



# Pushing the boundary

Risk management beyond insurance

Global Corporate



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# Contents

<b>Preface</b>	<b>4</b>
<b>Introduction</b>	<b>5</b>
<b>Instead of an executive summary</b>	<b>6</b>
<b>1. The risk landscape</b>	<b>8</b>
1. Regulation and compliance	8
2. Slow economic recovery	8
3. Cost control	9
4. Emerging market entry	9
5. Social acceptance and corporate social responsibility (CSR)	9
6. Taxation risk	9
<b>2. Risk and uncertainty</b>	<b>10</b>
<b>3. Forecasting in an uncertain world</b>	<b>12</b>
1. In search of models and data	12
2. The common sense approach to forecasting	13
<b>4. Emerging risk</b>	<b>15</b>
Introduction	15
1. Set-up	15
Staffing an early warning team	15
Training those involved in early warning work	15
2. Scoping	16
Establishing an operational framework	16
3. Scanning	17
4. Analysis	18
5. Action	19
Box 1: how does Zurich spot emerging risks?	20
<b>5. Reputation risk</b>	<b>22</b>
Introduction	22
1. Politics and reputation risk	22
Box 2: reputation loss in the oil industry	23
2. The economic role of trust	23
Box 3: monitoring media using Web mining and blog mining	25
3. Best practices for minimizing reputation risk: five proactive steps	26
Box 4: how to get a handle on reputation risk?	27
<b>6. Responding to the challenge of global supply chain risks</b>	<b>29</b>
1. The challenges defined	29
2. A three-step approach to finding the right solutions	30
3. The benefits are clear	31
<b>7. A practical primer for supply chain risk management</b>	<b>32</b>
1. A hard look at cost savings	32
2. The importance of intangible benefits	34
3. Getting a grip on investment costs	34
4. The challenge of supply chain risk – an opportunity to push the boundary	35

# Preface

A first draft of this paper was written for Zurich's Global Risk Management Summit, which was held on September 10 and 11, 2010, in Lucerne, Switzerland.

The report was produced under the general direction of Daniel M. Hofmann, Group Chief Economist of Zurich Financial Services. Major contributions were made by a team from Oxford Analytica under the lead of Elizabeth Barker. In addition, summit speakers and Zurich colleagues wrote special contributions about topics in their field of expertise. These chapters came from Tim Astley, Douglas W. Hubbard, Gary S. Lynch, Mary Merkel, and Nick Wildgoose.

Much encouragement and financial support came from the Global Corporate business division under the lead of its Chief Executive Officer, Mario Vitale, and congenially represented by David Martin and Gregory Renand.

Most importantly, this report would not have been written without the support and engagement of our customers who attended the Global Risk Management Summit. We are thankful for their active participation. Their enthusiasm and their stimulating comments were essential in shaping the final version.

This report is dedicated to the community of risk managers.

# Introduction

This year's Global Risk Management Summit looked at risks that, although typically not covered within the business model of insurance, are faced by risk managers in corporations around the globe. These risk managers must cope with uncertainty whether insurers can provide solutions or not.

That's why we accepted the challenge to explore these issues more deeply and help our customers to understand – and possibly manage – these seemingly intractable risks. Zurich has always been prepared to push the boundary between risk and uncertainty, or the insurable and non-insurable.

As one would expect from a topic that attempts to push the boundary, the answers were unlikely to be easy and in some cases they continue to be elusive. But we still hope to have shed light on important issues. We invite you to engage us in continuing this productive and enriching conversation.

My colleagues and I wish you enjoyable reading. We would be delighted to receive your feedback and suggestions for future summits. The planning for our next event is already underway.



**Mario Vitale**

Chief Executive Officer  
Global Corporate  
Zurich Financial Services



# Instead of an executive summary

## Five lessons for risk management

This volume takes a pragmatic approach to decision-making in states of the world characterized by risk and uncertainty. It starts with a pragmatic definition of risk (provided by Hubbard, chapter 2) as a state of uncertainty where some of the possibilities involve undesirable outcomes.

Following the American economist Frank L. Knight one could add further that decision-makers in risk situations are faced with unknown outcomes but known ex-ante probability distributions. And it follows readily that decision-making and risk management would appear to be comparatively easy in these situations, as the model's properties are known and data readily available.

The task becomes more challenging in states of the world characterized more heavily by uncertainty. It is a world where outcomes extend over a range of possibilities and where, again following Knight, the probability distribution of a random outcome is unknown. In other words, it is a world of unknown unknowns where no data exist and modeling is not possible.

At first blush it would appear to be very difficult, if not to say impossible, to tackle the challenges caused by such uncertainty. However, it is the explicit purpose of this volume to push the boundary and provide practical guidelines for risk management under high doses of uncertainty. Here are five insights for implementation.

- 1. Uncertainty can be assessed and measured.** It is a common fallacy to suppose that uncertainty cannot be assessed and measured. However, it is important to define well the object of measurement. Once that's done, it is typically recognized that the problem – how to grasp uncertainty in our case – is not completely unique and that more data are available than initially thought. Even when faced with the perfect unknown unknowns, scenario analyses will frame the problem and help to reduce uncertainty.
- 2. Establish early warning systems.** To be aware of uncertainty is one thing, but to spot an emerging risk is another. Emerging risk radars must be built and systems for continuous scanning established. This requires strong communication structures so that information can filter up quickly and easily to decision makers. IT tools such as Web mining and blog mining can be deployed, for example, to capture potential reputation crises.

- 3. Prudent forecasting is possible and necessary.** Although forward-looking by default, risk assessment should not be confused with forecasting. Nevertheless, forecasts are important to reduce uncertainty. The common sense approach to efficient forecasting assumes that trends cannot be relied upon, and that a good forecast will embrace things that don't fit into familiar boxes. It is a first step toward mitigating the risk of being surprised by unknown unknowns, or the now proverbial 'black swan.'
- 4. Contingency planning is indispensable.** Since unknown unknowns keep generating surprises it is important to develop contingency plans that cover a whole range of scenarios. When disaster strikes it is usually too late to create effective plans to cover the fallout for production, employees, reputation, supply chains or service disruption. Contingencies for generic adverse outcomes must be in place. Successful contingency planning will also endeavor to map the interaction among emerging risks.
- 5. Resilience buffers will dilute adverse impacts.** Even the best risk assessment and most efficient forecasting cannot protect against the adverse impact of uncertainty. Reputation risk is particularly treacherous as reputation loss can occur overnight. That's why creating a 'resilience buffer' is vital. As Roland Schatz shows in his contribution, pushing a company's image above the awareness threshold will help to deflect threats to reputation if a crisis should occur. It gives senior management a stock of goodwill or a resilience buffer to draw from, which helps to reduce the damage to reputation. The challenge for risk managers will be to transfer the idea of resilience buffers to other areas in order to mitigate the adverse impacts of uncertainty.

The presence of uncertainty is always a challenge for insurance and risk management alike. But in the past, insurers have always pushed the boundary and provided solutions for risks that at one time were considered uninsurable. The most recent example for such a transition is supply chain risk insurance, but one can be sure that there will be more to follow in the future. In deliberately pushing the boundary, insurers and risk managers are making uncertainty not only measurable but also manageable. And by adhering to a few basic principles, and by paying appropriate attention to common sense, risk management will preserve and even create value.

# Chapter 1

## The risk landscape



*The focus of this paper is on risks that are difficult to grasp but that nonetheless are part and parcel of our daily risk management challenges*

Businesses face many risks, some emerging on the horizon and some ever present. They all come in different incarnations. Some are comparatively easily identified, assessed and mitigated. Other risks are more challenging. They are at times very difficult to spot, even more difficult to assess, and most difficult to manage. And yet they may also be facts of corporate life, such as competition risk or reputation risk.

The focus of this paper is on the second, arguably more intractable class of risks. That's not because they are more interesting than more mundane issues. It's because these risks consistently top the list of risks businesses around the world are worrying about. And what makes them even more of a challenge is the fact that these risks are largely uninsurable, leaving firms to work out for themselves how to monitor, mitigate and manage them.

So before engaging in a discussion of concrete approaches to dealing with risks that are outside the boundary of insurability, but of essence to corporate risk management, we start out with a synopsis of the top risks most businesses are currently concerned about. They include<sup>1</sup>:

### 1. Regulation and compliance

With governments anxious to avoid a repeat of the global financial crisis, they are keen to roll out new regulations to better manage the financial sector. However, there are real concerns among critics that any new regulations may be poorly designed, too rapidly implemented and over-eager. Further, regulation may be uncoordinated, with national governments initiating their own regulatory systems, increasing the risk of conflicting compliance and preventing global firms from engaging in cross-border activities. Firms have also been suffering from the huge uncertainty hanging over which direction any new regulations might take. Such uncertainty stifles business growth and investment as companies hang in limbo waiting to learn more.

### 2. Slow economic recovery

There is understandably deep concern among businesses that there has been a 'false dawn' and that a full economic recovery may be yet to emerge. With many governments having exhausted their coffers following the implementation of large stimulus packages last year, analysts are now predicting that economic activity may slip again, as government injections dry up without any lasting effect on the real economy. In fact, looming sovereign debt crises have emphasized that, in some cases, markets may object to further stimulus even if it's desired.



