McKinsey Working Papers on Risk, Number 23

Getting risk ownership right

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McKinsey Working Papers on Risk presents McKinsey's best current thinking on risk and risk management. The papers represent a broad range of views, both sector-specific and cross-cutting, and are intended to encourage discussion internally and externally. Working papers may be republished through other internal or external channels. Please address correspondence to the managing editor, Rob McNish (rob_mcnish@mckinsey.com)

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Getting risk ownership right

Only when a firm is the natural owner of its risks can it optimally manage its risk exposure.

In the recent financial crisis, firms of all kinds—banks, insurers, and corporations in many sectors—found that their risk-management systems did not perform as advertised. The effects ranged from mild, in the case of some corporations that suffered modest losses, to severe, in the case of the widely devastated banking sector.

To these companies, the significant investments made in their risk-management systems now often feel like money wasted. These sophisticated tools failed either to predict the crisis (though some would say that this was not their job) or to safeguard their users from its effects (which most assuredly was their role). Indeed, the systems allowed firms, especially banks, to amass enormous risks, many of them poorly understood and sometimes not even noticed.

As the global economy continues to struggle, all these firms that bought into the promise of risk management find themselves at a loss about what to do next. Can the failed approaches be fixed? Should they be junked and redesigned from scratch? Is risk management in fact an impossible dream?

Interestingly, while the damage from the crisis was widespread, it did not affect everyone. A handful of banks, a number of insurers, and a good many other companies managed to come through relatively unscathed. Yet to outward appearances, these firms adhered to the same risk-management principles as those that went under. It would appear that "risk management" *per se* is not to blame; the fault may lie less in the formal approach to risk and more in the ways that banks and others executed certain risk practices.

In that regard, we argue that risk management needs to be completely rethought, from the bottom up, so that a firm's risk practices fully deliver on the promise of risk management. In a series of articles, we outline the core elements of this "new risk paradigm":

- Improved transparency, understanding, and modeling of risk[1]
- A clear decision on which risks to "own" and which risks to transfer or mitigate
- The creation of a more resilient organization and processes that help the firm to be proactive in risk mitigation
- The development of a true risk culture
- A new approach to regulation, for those operating in regulated industries

In this article we will address the second of these elements: risk ownership. In recent years, many firms owned risks that they either had not considered or for which they were not suited. In the new risk paradigm, an organization will take on only those risks for which it has three core lines of defense—a resilient and flexible business model, well-developed risk skills and capabilities, and sufficient financial strength to absorb risk if it should materialize.

An assessment of these three qualities is the right first step to understanding the risks that a company should own—an integral part of any company's strategy. And of course, a clear understanding of risk ownership is essential before a firm goes on to develop its risk strategy, appetite, and approach.

1 For more on this, see Silvio Angius, Carlo Frati, Arno Gerken, Philipp Härle, Marco Piccitto, and Uwe Stegemann, "Doomsday for risk models or the chance for a new paradigm?" which outlined a new approach that draws much more heavily than older approaches on insight, foresight, and market knowledge to provide managers with transparent information, especially on structural and cyclical risks.

Shortcomings of the traditional approach

In our previous article we argued that structural and cyclical risks were not sufficiently considered in risk-management systems in the crisis. This was one of several ways that risk management broke down. A partial list of shortcomings includes the following:

- Market entry or investment decisions were taken **without a true understanding of the underlying risks**. For example, as has been widely reported, many investors simply relied on rating agencies' assessments of some complex securities. The aggressive push to participate in the Middle East real estate bonanza is another example; many jumped in without even a partial understanding of the local economy and culture. Similarly, some European utilities entered the Russian market in the hope of a new market regime that did not materialize, resulting in some recent write-offs.

- In many cases the **skills to manage the risk did not sufficiently match the nature of the risk taken**. Insurance companies offered variable annuities to their customers as an attractive investment product combining growth potential and protection. However, only the most sophisticated firms considered potential risks from changes in volatility and other parameters. This unsuspected *vega* risk became apparent during the crisis, as customers used their protection when markets were at their most volatile. Drax, an English utility that operates only coal power plants, was not able to manage the risks arising from market interdependencies. It went bust twice when wholesale power prices in the UK fell, while coal plant costs remained fixed. In another example, Toyota's aggressive "leaning" of its design and supply chain was accompanied by a higher dependency on its suppliers, which resulted in some widely noted problems.

- Many institutions displayed **"herd behavior."** As bank after bank moved into Eastern Europe it came to seem that *not* being there could pose a real problem in terms of growth and profits. It is remarkable that in most cases, it is the late entrants or laggards that experienced the most severe problems. Investors in early subprime issues, say the 2004 vintage, were mainly unharmed, whereas those who invested in issues from 2007 and 2008 lost most of their money. In the mining sector, a wave of consolidations led some companies to overpay for acquisitions at the very peak of the commodity cycle.

- Many top decision makers—often including the board—were at times improperly briefed or uninformed; their firms had **an information flow problem.** Businesses that are geographically remote or whose business is unrelated to the firm's core operations often harbor especially high risks, as they are less understood at headquarters.

There were other mistakes too; some boards and managements were overly focused on returns, and many firms dealt only with the risks that were easy to hedge while ignoring other more challenging risks.

