



Extreme risks – insurance sector survey 2013

Response analysis



Survey results

Over the summer we invited insurance executives to engage in a survey on which extreme risks matter most for the insurance industry. This paper provides an analysis of the responses to the survey.

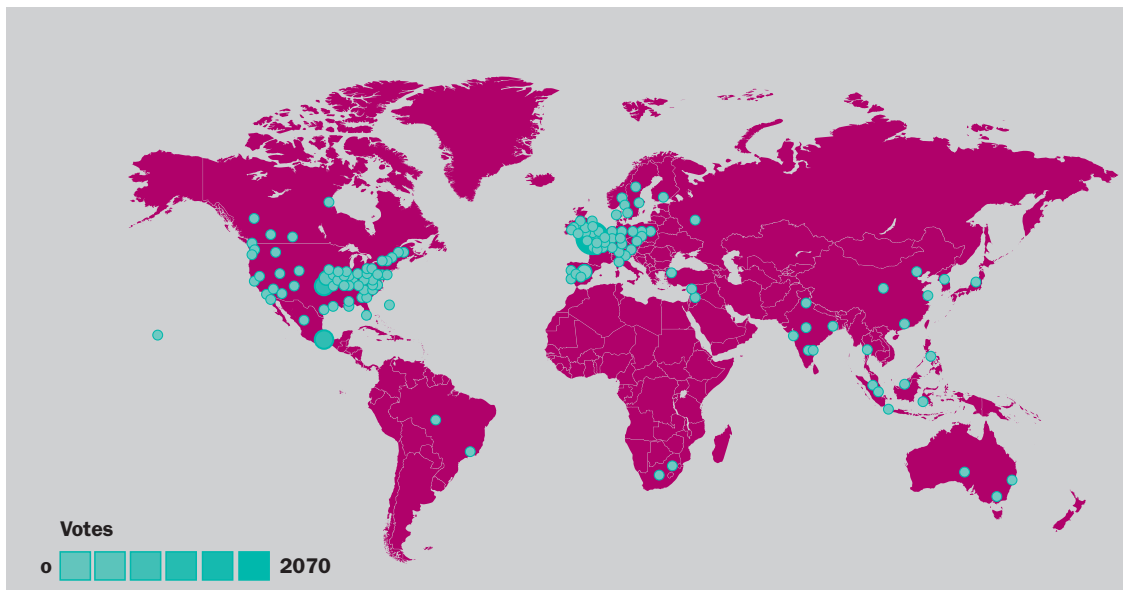
We used a relatively new way of gathering views and ideas – a wiki survey. Wiki surveys are open, simple and are seeded with initial ideas, in this case the extreme risks discussed in our research paper.¹ Participants were asked the question ‘Over the long term, which is the biggest extreme risk for

the insurance industry?’. They were presented with two of the extreme risks selected by an algorithm,² and either clicked on the one they thought was the biggest threat or had the opportunity to submit their own idea.

The response to the survey was beyond our expectations with over 30,000 votes being cast from countries spanning the world.

While the voting activity was heaviest in the USA and Europe there was a wide geographical distribution of participants as shown in **Figure 01**.

Figure 01. World map of all votes



The ranking of all seeded and user-submitted ideas is shown in **Figure 02**. Their respective score is calculated as the estimated chance that the idea would win against another randomly chosen idea. For example, a score of 100 means the idea is predicted to win every time and a score of 0 means the idea is predicted to lose every time. Interesting observations from the ranking include:

- Pandemic, natural catastrophe and food/water/energy crisis are voted by respondents as the three most important extreme risks for the insurance industry to worry about in the long term.
- We would suggest that #4, cyber warfare, and #5, threats relating to data stored in the cloud, are closely related with one being a more extreme version of the other.
- Risk #8 was submitted by a respondent and refers to an unidentified event that causes property damage, supply chain failures, business interruption and death on a significant scale.

While the risk description clearly sets out the liabilities the insurance industry would face, it is a shame the source of the risk is not identified as this would give some idea as to whether it was hedgable or not.

- A clustering of risks could be made from #9, rise in extreme weather that exceeds the capacity of insurance industry, which could be argued, is one of several potential manifestations of global temperature change (#26), as are rising sea temperatures (#17).
- At the bottom end of the ranking we see the threats that respondents collectively opted not to worry about. It is interesting to see that factors specific to the insurance industry were included in these low rankings including higher own fund requirements #46, dis-intermediated by technology #48, change in tax policy #51, and breakdown of motor market #56.

¹ Please see ‘Extreme risks, the irreversibility of time and the retirement anomaly’, Towers Watson, 2013 and ‘Extreme risks – 2013’, Towers Watson, 2013. Or, for a shorter summary, please see ‘Extreme risks summary paper – 2013’, Towers Watson 2013.