### 3. Cost control

In the current economic climate, many firms have looked to reduce costs in order to avoid financial fragility. Other firms, facing competition from low-cost entrants from emerging markets, have also looked to reduce costs so they can better compete on price. This needs to be managed carefully in order to avoid damaging product or service quality, operational safety or workforce morale and productivity. Another factor complicating cost control is commodity price inflation. Items such as steel, oil and food have all seen price rises, and companies face a considerable challenge in managing them. Hedging or limiting commodity use where possible can help, but for some, these measures may not go far enough.

### 4. Emerging market entry

China and other emerging markets have dominated global growth in recent years. They represent a huge opportunity and a strategic imperative for many firms. The new consumer markets now appearing are an irresistible challenge, especially as developed economies remain stagnant, with limited potential for further growth. Yet the risks involved with entering these markets remain high due to political risk, problems with local partners, cultural misunderstandings and poor communication, and poor relationships with the national regulator.

### 5. Social acceptance and corporate social responsibility (CSR)

It is now the norm for companies to look beyond growth and profit maximization and include environmental and social responsibility among their goals. Issues of particular concern range from the reputation of the financial sector and bankers' compensation to maintaining a social license to operate in sectors such as mining and metals, oil and gas, and nuclear power generation. The public is not easily fooled and token gestures or simply 'ticking boxes' in CSR policy will not be enough. Many companies in the oil sector have already been caught out, leading to huge reputation damage (see box 2, p. 23). CSR needs to be genuine and well-integrated into companies' activities.

### 6. Taxation risk

Businesses are likely to face substantial increases in taxation and levies over the next five to ten years as indebted governments look to raise funds through means other than painful spending cuts. Sectors may be hit unevenly as the more profitable ones become an attractive target. The financial sector has already seen some firms switch locations to avoid tax burdens and remain competitive, while others have been vocal in considering future moves. Increased tax rates not only reduce profit margins, but may also limit long-term investment and future growth.

# Chapter 2 Risk and uncertainty



*Alternative definitions of risk and uncertainty...*

*...and two pragmatic ones*

## A practical approach to measuring uncertainty

Douglas Hubbard\*

As the breadth of risk management grows, new industries and standards organizations are weighing in on what risk means and how to analyze and manage it. Technology, security, terrorism, operations and project management are just a few of the areas where professionals have attempted to develop risk management methods on their own. Usually this is done with little input from traditional risk management industries. In some cases, the methods of risk management and even the definitions of risk are incompatible with more established ideas from the insurance industry or, for that matter, popular understanding. As a result, the rapidly growing area of risk management needs to reinforce some fundamentals.

Some professions, such as project management, defined risk as including positive outcomes as opposed to purely negative outcomes. In the early 20<sup>th</sup> century the economist Frank Knight differentiated between uncertainty and risk by describing only the latter as quantifiable. In engineering the term 'risk' is sometimes reserved for discrete events, such as an earthquake, while 'uncertainty' is reserved for continuous values such as project costs. In finance, risk is used synonymously with volatility of return on investment.

In this chapter we begin with the following common-sense understanding, which is familiar and consistent among the insurance industry, the dictionary definition, popular understanding, and other quantitative analysts (see also chapter 7 on 'Effective Forecasting' for an alternative definition of risk and uncertainty).

- **Uncertainty:** the lack of complete certainty, that is, the existence of more than one possibility. The 'true' outcome/state/result/value is not known.
- **Risk:** a state of uncertainty where some of the possibilities involve a loss, injury, catastrophe, or other undesirable outcome (i.e., something bad could happen).

From here we make an explicit distinction between how the two are measured:

- **The Measurement of Uncertainty:** a set of probabilities assigned to a set of possibilities, for example, 'There is a 60 percent chance it will rain tomorrow, 40 percent chance it won't.'
- **The Measurement of Risk:** a set of possibilities each with quantified probabilities and quantified losses. For example, 'We believe there is a 40 percent chance the proposed oil well will be dry with a loss of USD 12 million in exploratory drilling costs.'

Measuring risk is not possible without measuring uncertainty, and that means applying odds to various possible outcomes. This is the point where many different practitioners of risk management in many industries find their biggest obstacle. But there are some sound methods for applying probabilities that are surprisingly straightforward.

\*The author is founder of Hubbard Decision Research.

## Four steps to measuring risk

- 1. Learn how to express your own uncertainty quantitatively.** Expressing your uncertainty using probabilities is a skill that can be taught. Without training, most managers are statistically 'overconfident.' That is, if we tracked all the times when they said they were 90 percent certain of some outcome, the outcome would have occurred much less than 90 percent of the time. But a 'calibrated' person is right about as often as they expect to be. In other words, over a large number of trials, they are right 80 percent of the time they say they are 80 percent certain, right 95 percent of the time they say they are 95 percent certain, and so on. Decades of research in decision psychology bear this out. It takes about four hours of training for most people to show significant improvement.
- 2. Model risks quantitatively.** The best way to assess risks in any complex system is to build a model of the system. Research shows that our expert intuition fails us when we are asked to synthesize a large number of factors in order to make a judgment.<sup>5,6</sup> It appears that the best way to improve on human judgment in complex systems is to build computer simulations of the system.<sup>7,8,9</sup> Even if probabilities used to build the initial model can be based on subjective, calibrated estimates (mentioned above), the ability to estimate risks will improve on unaided intuition.
- 3. Cast a wider net for analogies.** A common fallacy is to assume that only near-identical situations can serve as a benchmark for assessing risks. In many cases, this means that few if any situations are considered appropriate analogies for comparison. This is one of the reasons why financial analysts have typically been using only 3 to 5 year histories when they assess risk and return. Their reasoning is that only recent markets are useful analogies. The net effect of this is that the analysts are surprised by more catastrophic events – such as the recent financial crisis – even though history shows they happen more than once every generation. Similarly, a manufacturer producing new technologies believes that the technology is so unique that they can learn nothing about risks from looking at other technologies. But perhaps the manufacturer actually has a long history of producing unique, new technologies. This is similar to the fact that, even though each person is unique, a life insurance company can still use data from other people to determine an individual's insurance premium.<sup>10</sup>
- 4. Use real measurements.** Surveys of even fairly sophisticated quantitative models show that real-world measurements are not usually part of the modeling process.<sup>11</sup> Models should – where it is economically justified – rely on empirical observations. And this does not just mean the use of historical data alone (most models in the surveys did use historical data that was available). In some cases the most useful measurements will not have existing data and, therefore, new data must be gathered by sampling, controlled experiments, and other original research.

Many practitioners of enterprise risk management believe they are effectively managing risk and even that they are measuring the performance of risk management. Yet, when pressed, most will admit they do not actually attempt to measure risks in a quantitative manner. Unless they are actually measuring risks with quantitatively sound methods, they can't really be managing risks or measuring the effectiveness of risk management. The effort involved in implementing better metrics for risk and risk management will be among the highest payoff investments an organization can make.

<sup>1</sup> 'The Ernst & Young Business Risk Report 2010 – The top 10 risks for global business' (2010) Ernst & Young, in collaboration with Oxford Analytica. [www.ey.com/businessrisk2010](http://www.ey.com/businessrisk2010)

<sup>2</sup> B. Fischhoff, L. D. Phillips, and S. Lichtenstein, 'Calibration of Probabilities: The State of the Art to 1980,' in *Judgement under Uncertainty: Heuristics and Biases*, ed. D. Kahneman and A. Tversky (New York: Cambridge University Press, 1982)

<sup>3</sup> D. Kahneman and A. Tversky, 'Subjective Probability: A Judgment of Representativeness,' *Cognitive Psychology* 4 (1972): 430–454; and D. Kahneman and A. Tversky, 'On the Psychology of Prediction,' *Psychological Review* 80 (1973): 237–251

<sup>4</sup> D. Hubbard *How to Measure Anything: Finding the Value of Intangibles in Business*, John Wiley & Sons, 2<sup>nd</sup> edition, 2010, pp 71-6.

<sup>5</sup> C. Tsai, J. Klayman, and R. Hastie, 'Effects of Amount of Information on Judgment Accuracy and Confidence,' *Organizational Behaviour and Human Decision Processes* 107, no. 2 (2008): 97–105.

<sup>6</sup> P. E. Meehl, *Clinical versus Statistical Prediction* (Minneapolis: University of Minnesota Press, 1954), pp. 372–373.

<sup>7</sup> G.S. Simpson, S.P.E. Lamb, J. H. Finch, and N.C. Dinnie, 'The Application of Probabilistic and Qualitative Methods to Asset Management Decision Making,' *Society of Petroleum Engineers*, 2000.

<sup>8</sup> Lamb, Fiona, et al. 'Taking Calculated Risks' *Oilfield Review*, Autumn 2000.

<sup>9</sup> D. Hubbard *The Failure of Risk Management: Why it is Broken and How to Fix It*, John Wiley & Sons, 2009, pp 237-8

<sup>10</sup> D. Hubbard *The Failure of Risk Management: Why it is Broken and How to Fix It*, John Wiley & Sons, 2009, pp 180-1

<sup>11</sup> D. Hubbard, D. Samuelson 'Modeling Without Measurements: How the Decision Analysis Culture's Lack of Empiricism Reduces Its Effectiveness' *OR/MS Today*, 9 Oct 2009

## Chapter 3

# Forecasting in an uncertain world



Daniel M. Hofmann\*

'There are known knowns; there are things we know that we know. There are known unknowns; that is to say, there are things that we now know we don't know. But there are also unknown unknowns; there are things we do not know we don't know.'