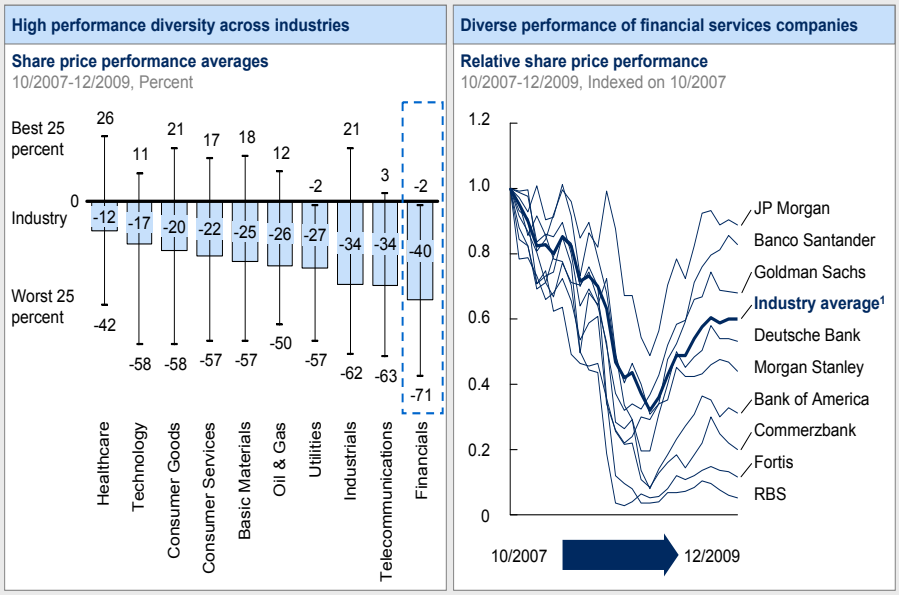
A new approach to risk ownership

Some banks and companies, however, did much better at risk taking during the crisis (Exhibit 1). Both JPMorgan Chase and Deutsche Bank were ranked among the biggest leveraged-lending and securitization houses before the crisis, but despite their extensive exposure they took relatively much smaller write-downs than others. Likewise there were winners in practically every other industry. Mining giant BHP Billiton entered the financial crisis with a balance sheet much less levered than its rivals, some of whom eventually needed liquidity injections. Prudent power and gas firms were relatively unaffected through the crisis as they adjusted their hedging strategies accordingly. Chemicals giant BASF adjusted its production levels early in the crisis, in a flexible way that allowed it to ramp up quickly again once the economy picked up.

Exhibit 1

During the crisis, performance varied significantly by industry, driven in part by different approaches to risk taking and management.

Significant performance spread of players across and within industries, driven by different approaches to risk taking and management



Source: Datastream, McKinsey analysis

What accounts for their success? While there are many factors, we argue that an essential one is the way these firms think about risk ownership. McKinsey earlier defined how firms successfully identify the risks they should keep and manage, and transfer those they should not.[2] Firms that determine they have a competitive advantage to assume specific risks are said to be its "natural owners." Firms should keep these risks and neutralize or get rid of the rest. For instance, large Canadian paper producers can be natural owners of paper price volatility risk, a risk into which they have insight; but they are not natural owners of Canadian dollar exchange-rate risk—a risk that can put them out of business and over which they have little control or insight.

At many firms, corporate strategy development is rightly accompanied by a review of the risks that the strategy will engender. Most firms then move on to a discussion of how much of those risks they can assume—ie, their risk capacity—typically using value at risk (VAR) or cash flow at risk (CAR) to make this technical calculation. In so doing they omit a crucial step – a forward-looking analysis of the firm's natural ownership (or lack of it) of both the risks that are embedded in its business, and of other risks that might emerge as the firm follows its long-term strategy.

To take a hypothetical example of the dangers of this approach, consider what would happen if aircraft manufacturers were to rely solely on a CAR analysis for big capital projects such as a new aircraft design. In such projects, surely much more is at stake than just capital. A wide range of risks are in play, extending well beyond the balance sheet. Likewise we argue that financial institutions that rely only on such measures are doomed to fail (and too often have done just that over the past 24 months).

2 Kevin Buehler, Andrew Freeman, and Ron Hulme, "Owning the right risks," *Harvard Business Review*, September 2008.

In our approach, risk-bearing capacity remains an important consideration, but is only one of three kinds of capability that a firm must have before it can be truly said to possess a competitive advantage. These three capabilities can be thought of as lines of defense that the firm uses to take on and manage risk (Exhibit 2):

