

# ISSUE BRIEF

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## Mastering Catastrophic Risk: How Companies Are Coping with Disruption<sup>1</sup>

The sources of company disruptions range from natural calamities such as hurricanes and earthquakes to human-caused disasters including terrorist attacks, oil spills, and chemical accidents. Economy-wide shocks such as the 2008–2009 financial crisis in the United States caused enterprise disruptions worldwide because of global interdependencies. Technological breakthroughs like digital marketing have upended established business models. Public regulations and government restrictions, from emission rules to immigration bans, have also threatened some of the best operating enterprises. Company disruptions can sometimes come from inside the firm's own walls, whether from executive malfeasance, worker sabotage, fraudulent reporting, the unexpected departure of an indispensable executive, or the release of a fatally flawed product. Costly litigation, cover-ups, and failed mergers can add their own troublesome waves.

### FROM INTUITIVE TO DELIBERATIVE THINKING

Decision makers tend to be shortsighted when choosing whether to invest in protection against catastrophic risks. They are often reluctant to incur upfront costs for loss mitigation measures because the near-term payoffs do not appear to justify the expenditure. Intuitive thinking, based on emotional reactions and simple rules of thumb, does not work well for evaluating disruptive risks since firms are unlikely to have experienced them before, and view them as below their threshold of concern. Deliberative thinking, by contrast, provides guidelines for decision makers to assess major risks and then choose among alternative courses of action. The analytic and systematic methods associated with deliberative thinking can better direct managers' attention to the multifaceted sequences and consequences that follow low-probability, high-impact events.

## MASTERING CATASTROPHIC RISK



HOW COMPANIES ARE COPING  
WITH DISRUPTION

Howard Kunreuther • Michael Useem

- Catastrophes such as the terrorist attacks of 2001, Hurricane Katrina in 2005, the financial crisis of 2008–2009, and the Japanese earthquake of 2011 led many firms to ratchet up their hazard assessments and build more robust risk-management agendas and strategies.
- Company leaders are now better prepared to think about the unthinkable, and to improve communication and readiness to withstand worst case scenarios. Improving readiness for and resilience against future shocks is now an integral part of company strategy.
- Management decisions in preparing for and reacting to low-probability, high-consequence events must overcome reliance on simplified decision rules that characterize intuitive thinking, such as myopia, underestimation of risk, use of risk thresholds, overconfidence, and a status quo bias.

<sup>1</sup> By Howard Kunreuther and Michael Useem. Funding from the Travelers-Wharton Partnership for Risk Management and Leadership Fund enabled us to conduct interviews with directors, executives, and managers at over one hundred companies listed among the Standard and Poor's 500 Index. Combining their lessons learned with case studies and other analyses, we provide a pragmatic framework to assist decision makers in effectively preparing for and responding to catastrophic risks. **Mastering Catastrophic Risk: How Companies Are Coping with Disruption**, Oxford University Press, 2018 (<https://global.oup.com/academic/product/mastering-catastrophic-risk-9780190499402>).

## RISK ANALYSIS AND RISK MANAGEMENT

Directors, executives, and managers who have already put in place a risk management strategy that enables them to take deliberative actions in response to an adverse event are better prepared to recover from that disruption and stay true to their firm's core values. Firms must first identify and assess the hazards faced by their enterprise, and then specify their risk appetite and risk tolerance as a foundation for developing a risk-management and crisis-response strategy.

Identifying the firm's risk appetite and risk tolerance often entails testing the company's resilience at the extremes by applying scenario analyses and stress testing. While the degree of financial distress is usually a first benchmark, it is not the only criterion used by many companies. The impact of risk on a firm's brand and credibility is frequently also important as it is generally recognized that a damaged reputation can severely impair a firm's long-term earnings.

Boards have become more directly engaged in company strategy and leadership by helping to define risk appetite, risk tolerance, and risk readiness. In today's world, catastrophic risks are especially deserving of the attention of all directors. They can appraise company risks in the development of new products and services by posing critical questions. But directors are also advised to draw a bright line between risks where they should play an active role and those over which executives should exercise delegated authority.

## SEVERE STOCK PRICE DROPS

What risks or events are likely to have a significant negative impact on the market value of a firm? And how long will it take for the stock price to bounce back, if ever? Enterprise resilience, a firm's readiness to come back from adversity, can be measured by the time it takes for the full restoration of its market value. With our research team, we studied stock prices of S&P 500 firms, focusing on disruptive events that resulted in a value loss of at least 20 percent—plus changes in stock price for individual companies over a ten-trading-day period relative to changes in their overall industry average.

The three most frequent drivers of precipitous losses in company value were *reputation and marketing* (risks related to the firm's brand, image, product pricing, and market share); *operations* (risks associated with mismanagement or unforeseen shortfalls in the internal operation of a business, including production and manufacturing); and *acquisitions* (risks stemming from all phases of a major acquisition).