Donald Rumsfeld, former U.S. Secretary of Defense

It resides in the nature of risks that they creep up on us when we are least prepared. Of course, it would be nice to command perfect foresight or at least possess reliable forecasts. Alas, as the former U.S. Secretary of Defense noted, the world is more complicated. There are not only known knowns, in which case forecasting would be easy, but also known unknowns and, worst of all, unknown unknowns. With the recent financial crisis, the latter have also become known – although incorrectly – as black swans.

In a world of uncertainty populated by black swans it seems that forecasting is very difficult, if not impossible. But risk managers are paid to cope with the impossible. That's why this chapter tries to develop a few practical pointers toward approaches that make forecasting possible.

*Forecasts require data and a model*

*But all models are incomplete by default*

*Risk and uncertainty in relation to our modeling and data collection ability*

*Assigning an appropriate approach to the various states of the world...*

### 1. In search of models and data

In principle, forecasts require a model and appropriate data to feed it. With weather forecasts, for example, a scientific understanding of atmospheric processes – the model – and a wealth of data points for a given location are used to predict the future state of the atmosphere in that location. Advances in meteorological sciences and, more importantly, the ability to process vast quantities of data have made weather forecasts more and more reliable.

However, the limits of weather forecasts are readily apparent to anyone who has ever been surprised by a thunderstorm during a hike in the mountains. The earth's atmosphere is a complex system. Even the most sophisticated models must simplify and throw away features of the real world that might be decisive. Moreover, even the best supercomputers wouldn't be fast enough to process all the data necessary to make perfectly accurate weather forecasts.

In that sense, meteorology is an excellent example of how good models and appropriate data are not sufficient to produce fully reliable weather forecasts. A considerable degree of uncertainty remains. This uncertainty depends on our ability to collect data and model the real world. One or the other may be impossible to obtain, and quite often we have neither models nor data. John Casti<sup>12</sup> has recently proposed a two-by-two matrix to characterize various states of the world that either have or do not have models and/or data. His matrix produces different classes of uncertainty that correspond to Rumsfeld's aphorism about the known knowns, unknown knowns, known unknowns and unknown unknowns (see next page).

Following Casti we can also assign various approaches to dealing with the four different classes of uncertainty. They range from dynamic system theory and network analysis, for dealing with known knowns where data exists and modeling is possible, to scenario analysis for coping with the unknown unknowns where modeling is not possible and data do not exist.

\* The author is Group Chief Economist of Zurich Financial Services.

<sup>12</sup> John Casti, *Four Faces of Tomorrow*, A report prepared for the OECD International Futures Project on Future Global Shocks, (unpublished manuscript) 2010.

...allows you to develop a framework for thinking about uncertainty

Forecasting must be based on the disciplined application of common sense

	Data exists	Data do not exist
Modeling possible	<b>Known knowns</b> <ul style="list-style-type: none"> <li>• Dynamic system theory</li> <li>• Network analysis</li> </ul>	<b>Unknown knowns</b> <ul style="list-style-type: none"> <li>• Simulation</li> <li>• Monte Carlo exercises</li> </ul>
Modeling not possible	<b>Known unknowns</b> <ul style="list-style-type: none"> <li>• Statistical techniques</li> </ul>	<b>Unknown unknowns</b> <ul style="list-style-type: none"> <li>• Imagination</li> <li>• Scenario analysis</li> </ul>

Without going into the details of each cell, the two-by-two dichotomies provide a framework for thinking about uncertainty. Even when we don't have models, we can apply statistical techniques or scenario analyses, and we have proven methods to overcome an absence of data. Uncertainty may not always be quantifiable to a satisfying degree, but as Douglas Hubbard has shown in chapter 2, we can tackle (almost) anything, even uncertainty.<sup>13</sup>

## 2. The common sense approach to forecasting

That said the presence of uncertainty and risk make it almost mandatory to generate robust forecasts. Of course, the goal cannot be to predict the future. According to Casti, the purpose of the forecasting exercise should rather be 'to take action (today) to limit risk in preparation for an inherently uncertain future.' In this context, Paul Saffo has identified six rules for effective forecasting.<sup>14</sup> They are nothing more – but also not less – 'than the systematic and disciplined application of common sense.' In other words, they are probably ideally suited to serve risk managers and senior executives who would like to push the boundary of the uncertain. Here's a summary of Saffo's findings:

- **Rule 1: Define a cone of uncertainty.** Starting at the present, map out an expanding cone that represents the overall expansion of uncertainty as we move forward in time. Defining the cone's boundaries is crucial. It allows us to separate the highly improbable from the wildly impossible, with outliers (or wild cards and surprises) defining the edges of the cone. At first, a cone should be rather wide to include a lot of uncertainty; it can be narrowed later as more information becomes available. In contrast, a cone that's initially drawn too narrow leaves out avoidable unpleasant surprises. At the same time, a danger is to focus too much on outliers. It leaves a hollow cone and will result in being surprised by a neglected or entirely overlooked certainty.
- **Rule 2: Look for the S-curve.** Many developments tend to follow the S-curve of a power law. Important changes almost never occur abruptly. They start out slowly and incrementally, then accelerate, and eventually taper off again. The problem is the S-curve's flat-line beginnings, which is often mistaken for a trend. As Sir Alec Cairncross put it:

A trend is a trend is a trend.  
But the question is will it bend?  
Will it alter its course  
Due to some unforeseen force  
And come to a premature end?

<sup>13</sup> See also Douglas W. Hubbard, *How to Measure Anything; Finding the Value of Intangibles in Business*, Wiley, 2nd edition 2010.

<sup>14</sup> Paul Saffo, *Six Rules for Effective Forecasting*, *Harvard Business Review*, July-August 2007.

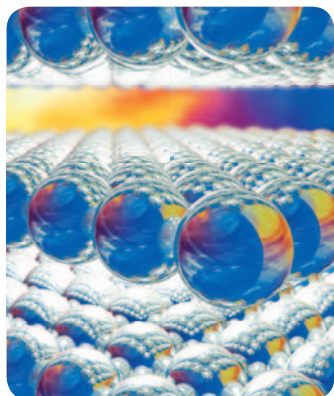
Hence, the art of effective forecasting is to identify the inflection point of the S-curve before it emerges. For that one must be sensitized to the precursors of the turning points (see rule 3).

- **Rule 3: Embrace the things that don't fit.** The odd event that doesn't fit in a pattern may just be an early warning indicator that the S-curve will soon reach the inflection point. By definition, anything that's new will not fit into old categories. That's why one should never ignore signals that don't fit into familiar boxes. And if one is interested in finding out what may turn the world upside down one should look more systematically into peculiar or interesting failures.
- **Rule 4: Hold strong opinions weakly.** It is in the nature of humans to develop strong opinions and hold on to them no matter what. Academic researchers tend to immunize theories by quietly suppressing contradictory evidence, a habit that continues until the body of contradictions is so overwhelming that it forces a revolution. In contrast, effective forecasting is built on a process of strong opinions that are held weakly. Having strong opinions allows us to reach conclusions and decision points quickly. But holding them only weakly allows us also to discard them quickly in the face of contradictory evidence.
- **Rule 5: Look back twice as far as you look forward.** The financial crisis has painfully reminded us that the immediate past is never a reliable indicator of the future. One of the more serious mistakes in financial modeling was the over-reliance on the two decades prior to 2007, a period that economists called The Great Moderation. It was characterized by low economic and financial market volatility, and it lulled model builders into believing that the likelihood of extreme events was extremely small. If they had looked further back into the past, say more than 100 years, to include also the volatile postwar business cycles and the great stock market crash of 1929, their assumptions about the probability distribution function of market events would have been dramatically different.
- **Rule 6: Know when not to make a forecast.** Wise forecasters realize that the cone of uncertainty is not static. It expands and contracts as the present rolls into the future and certain possibilities are actually realized while others are closed out of reach. It follows that under certain circumstances the uncertainty cone is so broad and its edges so blurred that a wise forecaster will refrain from making any forecast at all.

Efficient forecasting is akin to telling a good story. It is important what story we choose and how we tell it. It must be plausible, appeal to our common sense, command a compelling inner logic, and build on a rich reference to the past. At the same time the story must include as many likely outcomes as possible and push the boundary to the unthinkable. Ultimately, the successful forecasting story is about how we transform uncertainty into calculable and manageable risk.



## Chapter 4 Emerging risk



*There is a tension between the need for established, reliable experts for evaluation and the distortions resulting from their professional and institutional commitments.*

### Best practice ‘pillars’ for successful early warning systems (EWS)

#### Introduction

Managing any type of risk, especially those that are uninsurable, is challenging, and successful companies cope best by drawing on a toolkit of resources. One such resource is an early warning system (EWS). These have become a popular tool in both the private and public sectors to detect and prepare for emerging risks and unexpected events. Yet there exists no simple, accepted standard of how best to implement and manage an EWS.

This section describes the key elements, grouped in five main pillars.

#### 1. Set-up

##### Staffing an early warning team

###### Employ a multi-disciplinary team

The choice of personnel is crucial to the success of any EWS. Prominent subject area experts alone are not sufficient. A varied and diverse team is essential for an effective EWS. Diversity also makes it easier to distinguish what is objectively important from what is subjectively novel. Generalists are often the best candidates for the scanning phase.