² The algorithm is essentially random, but with tweaks. For example, new user-submitted ideas have a higher-than-random chance of being selected in order that a meaningful number of votes on them (positive or negative) can be gathered.

- Of interest to us is the very low ranking of the user-submitted idea of super volcanos in the US (#53) when the natural catastrophe seed idea is ranked at #2. For us, a super volcano is an intrinsic part of thinking about extreme natural catastrophe risk. Consequently we wonder whether respondents in effect voted for a 'confluence' of more 'traditional' natural catastrophe risks rather than extreme versions (for example, magnitude 10 earthquake plus 30 metre tsunami). This could

be due to behavioural biases (such as availability or recency) with insurance respondents influenced by recent events or by those for which they most commonly plan.

- Cosmic threats or aliens invading were not deemed a significant worry for responders. However, it is not clear whether this is because the threats are too remote, or because *force majeure* clauses in insurance contracts would make these liability-free events.

Figure 02. List of ideas

Rank	Idea text	Wins	Losses	Score	Seeded/user-submitted
1	Pandemic: A new, highly infectious and fatal disease spreads through human, animal or plant populations worldwide	1095	427	71.9	Seeded
2	Natural catastrophe: A confluence of major earthquakes, tsunamis, hurricanes, flooding and/or volcanic eruptions with major global effects	1009	521	65.9	Seeded
3	Food/water/energy crisis: A major shortfall in the supply of, or access to, food/water/energy, causing severe societal issues	1054	554	65.5	Seeded
4	Cyber warfare: Computer sabotage/espionage at a major scale, with severe damage to infrastructure, financial, medical or defense systems	1009	538	65.2	Seeded
5	Technology: Large quantity of personal, business, or government data stored in clouds are found to be hacked, compromised, or misused	173	96	64.2	User-submitted
6	Depression: A deep and protracted trough in economic output, massive increase in unemployment, restriction of credit, shrinking investment	1012	573	63.8	Seeded
7	Banking crisis: Central banks unable/unwilling to supply liquidity in the next crisis, causing banking and real economic activity to stop	960	560	63.1	Seeded
8	An extreme event that causes property damage, supply chain failures, business interruption and death on a significant scale	329	192	63.1	User-submitted
9	Rise in extreme weather: Events exceed the capacity of insurance industry and governments to respond, with physical and social implications	495	290	63.0	User-submitted
10	Sovereign default: Non-payment by a major sovereign borrower, causes market panic and adversely disrupts the global economy	988	603	62.1	Seeded
11	Hyperinflation: Prices increase rapidly, wiping out savings, provoking extreme consumption and hoarding of real assets	981	601	62.0	Seeded
12	Infrastructure failure: An interruption of a major infrastructure network, disrupting economies or impacting basic needs	943	590	61.5	Seeded
13	Default with Knock-on effects: extreme event leading to default of major insurer/reinsurer, then resulting in difficulties for many others	267	189	58.5	User-submitted
14	Terrorism: A major ideologically-driven attack on an important target, inflicting large-scale human and financial damage	907	665	57.7	Seeded
15	EUR-Break up with political turmoil and wars	285	220	56.4	User-submitted
16	Regulatory paralysis: Regulations are introduced that significantly constrain the insurance industry removing consumer choice and competition	512	410	55.5	User-submitted
17	Rising sea temperatures: Leading to increased flood risk and cyclonic activity	520	427	54.9	User-submitted
18	Biotech catastrophe: Biological technology (genome, nano, and so on) is applied in a destructive way, either intentionally or inadvertently	844	717	54.1	Seeded
19	Break-down of capitalism: Distrust in the private capital/property system, causing a collapse in economic activity and asset prices	835	711	54.0	Seeded
20	Inability of our form of government to effectively manage spending and taxes – destroying entrepreneurship	121	103	54.0	User-submitted
21	Anarchy: Income inequality and modern communication cause extreme social disorder in a major state, causing government and economic collapse	808	695	53.8	Seeded
22	Biodiversity collapse: Destruction of the world ecosystem leading to problems with human food and water supplies, disease, or climate issues	851	732	53.8	Seeded
23	Currency crisis: A significant devaluation of a major currency that becomes self-fulfilling, with loss of purchasing power	829	717	53.6	Seeded
24	Extreme longevity: Advances in medicine or genome science significantly increase life expectancy, overwhelming support systems	842	748	53.0	Seeded
25	Global trade collapse: A protectionist backlash against cross-border mobility of labour, goods and capital, causing global trade to collapse	808	719	52.9	Seeded
26	Global temperature change: Earth's climate tips into a less-habitable state (hot or cold), disrupting social and economic systems	821	737	52.7	Seeded

