SOCIETY OF ACTUARIES

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Survey of Emerging Risks

By Max J. Rudolph

EMERGING RISKS can be thought of from two perspectives; completely new risks that have never been seen before, and risks that are evolving in unexpected ways. Examples of the former include the release into the human population of the AIDS virus and the development of the atomic bomb, while the latter would include the home mortgage market in the United States and liability regimes (litigiousness). Many emerging risks fall in a gray area. After the fact, some claim to have predicted the risk. Others repeatedly claim yet another "Perfect Storm," absolving them of accountability. Part of a risk manager's job is to provide environmental scanning of potential risks. According to Nassim Taleb, author of *The Black Swan*, the goal is to turn a lack of knowledge about emerging risks into tools that aid decision making.

The recent financial environment has provided credibility to those who have been laughed at for years while trying to place topics like financial leverage on the strategic agenda. Firms of all sizes (and individuals) had no game plan in place to address the current crisis. In reality very few were prepared for the extent of the recent impact on a wide range of financial instruments. Firms with high amounts of leverage, such as hedge funds and investment banks, were especially susceptible to the downturn. A risk manager prepares a firm to succeed across a variety of potential scenarios.

WHEN THE MUSIC STOPS…

Emerging risks require managers and modelers to think outside their comfort zone. This is not easy. There is often no incentive to incorporate risks being ignored by competitors. Consider this quote from Chuck Prince, CEO of Citigroup, in summer 2008.

"When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to dance. We're still dancing."

He was referring to subprime loans. Had he elected to take Citigroup out of this market he would have been under great pressure from external stakeholders to maintain financial growth rates. When markets are calm, CEO's are fired for making reasonable risk-driven decisions. When markets become volatile, they are fired for exposing the firm to these unanticipated risks.

SURVEY BACKGROUND

This article summarizes an emerging risk research project completed by the Joint Risk Management Section. The full report can be found at http://www.soa.org/research/risk-management/research-2009-emerging-risks-survey.aspx. Rather than creating a unique set of emerging risks to consider, a set developed by the World Economic Forum was chosen as reasonable. Their reports, starting in 2007, can be found at *www.weforum.org*. The 23 risks have been categorized as Economic (5), Environmental (5), Geopolitical (7), Societal (4), or Technological (2). These emerging risks were held constant between the two surveys to allow comparisons. The current survey added questions related to current topics.

INFLUENCED BY OUR ENVIRONMENT

An article describing an earlier survey completed with the INARM (International Network of Actuarial Risk Managers) group can be found on pages 18-21 of the *International News* August 2008 issue (International Survey of Emerging Risks, *http://soa.org/library/newsletters/international-section-news/2008/august/isn-2008-iss45.pdf)*. You might expect surveys of potential future risks to be stable over time. This has not been the case. The respondents were clearly impacted by the current environment. At the end of April 2008, when the first survey was issued, the S&P 500 stood at 1,386 (according to Yahoo Finance), the price of a barrel of oil was $114 (per the Energy Information Administration), and the U.S. dollar was at 1.56 Euros. At that time the top four emerging risks were

1. Oil shock/energy supply interruptions (57 percent)
2. Climate change (40 percent)
2. Blow up in asset prices/excessive indebtedness (40 percent)
4. U.S. current account deficit/fall in U.S. dollar (38 percent)

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The current survey was issued in early November 2008. By the end of October, using the same sources, the S&P 500 had dropped 30 percent to 969, the price of a barrel of oil had dropped 40 percent to $68, and the U.S. dollar had strengthened 23 percent to 1.27 Euros. Each respondent was asked to list up to five emerging risks that would have the greatest impact over the next few years. The 412 total responses, including nine in the Other category, total 4.6 per respondent. The top four emerging risks from the survey are

1. Blow up in asset prices/excessive indebtedness (64 percent)
2. U.S. current account deficit/fall in U.S. dollar (48 percent)
3. Oil price shock/energy supply interruptions (39 percent)
4. Middle East instability (34 percent)

As might be expected for a group of risk professionals completing a survey asking what they were worried about, the Economic category received the most responses, followed by Geopolitical. The others trailed far behind. It will be interesting to trend over time to see if this is a lagging indicator or a contrarian indicator. Are risk professionals able to step outside their current surroundings to predict emerging risks or do they get locked in to today's major issues and ignore the risk that is about to explode into consciousness after years of calm. Many would argue this is what happened with the recent financial problems, where managing the economy to avoid the ebbs and flows made it too easy to take risk, and managers were lulled into a false sense of security. The best risk managers will need to overcome this bias.

