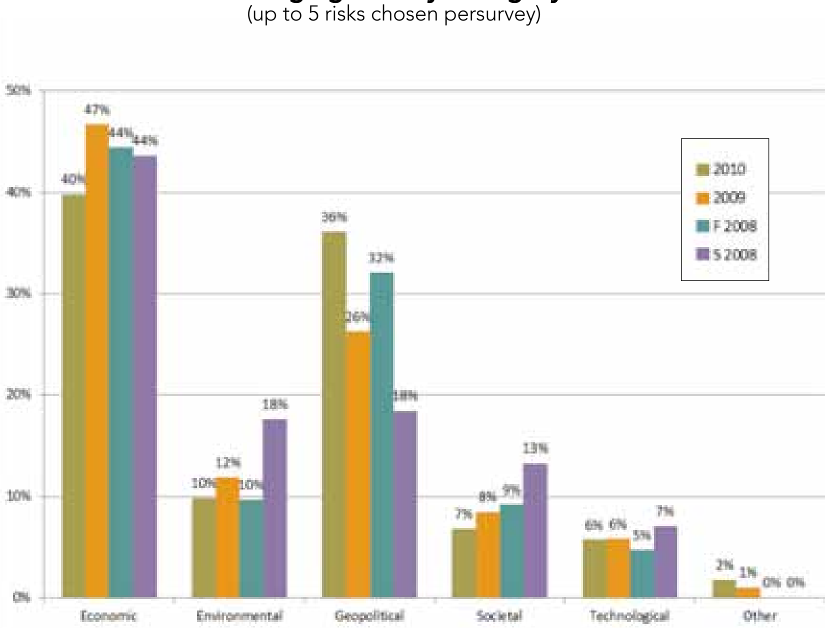
By Max J. Rudolph

Max J. Rudolph, FSA, CERA, CFA, MAAA, is owner of Rudolph Financial Consulting, LLC and can be reached at *max.rudolph@rudolphfinancialconsulting.com.*

IN 2010 THE WORLD ENDURED ITS USUAL LITANY OF NATURAL DISASTERS: FLOODING, EARTHQUAKES, volcanic eruptions and wildfires, among others. While some of these caused great grief, such as the Haiti earthquake, or disruption, like the Icelandic volcano, greater surprises came from man-made crises last year. The European sovereign debt crisis has yet to fully play out, but risk managers now recognize their exposure to the risk that leading nations could default.

The BP oil spill in the Gulf of Mexico was a surprise in its magnitude and brought the impact of various risk combinations to the fore. Tensions on the Korean peninsula had escalated. It was in this context that the Joint Risk Management Section conducted its fourth survey of emerging risks in fall 2010.

CHART 1
Emerging Risk by Category
(up to 5 risks chosen persurvey)



Some risks generate a large volume of historical data that remains stable over time. Other risks are evolving in uncertain ways, have been forgotten in their dormancy, or are new. These latter risks are called emerging risks. While stable risks can usually be represented by statistical distributions, this is not true of emerging risks.

The financial crisis, driven in part by excessive leverage and misaligned incentives, focused risk managers as perhaps never before. Their heads were down, making sure their organizations survived. Not surprisingly, during this period previous surveys showed a heavy concentration of concern about economic risks. As time since the worst of the crisis lengthens, risk managers seem to be taking time to survey other risks that might pose long-term threats and opportunities. This is reflected in lower concentration among the top risks and risk combinations in the current survey.

Nassim Taleb, author of *The Black Swan*, has stated that a black swan is something no one predicts in advance but, after the fact, everyone understands and thinks they could have predicted. Some argue today that the BP oil spill was not a black swan because it could have been predicted. This is a form of hindsight bias. Previous surveys have highlighted a form of anchoring bias, where survey results are influenced by recent events, and that was seen again in this survey.

2010 proved to be a pivotal year for risk managers. There is currently an upsurge in management's willingness to listen to risk managers and fund their activities. Most organizations increased both their risk management activities and staff. Survey results show continued higher enterprise risk management (ERM) activity expected in 2011 (64 percent), but fewer resource increases (41 percent) than in 2010. Could the window of opportunity be closing for risk managers, only to open again after the next disaster or crisis? Prolonged stable environments can lead to excessive risk taking and limited oversight, while high volatility leads to fear and paralysis. Better decision making comes from recognizing that many risks cycle over time. A strong risk culture empowers flexibility, and companies that embrace it will succeed over long time horizons. Predicting the future was part of their job for 77 percent of the respondents, in terms of identifying potential events and building out the flexibility to address those events if they occur.

