

*Journal of***APPLIED CORPORATE FINANCE**

A MORGAN STANLEY PUBLICATION

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# The Theory and Practice of Corporate Risk Management\*

by Henri Servaes and Ane Tamayo, London Business School,  
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**T**he financial crisis of 2008 and the resulting recession caught many companies unprepared and, in so doing, provided a stark reminder of the importance of effective risk management. While academic theory has long touted the benefits of risk management, companies have varied greatly in the extent to—and ways in—which they put theory into practice.

To examine the relationship between theory and practice in more detail, we conducted a global survey of over 300 CFOs of non-financial companies to see how they perceived the value of risk management—the kinds of benefits it provides their firms, as well as its costs and drawbacks.<sup>1</sup> The corporate risk management function is generally viewed as the set of methods and procedures by which executives identify the kinds and levels of risk exposures faced by their companies, and then choose which exposures to bear and which to transfer to others through a variety of risk management techniques. In our survey, risk management encompasses a wide range of activities, including not only insurance purchases and financial risk management using derivatives but also the transfer of risks to suppliers and customers through pricing and other negotiated agreements. In addition to eliciting corporate assessments of the value added by their risk management programs, we also aimed to shed light on important aspects of risk management *practice*, including the organization of risk management groups, the degree of trading latitude given to risk managers, and the effect of accounting rule changes on risk management choices.

Although the economic environment has changed dramatically since we conducted this survey in 2005, its central findings and recurring themes appear as relevant as ever. Before discussing the results in detail, we now provide a brief overview of these findings:

- Most corporate executives responding to our survey viewed commercial risks—strategic failures, failure of projects, and competitor risks—together with financing risk and foreign exchange rate risk as the greatest threats to long-run corporate profitability and values. The importance of commercial risks in this list shows that senior executives see

financial risk management in the context of broader business risks. And given the credit and funding constraints of the past few years, the expressed concern about financing risk now looks prescient.

- While many companies consider risk in scenario planning exercises, less than half formally include risk analysis in their strategic planning processes. Given the current economic climate and the unexpected challenges posed by the crisis, incorporating risk management thinking into the overall strategy and operations of the firm could have major benefits.

- Executives judge the top benefit of risk management as “improving company-wide decision making.” Companies incur risks at all levels of the firm, from purchasing groups to sales forces, and the corporate executives in our survey were most keen on improving the understanding of risk by employees at all levels. In effect, their goal was to instill in the firm a “risk-awareness culture”—a goal that, although rarely achieved, is likely to be of even greater importance today. This goal is echoed by GARP, the global industry association of risk managers, whose declared aim is to spread the concept of a “risk management culture” throughout the organization.

- Another benefit of risk management cited by some CFOs is its ability to deliver more stable earnings and strengthen business reputations by providing less “noisy” information to investors and the boards of directors about a company’s longer-term profitability and value. By using financial (or natural) hedges to reduce or eliminate sources of variability that are not “core” to the business, companies can help investors distinguish superior managerial performance from the effects of luck (say, a jump in oil prices for an exploration company). In today’s highly uncertain environment, providing investors and boards with a clearer picture of the underlying performance of the firm’s core operating businesses allows for better internal investment and operating decisions as well as more accurate valuations by outside investors.

- When considering the costs of risk management, executives are most concerned about the direct costs of the products,

\* This project was sponsored by Deutsche Bank Securities, Inc. and the Global Association of Risk Professionals (GARP). We would like to thank James Ballingall, Don Chew, Adrian Crockett, Fred Harbus, and Roger Heine (Global Head, Liability Strategies Group at Deutsche Bank Securities, Inc) for helpful comments and suggestions.

1. A total of 334 companies globally participated in the survey, with responses distributed widely by geography and by industry. Further details of the sample can be found in the note “Survey Questions and Sample,” which is available at [faculty.london.edu/hservaes/globalsurvey.htm](http://faculty.london.edu/hservaes/globalsurvey.htm).

## About the Survey

The CFO survey was conducted in the summer of 2005, covered both publicly traded and privately owned companies, and was conducted in collaboration with Deutsche Bank Securities, Inc. and the Global Association of Risk Professionals (GARP). The survey contained questions that were organized into the following nine sections: Company Information, CFO Views, Capital Structure, Liability Management, Liquidity Management, General Risk Management, Interest Rate Risk Management, Foreign Exchange Risk Management, and Commodity Risk Management.

Because of the size of this survey, we encouraged CFOs to complete the “CFO Views” section, but allowed them to delegate their responses to some parts of the survey to those people within their organizations more knowledgeable about specific areas within the finance function. The companies targeted for the survey included all firms worldwide that had a coverage officer assigned to them by the investment banking division of Deutsche Bank. This sample comprised 4000 non-financial companies from 49 countries, gener-

ally the largest companies in their respective countries and industries.

Because of the length of the survey, respondents were not required to complete all survey questions. CFOs received a written request from the academic researchers involved in the survey asking them to participate. The investment bank officers covering the companies were requested to follow up the written request with a telephone call encouraging the firms to complete the survey. To ensure objectivity, the survey was completely anonymous. However, in return for completion of the survey, companies were promised access to detailed benchmarking reports.

334 companies answered at least part of the survey. The countries with the largest number of participants were Germany, Italy, Japan, Spain, Switzerland, the U.K., and the U.S. About 30% of the responding companies are not listed on an exchange. The median revenues of the participants were \$1.6 billion.

as well as the opportunity costs of having hedged while prices move in the company's favor. The worry about opportunity costs suggests that the goal of the risk management program may not be well understood by top management and the board. In fact, one in eight respondents feels that one of the drawbacks of risk management is the difficulty in explaining the program to the board.

- While risk measurement is an essential part of risk management, it is surprising that almost half of the companies reported having no explicit measures to evaluate the performance of their risk management functions. Without measurement, it is perhaps not surprising that 40% of the respondents could not even guess how much value the risk management function adds to the firm.