###### Integrate decision makers into the EWS team

Integration can be achieved either by putting key decision makers in the same room as external experts to challenge preconceptions and prejudices; or, preferably, including people from all levels of the organization (including the decision makers themselves) in the process, from scanning for risks through to analysis and action. The team should also contain someone whose opinions will be credible to senior decision makers and who can ensure that communication lines between different levels of the organization remain open and flexible.

###### Build networks into the team

Networks can prevent a situation where focus is inward and information communications linear. It is important not to segment early warning thinking or exercises within an organization. By encompassing as many information and expertise networks as possible – both through varied and multi-level internal engagement and consulting with external sources – an organization can access cross-disciplinary sources and more accurately depict the complex and interconnected nature of the environment in which it operates.

###### Engage in systems thinking

An active understanding and adoption of systems thinking is important to both providers and consumers of EWS. Using examples of how risks interconnect (including those both internal and external to the organization) can raise awareness of the potential secondary or tertiary impacts across the networked systems within which both the early warning team and the decision makers operate.

*Things that first seem impossible then go on to seem inevitable.*

### Ensure good communication of ideas across the organization

Ensuring good organizational communication while avoiding 'group think' can be achieved by raising awareness of the dangers of 'silo' thinking. Consider issues beyond the stated or unarticulated assumptions about the organization's internal workings and how these relate to the external environment.

## 2. Scoping

### Relax existing assumptions of the world

Identify the assumptions underlying the present (such as the existence of the nation state, or GDP growth) and think about the direction of change if these assumptions were to break down. Through this, an organization can begin the work on the third pillar (scanning), with greater awareness of its perceptual biases.

### Think about the unthinkable

When approaching early warning systems, try to think 'outside the box.' An EWS needs to ensure that all those involved – including decision makers – understand that one of its aims is to challenge preconceptions and 'silo' thinking.

### Consider more than one future

An EWS considers and incorporates many different futures and risks. Identifying and predicting a single future is impossible and not the task of an EWS. Instead, an EWS exists to flag up risks or opportunities that may have significant impacts for an organization and to develop a range of plausible futures that challenge the organization to maintain the flexibility needed to respond to any combination of outcomes.

### Define the scope of the EWS

Establish a clear goal for an EWS, clearly articulating the reason why it has been set up. Defining the scope of an EWS should be carried out in terms of the organization's needs, interests, risk perceptions, horizon and timeline. Include only risks that have a meaningful impact on the organization during the timeframe in question.

### Simplify language

Establish a clear operational understanding of the concepts behind the EWS. Clarity on the terminology being used to explain these will enable all staff to engage in the process.

### Construct the 'known-unknown' matrix

Some uncertainties can be apprehended once we are aware of our ignorance. 'Known-unknowns' are the things we know that we do not know. But there are also 'unknown-unknowns' – issues we do not know that we do not know. There are even 'unknown-knowns' – issues which we do not know that others know (see chapter 3).

### Manage information and knowledge effectively

Install a centralized Management Information System. This greatly facilitates the smooth working of an EWS, where the collection and distribution of data is formalized into a clear and continuous process. Such a system will be able to show evidence of success and can also facilitate learning from past mistakes.

*Traditional, trusted sources are not necessarily useful for anticipating new risks.*

### 3. Scanning

Best practices for scanning divide into two broad categories – what and how to scan for risks, and how to convince decision makers that the findings are relevant to them. It is important to continue to involve decision makers at this stage of the EWS exercise as this engenders a greater sense of stakeholder engagement and ownership, which is useful during later stages of the process.

#### Scan as diverse a range of sources as possible

Draw on a diverse range of sources to collect information on a particular trend and refrain as much as possible from selection or filtering at the initial stages.

#### Make the system accessible to its consumers

An EWS should be accessible to all stakeholders, regardless of their function, background and culture. Best practices for the scanning phase of the system include 1) designing and maintaining a taxonomy that organizes scan data in an intuitive way, where confirming data is accrued and annotated and 2) identifying sources so that stakeholders understand the provenance of data. This second step increases the likelihood of their accepting its credibility. By recognizing sources of supporting data as rational – if not as evidence-based as they are accustomed to – stakeholders will be more receptive to the warnings they receive.

#### Engage in different modes of scanning

Train scanners and decision makers to re-learn how they listen, receive and read information when searching or learning of new trends. Successful scanning involves ‘putting one’s brain in neutral’ and ‘de-focusing’, reading or listening in an entirely different way from perhaps how one might for research or leisure.

#### Reference and annotate sources

By labeling and classifying sources of emerging risks that are included in an EWS scan (e.g. as primary or secondary, or as expert, popular or fringe), it is easier for consumers of the system to appreciate the rationale behind the inclusion of an issue, and indeed for scanners to gain a clearer idea over time of where useful early warning signals are most likely to be found.

#### Use data- and text-mining software

Due to the proliferation of online sources of information, scanning software has become an indispensable part of most EWSs. However, the over-mechanization of EWSs is strongly discouraged and stakeholders must realize the continued importance of human judgment. The ability of the human mind to make (unexpected) connections is still invaluable.

*We are not made of mathematics, so we should not try to base future assumptions on mathematics. Considering human behavior is key. So many things in this world are deeply colored by human reactions, prejudices, and ideology.*

## 4. Analysis

### Be open to other worldviews

A key best practice is to keep minds open during analysis. It can mean playing 'devil's advocate' and taking on board other viewpoints, cultural considerations or motivations. Organizations may act in very different ways. Consider the style of thinking or cognitive biases that consumers or other competitors might be operating under, their personalities, culture and environment. Realize that others may have different information which may lead them to behave in ways that you may not have anticipated.

Behavioral factors can also come into play. As people often engage in irrational behavior when making decisions or interpreting information, considering how human beings may react is key to analyzing emerging issues and their impacts. Human behavior is governed by many complex factors, such as habits, social norms, intrinsic and altruistic behaviors, and information overload or choice overload, such that the supposedly rational outcome is not always the most likely one.

### Reconsider rejected ideas

People usually reject issues for which they are not prepared, or an idea that surprises them or seems ridiculous. If an idea is rejected, it most probably means that an organization has simply not considered it before. It is important in such cases to analyze why an idea has been rejected and even to reframe and reconsider it.

Further, some events happen more frequently than others, and analysts should be aware of the patterns of societal memory. Infrequent events which have occurred recently will be foremost in people's minds more than a high-impact event which last occurred a long time ago. Therefore, organizations need to be aware of such biases and make sure that their analysis factors in such human propensities for distortion.

### Map impacts of emerging issues

A good scanning database will always 'connect the dots' and map trends and risks. Mapping the primary, secondary and tertiary impacts can help to identify potential yet previously unidentified changes. Also make sure to identify and record how each impact converges or interconnects with other ones. Mapping relationships among issues and trends can also help to identify where they form virtuous circles which could accelerate the speed of change or, conversely, where several emerging issues might interact to counteract each other and slow change.

### Disprove your gut feeling

Individuals often make intuitive decisions or 'have a hunch' about a particular emerging risk which they believe will become important. Rather than only trying to prove this hunch, best practice tries to disprove it through a search for 'competing hypotheses,' looking for evidence or opinions which do not support it.

*'With a free hand to choose coefficients and time-lags, one can, with enough industry, always cook a formula to fit moderately well a limited range of past facts. (But such quantitative modeling) often cannot support one-tenth of the burden that is placed on it.'*

**John Maynard Keynes**

*Say too much rather than too little. Insult rather than consult and challenge people's beliefs.*

### Use both qualitative and quantitative data

'Hard data' should always be combined with 'soft data.' While economic forecasting, rigorous modeling and the collection of accurate data is useful when analyzing an emerging risk, such quantification should always be integrated with 'soft data' which can generate a more nuanced view of a situation. The qualitative analysis that produces 'soft data' can include expert consultations, scenarios and discussion within the organization.

## 5. Action

### Communicate early warnings effectively

First, best practice needs to ensure that strong communication structures are in place so that information can filter up quickly and easily to decision makers. However, reporting structures do not need to be rigid; indeed, flexibility is often more effective. Second, decision makers are most likely to be convinced about the importance of an emerging risk if they understand its impacts and why it is important for their organization to respond (see chapter 5 for a practical example). Information needs to be carefully prepared and fully analyzed before being passed on to a decision maker. Their engagement is also more likely if they are involved in some of the collection of relevant information. Third, how this information is conveyed is essential. In order to be convinced, decision makers need to receive information that they believe is credible and from trusted sources, be that written material or conversation with trusted experts.

### Prepare for alternative futures

Organizations should prepare for the emergence of different risks by remaining flexible and receptive to change. Contingencies should be developed even for high-impact, low-probability events. Scenario planning remains a useful exercise since it can outline a number of futures based on current trends and risks.

### Foster a culture of dissemination

EWSs work best when there is ownership of the system across the entire organization or group so that all members feel engaged and believe that they can contribute. In practice, regular meetings or use of the intranet to disseminate or collect information on emerging issues can be effective methods of communication.

### Monitor and evaluate

Like most systems, EWSs work most effectively when there is a formal feedback loop which continuously analyzes and evaluates performance in order to ensure that past mistakes or failures are understood and that the system continues to improve.