There were definite shifts in the 2010 survey results. One can see in Chart 1 that the Economic category of risks is still the top choice ahead of the Environmental, Geopolitical, Societal and Technological general categories. Yet it also shows that as time passes from the financial crisis, its dominance decreases. Finishing a strong number two, Geopolitical risks increased as political tensions rose.

ANCHORING BIAS

As in past reports, the survey results show that current values of the S&P 500, a barrel of oil and the U.S. dollar relative to the Euro seem to anchor perceptions of risk. The survey results have evolved over time, generally lagging recent events.

Table 1

	S&P 500	Oil (per barrel)	USD/Euro
Spring 2008	1,385.59	$ 113.70	$ 1.56
Fall 2008	968.75	68.10	1.27
Fall 2009	1,106.41	77.04	1.48
Fall 2010	1,176.19	84.49	1.40

When the initial survey was conducted in April 2008, oil prices were relatively high, the stock markets were at record levels, and the dollar had trended down. At that time the top four emerging risks chosen were:

1. *Oil shock* (57 percent of respondents)
2T. *Climate change* (40 percent)
2T. *Blowup in asset prices* (40 percent)
4. *Fall in value of U.S. $* (38 percent).

With oil at historic highs, it was the predominant emerging risk chosen. By the time the second survey was issued in early November 2008, the financial crisis was in full swing. The S&P 500 had dropped 30 percent, the price of a barrel of oil had decreased 40 percent, and the U.S. dollar had strengthened 23 percent. The top four emerging risks from this second iteration of the survey were:

1. *Blowup in asset prices* (64 percent)
2. *Fall in value of U.S. $* (48 percent)
3. *Oil price shock* (39 percent)
4. *Regional instability* (34 percent).

Systemic risk was perceived to be very high at that time with stock values in free fall. Oil prices had fallen, U.S. currency was considered a safe harbor, and the U.S. election cycle had just concluded. At the time of the third survey in late 2009, the S&P 500 had increased 14 percent, the price of a barrel of oil had increased 13 percent, and the U.S. dollar had weakened 17 percent. The top four emerging risks at that time were:

1. *Fall in value of U.S. $* (66 percent)
2. *Blowup in asset prices* (49 percent)
3. *Oil price shock* (45 percent)
4. *Chinese economic hard landing* (33 percent).

In the current survey, opened in mid-October 2010, the indicators had not changed materially from the previous survey. Most of the top five results continue to come from the Economic category, but there is increasing concern about global risks:

1. *Fall in value of U.S.* $ (49 percent)
2. *International terrorism* (43 percent)
3. *Chinese economic hard landing* (41 percent)
4. *Oil price shock* (40 percent)
5. *Failed and failing states* (38 percent).

THE CHINA CARD

Risk managers are increasingly concerned about the situation in China. When asked for their overall top emerging risk, Chinese economic hard landing rose to the number one ranking, increasing from 4 percent in the prior survey to 14 percent this year. A fall in value of the U.S. dollar also remains a top concern as the second leading response:

CONTINUED ON PAGE 8

Evolution of Emerging Risks | from Page 7

1. Chinese economic hard landing (14 percent)
2. Fall in value of U.S. $ (11 percent).
3. Blowup in asset prices (10 percent).
4T. Breakdown of critical information infrastructure (CII) (9 percent).
4T. Oil price shock (9 percent).