- Three quarters of the respondents admitted to changing the size or timing of their hedges based on their own views on market movements, while half admitted to taking active positions based on these views. While most companies report engaging in such active management infrequently, to the extent that companies do permit or encourage such trading, we suggest that they impose strict limits on possible exposures and exercise tight controls.

### The Theory of Risk Management

Companies face a wide variety of risks to their long-run profitability and value. We divide these risks into three general families: market, commercial, and external events.

**Market risks** relate to price movements in financial

markets and include interest rate risk, foreign exchange risk and commodity price risk as well as possible pension fund shortfalls. In many cases such exposures can be managed using financial derivatives, but in many other cases they cannot.

**Commercial risks** are inherent in the operations of the firm and are generally subject, to a certain extent, to management's control or influence. Among such risks are failures of internal processes and actions by competitors. The management of such risks, although clearly central concerns of business executives, cannot typically be accomplished with derivatives or other kinds of financial contracts.

**External event risks** are not necessarily firm-specific, and can stem from non-market events such as natural catastrophes or changes in tax or regulatory policies. Events such as litigation represent a blend of these risks and commercial risks.

To see how corporate risk management can affect shareholder value, it is helpful to understand the conditions and circumstances under which risk management “does not matter.” To that end, let's consider a simple scenario in which markets are “perfect”—that is, a world in which there are no taxes or transaction costs, no costs associated with reorganizing distressed companies in bankruptcy, no information problems (both investors and managers have a reliable understanding of a corporation's prospects) and no agency costs (corporate managers always take all positive NPV projects, and reject all others). In addition to these standard assumptions, we also assume that all risk management products are fairly priced.

Under these clearly artificial conditions, risk management activities cannot affect a company's value because investors can manage risks as well as the firm. For example, it would be irrelevant whether a jeweler hedged its exposure to the price of gold or the investors holding the shares hedged the exposures. The investors would have enough information to calculate the appropriate hedge ratios and would have access to the same product set as the company. Since investors seeking to manage risk can produce the same cash flows as the company, the value of the hedged and unhedged firm should be the same.<sup>2</sup> Moreover, in such a perfect environment, it is not clear why companies or their investors would want to manage risk in the first place, since there is little scope for value creation by purely financial decisions.

### Benefits of Risk Management

But neither markets nor companies are perfect and to see how and under what circumstances risk management has the potential to add value, financial theorists (and practitioners) focus on certain kinds of imperfections that, if unmanaged, can end up reducing corporate values.

**Reducing Costs of Financial Distress.** Financial distress can be costly. In addition to the direct costs of distress (such as lawyers' fees), there are often much larger indirect costs associated with financial trouble. Customers may no longer want to buy the company's products, suppliers may be less willing to extend credit, and employees may begin to look for alternative employment. And management's attention may be distracted away from their main concern: maintaining the profitability of the operating business, if necessary through ongoing investment.

The destruction of franchise value under financial distress can be particularly large for companies whose success depends on consumers, employees, or suppliers having confidence that the company will be around for a long time. For example, consumers may be reluctant to buy a computer and associated warranty from a firm they believe may no longer exist in a year. And so, by reducing the probability of financial distress and helping to maintain the confidence of these important corporate stakeholders, corporate risk management can add (or at least preserve) significant value.

**Avoiding the Corporate Underinvestment Problem.** Perhaps the greatest cost of financial distress, however, stems from the tendency of financially troubled companies to cut back on or delay new investments to preserve limited internal funds.<sup>3</sup>

Companies can create value by establishing a risk management program that ensures they have sufficient funds or access to capital to keep value-enhancing projects on-line.

**Increasing Corporate Debt Capacity.** Governments in many countries provide incentives for corporations to issue debt by making interest tax-deductible. At the same time, the position of debtholders or lenders—who lose if firms do poorly, but do not share in the upside if they do extremely well—is strengthened by corporate decisions to reduce risks (and undermined by decisions to increase them). For this reason, an effective corporate risk management strategy that reduces a company's risk also can have the effect of expanding its debt capacity, thereby increasing the tax (and other) benefits of debt financing. Risk management can also lead to greater efficiency in cash holdings.

**Reducing Tax Payments by Stabilizing Income.** Another tax-based rationale for risk management arises in jurisdictions with progressive taxes on corporate income.<sup>4</sup> If the tax rate on locked-in "average" income is less than the average taxes owed on fluctuating earnings, then it can pay to hedge away risks and lock in lower tax payments. Progressive tax schedules can be caused by statutory rates, or by the product of a variety of specialized features of the tax code, such as specific carry-forward and carry-back rules. Research has shown that the tax savings from hedging can be material under certain circumstances.<sup>5</sup>

**Communicating Information to Investors.** Some have argued that risk management can be used to help investors get a more precise sense of managerial performance by enabling them to identify the underlying profitability of a business and distinguish superior operating performance from favorable moves in external variables such as commodity prices and FX.<sup>6</sup> More generally, by managing the risk profile of the firm, companies can give investors greater confidence in management's ability to control the firm's destiny, carefully choosing which risks to bear (based on a principle of comparative advantage) and laying off those risks that can be better managed by other companies or investors.

**Other reasons to measure and manage risk.** While less developed in theory, there are more mundane reasons for a firm to measure and manage risks. For example, companies routinely enter into contracts and make commitments with other parties. These contracts or commitments might lock in supplier or customer prices in a foreign currency for some period of time, or commit to a certain implicit financing

2. In its essence, the irrelevance of risk management under perfect markets is an example of the type of argument made by Franco Modigliani and Merton Miller in their capital structure irrelevance propositions. They represent an application of the Law of One Price or No Arbitrage Principle, which states that two assets with the same future payoffs must have the same price today. See Modigliani, F. and M. Miller, 1958, "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review* 48, 261–297.