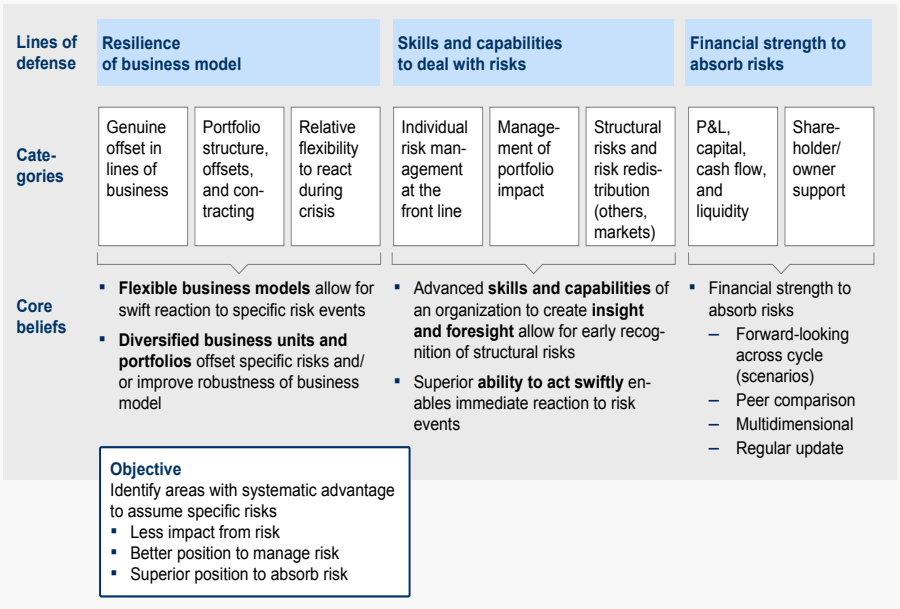
- **Resilience of the business model.** As we saw in the crisis, subtle differences in business models can yield significant differences in risk exposure. Consider a gas distributor with significant flexibility in both its supply contracts and its sales agreements. When sales fell as customers retrenched, it was affected only on the margin. Banks whose business model relied heavily on customer deposits fared much better than those that depended on wholesale funding. Both of these examples demonstrate that, entering into a crisis or period of uncertainty, the configuration of the business model is critical. But just as important is its adaptability. The degree to which the business model allows for change is also critical; for example, how quickly can the firm adjust its cost and manufacturing footprint to meet but not exceed reduced demand?

- **Risk management and mitigation skills.** This is probably the hardest line of defense to measure, yet is also the most likely way a firm can distinguish itself from competitors. Besides the optimal location for mitigation skills, at the front line, we consider structural risk monitoring and mitigation also highly important. Many markets move in cycles—certainly most financial markets do—and the structural risks inherent in the downswings must be detected and managed in time. Some leaders in securitizations and leveraged lending—the markets that initiated the crisis—are once again achieving strong results as compared with second-tier banks, in large part because they generate true insight and foresight from their better skills and capabilities. They take a long-term perspective on risk selection and recognize emerging risks early, allowing them to better steer through the cycle.

Exhibit 2

Three elements define natural risk ownership.

Three lines of defense



Source: McKinsey analysis

- **Financial strength and shareholder alignment.** Sufficient capital is the key to financial resilience, and has been the traditional focus of efforts to define the "risk appetite." But we argue that financial power should be thought of by companies as their last line of defense. And their understanding of financial strength should take a multiyear perspective, rather than a single year; should be updated regularly as the environment changes; and should be compared with the financial strength of rivals.

  A firm can satisfy itself that it has ample financial strength to absorb the risks it faces. But, as the crisis showed, firms must proactively communicate that information to their shareholders and then deliver results that match those communications. Firms that did this in the crisis gained the profound trust of their owners. In difficult times such firms prove more resilient, not least because both the markets and their shareholders are more willing to recapitalize them if necessary.

It is the interplay of an institutions performance on these three lines of defense, and a comparison of those abilities with its competitors, that should determine the risks a firm takes.

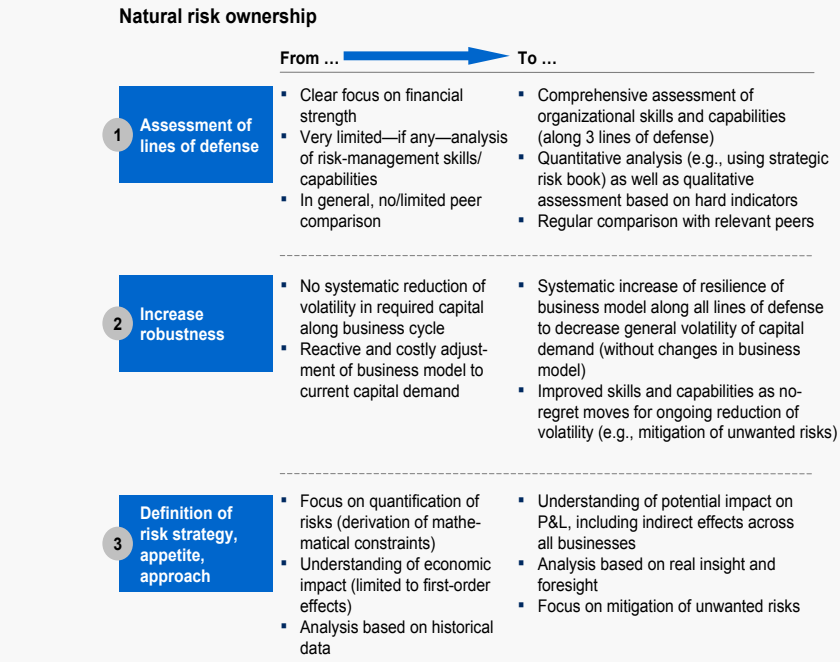
Making it happen

The new approach to risk ownership will make a firm, compared with its peers, less affected by external shocks (through greater resilience of its business model), more flexible and able to proactively manage risk (through its greater skills and capabilities), and, if necessary, better able to consume the risk (through its superior financial strength and shareholder alignment). Firms should deploy three steps to get there (Exhibit 3):

Exhibit 3

Companies can use these steps to transform their risk management.