The world changed materially between the two points. In the future, it might be useful to average the response rates across time to overcome this bias, and the data will be saved in order to accomplish this. Most of the same risks received top billing, but when oil prices were high in May we were more concerned about oil prices, and when oil prices dropped and asset prices blew up we moved our concerns to the risk most associated with the current financial crisis. The Mumbai attacks occurred in late November 2008 after most of the participants had completed their survey and did not impact the overall results, although it should be noted that the two responses completed after the attacks occurred both included International terrorism as one of their top five emerging risks and one voted for it as the top emerging risk. It is human nature to react to our surroundings. Another way of looking at this data is to distribute them by category.

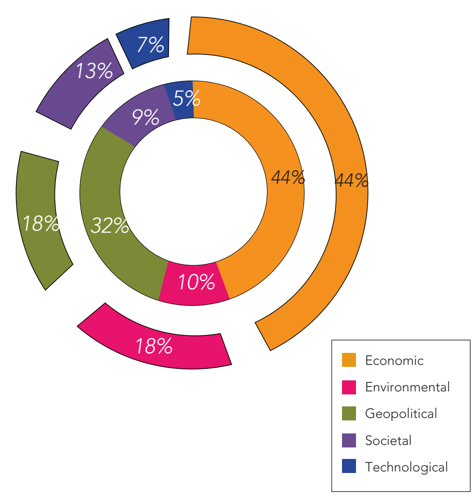
1. 179 responses	Economic
2. 129 responses	Geopolitical
3. 39 responses	Environmental
4. 37 responses	Societal
5. 19 responses	Technological

Figure 1 compares Emerging Risks by Category across the two surveys. Looking at the distribution by major category shows that Geopolitical increased from 18 percent to 32 percent at the expense of Environmental, Societal, and Technological. This may be due to the timing of the U.S. Presidential election during the later survey, with more media coverage of these topics creating an anchor for respondents.

FIGURE 1

Emerging Risk by Category

(Spring 2008 outer circle, Fall 2008 inner circle)



Respondent demographics are similar between the two surveys based on employer type, with most coming from insurance companies or consulting backgrounds. Geographically, Europe was not as well represented in the current survey so North American viewpoints are more heavily weighted. A total of 89 responses were received.

Respondents were also asked to choose the single most important emerging risk. The top four specific responses came from the Economic category, with the fifth from Technological. 68 percent of results are explained by the top five responses.

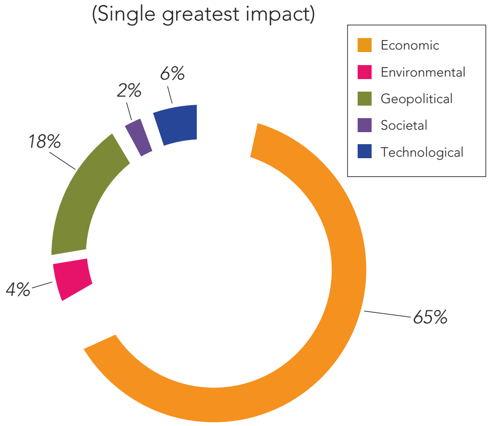
1. 25 percent — Blow up in asset prices/excessive indebtedness
2. 18 percent — U.S. current account deficit/fall in U.S. dollar
3. 12 percent — Oil price shock/energy supply interruptions
4. 7 percent — Fiscal crises caused by demographic shift
5. 6 percent — Breakdown of critical information infrastructure (CII)

Figure 2 shows the breakdown by category. With Economic risks taking the top four spots it is not surprising to see the Economic category with over half the responses.