## Box 1:

### How does Zurich spot emerging risks?

Mary Merkel\*

'Bonehead Ideas Chapter 2: Cars that Enable the Blind to Drive,' 'The Web Means the End of Forgetting,' 'Small Difference: A Science Perspective on Regulatory Challenges of the Nanoscale' and 'The Mouse that Glowed' are just a few of the titles that are being discussed and debated in Zurich's Emerging Risk Group (ERG).

The ERG consists of a multidiscipline team authorized to identify, research, monitor and recommend actions associated with emerging risks. The team coordinates Zurich expert resources, supplemented by expertise not otherwise available within the Group, to strategize on minimizing adverse financial threats and maximizing financial opportunities that arise from emerging risks. It also provides thought leadership to accelerate the pace of knowledge transfer to business partners and customers through the lifecycle of emerging risks.

#### Definition of emerging risks

Zurich defines emerging risks as phenomena whose full nature and effects are not yet known, and may impact the financial results of our insurance underwriting operations now or in the future. We consider that emerging risks may be beyond the bounds of existing underwriting and pricing practices, actuarial calculations in terms of scale, frequency and timing, and scenarios that are not contemplated in product contract language. However, emerging risks do not only have potential downsides; they also may represent business opportunities for our customers and Zurich.

#### The emerging risk lifecycle

The ERG follows a seven step process in the Emerging Risk Lifecycle:

**Identification:** We seek out and collate global information for review, analysis and consideration as emerging risks. Sources of emerging risks include our own internal research, as well as input from reinsurers, academia and other external organizations. We identify megatrends, and direct further research on high-potential candidates of emerging risks.

**Screen:** We determine the need and extent of additional research and development. We employ and coordinate internal and external resources for breadth in collaborative results.

**Quantify and prioritize:** We employ a simple quantification model to establish a direct link between the issue and the financial underwriting results. Using this information, we establish a relative prioritization of issues and populate our Emerging Risk Radar (see next page).

**Analyze and resolve:** We transfer the acquired knowledge throughout the organization via established communication networks, newsletters and databases. We establish benchmark events that define shifts in priority, and recommend solutions and strategies.

**Implement solutions:** We provide support in the implementation of solutions throughout the Group. We also recommend new product opportunities and assist in their design.

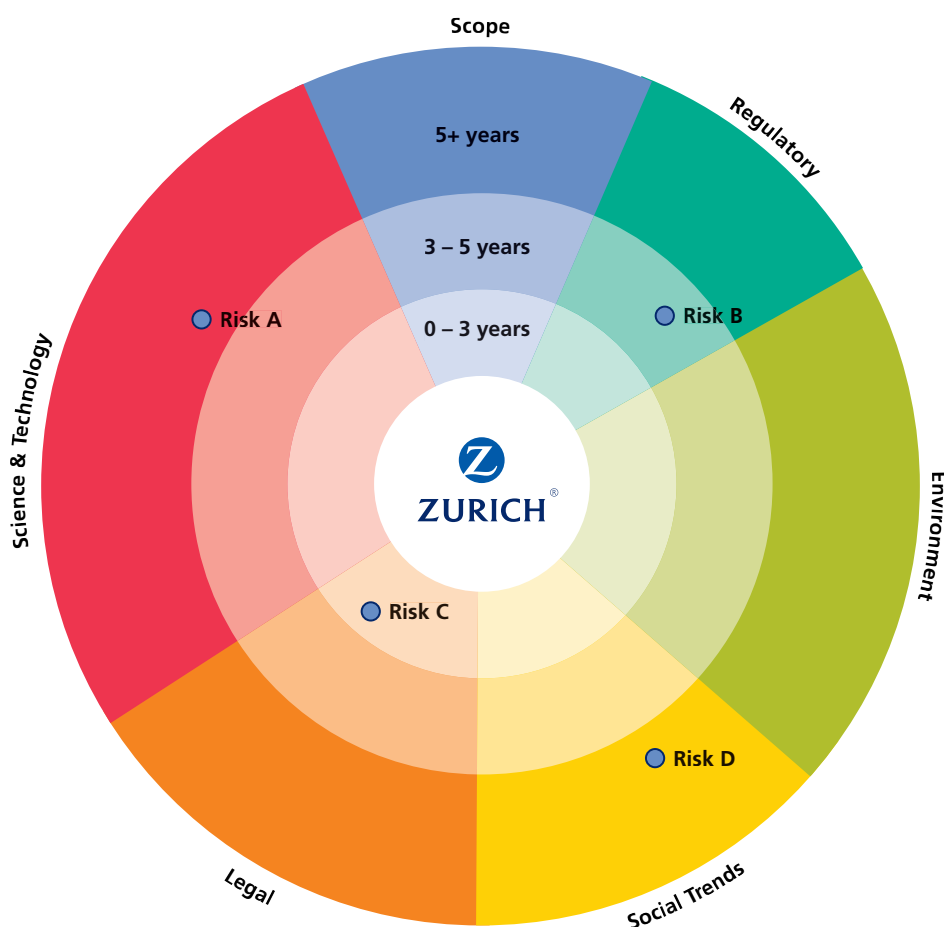
**Measure results:** We undertake a forensic review of solutions.

**Process improvements:** We conduct a forensic review to improve processes going forward, identify threats and missed opportunities, and identify issues falsely pursued.

\* The author is Casualty Chief Underwriting Officer at Zurich.



## Emerging Risk Radar framework



### The Emerging Risk Radar

The threats and opportunities identified during the Emerging Risk Lifecycle are tracked on Zurich's Emerging Risk Radar. Each threat is classified by its primary scope (Science and Technology, Regulatory, Environmental, Social, or Legal) its potential emergence (0-3 years, 3-5 years, 5+ years) and its potential impact on the Group. The Risk Radar is published on our Group intranet, and is interactive; users roll their cursors over the potential threat to get a detailed explanation of the potential harm.

Currently, the Zurich Risk Radar is populated with over 50 potential threats and opportunities identified by the ERG through the Emerging Risk Lifecycle Process.

Here are some emerging risks that we are currently watching:

- Motor/liability legal convergence
- Water shortage
- Synthetic biology
- Night shift work

### The results of our efforts

The ERG has achieved our goals of minimizing potential financial harm, developing new products and thought leadership. Specific achievements include:

- Through the ERG analysis of nanotechnology, we have developed a proprietary tool which helps an underwriter assess the potential exposure to nanoparticles. This tool, ZNEP, was developed in conjunction with external experts, to allow Zurich to successfully underwrite this emerging risk.
- The ERG had identified new product opportunities related to privacy and water supply.
- The ERG has provided thought leadership on such issues as pharmaceuticals in drinking water, climate change, and the potential impact of solar storms.

# Chapter 5

## Reputation risk



*Reputation risk as paradigm for fundamentally intractable risks.*

### Introduction

Rather than expanding on the list of business risks presented on the previous pages, this chapter focuses on a challenge – reputation risk – that captures the dimensions of all fundamentally intractable risks. While amorphous at first blush and difficult to grasp, reputation risk impacts each industry and each firm differently. And yet it should be on each company's radar screen and enter their contingency planning and anticipatory risk management processes.

This chapter moves from the general to the specific, from a broad description of the drivers of reputation risk to concrete recommendations on how to make corporations more resilient against the ever-present danger of reputation loss.

### 1. Politics and reputation risk

Many factors can affect the reputation of a firm, not all of which fall within its control. Developments in the political environment, for example, can quickly have a negative impact on a firm's reputation, especially in the wake of a crisis.

#### Regulatory backlash

The political response to a crisis can take a company problem and make it an industry problem. As media interest and public pressure forces politicians to respond quickly to crises, they tend to make 'big' statements on how they are dealing with the situation to ensure it never happens again. More often than not, these statements involve prescriptions for more stringent regulation and oversight. This can make the situation worse for other industry participants, who tend to look guilty by association and find themselves facing new rules. In the most recent example, the BP oil spill is likely to lead to much more heavy-handed regulation of the oil industry as a whole (see Box 2).

#### Heterogeneous reactions

The good news is that not all political reactions are so stark. Public reactions to a crisis can vary geographically, according to the economic relationship between the community and the company and/or industry involved. A major oil or gas mishap in a region where the industry has operated for years – and where there is a longstanding association between the industry and the community – is less likely to produce local calls to halt production, tighten regulation or financially cripple the firms involved.

For example, the major gas rig explosion in West Virginia on June 7 led to calls for increased scrutiny of alternative gas production in the state. However, demands to halt exploration of the massive Marcellus shale reserves have gone nowhere. Pennsylvania and West Virginia have been heavily involved in oil and gas production for 150 years (coal mining has been a mainstay for even longer). Likewise, it is telling to note that while the Gulf of Mexico region has been the most animated in its anger towards BP over the Macondo spill, it has maintained a favorable disposition toward the industry in general and remains firmly opposed to President Obama's moratorium on drilling.

This highlights the importance of maintaining strong stakeholder relations when times are good, and having contingency plans in place to protect or placate key stakeholders in the event of a negative event.

## Box 2:



## Reputation loss in the oil industry

The reputations of ExxonMobil, Shell, ConocoPhillips and Chevron have been tarnished following the BP oil spill on April 20, 2010, proving again the existence of a 'reputational commons.'