Three steps to define and implement risk ownership



Source: McKinsey analysis

- A thorough and objective assessment of the strength of their current lines of defense
- A program to build the strength and health of these lines of defense where needed
- The use of the newly redefined risk ownership to inform the firm's risk strategy and approach

Conducting an assessment

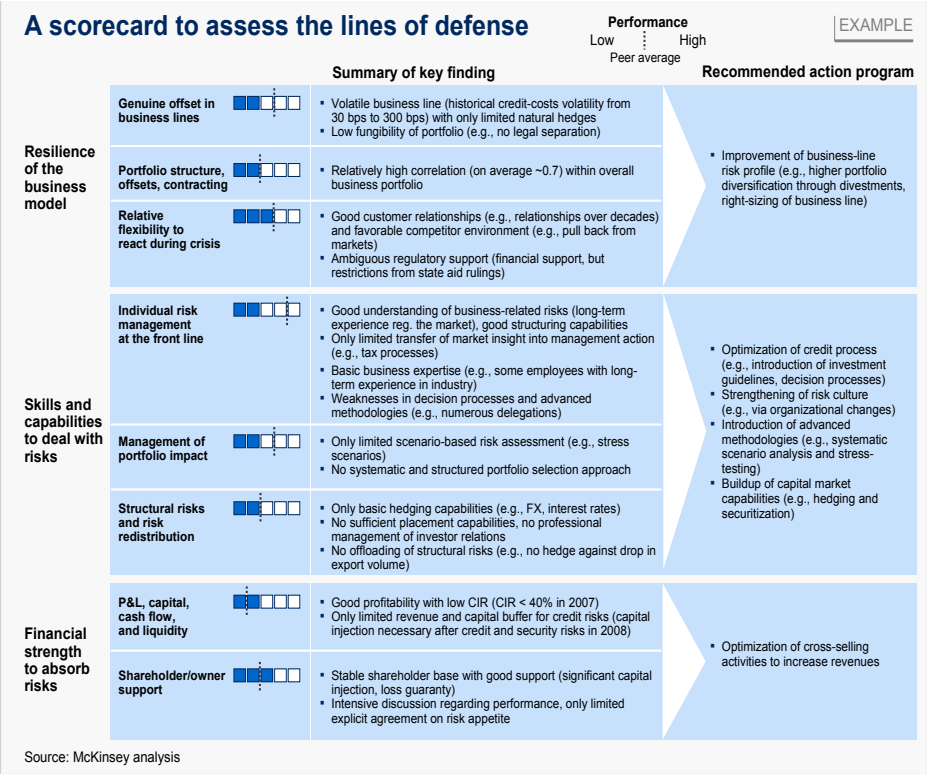
We have found that very few institutions have performed an explicit analysis of their risk-related capabilities. Usually these efforts have looked only at financial- risk-bearing capacity, typically without any peer comparison.

To make a comprehensive assessment, like that shown in Exhibit 4, firms can rely on quantitative measures to assess both resilience of the business model and financial-risk-bearing capacity. A meaningful assessment of an organization's skills and capabilities has to rely on more qualitative measures, such as the "indicators" (i.e., elements of the organization's readiness to act) that we propose below. Importantly, the firm's self-assessment must be accompanied by a similar outside-in assessment of competitors' lines of defense.

Resilience of the business model. To assess their business model and how well it might perform under duress, firms can look, surprisingly, to the recent work done in the banking industry. We acknowledge that banks' risk practices might not seem exemplary; but in this case banks, prodded by regulators, are beginning to get it right. The industry has developed a number of tools to stress-test the resiliency of a bank under a range of different scenarios, including pressures and shocks. Firms should use these tools, adapted to their particular environment, to understand their exposure to a given risk and the impact on the P+L and capital base absent any management action.

Exhibit 4

One company's careful and systematic approach to measure the three elements of natural risk ownership.



Source: McKinsey analysis

A good first step is to conduct a simulation, very similar to the technique used by trading desks to gauge the effect of changes in market price. However, even in banks this concept has rarely been used to assess infrequent but nevertheless important structural risk exposures, such as the effect of broad cyclical changes in equity markets on asset-management revenues. Industrial firms, too, have structural risk concerns, including questions about long-term price developments of emission credits and commodities.

These tools can help companies understand the links between their businesses, and the extent of natural hedges within their portfolio of businesses. They can also help measure the organization's reaction time to specific risk events. This can help a company's strategists think through the moves that others might make in a crisis, including competitors, regulators, and customers. Importantly, the decision about the risks to include in the assessment and simulation should be based on true insight; we consider it not an "art," as some put it, but a differentiating factor of good risk owners.