FIGURE 2

Emerging Risk by Category

(Single greatest impact)

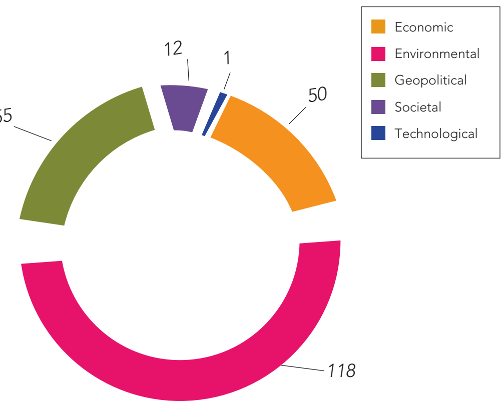


Local food shortages often lead to unstable regions of the world. Respondents were asked to combine emerging risks that could lead to regional food shortages. The leading combination of risks, with 25 percent, was *U.S. current account deficit/fall in U.S. dollar and Blow up in asset prices/excessive indebtedness.* These two emerging risks were used as components of other leading combinations, along with *Oil price shock/energy supply interruptions, Middle East instability, and Fiscal crises caused by demographic shift.* As shown in Figure 3, Environmental emerging risks account for half of the 236 responses.

FIGURE 3

Regional Food Shortages by Category

(up to 3 responses per participant)

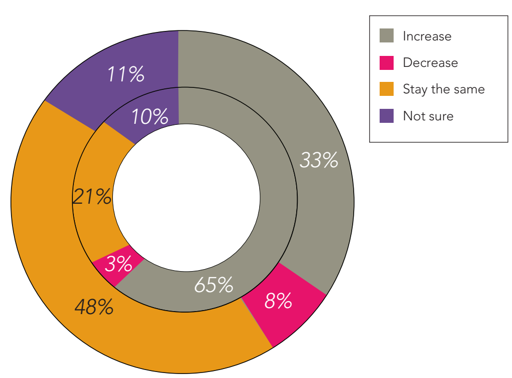


The survey also asked about expectations for ERM-focused activities in 2009. Not surprisingly, given the recent financial turmoil, 65 percent expected the activities for their organization or clients to increase. As shown in Figure 4, only 33 percent expected funding to increase for these activities. Budgets may not allow increased quantitative analysis, so projects will need to be prioritized and leveraged to meet multiple needs.

FIGURE 4

Enterprise Risk Management 2009

(outer circle funding, inner circle activity level)



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IMPLICATIONS FOR THE FUTURE

Thinking about emerging risks can add to the complexity of a risk manager's job and perhaps lead to some sleepless nights, but addressing potential scenarios qualitatively in advance can reduce the probability of bankruptcy and stabilize earnings. Repeating this survey in the future will help respondents learn from their own choices as well as those of the group. By combining results across time periods we may be able to discern additional information from the results. As the survey reported, risk managers will continue to be expected to accomplish more with a limited budget. Prioritization of effort, including thinking about emerging risks, will lead to the best results.✦

GLOSSARY OF RISKS

The following 23 core risks were defined in Global Risks 2007: A Global Risk Network Report, and can be found at *www.weforum.org/pdf/CSI/Long_Global_Risk_Report_2007.pdf.*

ECONOMIC

- Oil price shock/energy supply interruptions
- US current account deficit/fall in US dollar
- Chinese economic hard landing
- Fiscal crises caused by demographic shift
- Blow up in asset prices/excessive indebtedness

ENVIRONMENTAL

- Climate change
- Loss of freshwater services
- Natural catastrophe: Tropical storms
- Natural catastrophe: Earthquakes
- Natural catastrophe: Inland flooding

GEOPOLITICAL

- International terrorism
- Proliferation of weapons of mass destruction (WMD)
- Interstate and civil wars
- Failed and failing states
- Transnational crime and corruption
- Retrenchment from globalization
- Middle East instability

SOCIETAL

- Pandemics
- Infectious diseases in the developing world
- Chronic disease in the developed world
- Liability regimes

TECHNOLOGICAL

- Breakdown of critical information infrastructure (CII)
- Emergence of risks associated with nanotechnology