3. By extension, this reaction requires managers to be unwilling to raise external funds, due to high "deadweight" costs of fund-raising, especially in periods of distress. A similar argument applies to cutting the dividend. See also A. Froot, D. Scharfstein, and

J. Stein, 1994, "A Framework for Risk Management", *Journal of Applied Corporate Finance* 7 (3), 22–23.

4. This argument was developed by C. Smith, and R. Stulz, 1985, "The Determinants of Firm's Hedging policies," *Journal of Financial and Quantitative Analysis* 20, 391–405.

5. See J. Graham and C. Smith, 1999, "Tax Incentives to Hedge," *Journal of Finance* 54, 2241–2262.

6. See P. DeMarzo and D. Duffie, 1991, "Corporate Financial Hedging with Proprietary Information," *Journal of Economic Theory* 53, 261–286.

arrangement with a customer. Without an appreciation of the risks (and their prices) assumed in these garden-variety commercial decisions, companies can unknowingly leave a considerable amount of money on the table.<sup>7</sup> For example, without an appreciation of risk, companies can end up giving customers or suppliers costly “free options.”

### Costs of Risk Management

Corporate risk management programs involve costs as well as benefits. And although market imperfections such as the costs of financial distress can give rise to benefits from managing risk, it makes sense to manage risks only if these benefits are larger than the costs associated with managing the risks. We now discuss a number of these costs.

**Product Costs.** When an investor wants to protect against potential losses and purchases a put option in the market at a fair price, the premium paid is clearly a “cost.” Yet to a financial economist, the fair exchange of one financial asset (cash) for another one of equal value (the option) is not a costly exchange. It would be costly, however, if there were deadweight costs, such as fees or an inflated price, associated with the purchase. Managing risks where there is no liquid market for risk management products can give rise to “deadweight” costs that represent a real cost to the firm.

**Lost Upside.** In some cases, companies choose hedging strategies to manage risk in which they combine downside protection with the loss of upside rewards. For example, suppose you held a portfolio of the S&P 500. With the right combination of derivatives, you could completely eliminate this exposure without selling the portfolio or spending any cash. These hedging strategies would typically involve giving up the upside potential to pay for downside protection. As noted above, the loss of upside need not be a cost if the exchange is a fair one. But, in terms of corporate strategy, the loss of upside could be costly, particularly if the upside that is forgone by hedging forces the company to raise new capital to fund a promising investment opportunity.

**Trading Losses and Other Organizational Costs.** Corporate risk management programs often require the hiring of specialized personnel, expenses of training other staff in risk management, and the purchase or design of information technology systems to monitor risks.<sup>8</sup> Risk management often involves taking positions in various financial instruments. Over the years, a number of derivative disasters have been publicized in which flawed risk management strategies or overzealous

traders have forced companies to incur not only financial losses, but considerable damage to their reputations.<sup>9,10</sup> These publicized losses and organizational costs are not inherent to risk management or even derivatives, but can be seen in a wide variety of other business activities.

**Communication Challenges.** As mentioned earlier, a potential benefit of risk management is that it enables investors to distinguish managerial skill from luck by stabilizing the earnings stream and giving investors a clearer sense of the underlying corporate earnings power. In practice, however, it is often difficult for the architects of the best designed hedging programs to explain acceptable hedging losses to their investors, boards, and sometimes to top management as well. The difficulty of explaining such losses can represent a major challenge for (and impose significant costs on) top management.

### Practical Considerations

There are a wide variety of ways in which companies can manage risks. Nevertheless, most risk management strategies can be categorized into one of three functionally distinct types:<sup>11</sup>

**Hedging:** Eliminates an exposure completely, giving up both potential loss or gain.

**Insurance:** Eliminates only the adverse outcomes, while maintaining potential upside, but with upfront or ongoing costs.

**Diversification:** Entering into uncorrelated activities instead of concentrating on fewer correlated activities, thereby reducing a company’s exposure to any one activity.

These three strategies can be carried out in different ways, including operational activities or through the use of financial products. For example, a jeweler can hedge its exposure to fluctuating gold prices by entering into gold derivatives while keeping its product prices the same, or by passing along all price increases and decreases to its customers.

### Products

Risk management can be carried out with a large variety of financial products. “Hedging” tends to involve “linear” contracts—that is, contracts whose payoffs move one-for-one with the value of the underlying asset and so can be graphed with straight lines. Linear contracts tend to be obligations or commitments, and include forward and futures contracts and swaps. For example, Figure 1 shows the payoff diagram for a

7. See G. Brown, 2001, “Managing Foreign Exchange Risk with Derivatives”, *Journal of Financial Economics* 60, 401–448.

8. In its survey of risk managers on six continents, the Global Association of Risk Professionals (GARP) reported that compensation varied by title, background, type of firm, and geography. But to focus on the top position, about 30% of Chief Risk Officers were earning total compensation over €250,000 per year. See *Counterparty Risk Management Policy Group II, Toward Greater Financial Stability A Private Sector Perspective*, (July 27, 2005). <http://www.crmpolicygroup.org/>; Global Association for Risk Professionals. 2005 and *Global Compensation Survey*. Group of Thirty, Global Derivatives Study Group. July 1993. Derivatives: Practices and Principles.

9. For a brief discussion and further references see J. Hull, 2009, *Options, Futures and Other Derivatives*, 7th ed. Upper Saddle River, NJ: Prentice Hall. Chapter 32: Derivative Mishaps and What We Can Learn From Them.

10. In addition, risk management can also be used to protect pet projects that do not increase shareholder value; in this way, risk management can destroy value by insulating the firm from the market discipline of having to find funding. See P. Tufano, 1998, “Agency Costs of Corporate Risk Management,” *Financial Management* 27, 67–77.