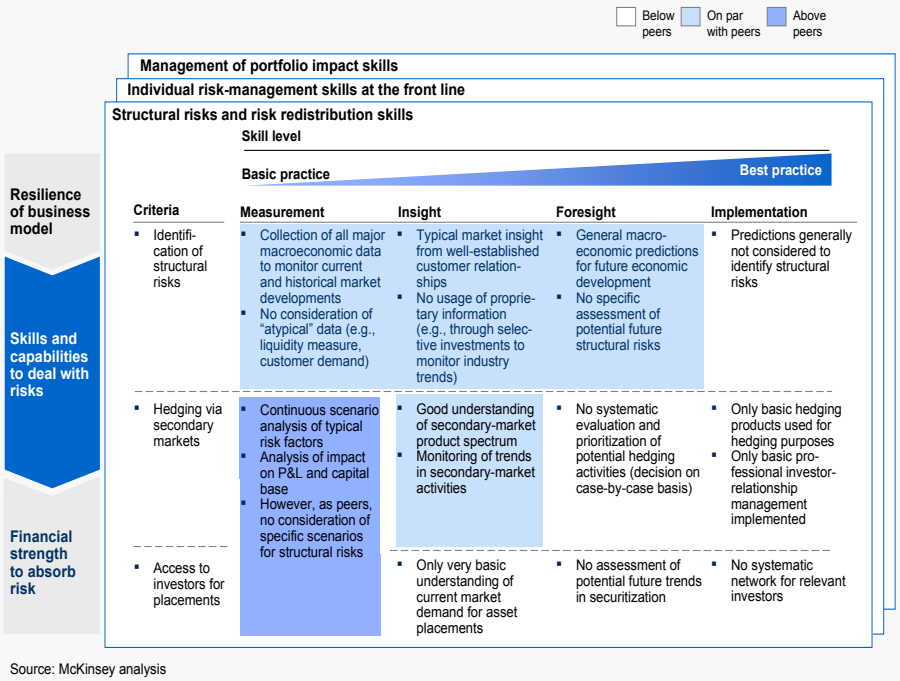
Risk management and mitigation skills. In our previous article[3], we argued that insight and foresight are keys to the new risk-management paradigm. The capability for fast management action is another one. It is on these attributes that the second line of defense, risk skills and capabilities, should be assessed. Hard metrics are not easy to find, but there are clear markers one can apply (Exhibit 5). Privileged access to information is one such marker, and the ability to extract the information's meaning and act upon it are two more. In most industries and regions, firms that have operationalized this—by building the infrastructure to gather risk intelligence and supply it to management, as well as to frontline staff where appropriate, for use in steering the firm—are clearly a step ahead of their competitors.

Exhibit 5

Companies should use several qualitative assessments to measure their risk capabilities.

Markers to measure skills

EXAMPLE



Source: McKinsey analysis

3 "Doomsday for risk models or the chance for a new paradigm?" op cit.

Financial strength and shareholder alignment. Finally, with respect to risk-bearing capacity, firms must assess two attributes: their financial strength and their shareholder alignment. Financial strength is a product of considerations such as the quality of earnings and their growth trajectory; the flexibility of costs in the operating model (i.e., the proportion of variable to fixed costs), and the likelihood of a shortfall in the P&L and capital base. Shareholder alignment is assessed by reviewing the extent of shareholders' understanding of the company's risk profile; the performance expectations that shareholders have, given that risk profile; and the depth of shareholders' commitment to support management's strategy in times of crisis.

Fortifying the lines of defense

A structured assessment will typically reveal gaps when compared with peers. While the work needed to fill most gaps must be custom-designed, as we explain in the next section, some deficits are so common that filling them, with the four "no regrets" moves outlined here, should be on the agenda of every firm:

- Separate risk ownership from the business. In a *Harvard Business Review* article called "The new arsenal of risk management," McKinsey described how the development of risk mitigation markets allowed companies to dispose of risks it does not naturally own.[4] Even before a firm comes to that conclusion, it can take steps to ensure that risk can be readily detached and transferred. These levers include structuring purchase and sales contracts carefully. If purchase and sales volumes are made flexible, that will help firms pare their exposures should the need arise. Setting up long-term hedging contracts is another means to increase the robustness of the business model—though in some cases at the expense of increased counterparty risk. To support this, firms should build their risk-structuring capabilities, not only for everyday hedging but also as a foundation for longer-term activities.

- Improve reaction time by investing in flexibility. Too often institutions feel themselves bound by fixed corporate structures. This hinders their ability to react quickly. In banking, the advent of credit-portfolio-management functions, in combination with the emergence of credit secondary markets and changes in contracts, freed banks from these fixed structures. Although abused at times, notably by banks that aggressively leveraged the balance sheet, the concept worked well during the crisis for those who used it prudently. Nonfinancial institutions can take some similiar steps. For one, they can manage their "strategic book" with, for example, structured transactions. Additionally, they can make more of their cost base variable—but only after weighing the trade-offs between fixed and variable costs. In many cases, companies choose to fix a cost because it is cheaper than the variable option. Similarly they outsource and offshore activities, in some cases only saving a few pennies on the dollar. In both cases they may give up the kind of flexibility that might be obtained from, say, a production plant that can switch quickly from one product to another, or a manufacturing network within which production can be shifted from one continent to another.[5] Firms should carefully consider the tradeoff between fixed and variable; in many cases, building in flexibility will more than pay for itself over time.

- Encourage the front line to mitigate risks. Early mitigation by the front line is tremendously valuable, especially in a crisis. Firms should carefully design their incentives to encourage sellers and underwriters to adopt risk-optimizing practices. Companies should reward those who write their sales and purchasing contracts with terms that allow risk to be transferred; this helps the firm optimize risk-return with every deal. The company must also give the front line the support it needs. It should provide strict pricing and risk underwriting/mitigation guidelines, based on benchmarks that include secondary market prices, to ensure that the firm is

4 Kevin Buehler, Andrew Freeman, and Ron Hulme, "The new arsenal of risk management," *Harvard Business Review,* September 2008.