CHART 2
Emerging Risks by Category
Single Greatest Impact

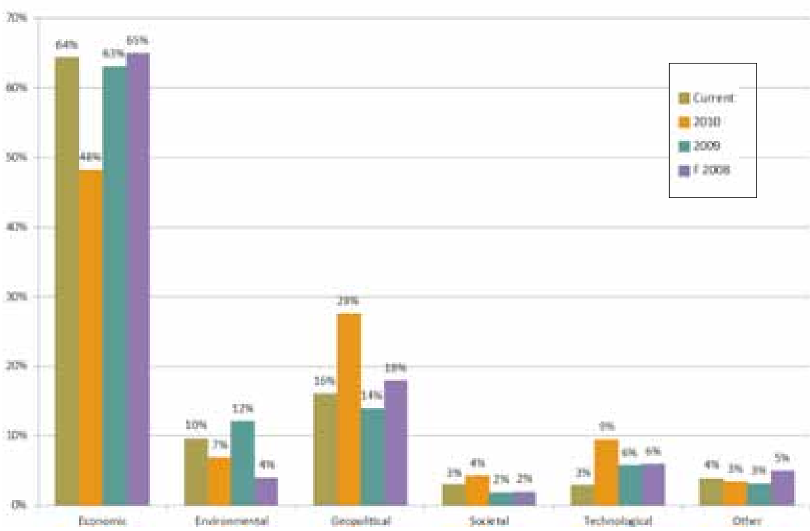
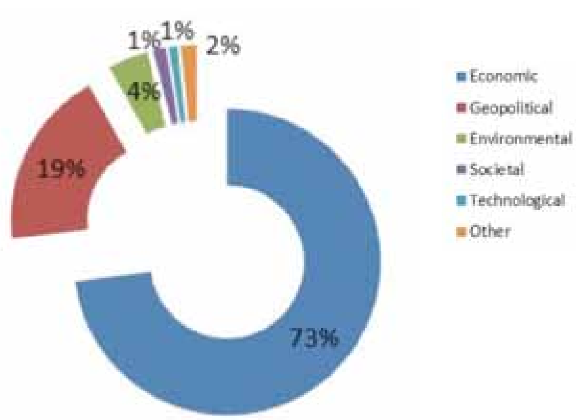


CHART 3
Combinations Impacting China



It is interesting to consider the ramifications of differences between Charts 1 and 2. In Chart 1, where the survey asked for five emerging risks, the Geopolitical category spiked in the current survey. However, when asked for the overall top emerging risk, the Geopolitical category is much lower than in 2009, while the Economic category remains high.

Each year a topical issue is addressed, with respondents asked to choose risk combinations that could impact a potential event. Previous questions have addressed regional food shortages and political instability, and each has since proven timely. In this survey China's financial relationship with the world was explored. Respondents were asked to consider primarily changes in currency, commercial and investment relationships. Respondents were asked to include up to three risks. Results focused on Economic risks, with almost three-quarters of the risks chosen from that category.

1. 73% Economic
2. 19% Geopolitical
3. 4% Environmental
4. 1% Societal
5. 1% Technological

The top two specific risks chosen were almost a dead heat, with fall in value of U.S. $ (24 percent) and Chinese economic hard landing (23 percent). Rounding out the top five were oil price shock (16 percent), retrenchment from globalization (9 percent) and blowup in asset prices (6 percent).

LEADING INDICATORS

As companies implement their ERM process, many are creating metrics around key performance indicators. A lagging indicator uses information collected after an event occurs, such as the number of auto policies in force or widgets sold. A leading indicator provides information earlier in the process. Examples would include insurance applications being much higher/lower than expected or a spike in the credit default spread for a supplier. Over half the respondents reported having at least some leading indicators around emerging risks, but efforts continue to evolve and the current status is often "seat of the pants."

"ERM requires a balance of mitigation and opportunity, and between qualitative and quantitative analysis."

ERM requires a balance of mitigation and opportunity, and between qualitative and quantitative analysis. Risk managers in this survey reported that, in addition to increased model sophistication, they have also incorporated more common sense and imagination into their analysis.

CONCLUSIONS

As this article is being written, countries in North Africa and the Middle East have erupted in a people's revolt against the current regimes and Japan suffered one of the most devastating earthquakes on record, reminding humanity of our fragility. Risk managers are human too, suffering from the flaws of anchoring and hindsight bias, but fulfill an important role as they try to understand risk interactions and the unintended consequences of emerging risks. Which risks will evolve to dominate decision making? The world's Geopolitical risk is growing, with the eventual outcome unknown. Will overpopulation lead to food shortages, or will disease or global warming become prevalent? By being vigilant and using leading indicators, organizations can better deal with these challenges.

BACKGROUND

This research project was funded by the Joint Risk Management Section of the Society of Actuaries, Canadian Institute of Actuaries and Casualty Actuarial Society. An electronic survey was used to gather the views of risk managers. The research report can be found at: *http://www.soa.org/research/research-projects/risk-management/research-2010-emerging-risks-survey.aspx.* ■