11. See Z. Bodie and R. Merton, 2000, *Finance*, 264–267.

Figure 1 Example Linear Contract

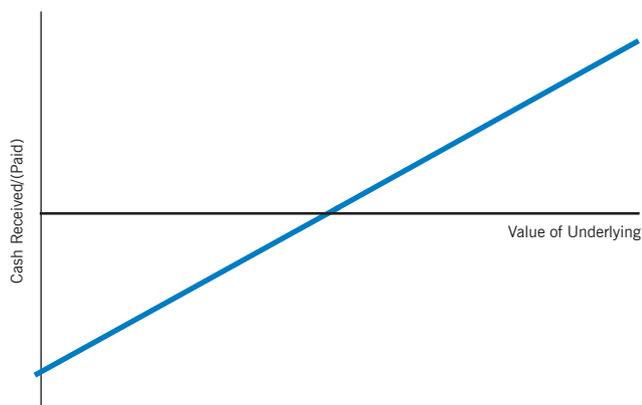


Figure 2 Example Non-linear (Call Option) Contract

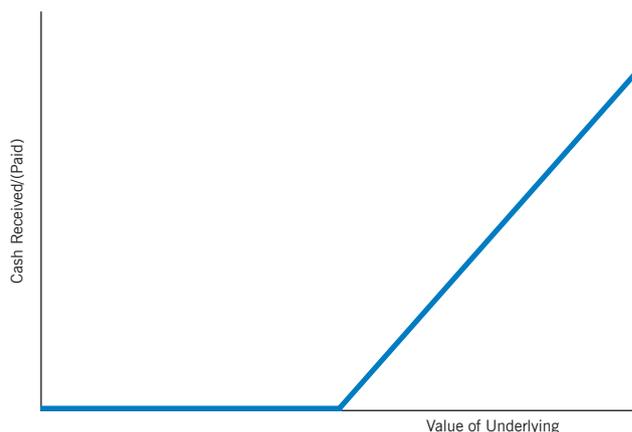
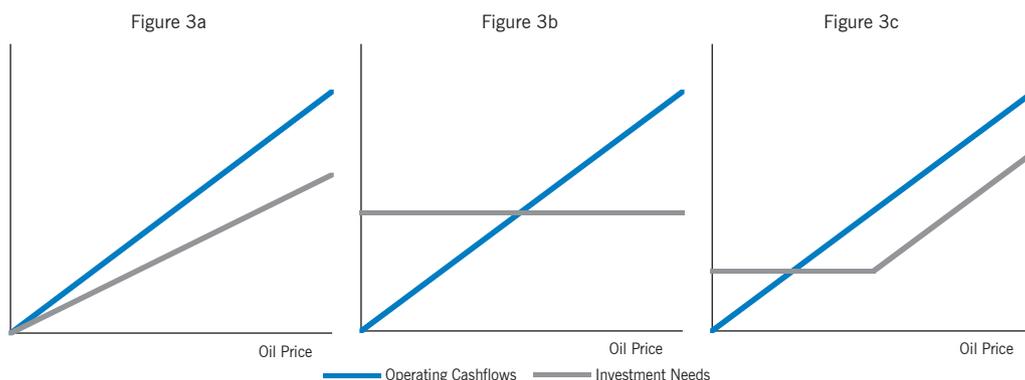


Figure 3 Hedging the Investment Need – Operating Cashflow Mismatch



forward contract that obligates the holder to buy the underlying asset at a certain predetermined price. Linear contracts products can also be embedded into purchase or supply commitment contracts, or can be synthesized using other products.<sup>12</sup>

Insurance products tend to involve “non-linear” contracts, whose payoffs are not a single straight line, but rather a combination of lines. For example, Figure 2 represents the payoff of a call option, which gives the holder the right, but not the obligation, to purchase an underlying asset at a fixed price.

Insurance products include options as well as insurance itself and various kinds of guarantees.

Products can differ along many dimensions: whether the product is standardized or customized, whether it is a traded and liquid instrument or an illiquid one, and whether it is a relatively “simple” product or a more structured product with multiple elements. Products can also differ with regard to the provisions for credit risk protection. For example, forwards

and futures offer similar payoffs. But whereas the former settles up at the maturity of the contract, the latter settles up on a regular basis with parties posting cash collateral in the form of margin. For example, suppose that a gold mining company hedges all of its gold price exposure through a swap. If that swap requires the firm to post collateral continuously, the would-be hedger could find itself facing a liquidity crisis because its stock of gold in the ground cannot be quickly liquidated to meet cash margin requirements.

### Extent and Type of Risk Management

In general, the appropriate amount and form of risk management depend on the reason for managing the risk. This can be seen clearly, for example, in the discussion of the role of risk management strategy in protecting a company’s ability to fund value-increasing strategic investments.<sup>13</sup> At the core, the theory suggests that companies should match their invest-

12. For an example, one can synthesize a forward contract using options, or combining the underlying exposure with borrowing or lending.

13. This discussion is adapted from D. Froot, D. Scharfstein and J. Stein, 1994, “A Framework for Risk Management,” *Harvard Business Review* 72, 59–71.

ment requirements with their internal cash flow. Figure 3 shows pairs of hypothetical schedules for an oil exploration and production company's operating cash flows and investment needs conditional on the oil price.

In Figure 3a, the internal funds and the required investments are well matched, so the company can meet its needs without any effort to manage risk. In Figure 3b, the firm's investment needs are flat, so that its optimal risk management strategy would be to enter into a linear strategy that essentially "borrows" from those situations when oil prices are high to meet its investment needs when prices are low. In Figure 3c, the firm's investment needs outstrip its internal cash flow when oil prices are low, but match them when they are high. In this case, the optimal strategy would be to use options.

Other motives for managing risk suggest different strategies. If the goal of risk management is to reduce tax payments, then the optimal strategy would depend on the structure of the tax code. For example, under a uniformly progressive tax schedule, it might be optimal to eliminate all risk, but this might be inappropriate under different tax regimes.

Sometimes companies do not know their exposures in advance. For example, a citrus grower might want to hedge potential fluctuations in orange juice prices. Suppose it entered into a linear contract where it agreed to pay or receive the difference between a fixed amount upfront and the market price of orange juice in one year's time. The grower has effectively agreed to sell next year's orange juice production at a fixed price.

