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RISK PRACTICE

Risk: Seeing around the corners

Risk-assessment processes typically expose only the most direct threats facing a company and neglect indirect ones that can have an equal or greater impact.

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The financial crisis has reminded us of the valuable lesson that risks gone bad in one part of the economy can set off chain reactions in areas that may seem completely unrelated. In fact, risk managers and other executives fail to anticipate the effects, both negative and positive, of events that occur routinely throughout the business cycle. Their impact can be substantial—often, much more substantial than it seems initially.

At first glance, for instance, a thunderstorm in a distant place wouldn't seem like cause for alarm. Yet in 2000, when a lightning strike from such a storm set off a fire at a microchip plant in New Mexico, it damaged millions of chips slated for use in mobile phones from a number of manufacturers. Some of them quickly shifted their sourcing to different US and Japanese suppliers, but others couldn't and lost hundreds of millions of dollars in sales. More recently, though few companies felt threatened by severe acute respiratory syndrome (SARS), its combined effects are reported to have decreased the GDPs of East Asian nations by 2 percent in the second quarter of 2003. And in early 2009, the expansion of a European public-transport system temporarily ground to a halt when crucial component providers faced unexpected difficulties as a result of credit exposure to ailing North American automotive OEMs.

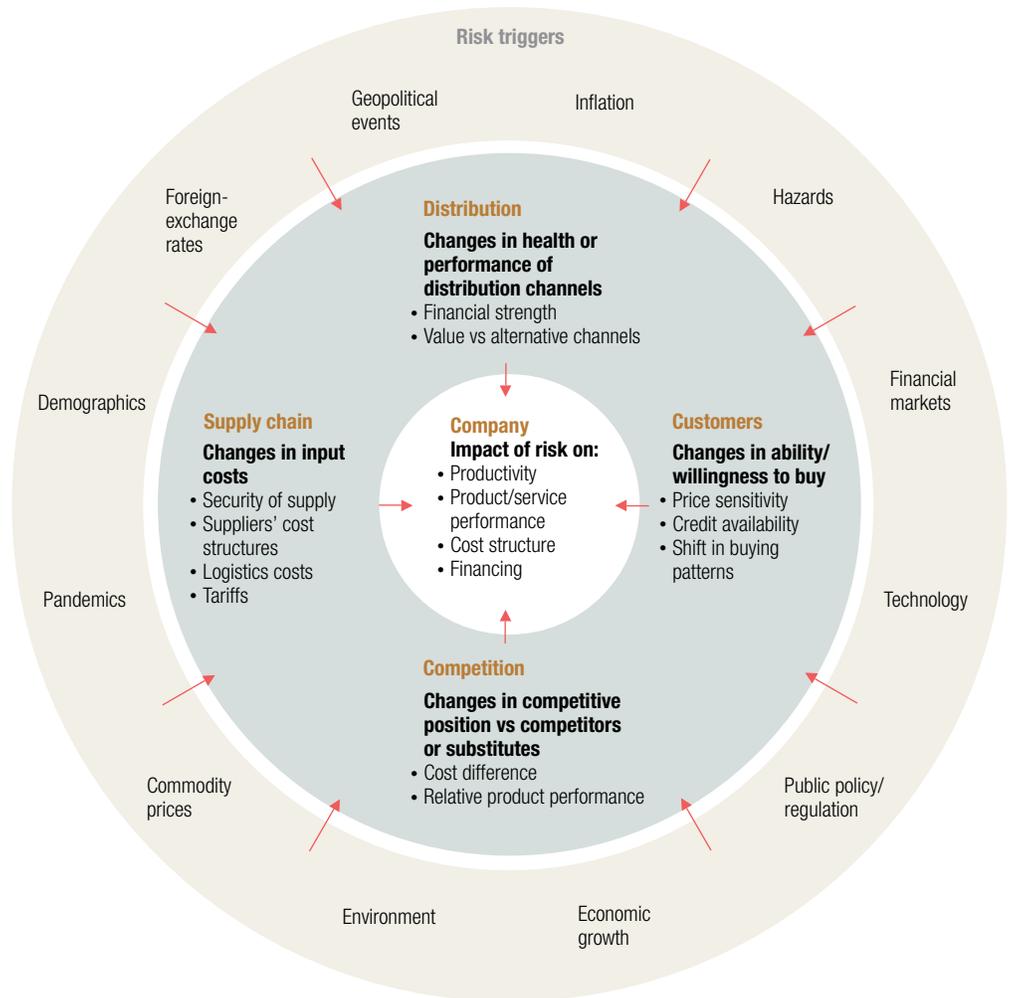
What can companies do to prepare themselves? True, there's no easy formula for anticipating the way risk cascades through a company or an economy. But we've found that executives who systematically examine the way risks propagate across the whole value chain—including competitors, suppliers, distribution channels, and customers—can foresee and prepare for second-order effects more successfully.