- A firm's risk appetite is the amount and kind of risk that it is willing to accept to achieve its objectives. It is balanced against the firm's risk tolerance, a company's allowable likelihood for accepting a large loss that can disrupt the firm or the maximum loss that it is willing to incur for a given risk.
- Critical to a firm's recovery from an adverse event are investment in preparedness measures, a readiness for fast action and a set of key risk indicators. Some of the most widely used practical devices include:
  - imagining the next disruption
  - modeling risk
  - reducing future losses by incurring upfront costs of mitigation measures
  - improving communication
  - strengthening suppliers
  - networking with competitors
  - developing personal familiarity and mutual trust between a company's crisis team and its business leaders
- Information technology firms required on average some 132 weeks—more than two and a half years—to fully recover after a severe setback. Utilities and healthcare companies also required more time than the average, with 131 weeks for utilities and 102 weeks for healthcare. Risk sources also had a major bearing on recovery times: increased competition, 62 weeks; industry trends, 137 weeks; acquisitions, 121 weeks; government actions, 61 weeks; and disasters, 58 weeks.

# FIFTEEN STEPS TOWARD MASTERING CATASTROPHIC RISK

From our study of large publicly-traded firms in the U.S. and abroad, we have identified a set of management practices for company leaders to overcome their systemic decision biases and reduce the likelihood and the impacts of large-scale disruptions. On the premise that we can all become better at catastrophic risk management if we learn from one another, we encourage readers to share their experiences and tactics at [cat-risk@wharton.upenn.edu](mailto:cat-risk@wharton.upenn.edu).

## **1: Prepare Now for Low-Probability Events**

Some decision makers perceive the likelihood of a disastrous event to be so small that they view it below their threshold level of concern. Involve directors, executives, managers and front-line employees so they carefully examine potential extreme events now rather than assuming “it will not happen to us.”

## **2: Know Your Risk Appetite and Risk Tolerance**

Quantify your risk appetite and tolerance for taking on risks. By specifying these two metrics, companies can better determine the risks they are willing to take and invest time and resources for reducing future losses.

## **3: Think Long-term**

Many firms are reluctant to engage in protective measures prior to a disruptive event because of their high upfront costs. Tying executive pay to multiyear performance-based incentives like stock options can remind those most responsible for company performance of the need for long-term planning.

## **4: Consider Worst-Case Scenarios**

Scenario planning, sensitivity analyses and stress testing enable firms to determine when the benefits of preventive measures exceed their costs across a range of disruptive events. Given the great uncertainties associated with low probability risks, firms should consider worst case scenarios and their likelihood of occurrence over varied timeframes.

## **5: Appreciate Global Interconnections**

A flattened world has enabled firms to rely on a dispersed networks of suppliers and distributors but has also proliferated their risks. Many companies are taking steps to diversify their suppliers and distributors, recognizing that relying on single sources can lead to disruptions, as the auto industry experienced in the wake of Japan’s 9.0 magnitude earthquake in 2011 and the resulting meltdown at the Fukushima nuclear facility.

## **6: Stretch Time Horizons**

Viewed from a short-term perspective, extreme events are relatively rare. If the chance of a specific adverse event occurring this year is given as 1-in-100, that seemingly low probability may result in our failing to pay attention to its consequences. However, reframing the probability of this event’s occurrence over the next 30 years as greater than 1-in-4 may be enough to lead companies to invest in protective measures now.

## **7: Act Fast, Even with Imperfect Information**

Company calamities are by definition fast-moving and have a wide impact, often limiting the information available to those responsible for dealing with the resulting disruption. A complete set of data for making management decisions are never available in the midst of a crisis, but that should not deter leaders from making fast and timely decisions.

## **8: Be Alert to Near Misses**

Business leaders are likely to congratulate themselves on avoiding a disruptive event, rather than asking why they were fortunate not to have been hit this time. Instead, consider what insights you can gain from a near miss.

## **9: Conduct After-Action Reviews**

Disciplined learning from both near misses and direct hits can be invaluable. Following a close call or disruption that has just occurred, a company’s leadership is open to doing something to prevent its recurrence.

## **10: Beware of Fighting the “Last War”**

When company leaders believe that the next disruptive event will somehow be similar to the last one, they are likely to be ill-prepared for a future one. Thinking broadly in constructing future scenarios when conducting after-action reviews will enable firms to overcome the tendency to focus on their most recent adverse event.

### **I 1: Learn from Competitors' Misfortunes**

Competitors' calamities present a unique learning opportunity to avoid a similar disruption. Trade and professional associations can play a vital role in disseminating experienced-based lessons so directors and executives from all firms in the industry can learn from their counterparts.

### **I 2: View Risk Management as a Value-Creating Strategy**

Risk management should be viewed as a long-term investment in staying competitive by creating sustainable value and protecting the firm and its reputation, rather than a short-run burden on management's time and the company's budget.

### **I 3: Be Unsurprised by Surprise**

Catastrophic disruptions rarely provide sufficient warning in advance of their occurrence. Learn to expect the unexpected, and think deliberately before a future disruption.

### **I 4: Insure Against Adverse Events**

By transferring financial exposure to a third party through insurance, firms are able to increase their risk appetite and risk tolerance, knowing they have protection against large losses. Firms that cannot secure insurance against a given risk at an attractive price may opt to self-insure. Recognize that if insurance is expensive, this may be a market signal that the risk is not worth taking unless the potential returns are large.

### **I 5: Everybody Is Responsible**

Enterprise risk management can best be viewed as the responsibility of all, from front-line managers, to the risk-analysis team, internal audit group, and top executives. Directors can provide invaluable guidance on risks and their mitigation by serving as a partner with executives and risk managers in the firm.

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