Now suppose that a late frost destroys the orange crop. The grower now has no underlying exposure—that is, no orange juice to hedge. In this circumstance, it would probably suffer a loss on the contract (because juice prices would likely rise), and have no corresponding gain on physical oranges. In cases where there is such uncertainty about quantity, it is typically best to use non-linear risk management strategies.<sup>14</sup>

Another consideration in determining the optimal risk management structure is the cash flow properties of the selected instrument. In most cases, risk management is meant to eliminate volatility or put a "floor" on levels of cash flows or earnings rather than hedging firm value. If an instrument were a good "value hedge" but gave rise to cash flow volatility, it could create problems. Indeed, futures contracts, which require the posting of a periodic maintenance margin, have this property. Although such hedges may perform as well as swaps or forwards from the perspective of a value hedge, the margin calls could result in additional and unwanted cash flow volatility.

### Management of the Risk Management Function

The "theory" of how to manage risk management functions has been developed largely through practice. Over time, various industry groups have come up with best practices

guidelines. One of the first of these was the Group of Thirty Report in 1993, which established a set of best practices for derivative traders and users, and included 24 specific recommendations. These general principles include the following:

- Derivatives and risk management activities should be consistent with board-approved policies and be overseen by senior management.
- End users should periodically mark their positions to market, forecast cash investing and funding requirements arising from transactions, establish clear risk limits, and use stress testing and simulation.
- End users should establish a clearly independent and authoritative function to design and ensure compliance with prudent risk limits.
- Ensure that risk management activities are executed by professionals with the appropriate experience, skills, and specialization.
- End users must have systems that measure the risks incurred through their transactions.
- End users must have a clear identification of who is authorized to enter into derivative transactions.

Although the Group of Thirty Report is now 16 years old, it remains useful advice for achieving effective oversight of the corporate risk management function. More recently, the Counterparty Risk Management Policy Group issued a 273-page report that highlights a variety of detailed recommendations, including model validation by third parties, appropriate oversight of trading activities, and movement towards greater systems integration.

### Survey Findings

#### Value of the Risk Management Function

In the risk management section of our CFO survey<sup>15</sup>, we asked CFOs to estimate the fraction of their firm's value that they would attribute to risk management activities. Roughly 40% of participants said that they could not estimate its contribution. (As we shall see later, this may reflect the fact that in many if not most companies, the effectiveness of the risk management function itself is not formally measured or evaluated.) Of the survey respondents willing to estimate risk management's contribution to firm value, the average value contribution was judged to be 3.8% of market capitalization, or about 35% of the estimated contribution to value (10.8%, on average) of the total financial management function.

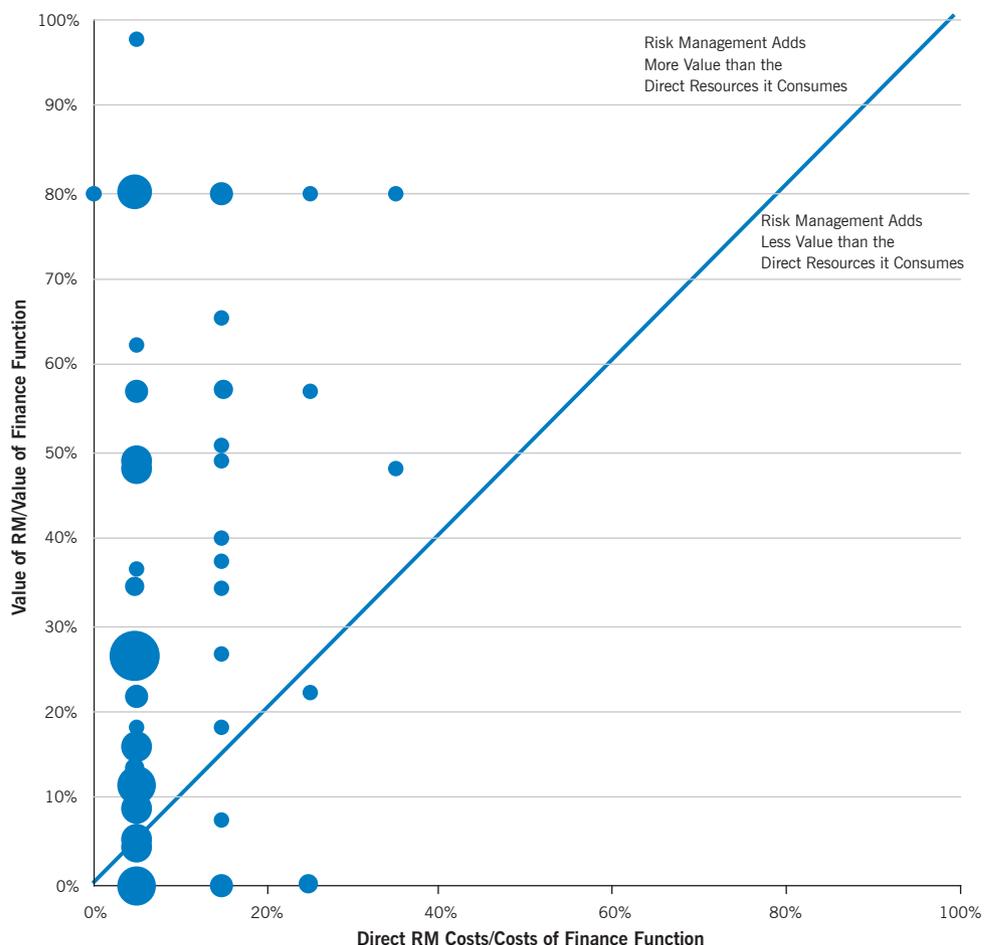
Moreover, in those 60% of cases where survey respondents estimated the value added by the finance and risk management functions (as well as the costs associated with those functions), the risk management function was judged to produce a decent "bang for the buck," contributing a larger fraction of the finance value-add than it consumed of the

14. See G. Brown and K. Toft, 2002, "How Firms Should Hedge," *Review of Financial Studies* 15, 1283–1324.

15. The risk management section of the survey was part of a larger survey covering

nine areas: Company Information, CFO Views, Capital Structure, Liability Management, Liquidity Management, General Risk Management, Interest Rate Risk Management, Foreign Exchange Risk Management and Commodity Risk Management.