Within 24 hours, the iconic image of an offshore drilling platform went from symbolizing the mastery of cutting-edge technology to denoting foolhardy risk-taking. The events that unfolded in the Gulf of Mexico quickly engulfed the entire sector, with ExxonMobil, Royal Dutch Shell, ConocoPhillips, and Chevron finding themselves alongside BP in the line of fire.

The companies tried to isolate themselves by protesting, one after the other, that they would have not adopted the same drilling and completion methods as BP. But even as they asked the world to trust them, their CEOs had to admit under oath before Congress that they were embarrassed by their own 'spill-response plans.' The majority of these plans were identical and included such procedures as protecting walruses and other sea animals that don't inhabit the Gulf of Mexico; listing a defunct Japanese-language Web page as part of the supply chain for contingency needs; and relying on the expert advice of a scientist who had died in 2005. The message that came across loud and clear was that Big Oil only pays lip service to environmental concerns.

The reputation of the Obama administration has also suffered. It was the industry reassurance that technology had 'everything under control' and the risks of a disaster were 'minimal' that led President Obama, on recommendation from the Department of Interior, to announce the opening of vast tracts of offshore acreage to oil and gas exploration less than three weeks before the explosions that crippled the Deepwater Horizon.

By the end of July, after scrambling for a response, the Supermajors announced that they were banding together to establish a USD 1 billion joint venture to design, build and operate a rapid-response system capable of capturing and containing up to 100,000 barrels of oil flowing 10,000 feet below the surface. This is unlikely to be enough to turn public opinion around. Tougher regulations will undoubtedly follow and the inevitable result will be an increase in operating costs.

While the actions of one company may trigger events such as spills, pipeline breaks or water contamination, almost invariably, the consequences affect the entire sector. Once that happens, it takes much more than a PR campaign to re-establish trust and a positive working environment (see also box 4, p. 27).

*Trust facilitates cooperation, making economic transactions easier.*

## 2. The economic role of trust

### Economic trust

Reputation and trust are inextricably linked. Nobel prize winner Kenneth Arrow, recognizing the pervasiveness of mutual trust in commercial and non-commercial transactions, once stated that 'it can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.'<sup>15</sup> Since then there has been plenty of evidence to show a strong positive correlation between the average level of trust within a community and aspects of its economic performance. Trust allows cooperation, which in turn permits political and social development. Well-functioning societies show greater levels of trust between citizens, and between citizens and public authorities. Conversely, those societies in which such levels of trust are low often function less effectively, in both the public and private sector. For example, people's willingness to invest in stocks is higher where trust is higher, while corporations in these countries are more willing to open up their shareholder base, which allows them to increase in size.<sup>16</sup> Cultural factors such as language, physical appearance and religion have also been shown to affect trust. The more similar two parties are, the more likely they are to trust one another.<sup>17</sup>

<sup>15</sup> Arrow, Kenneth, 'Gifts and exchanges,' (1972) *Philosophy and Public Affairs*, 1:343-362.

<sup>16</sup> Guiso, Luigi, Paola Sapienza and Luigi Zingales (2008), 'Trusting the Stock Market' *Journal of Finance*. 63. 6: 2557-2600.

<sup>17</sup> Guiso, Luigi, Paola Sapienza and Luigi Zingales (2009), 'Cultural Biases in Economic Exchanges?' *Quarterly Journal of Economics*.

*People are particularly averse to losses caused by betrayal, more than they are to losses of equal value that are due to chance.*

### Definitions of trust

In our context, trust is the expectation that businesses will deal with their customers in a fair and honest way. It reflects the extent of people's willingness to take on the risk of being let down by others and incurring a monetary loss as a result. Recent research has shown that individuals are affected to a greater degree by – and are more averse to losses linked to – a perceived betrayal of trust than they are to losses purely due to chance.<sup>18</sup>

### The value of trust for business

This has important implications for business. Trust makes doing business easier because it saves costs in monitoring, accessing information and screening. Breaking a customer's trust in a corporation can have considerable reputation consequences, and this can be a particular problem in countries where people receive little legal protection and thus have to rely heavily on personal relations. In such countries, reputation is even more valuable because it is more critical. Destroying this asset can impact investment, particularly in long-term projects. It can also have important internal consequences for the company's long-term productivity and even its viability. Poor reputation may have an immediate effect on workforce morale and the degree to which employees identify themselves with the firm. If the loss of reputation is so severe as to threaten corporate success in the medium term, talented workers may leave or search for other job opportunities; for many organizations, such a loss of skilled human capital may be difficult to replace. In some cases, only the replacement of senior members of the corporate leadership, especially those in public-facing positions, can begin the process of repairing badly damaged reputations.

### Reputation and trust

The close relationship between trust and reputation is not surprising. Reputation can be thought of as public information that reflects the state of an individual or company's trustworthiness. This is based primarily on how they have been regarded in the past and determines the degree of willingness to do business with them. As with trust, reputation is an asset that takes substantial time and effort to build but can be lost almost instantaneously. Moreover, once a sullied reputation drives a customer away, the subsequent absence of interaction means that there is little opportunity for the company to rebuild trust again through offering a positive experience.

### Trust and the financial crisis

One telling example of this slow process in rebuilding trust is the recent financial crisis. Trust in banks, according to the Financial Trust Index constructed at the University of Chicago, dropped to an historical low after the collapse of Lehman Brothers. The share of people trusting banks and intermediaries, which was around 30 percent in early 2008, fell to 5 percent by the end of that year.<sup>19</sup> Since then, despite many positive economic indicators, including steady improvement in banks' profitability, there has been no similar recovery in public trust. This loss of trust has had severe implications for business: 25 percent of those who lost faith in banks withdrew their deposits compared with only 3 percent of those who retained trust in the banking system.<sup>20</sup>

### The vulnerability of reputation

Reputation can be as vulnerable to unfounded rumor as to an actual culpable act. As the Federal Reserve puts it, reputation risk is 'the potential loss that negative publicity regarding an institution's business practices, whether true or not, will cause a decline in the customer base, costly litigation, or revenue reductions (financial loss).' When the negative publicity is false, there is some prospect of recovery through the assiduous provision of correct information. But when the accusations are accurate, the only strategy is to admit fault, apologize and then engage in a sequence of repeated and highly visible behaviors that demonstrate the commitment of the organization to undertaking the work that is needed to rebuild its reputation.

<sup>18</sup> Bohnet, I., F. Greig, B. Herrmann, and R. Zeckhauser (2008). 'Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States,' *American Economic Review*, 98, 294-310.

<sup>19</sup> Guiso, Luigi (2010), 'A Trust Driven Financial Crisis. Implications for the Future of Finance', Working Paper, European University Institute.

<sup>20</sup> Zingales, Luigi, Sapienza, Paola, 'A trust deficit is driving our economy down' 27 February 2009, *City Journal*.

Experts note the existence of 'collective reputations' and a 'reputation commons.' Each firm's reputational capital is the sum of every public-facing element, be that its employees' behavior, the quality of its products or services, or a subsidiary's advertising.<sup>21</sup> Therefore, a firm looking to build or maintain its reputational must identify, monitor and maintain the reputational capital of each element on a continuous basis (see box 4, p. 27).

A 'reputation commons,' meanwhile, is the shared reputation of the industry. Consumers often lack the information or the time to fairly judge each individual firm and so the actions of one firm can easily impact on the reputation of its entire industry.<sup>22</sup> Therefore, just as it pays a community to maintain a common good such as air or a fishery, it pays an industry to maintain and invest in its reputation (see box 2, p. 23).

### Building and protecting reputational capital

A successful company will invest time and effort in nurturing and protecting its reputation in order to encourage individuals to trust in it and do business with it. This should include careful consideration of the internal implications of a damaged reputation (loss of employee morale, an exodus of intellectual capital); an assessment of its impact on the willingness of customers and suppliers to do, or be seen doing, business with the company; and the opportunities for investing in processes and systems that can lessen the potential for mistakes or behavior that will damage public perceptions of the company.

## Box 3:

### Monitoring media using Web mining and blog mining

**Web mining and blog mining have proven to be extremely effective tools for monitoring both public opinion and reputation and for signalling a potential reputational crisis early on.**

A global pet food company suffered a severe loss of reputation when it was discovered that its dog food was contaminated with a deadly bacteria, leading to the deaths of thousands of pets across Asia. The cause was eventually traced back to a single factory in Thailand. However, when the company traced back to find the start of the problem, articles on dogs dying from food poisoning were found in local media and blogs in just one region of South Korea. If the company had had a Web mining system in place at that time, it could have picked up on the problem far in advance, addressed the contamination problem and avoided the national news scandal that erupted as a result. Withdrawing the product, overhauling the factory involved, and compensating pet owners cost more than USD 600 million – on top of considerable reputational damage. This incident prompted the company to develop an effective Web mining system.

Web mining and blog mining can also help to monitor the extent of reputational damage as it occurs. On occasion it may be far less damaging than initial reports would suggest. For example, a confectionary company released an advertisement which its PR company worried was homophobic and strongly recommended the firm to make a public apology on national TV. However, when the company investigated public opinion using its web mining tool they found that there was 25 times more blogging about its product than before. Moreover, although there were some complaints, 90 percent of people viewed the advert in a comical light and were not offended.

<sup>21</sup> Tirole, J. 'A theory of collective reputations' (1996) *Review of Economic Studies*, 63: 1-22.