5 For more on creating flexible business models, see Eric Lamarre, Martin Pergler, and Gregory Vainberg, "Reducing risk in your manufacturing footprint," April 2009, mckinseyquarterly.com

receiving an appropriate and predetermined risk-adjusted price for its products. Even clerks in operational roles should be empowered to optimally manage risks

- Early monitoring, restructuring, and workout. As mentioned, many banks seemingly forgot how to do proper credit monitoring and management. In these times, this is a crucial capability; if done properly it can trim loan-loss provisions by 10 percent to 15 percent. For both financial institutions and industrial firms, an early-warning system that draws on all information available within the institution and from external sources can provide reliable indications that things are going wrong. The frontline, once properly motivated, can be invaluable here; early warnings from people active in the markets can save the firm from catastrophe.[6]

  To deal with risks as they materialize, firms should craft detailed action plans that include clear decision criteria, unambiguous responsibilities, and segment-specific workout and restructuring approaches. They may, for example, create workout "SWAT" teams dedicated to specific risk issues or major risk events as they arise.

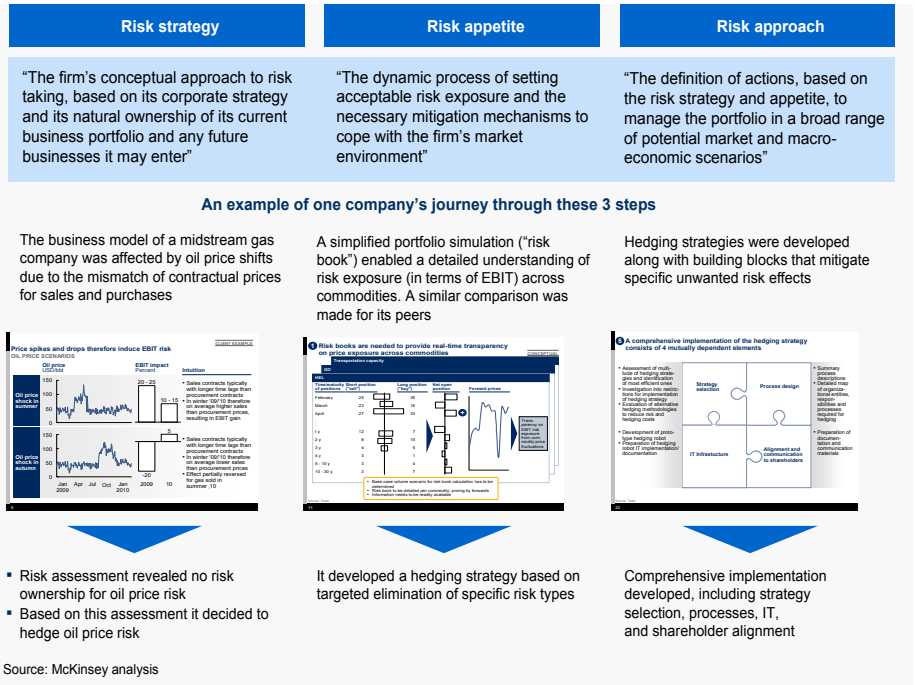
Definition of risk strategy, appetite, and approach

These no-regrets moves will fill four of the most common gaps. Others will likely become apparent in the assessment and must be addressed, most likely through investment in greater skills and capabilities.

Once the firm has established adequate lines of defense, it can safely assume some specific risks—that is, it can proceed with confidence that it is the natural owner of these risks. These risks will be at the center of the firm's risk strategy, and will lead naturally to its risk appetite and approach (Exhibit 6).

Exhibit 6

A definition and an example of the three steps.



Source: McKinsey analysis

6 McKinsey has found strong evidence that in most companies there is profound understanding in parts of the organization, especially the front line, of emerging risks. In a forthcoming article we will describe how to best capitalize on these insights.

Defining the risk strategy. To decide which risks to own strategically, firms should sort through all the risks in their portfolio, current and future, and consider two critical variables: natural risk ownership based on a thorough assessment using the three lines of defense laid out above (and the competitive advantage that comes along with it) and the ease with which the needed lines of defense can be built (Exhibit 7). These two variables will dictate one of four strategies. Three of these strategies require the firm to build or enhance its risk skills:

- If a firm has clear evidence that it has natural ownership, and that the advantage that conveys is not likely to be lost to competition soon, it should continue to own that risk and take on more, up to the extent of its risk appetite (discussed below).

- If the advantage the firm enjoys is susceptible to competition—i.e., if it is relatively easy for rivals to develop similarly robust lines of defense—then firms should make the necessary investment to extend their capabilities in order to increase the benefits it receives from better insight and foresight. This is why it is so important for firms to perform a competitive review along with their self-assessment.

- Most often we find institutions do not have natural ownership, but the necessary lines of defense are in their grasp. In this case, firms should build the necessary capabilities to understand and manage the risk. Firms will have to consider investing in systems, redesigning processes, and taking many other potential steps, but first and foremost they must consider the skills and capabilities of their staff.