Figure 4 Value Contribution of Risk Management



finance budget. Figure 4 shows the relationship between the costs and value of risk management as a proportion of the overall finance function (with the size of the bubbles representing the number of respondents indicating a given combination of cost and value).

### Overall Riskiness of the Firm

To provide context for understanding the corporate risk management function, we asked CFOs to benchmark the overall risk of their companies, as compared to the risk of other firms in their respective industries, during the previous five years. The CFOs could assess their firms at anywhere from *Substantially Less Risky* (1) to *Substantially More Risky* (5). While the question did not explicitly define “riskiness,” it was intended to give a rough gauge of CFO perceptions.

As can be seen in Figure 5, about half of the respondents (47%) said that their firms were about as risky as their industries. Of the rest, more than twice as many thought that their firm was less risky than the industry (36%) rather than

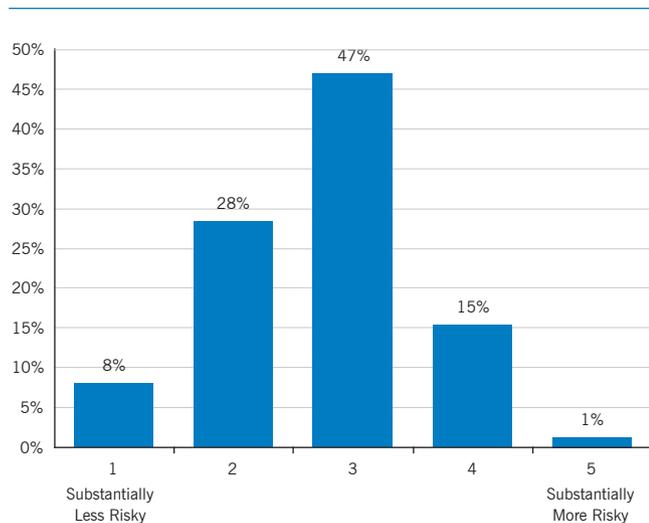
more risky (16%). Generally, our sample of CFOs considered themselves representative of their peers with respect to risk, if a bit less risky, which gives some confidence that their views on risk management are fairly representative.

### Types of Exposure

In addition to gauging the general level of riskiness, it is useful to get a sense of which risks CFOs judged to be the most important for their companies. We asked CFOs to indicate what risks, if left unmanaged, would be most costly over the next five years, considering both the likelihood and magnitude of losses. They ranked risks on a six point scale from not costly (0) to very costly (5).

In ranking risks, we expected CFOs to focus primarily on those risks their staffs managed on a day-to-day basis—that is, financial risks. But as can be seen in Figure 6, while foreign exchange risks ranked as the most material risk, five of the next six risks were commercial in nature (strategic risks, competitive risks, failure of company projects, execution risks,

Figure 5 Overall Firm Riskiness



and reputational risks). This suggests that CFOs generally see financial risks as being less important than core business risks. Interestingly, the second highest ranked financial risk was “financing risk”—the possibility that the company would be unable to raise funds (at fair prices) when needed. This suggests that even before the current crisis, CFOs were rightfully concerned about access to funding. By contrast, the classic financial risks such as interest rate risks, credit risks, commodity price risks, and property and casualty risks ranked squarely in the middle of the list.

**FX Risk.** Companies were asked to provide estimates of the fractions of revenues, operating costs, and other elements of their business that were exposed to fluctuations in exchange rates. The overwhelming majority, or 93%, of the companies reported some kind of foreign exchange exposure. On average, as illustrated in Figure 7, between a quarter and a third of corporate revenues, costs, and cash flows were said to be exposed to movements in exchange rates.

**Interest Rate Risk and Commodity Risk.** Almost three quarters (73%) of the companies reported having at least 10% of debt with floating interest rates prior to any risk management activity. One would expect this exposure to change with the interest rate environment. With respect to commodity exposures, about half (49%) reported having material commodity exposures, with the largest exposures cited as electricity, oil, natural gas, petroleum-based products, refined products, base metals, and coal and related products.

### Benefits of Risk Management

In the survey, we listed a variety of rationales for risk management and asked respondents to judge “how important are the following benefits of a successful risk management program?” on a six point scale ranging from “not important” (0) to “very important” (5). In brief, we wanted to know which, if any, of

the risk management theories accorded best with managers’ judgment of the risk management function.

As reported in Figure 8, the most valuable benefit of risk management, cited as important (4) or very important (5) by almost two thirds (63%) of the responding companies, was to improve risk-based decision making throughout the company. We interpret this as a strong desire for risk management programs to instill a risk culture in the organization—one that factors risk into a wide range of decisions, including product pricing, purchasing, capital investments, capital structure and the level of cash holdings. (Consistent with this response, in another part of the survey companies identified improving employees’ understanding of risk as “the area of improvement affording the greatest opportunities” within their firms.) While more prosaic than many of the academic theories of risk management, this result underscores managers’ understanding that risks affect their day-to-day operations, and that in decentralized organizations, managers in sales, purchasing, operations, and elsewhere have to be attuned to risks they might inadvertently take on, fail to take, fail to report, or price incorrectly.

The second highest ranked benefit of risk management, cited by 43%, was to preserve the company’s reputation. This response may reflect corporate managers’ concerns about the effects of financial distress on the firm’s customers, suppliers, and employees, although the reduction in financial distress was also listed as a potential response. It could also stem from the conviction of many corporate managers that the stock market rewards less volatile earnings streams—and that to the extent risk management succeeds in increasing the stability of the earnings stream, it strengthens the firm’s reputation with investors (as well as customers and suppliers). Consistent with this last explanation, the next two most cited motives for risk management are to reduce the volatility of accounting earnings and to stabilize the revenue stream.