<sup>22</sup> King, A., Lenox, M. & Barnett, M. 'Strategic responses to the reputation commons problem' In A. Hoffman & M. Ventresca (Eds) 'Organisations, policy and the natural environment: Institutional and strategic perspectives' (2002) 393-406. Stanford, CA: Stanford University Press.

### 3. Best practices for minimizing reputation risk: five proactive steps

The previous discussions make clear some key corporate practices to ensure a strong reputation.

- 1) Ensure contingency plans for possible risks are well researched, tested, and specific to the firm. Question the benefits of cost saving efforts on these plans if the move could threaten their ultimate quality and effectiveness.
- 2) Analyze the existing reputation of both the firm and the industry and then generate reputational capital through a convincing CSR policy and the creation of resilient relationships with stakeholders (see box 4, p. 27). Adopt initiatives to counteract any misperceptions. For example, in the mining and metals sector, local job creation is often seen as temporary with little training offered. By providing worker education or skill transfer programs, firms can help to offset any reputation damage in the future.
- 3) Invest time in due diligence for investments, acquisitions, joint ventures, sub-contracting and vetting high-level staff. Don't leave this too late and hire the best to carry it out. Be thorough – even the largest degrees of separation between firms can cause reputation damage if viewed from a particular angle by the media.
- 4) Develop effective ways of monitoring social media. Track opinions of key public entities such as governments, media, NGOs, academia, employees and the general public on a regular basis. Web and blog mining can be invaluable in picking up product problems, poor service and consumer dissatisfaction early on before these issues build to national/global levels (see box 3, p. 25).
- 5) Work with other industry participants to create a self-regulatory institution. Such institutions can lessen the negative 'spillover' effects on industry reputation that result from a crisis (see box 2, p. 23).

In the event of a crisis:

- 1) Admit fault where it exists, and be transparent and as honest as possible. The public is rarely won over by companies denying their mistakes and are far more likely to 'forgive and forget' if the company adopts a more modest stance.
- 2) If the firm is part of a self-regulatory institution then use its help to assist in addressing a crisis and request a statement that outlines how the industry as a whole is addressing the issue.
- 3) Review the five proactive steps outlined above to see what went wrong and what could be done better in the future.



## Box 4:



## How to get a handle on reputation risk?

Roland Schatz\*

The recent crises at Apple, BP and Toyota demonstrate that reputation is no longer merely nice to possess, but rather a strategic asset that affects every company's bottom line. Putting aside the question of reputation and short-term profits, the ability of a CEO like Apple's Steve Jobs to communicate the company's value drivers and to position his brand above a given **awareness threshold**<sup>23</sup> through a diverse media presence enhances the company's future prospects for all stakeholders and shareholders. As we have seen from multiple recent examples – including Bayer, BP, Merck and Toyota – companies suffer if they fail to maintain an ongoing news flow. When disaster strikes, companies are better off if they listen to the paraphrased advice of Bill Clinton: "It's the reputation, stupid!"

The concept of reputation management can be understood by analogy to poison and water. If somebody put three drops of poison into a nearly empty glass, the toxin would be enough to kill anyone who took a sip. If the glass were full of water, however, those three drops of poison wouldn't have nearly as significant an effect if someone took a sip.

In media relations the situation is similar: for companies like Toyota or BP, firms which tend to avoid having a regular news flow, three bad reports can have a huge impact, including stock price turbulence as well as problems with client and employee satisfaction. But if a company communicates on an ongoing basis – as VW does – then even horrible news like the prostitution scandal, corruption allegations or even fraud do not significantly disturb the public's overall perception of the company.

By keeping a company in the news, an image is created that provides shelter for the company, helps retain and expand its sales, builds awareness among high potentials, and supports its share price. Equally important, by sustaining an image above the **awareness threshold**, a company's ongoing image helps to counterbalance bad news should a crisis occur. Surpassing the **awareness threshold** gives senior management a solid base of credibility with journalists, with whom they have established a regular pattern of media contact.

While in the case of VW the headlines matched the facts, stakeholders and shareholders also received news regarding the company's latest successes in R&D, the good sales of the Golf and communication on VW's latest human resources strategies.

How does this process relate to risk management? Corporations, industries and even regions often are confronted with two possible scenarios: their image can be better in the media than in reality, or worse. We define both circumstances as **reputation gaps**.<sup>24</sup> Both present potential risks.

- a) In the case where a company's performance is factually better than its reputation (e.g. Toyota), the company will pay a high image price when something goes wrong. Failure to manage reputation proactively will result in significant costs, while efforts to address the problem after something has gone wrong will often be ineffective – for example, campaigns which try to convince the audience through obviously paid advertisements that comments in the editorial section a page earlier were false. In this scenario, a company can expect recalls, rising skepticism from top clients, banks demanding higher interest for loan agreements and costs that hamper the ability to conduct business and grow profits.

\* The author is CEO of Media Tenor, a research institute focusing on strategic media analysis.

<sup>23</sup> The *awareness threshold* is defined by some minimum number of reports on a given organization in relation to all other printed reports within a specific set of opinion leading media in a fixed timeframe, such as one month.

<sup>24</sup> Eccles, Newquist, Schatz: Reputation and its Risk, Harvard Business Review, February 2007.

b) In the case where a company's performance is factually worse than its reputation (e.g. Google or Facebook), it is just a question of time before the bad news starts. Frustrated employees or business associates may leak data to the media or, perhaps, an accident will happen. The positive, yet exaggerated, spin the company has received in the past will be turned on its head in a matter of days.

**Strategic media reputation management** cannot predict when such a 'reputation hurricane' will happen, but it is able to predict how long the storm will last and how best to minimize its damage. Strategic media reputation management provides clear, measurable data regarding how many reports are necessary to counterbalance an image attack, and provides top management time enough to respond in an accurate and professional way. A number of qualitative factors also play a role, most importantly the **share of voice** (the amount of media interviews and opinion columns that quote the company directly) which also needs to be professionally managed. Additionally, the percentage of analyst quotes mentioning the company need to be pushed to a maximum of 10 percent to achieve varied perspectives that will enhance reputation.

Based on these ten indicators and a research approach based on a complete report database that allows for the definition of the relevant awareness threshold, each individual industry can build its own **reputation risk matrix**, allowing them to spot in real time where a company's image stands and what needs to be done to achieve more favorable conditions. The tools exist, but the question remains: are companies ready for the diagnosis? In the decade since Enron collapsed, we have seen too many executives who would rather change their doctor and ignore the bad news than cure the disease. Eventually, however, the bad news always found these executives, and the outcome, for them and their companies, proved costly.

## Chapter 6

# Responding to the challenge of global supply chain risks



### A structured approach to the management of supply chain risks

Tim Astley\*

Research has shown that an adverse event or incident in the supply chain can have significant long-term effects on shareholder value while a recent survey by the Business Continuity Institute found that around three-quarters of the firms questioned expect more supply chain disruptions in the future.

#### The risks are real

Supply chain risks come in a variety of shapes and sizes. Four disruption examples that have made headlines in recent months illustrate the breadth of risks to be understood.

1. Many industries are facing a shortage of basic electronic components. The latest global recession led to output cuts in this sector, staff reductions, investment freezes and insolvencies. As economies begin to recover, the capacity to respond is catching many out.
2. European legislation known as REACH (aimed at creating common registration and testing requirements for all chemicals that are manufactured or imported to the EU) has prompted some suppliers of critical raw materials to cease manufacture rather than comply, creating some severe problems down the supply chain.
3. Retailers in the U.S. have reported a shortage of container shipping capacity needed for businesses to re-stock in anticipation of renewed consumer spending growth.
4. The volcanic ash cloud which disrupted air traffic in north west Europe in early 2010 highlighted the danger of over-reliance on single transport modes and routings.

While the effects of some of the above examples could be said to be predictable, it is impossible to identify precisely every severe event that may impact an organization's performance. Instead, it is much more important to understand the nature of the generic vulnerabilities and then to formulate cohesive ways of addressing them. To achieve this, firms must define a more structured approach to the identification, management and understanding of the risks they face across the supply chain.

### 1. The challenges defined

#### Striking a balance

- How far should the supply chain be streamlined?
- Should a single-source supplier policy be pursued to bring efficiencies and cost savings, and if so, what is the risk of failure?
- Supply base and inventory levels may be reduced but how much buffer stock is needed?
- Should alternative sources be identified?

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Clearly, the chosen approach must align with the needs of the business, but understanding the issues in terms of risk appetite will facilitate strategic decision making and allow the options to be priced and balanced against the resilience risks.

#### Assessing the risk

- What complexities need to be understood?
- What are the important risk factors?
- How far up the supply chain do you need to go and can these risks be addressed?

A structured approach will ensure a rigorous assessment while enabling a focus only on those areas of risk with the greatest priority.

#### Mapping the interdependencies

- Not all elements of the supply chain are visible.
- Interdependencies might not be fully understood, and critical supplies or distribution nodes might not be obvious.
- Communication between the procurement team and other business functions could be inefficient.

Introducing a standard risk perspective will allow all critical functions and layers of management to be involved and, more importantly, to understand where the greatest exposures lie.

#### Finding the skills

As supply chain risk management develops into a recognized discipline, organizations are finding it increasingly difficult to combine the required skill sets with cross-functional experience. Risk managers have a crucial role to play here.