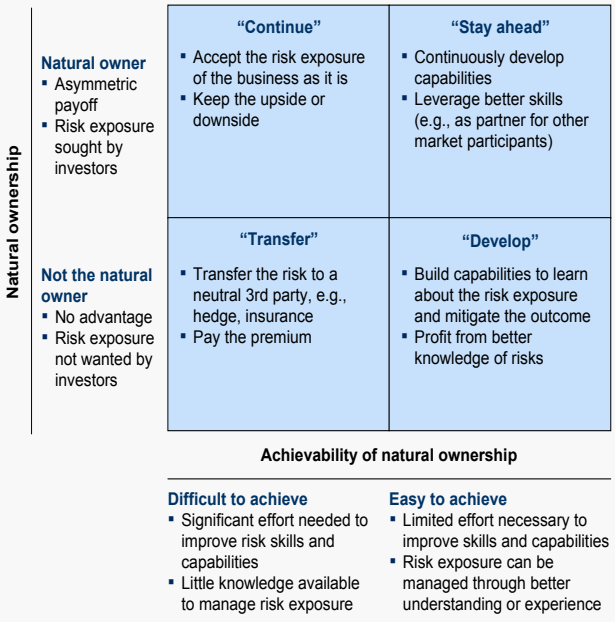
The fourth alternative is straightforward if sometimes difficult to acknowledge:

- If it does not have competitive advantage, and the required lines of defense are difficult to build, then firms should exit the business, either through outright divestiture or an effective long-term hedging program.

Exhibit 7

The firm's natural ownership and its (as well as its rivals') ability to achieve it should determine the risk strategy.

The risk strategy



Source: Adapted from D. Apgar, *Risk Intelligence*, Harvard Business School Press, 2006; McKinsey, "Owning the risk risks," *Harvard Business Review*, September 2008

Setting the risk appetite. Every company must be able to determine at any moment if its exposure to strategically acceptable risks is still appropriate. To do this most banks (and many other financial and nonfinancial institutions) use indicators like value at risk (VAR) or cash flow at risk (CAR), which define a theoretical maximum level of loss for the period in question (Exhibit 8). The great problem with these indicators, as everyone learned during the crisis, is that their reliance on recent historical data makes them liable to miss longer cycles; they can also miss structural changes and "tail" events. VAR also groups all risks together, does not sufficiently differentiate among the kinds of risk (and the firm's ability to manage them), and does not give managers a view into the magnitude and sensitivity of individual risks.

With VAR's accuracy in question, firms need another approach. We argue that companies should be interested in the sensitivity of performance to specific risks materializing over time. We propose four must-have attributes for a risk exposure metric:

- Performance should be assessed over a longer period of time. The right period will vary by industry and by the extent of risk that cannot be transferred or mitigated during the length of a cycle.
- Firms should use specific risk scenarios that embrace all the possible and relevant events, rather than a simple distribution.
- Firms should compare their performance not only against risk events but also against their peers.
- Impact should be measured in real accounting terms.

Exhibit 8

VAR and its cousins should be supplemented with other analyses.

The problems with VAR

	Typical approach	Issues commonly seen	Recommended approach
Understanding of risk exposure	▪ **Calculation of single figures** (e.g., VAR or cash flow @ risk) ▪ Definition of required minimum capital against quantified risk on yearly basis	▪ Materialization of some risks on longer time horizon only ▪ Structural risks not identified and quantified	▪ **Comprehensive analysis of risk exposure** along several relevant KPIs using scenario analysis – Definition of consistent risk scenarios covering specific events (incl. structural risks) – Analysis of longtime performance (through-the-cycle view) – Comparison against peers
Setting the risk appetite	▪ **Setting absolute levels** of likelihood and impact of specific risk shocks	Substantial difficulties in quantifying the level of acceptable risk (represented in single figure)	▪ Discussion on **tolerance and acceptance of risk exposure** along defined scenarios against peers in specific market situation – Decision about **unwanted impacts** in certain scenarios – Identification of **potential opportunities** in specific scenarios ▪ Set appetite based on identifying improvement levers and impact

Source: McKinsey analysis

Earlier we described how a portfolio simulation tool can be used to assess resilience. It can also be employed to determine risk exposure. After the input of key parameters such as long-term scenarios, selective KPIs, and the relevant peer group, the tool allows for a comprehensive and dynamic analysis of risk exposure through the business cycle, and its impact on all relevant performance metrics. To this firms should add a measure of the flexibility of the organization to adjust its business model.

The transparency that the simulation provides will help the company pull apart its risk exposure to understand the risks that offer the biggest opportunities—and the most significant threats. And it will facilitate the development of a risk mitigation and management approach to shape the best possible risk-return profile for the company. Exhibit 9 provides an example.

Defining the risk approach. The risk approach builds on the two previous steps (defining risk strategy and setting risk appetite); it is the way that the firm implements those concepts. The approach has two key thrusts: the operational translation of decisions on risk appetite into daily decision making and the building and strengthening of the lines of defense.