Risk along the value chain

Most companies have some sort of process to identify and rank risks, often as part of an enterprise risk-management program. While such processes can be helpful, our experience suggests that they often examine only the most direct risks facing a company and typically neglect indirect ones that can have an equal or even greater impact.

Consider, for example, the effect on manufacturers in Canada of a 30 percent appreciation in the value of that country's dollar versus the US dollar in 2007–08. These companies did understand the impact of the currency change on their products' cost competitiveness in the US market. Yet few if any had thought through how it would influence the buying behavior of Canadians, 75 percent of whom live within 100 miles of the US border. As they started purchasing big-ticket items (such as cars, motorcycles, and snowmobiles) in the United States, Canadian OEMs had to lower prices in the domestic market. The combined effect of the profit compression in both the United States and Canada did much greater damage to these manufacturers than they had initially anticipated. Hedging programs designed to cover their exposure to the loss of cost competitiveness in the United States utterly failed to protect them from the consumer-driven price squeeze at home.

Exhibit 1

Cascading risks

Clearly, companies must look beyond immediate, obvious risks and learn to evaluate aftereffects that could destabilize whole value chains, including all direct and indirect business relationships with stakeholders. A thorough analysis of direct threats is always necessary—but never sufficient (Exhibit 1).

Competitors. Often the most important area to investigate is the way risks might change a company's cost position versus its competitors or substitute products. Companies are particularly vulnerable to this type of risk cascade when their currency exposures, supply bases, or cost structures differ from those of their rivals. In fact, all differences in business models create the potential for a competitive risk exposure, favorable or unfavorable. The

point isn't that a company should imitate its competitors but rather that it should think about the risks it implicitly assumes when its strategy departs from theirs.

Consider the impact of fuel price hedging on fares in the highly competitive airline industry. If the airlines covering a certain route don't hedge, changes in fuel costs tend to percolate quickly through to customers—either directly, as higher fares, or indirectly, as fuel surcharges. If all major companies covering that route are fully hedged, however, that would offset changes in fuel prices, so fares probably wouldn't move. But if some players hedge and others don't, fuel price increases force the nonhedgers to take a significant hit in margins or market share while the hedgers make windfall profits.

Companies must often extend the competitive analysis to substitute products or services, since a change in the market environment can make them either more or less attractive. In our airline example, high fuel prices indirectly heighten the appeal of video-conferencing technologies, which would drive down demand for business travel.

Supply chains. Classic cascading effects linked to supply chains include disruptions in the availability of parts or raw materials, changes in the cost structures of suppliers, and shifts in logistics costs. When the price of oil reached \$150 a barrel in 2008, for example, many offshore suppliers became substantially less cost competitive in the US market. Consider the case of steel. Since Chinese imports were the marginal price setters in the United States, prices for steel rose 20 percent there as the cost of shipping it from China rose by nearly \$100 a ton. The fact that logistics costs depend significantly on oil prices is hardly surprising, but few companies that buy substantial amounts of steel considered their second-order oil price exposure through the supply chain. Risk analysis far too frequently focused only on direct threats—in this case, the price of steel itself—and oil prices didn't seem significant, even to companies for which fluctuating costs may well have been one of the biggest risk factors.

Distribution channels. Indirect risks can also lurk in distribution channels: typical cascading effects may include an inability to reach end customers, changed distribution costs, or even radically redefined business models, such as those recently engendered in the music-recording industry by the rise of broadband Internet access. Likewise, the bankruptcy and liquidation of the major US big-box consumer electronics retailer Circuit City, in 2008, had a cascading impact on the industry. Most directly, electronics manufacturers held some \$600 million in unpaid receivables that were suddenly at risk. The bankruptcy also created important indirect risks for these companies, in the form of price pressures and bargain-hunting behavior as liquidators sold off discounted merchandise right in the middle of the peak Christmas buying season.

Customer response. Often, the most complex knock-on effects are the responses from customers, because those responses may be so diverse and so many factors are involved. One typical cascading effect is a shift in buying patterns, as in the case of the Canadians

who went shopping in the United States with their stronger currency. Another is changed demand levels, such as the impact of higher fuel prices on the auto market: as the price of gasoline increased in recent years, there was a clear shift from large sport utility vehicles to compact cars, with hybrids rapidly becoming serious contenders. Consider too how the current recession has shrunk the available customer pool in many product categories: demand for durable goods plummeted among consumers holding subprime mortgages as their access to credit shrank, and demand for certain luxury goods fell as even financially stable consumers turned away from conspicuous consumption.

Effects on a company's risk profile

Risk cascades are particularly useful to help assess the full impact of a major risk on a company's economics. Exploring how that risk propagates through the value chain can help management think through—imperfectly, of course—what might change fundamentally when some element in the business environment does.