Among the more theoretical or “academic” theories of risk management, rationales such as reducing the costs of financial distress and supporting the company’s ability to carry out its strategic investments were chosen as important factors by some 25% to 35% of the respondents. And consistent with and reinforcing this finding, roughly 25% of the corporate respondents also described their risk management activities as responses to “demands” by investors—notably, shareholders as well as bondholders or lenders—and regulators. All of these “external” corporate constituencies benefit from corporate attempts to avoid (or at least minimize the costs of) financial distress and, particularly in the case of shareholders, to maintain their growth and capital spending plans.

Only 17% of CFOs said that risk management permits their companies to exploit profitable opportunities to trade in FX, interest rates, and commodities. Although there is some support for the establishment of trading operations by (mainly financial and commodities) companies, even in an efficient

Figure 6 Risk Exposures

Factors	% 4 or 5	% 4 or 5
Foreign exchange risks		53%
Strategic risks		47%
Financing risk		40%
Competitive risks		39%
Failure of company projects		36%
Execution risks		35%
Reputational risks		33%
Commodity price risks		32%
Operational risks		31%
Interest rate risks		31%
Credit risks		28%
Regulatory or government risks		26%
Loss of key personnel		26%
Property and casualty risks		22%
Litigation risks		21%
Natural catastrophe risks		17%
Employee misdeeds		13%
Terrorism risks		13%
Political risks		11%
Pension or healthcare shortfalls		10%
Weather risks		9%

Figure 7 FX Exposures

Factors	Average Exposure	Average Exposure	Firms with Non-Zero Exposure
Operating Revenues		33%	87%
Operating Costs		29%	91%
EBITDA		29%	88%
Assets on Balance Sheet		28%	86%
Liabilities on Balance Sheet		27%	81%
Operating Cashflows		25%	86%
Investment Cashflows		23%	86%
Financing Cashflows		22%	77%

market setting,<sup>16</sup> the key to profitability in such operations is said to be an emphasis on “market-making”—profiting from the bid-ask spread—with strict limits on “position-taking.”<sup>17</sup>

So, how well does the current theory of corporate risk management explain what we observe current practice? The fact that almost 75% of the companies surveyed did not see risk management benefits as being “very important” (giving it a score of 5) is far from a ringing endorsement of the theory. On the other hand, this finding may simply confirm the reality that those activities that fall under the rubric of risk management—particularly *financial* risk management using derivatives—are

not core activities for the vast majority of companies. The finding also reflects the widespread observation, noted at the outset of this article, that, apart from FX and financing risks, for most companies commercial or business risks are far more important than the financial or market risks that are the main focus of most corporate risk management programs.

### Costs of Risk Management

The benefits of risk management must, of course, be evaluated in light of the costs. We asked respondents to rank the major potential drawbacks to a risk management program.

16. See R. Stulz, 1996, “Rethinking Risk Management,” *Journal of Applied Corporate Finance* 9 (3), 8–25.

17. See A. Braas, 1989, “How Bank Trading Rooms Really Make Money,” *Journal of Applied Corporate Finance* 2 (4), 85–90.

Figure 8 Benefits of Risk Management

Factors	% 4 or 5	% 4 or 5
Improve company-wide decision making		63%
Preserve company reputation		43%
Reduce the volatility of earnings		37%
Stabilize revenue stream		36%
Reduce the costs of financial distress		36%
Improve cash management decisions		28%
Improve capital structure decisions		28%
Plan and stabilize pattern of investments		27%
Improve pricing policy		26%
Demands by bondholders or lenders		25%
Demands by shareholders		24%
Demands by regulators		24%
Manage and lower tax payments		24%
Exploit profitable trade opportunities		17%

The ranking was on a six point scale going from *Not Substantial* (0) to *Very Substantial* (5).

As can be seen in Figure 9, three of the top four drawbacks identified as “important” or “very important” are the direct costs associated with (1) purchasing insurance, (2) risk management products (generally), and (3) business continuity services.<sup>18</sup> But while these three were considered among the most costly, more than three-quarters of the respondents did not consider these costs “substantial.” Risk management using linear instruments can be costly due to the loss of upside potential. However, only one in six respondents (16%) considered these long-term opportunity costs to be important, while only 12% were concerned about short-term opportunity costs. What’s more, the cost of running the risk management group, including personnel and systems, was viewed as important by only 13% of the corporate respondents—and only 10% cited compliance and reporting costs as substantial.

At the same time, difficulty in explaining the company’s risk management practices to the board was considered a substantial drawback by 13% of the companies, while 7% admitted to difficulty in explaining their programs to investors and 5% to encountering investor resistance. The risks associated with trading activities, as reported in this and other parts of the survey, were seen as an important drawback by only 9% of the respondents. More generally, the overwhelming majority of respondents seem unconcerned throughout the survey about possible trading problems in their risk management programs. Comparing figures 8 and 9, executives were much more likely to identify substantial benefits of risk management than substantial drawbacks or costs.

18. The business continuity services option was shown as *Costs of data backup and business interruption activities* in the survey itself.

19. This option was shown as *Our planning process discusses various risks, but does not systematically attempt to measure the likelihood or magnitude of them* in

Figure 9 Drawbacks of Risk Management

Factors	% 4 or 5	% 4 or 5
Direct costs of purchasing insurance		23%
Direct costs of risk management products		19%
Long-term opportunity costs		16%
Costs of business continuity services		15%
Difficulty in explaining to board		13%
Costs of running risk management group		13%
Short-term opportunity costs		12%
Compliance and reporting costs		10%
Risk associated with trading activities		9%
Difficulty in explaining to investors		7%
Resistance by investors		5%

### Risk Management Techniques and Products

We sought to understand the techniques used by risk management groups, as well as the risk analysis conducted outside the risk management groups in our survey companies. As reported in Figure 10, almost three quarters (73%) of the risk management groups used some form of scenario analysis (which could include stress testing). “At-Risk” measures were used by 36%-45% of the companies (with slightly more companies reporting the use of Value-at-Risk (VaR) rather than Cashflow-at-Risk (CaR) or Earnings-at-Risk (EaR)). Just 6% reported using a risk-based shareholder value added analysis (SVA).