Rank	Idea text	Wins	Losses	Score	Seeded/user-submitted
27	A weak public sector and high social disparity leave society unprepared to face collective challenges like pandemics or major cat events	359	327	52.3	User-submitted
28	Under reserving: companies lowering assets backing reserves in an attempt to increase reported profits	151	138	52.2	User-submitted
29	Stagnation: A prolonged period of little or no economic growth, usually accompanied by high unemployment	845	773	52.2	Seeded
30	Nuclear contamination: A major nuclear event, leading to lethal effects on individuals or large radioactivity release to the environment	805	752	51.7	Seeded
31	Political extremism: The rise to power in a major economy of an oppressive government, leading to mass murders and threat to global peace	794	748	51.5	Seeded
32	Social Contract Erosion: Unwillingness of persons, legal systems, governments to abide by prior binding contracts (coverage, limits, and so on)	503	474	51.5	User-submitted
33	Deflation: Goods and services prices fall for a long period, transferring wealth from borrowers to savers; often associated with Depression	731	775	48.5	Seeded
34	Religious fanaticism: A wave of religious fanaticism (Islamic, Christian or other) disrupts social and economical structures	130	139	48.3	User-submitted
35	Peak Oil: Declining oil supplies disrupts transportation and food production, resulting in economic, financial, and political collapse	434	479	47.5	User-submitted
36	Elimination of Middle Class: Upper Class captures more and more wealth, thereby eliminating the middle class, which reduces insurance sales	307	353	46.5	User-submitted
37	Population explosion: the BRIC countries lift their population from poverty causing exponential consumption growth and adverse consequences	111	130	46.1	User-submitted
38	World War III: A military war among many of the world's major countries, killing many millions, destroying physical and human capital	690	841	45.1	Seeded
39	The definitive disconnect between economic growth and employment because of technological advances leading to societal unrest	406	502	44.7	User-submitted
40	Solar weather event: electricity is interrupted throughout large portion of the United States for several months	172	235	42.3	User-submitted
41	Health progress backfire: Massive rise in morbidity or mental ill-health, perhaps due to an unintended consequence of new health practice	612	866	41.4	Seeded
42	Nitrogen shock: Over-fertilization leads to soil degradation and oxygen-starved freshwater lakes and oceans, fish populations collapse	265	428	38.3	User-submitted
43	Abandonment of fiat money: A collapse in confidence in the purchasing power of paper currency and the consequent return to a gold standard	579	963	37.6	Seeded
44	Peace project EU fails, national tendencies increase, stop of European integration	261	454	36.5	User-submitted
45	Technological singularity: Technological advancement proceeds beyond the point of human understanding or control, threatening human life	520	950	35.4	Seeded
46	Change in Legislation: higher own fund requirements than in S2	178	331	35.0	User-submitted
47	Organised crime: A significant increase in the scale of illegal operation in a major economy, threatening legitimate economic activity	497	1040	32.4	Seeded
48	Sharing Economy: continued trend of democratization, insurance reverts to its main form-risk pooling-through technology (for example, Kickstarter)	227	489	31.8	User-submitted
49	Cosmic threats: Planetary risks such as a big meteorite impact, changed orbit due to a passing asteroid, or giant solar flare/magnetic storm	481	1059	31.3	Seeded
50	Anti-immigration sentiment leads to vigilante activity in major cities around the world	102	240	29.9	User-submitted
51	Significant change in tax policy that penalizes off-shore transactions	190	535	26.3	User-submitted
52	On-going high levels of political correctness, for example, EU gender ruling	125	364	25.7	User-submitted
53	Super volcanos in the US (Yellowstone)	67	207	24.6	User-submitted
54	Integration of man and machine yielding a form of immortality	87	393	18.3	User-submitted
55	Advances in cryogenics that allow people to be preserved for extended periods and then reawakened	40	185	18.1	User-submitted
56	Break down of motor market due to automatic driving gears	86	436	16.6	User-submitted
57	Alien invasion: An invasion of non-peace-seeking aliens that seek either to remove the planet's resources or enslave/exterminate human life	205	1317	13.5	Seeded

Conclusions

So how should companies actually adapt in recognition of extreme risks? We would suggest a prioritisation exercise: first, worry about the events ‘that can kill you’, that is permanently impair the company’s mission. This should identify which extreme risks matter and which can be ignored. For the former, the right thing to do is to pay up for the insurance, given that the prioritisation exercise has shown the company cannot afford to self-insure. Second, a company should do the simple thing of ensuring its risks are as diversified across as many different drivers as possible. For an investor, they should also fully diversify within asset classes and create a strategic allocation to cash to provide optionality. Finally, greater hedging complexity can be added over time, assuming it passes a considered cost/benefit analysis. This is likely to involve adding long-dated derivative contracts in a contrarian manner, that is, when they are cheap rather than popular.

Thinking Ahead

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