To illustrate, let's examine how the risk posed by new carbon regulations might affect the aluminum industry. Aluminum producers would be directly exposed to such regulations because the electrolysis used to extract aluminum from ore generates carbon. They're also indirectly exposed to risk from carbon because the suppliers of the electrical power needed for electrolysis generate it too. The carbon footprint can be calculated easily and its economic cost penalty determined by extrapolation from different regulatory scenarios and the underlying carbon price assumptions. This cost penalty would of course depend on the carbon efficiency of the production process and the fuel used to generate power (hydropower, for instance, is more carbon efficient than power from coal).

In general, large industrial companies believe they are “carbon short” in the financial sense—their profits get squeezed when carbon prices increase. Is that always true? A different story emerges from a closer look at the supply chain, which stiffer carbon regulations would change in many different ways. The cost of key raw materials, such as calcined petroleum coke and caustic soda, would increase, along with logistics costs and therefore geographic premiums. The US Midwest market premium, for example, reflects the cost of delivering a ton of aluminum to the region, where demand vastly exceeds local supply. Not all competitors in the industry would be affected alike: this effect favors smelters located close to the US Midwest, because they could then pocket the higher premium. Some suppliers might even benefit from their geographic position.

Moreover, in a carbon-constrained, tightly regulated world, aluminum becomes a material of choice to build lighter, more fuel-efficient cars. Since automobile manufacturing is one of the largest end markets for aluminum, carbon regulation could substantially accelerate demand, thus helping to support healthy margins and attractive new development projects. Clearly, a high carbon price would enhance aluminum's value proposition—positive news for the industry.

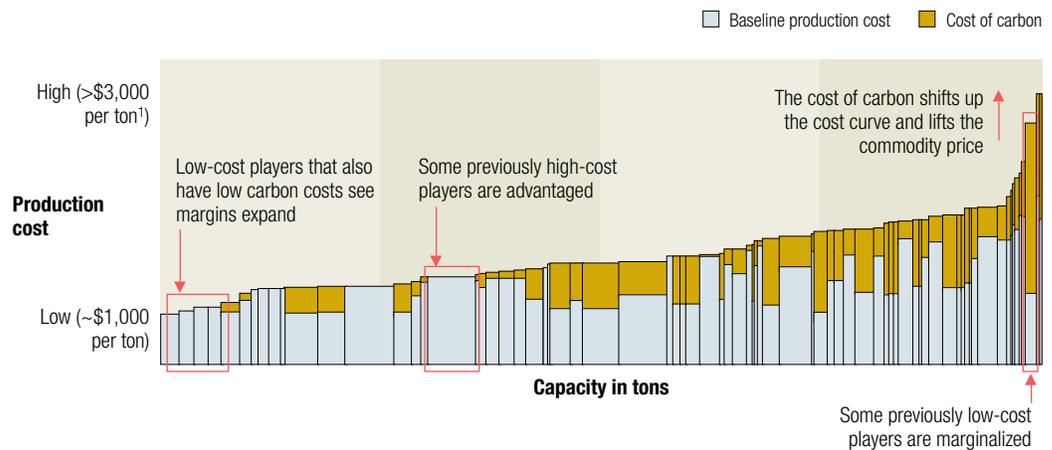
Finally, carbon regulations would affect not only a particular company but also its competitors, changing the economics of the business. For commodity industries, the cash cost of marginal producers sets a floor price. In a world where carbon output has a price, the cost structure of different smelters would depend on their carbon intensity (such as the amount of carbon emitted per ton of aluminum produced) and local carbon regulations. It's possible to show how any regulatory scenario could influence the aluminum cost curve (Exhibit 2). In nearly all the plausible scenarios, the curve steepens and the floor price of aluminum therefore increases. For most industry participants, especially very carbon-efficient ones (such as those producing aluminum with hydropower), a meaningful margin expansion could be expected.

A simple risk analysis suggested that one of our clients would be carbon short and that its profits would therefore decrease under new carbon regulations. But a more extensive

Exhibit 2

Shifting advantage

Aluminum industry cost curve after factoring in cost of carbon regulation



¹Dependent on regulatory scenario.

view of the way carbon risk cascades through the industry value chain shows that this company would actually be carbon long: as carbon prices increase, the company benefits economically thanks to its high carbon efficiency, its desirable geographic location (proximity to the US Midwest), and the potential added demand for aluminum.

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Unknown and unforeseeable risks will always be with us, and not even the best risk-assessment approach can identify all of them. Even so, greater insight into the way they might play out can provide a more comprehensive picture of an industry’s competitive dynamics and help shape a better corporate strategy. Thinking about your risk cascades is a concrete approach to gaining that insight. [○](#)

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