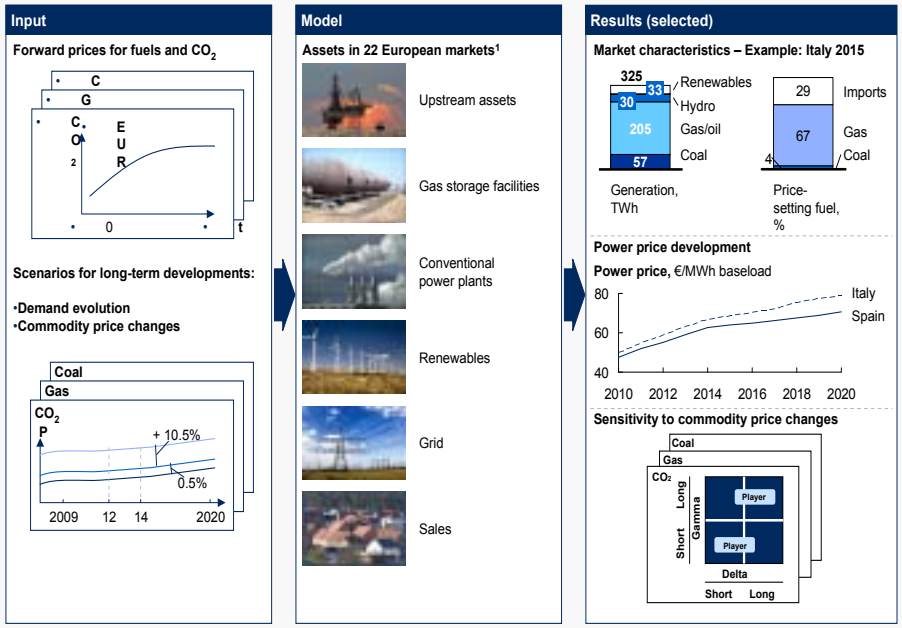
Operational risk taking should—within the limits set by the risk appetite—always include the definition of actual management approaches and mitigation levers. For a utility company for example, this would comprise defining, monitoring, and controlling a maximum amount of exposure from commodity price risk (e.g., oil, gas, coal—risks that many if not most utilities will naturally own) and the definition of standard hedging strategies. Day-to-day decisions must then comply with this limit and hedging strategies must be pulled if exposure exceeds. Early warnings have to be defined and regularly assessed; contingency plans must be defined as well. Needless to say, as the risk appetite varies over time, so too must the risk approach be regularly reassessed.

Exhibit 9

One utility used scenario analysis and a model of the energy market to understand its risk exposure.

Portfolio simulation to understand risk exposure

EXAMPLE



1 Regions covered: Western Europe, Southeast Europe, Central and Eastern Europe, Iberia, Nord Pool (Scandinavia), UK/Ireland, Italy

Source: McKinsey analysis

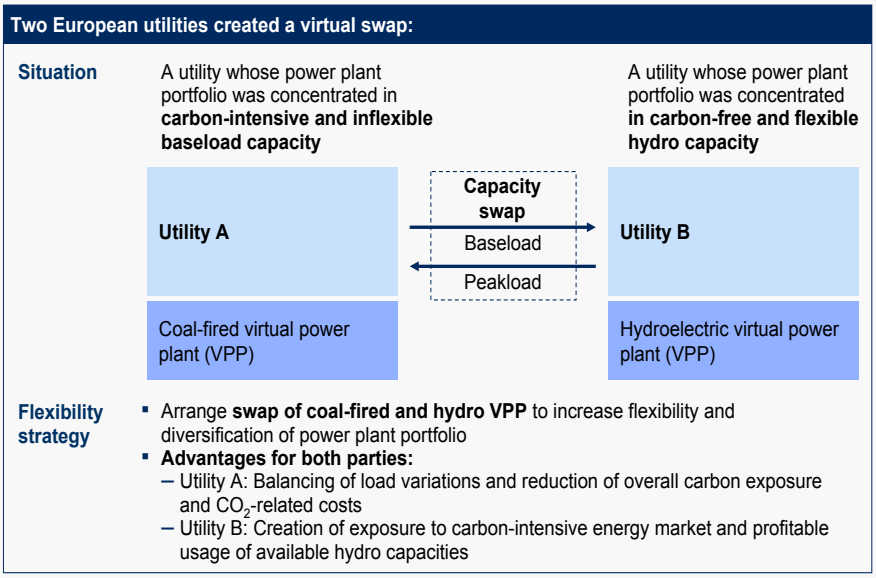
With respect to the second thrust (strengthening the lines of defense), the earlier decisions about risk ownership and appetite allow firms to decide how much they should invest in various capabilities, especially those needed to generate genuine insight and foresight, and to add flexibility. In the case of a firm that enjoys true risk ownership, it can become even more resilient by, for example, intelligent management of contract durations; shifting product manufacturing from one line or geography to another; speeding up its decision-making processes; or even swapping assets with another firm (Exhibit 10).

Exhibit 10

Both sides benefit from this financial swap.

Two utilities increased their resilience through a virtual swap of assets

EXAMPLE



Source: Press releases; McKinsey analysis

Where a firm does not have true risk ownership, but sees potential to develop the needed capabilities, it should put in place processes for systematic mitigation. The organization should enforce a conservative approach to further risk taking and develop an approach to hedge unwanted risks. The most effective ways to mitigate such risks are often structural rather than on a case-by-case basis. While financial markets should always be considered, other approaches involving suppliers and customers are often more successful.

□□□

The new approach to risk ownership is perhaps the most critical building block of the new risk-management paradigm, as it determines the risk strategy. The approach we propose is not less analytical than the VAR-related approaches that many firms use today. Instead, the approach draws on the kinds of insight and foresight that are usually missing from technical approaches to make much more substantiated and better decisions about risk.

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