#### Developing solutions

Organizations must find solutions to the key risks. A common view and a structured approach will enable managers to seek out the most appropriate solution whether through operational changes, a re-evaluation of supplier strategy or risk transfer.

## 2. A three-step approach to finding the right solutions

Zurich has identified three steps to finding the right solution:

#### Step 1: Evaluation

Priorities must be set. This means that critical parts of the supply chain must be identified and not just in terms of monetary value or volume. Bottleneck supplies could involve low values but have the potential to stall output entirely.

Threats in the macro environment need to be understood, such as the likely effects of trade embargoes, strikes, commodity shortages, natural catastrophes and supplier concentrations.

Vulnerabilities, associated event triggers and their consequences must be systematically evaluated, involving all processes concerned with the supply chain. For example, how good is supplier approval and monitoring? Are the supplies particularly vulnerable to theft, sabotage or deliberate damage? What are the risks along the physical supply routes?

The extent to which suppliers manage their own risks must also be taken into account. How will suppliers prioritize restoration of supply to their customers following a disruption? Have they forged better relationships with your competitors? This can be especially difficult in supply chains with multiple tiers.

### Step 2: Resilience

It's important to understand the requirements of the business to protect its reputation, brand and shareholder value, as well as more specific value measures such as revenue. The effectiveness of business continuity management clearly plays a major part. This should extend beyond the organization itself and typically include other key players along the supply chain where appropriate.

### Step 3: Optimization and protection of profit

Historically, supply chain risk transfer mechanisms have been restricted to contractual devices, or to a range of limited insurance covers. While outsourcing was seen by many as another way of transferring risk, others have realized that the risk does not go away just because someone else is managing it. Supply chain insurance provides organizations with another means of treating many more of these risks, while easing balance sheet concerns.

## 3. The benefits are clear

A systematic approach to supply chain risk management enables organizations to develop a sound understanding of both challenges and options. The benefits are many and varied:

- In-depth insight to the business and its operational needs
- Robust evaluation of critical areas of risk
- More assurance on resilience
- Greater clarity of supply chain exposures
- A fully informed risk transfer strategy

Businesses now realize that by driving cost out of the supply chain, they may be driving risk in. Risk managers must work cross-functionally to help apply the techniques which can identify, reduce, eliminate or transfer risk, and thereby minimize potential loss, optimize business resilience and help preserve brand and reputation.

Chapter 7

A practical primer for supply chain risk management



A hands-on guide for developing a convincing business case

Nick Wildgoose\*

Whenever one is looking to make advances in how an organization can improve its supply chain risk management, the request for more resources becomes paramount. In order to be able to obtain these, risk managers normally have to influence the relevant executives. It inevitably means that some kind of business case has to be made, which can be a significant challenge if they are not recording supply chain disruptions events, let alone the costs of these events.

This chapter develops an understanding of the factors and data points to be considered for the business case, and it will provide some indications of how it might be possible to obtain them. A number of organizations, although they remain in the minority, have successfully drawn up business cases and acquired the necessary resources to start to push the boundaries of risk management in the supply chain. These organizations have found that the benefits have far exceeded the costs of their investments, providing them with a competitive advantage.

1. A hard look at cost savings

When assessing the cost savings of a supply chain risk management exercise, it is important to begin with a few basic principles. It is best to look first at the supply chain of the most important/profitable product or service and the suppliers that support it. The case for supply chain risk management is likely to be so compelling that it may not even be necessary to calculate costs right down to the last unit.

Areas of cost savings	Possible data points to obtain
Existing disruption costs	<ul style="list-style-type: none"><li>• Disruption costs around the supply chain over a 3 to 6 month period to be extrapolated for annual figures (note: numbers to the nearest 10,000 monetary units will be sufficient at this stage).</li><li>• Material variance to account for increased costs from suppliers or increased logistical costs where items have to be sourced by air because sea freight would not deliver in time.</li><li>• Increases in internal labor costs because staff has to work additional hours at premium rates to make up for shortfalls.</li><li>• Other sundry costs might include increased warehouse costs to store existing work in progress while waiting for key items.</li></ul>
Near-miss disruption costs <sup>25</sup>	The approach to obtaining the relevant associated costs is similar to the above and should assess each additional cost item.

continued next page

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<sup>25</sup> The difficulty here can be to identify them in the first place – but changes in logistical patterns or sourcing approaches would signal them and operational staff is aware of them, if it is approached in the right way.



Areas of cost savings	Possible data points to obtain
Loss of revenue	<p>The impact of lost sales can be measured in terms of the loss of margin that the business suffered. If sales were not lost but discounts or penalty clauses were suffered, then these can be captured.</p> <p>As with the disruption cost measures given above, a possible approach would be to look at a sample period and then extrapolate for the whole year (as long as it is appropriate for the organization).</p> <p>Remember that after losing customers through a failure to supply, it can cost a significant amount to get them back.</p>
Management time	The starting point could be the fully loaded cost of an individual typically involved and a rough percentage of the time used in dealing with disruption events.
Forecasting improvements <sup>26</sup>	The benefits can be estimated in terms of reduced inventory obsolescence and potential improvements in working capital through reduced inventory holdings arising out of improved confidence in supply chain resilience.
Process efficiency and effectiveness	A supply chain risk mapping exercise is likely to lead to efficiency improvements. However this is probably only worth estimating if there are significant costs involved in the tier 1 supplier level.
Synergy cost savings	Many organizations have already committed substantial investments to improving their supply chains from a CSR perspective. This work can be leveraged so that the combined cost is smaller than the sum of the parts (i.e. 1+1 is less than 2) and the quality of the overall output is improved.
CO <sub>2</sub> savings	Organizations are increasingly asked to measure and pay for their overall CO <sub>2</sub> footprint, including the impact generated through the supply chain. The transparency that comes out of the supply chain risk exercise may also drive saving opportunities in this area.

<sup>26</sup> These may be included only if the supply chain risk work leads to increased transparency and improved forecasting in the supply chain in question.

## 2. The importance of intangible benefits

Intangible benefits can be very significant and in some cases may justify an investment in themselves. Key areas to look at are:

- 1) Impact on reputation and hence damage to the brand caused by supply chain disruption.** There are a number of organizations who have or could calculate their brand value. If we allow for a very conservative 1 percent reduction in brand value, this is likely to equate to more than the total of all supply chain risk investment costs. Non availability of a product or service can also significantly impact customer loyalty. One way to measure the latter would be to look at where customers rejected late deliveries.
- 2) Breaking down of organizational silos.** Company supply chains do not exist within any particular company unit (or silo). They cut across operations, logistics, finance, sales, risk departments and other supply chains. The holistic approach to supply chain risk management can deliver other synergies, effectively 'leaning' the processes contained in individual units. A notional value could be calculated based on the overall costs or it could be just noted as a further potential benefit. As benefits are realized, it will be useful to capture them in order to justify the continued investment in supply chain risk management as part of overall strategic supplier relationship management.

## 3. Getting a grip on investment costs

The costs of an investment in supply chain risk management should be easier to calculate. It is probably best to start with a pilot approach looking at a particular product or service line. This will prove the concept within an organization and enable the calculation of a more comprehensive business case if required.

The likely costs to be included are:

- 1)** staff costs for individual(s) to be dedicated in support of the initiative (on a full cost basis)
- 2)** shared cost of allocated individuals
- 3)** consultancy or support costs for risk assessment tools available from third parties
- 4)** subsequent systems/software investments, which are likely to be the subject of a separate, more detailed business case

The business case is likely to be made in the context of an organization that is looking to drive cost savings and reduce working capital. Supply chain risk assessment seeks to achieve a balance by looking at the total cost of ownership. It is also important to understand the context of current economic trends, which indicate that we are entering a long period of scarcity and possibly cost inflation, where the winners will be those that can secure resources in the most efficient and effective manner.

#### **4. The challenge of supply chain risk – An opportunity to push the boundary**

As someone involved in the key risk activities of an organization but maybe lacking background knowledge in supply chain, many risk managers may be worried about taking on this challenge. They should however bear in mind that supply chains are increasingly the very lifeblood of an organization. Their health is critical to an organization's survival.

Risk managers may assume that supply chain professionals already manage risk perfectly well, but this is generally not the case. Although there are a number of good processes and procedures available, many supply chain management professionals are not aware of all the tools and approaches that may be used. Approached in the right way they will be delighted to work with a knowledgeable risk team. They appreciate that the constant reduction in costs, which has been one of their key objectives for a number of years, reaches a point at which it becomes difficult to continue. They would like to be appreciated for a broader set of skills that they can apply in the changing world of supply chains such as innovation, risk management and relationship management. These skills are based on common criteria such as trust and transparency, the very attributes required to help minimize supply chain risk.

Risk managers should be confident that the risk processes they have used elsewhere are still applicable. It is just the scope and the structure of the approach that is different. The structure to be used has been researched and developed by a number of organizations (such as Zurich, where reviews are structured around 23 risk factors).

Another key benefit for any risk professional is that an engagement in supply chain risk doesn't only offer plenty of development opportunities, but also a better understanding of how an organization adds value. If risk managers want to raise their profile in the organization and extend their relationship network, supply chain risk management is a great place to start 'pushing the boundary' – and building a relevant business case is the first step.

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