While quantitative techniques like scenario analysis were used fairly widely by risk management groups, the use of formal risk measures by corporate strategic planning groups was much less common. As reported in Figure 11, when we asked survey respondents to characterize their approach to risk management in their planning process, a slight majority (55%) of the respondents chose the description “consider risks, but no quantification.”<sup>19</sup> Another 10% admitted to “no consideration or quantification of risks in the planning process.”<sup>20</sup> Only 46% used scenario analysis (as compared to 73% in risk management groups) and only 26% used simulation analysis. Thus, for most companies, risk considerations and explicit risk measurement appear to play a relatively small role in the strategic planning process.

### Financial Products

In the current environment, derivatives are often harshly criticized, sometimes called “weapons of mass destruction.” However, most CFOs of non-financial companies use derivatives to manage risks. When we asked CFOs how their companies managed their various risks, more than three quarters of the firms, as reported in Figure 12, said they used

the survey.

20. This option was shown as *Our planning process spends little time discussing potential risks* in the survey itself.

Figure 10 Tools in Risk Management Group

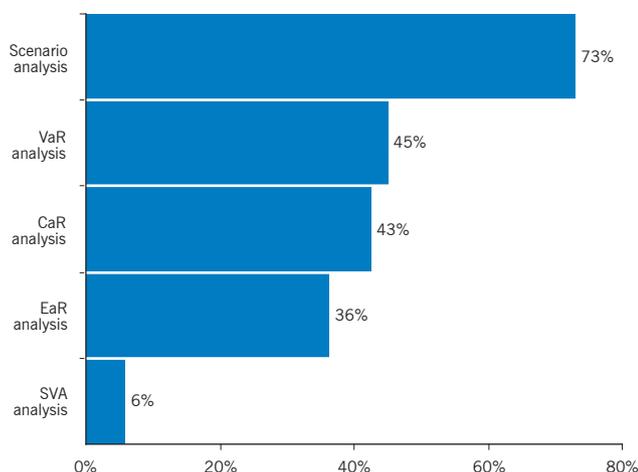


Figure 11 Tools in Planning Process

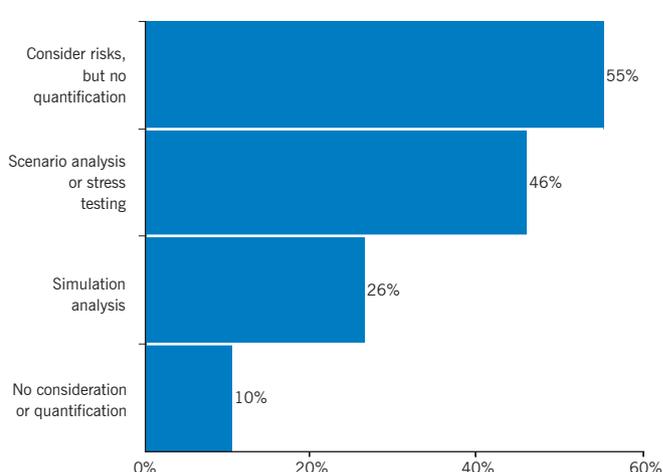
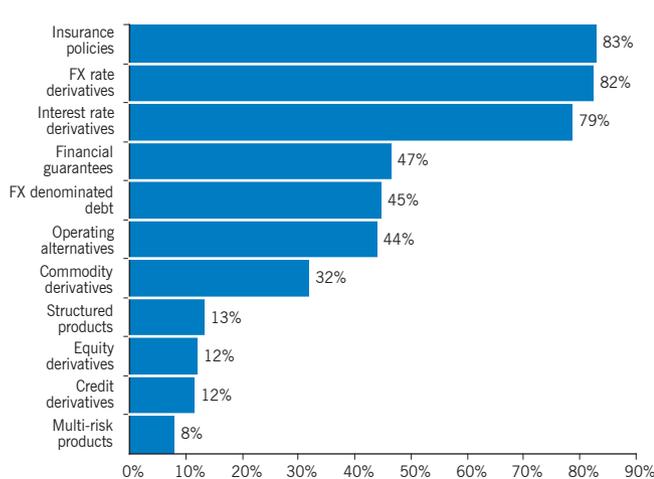


Figure 12 Risk Management Products



FX rate derivatives (82%) or interest rate derivatives (79%) to manage some portion of their exposures. A slightly larger fraction use insurance products. Slightly less than half use some form of financial guarantees (47%), FX denominated debt (45%), or operating alternatives (44%) to manage risk. About a third use some form of commodity derivatives and less than 15% use structured products, equity derivatives, credit derivatives, or multi-risk products. It is interesting to note that credit derivatives and structured products, while now quite controversial, were rarely used by non-financial firms in our study.

**FX Products.** As reported in Figure 13, the corporate instruments of choice for managing foreign exchange risk are forward contracts followed by swaps and over-the-counter options. Not surprisingly, options are more popular for anticipated transactions in which the exposure is not known with certainty. In such

cases, if the firm uses a linear hedge (e.g., a forward or swap) but the exposure does not materialize, management could find itself with a money-losing hedge. Nevertheless, forwards remain the most popular instrument, even for anticipated transactions, presumably because companies can anticipate the transactions with great certainty. Swaps are marginally preferred over OTC options when the exposures are known with greater certainty, possibly because companies prefer to lock in the price rather than just cutting off the lower tail of the distribution. Foreign currency debt is used to a lesser degree, except when balance sheet risk is being hedged. Futures contracts are rarely used, perhaps because the requirements to mark-to-market and post margin give rise to unpredictable variations in cash flow that are not matched by the underlying exposures.

**Interest Rate Products.** As can be seen in Figure 14, interest rate swaps are the overwhelming instrument of choice in managing interest rate risk presumably because of their simple structure and minimal upfront costs, but also because of the deep and liquid swaps market. It is interesting to note that over-the-counter products are preferred to exchange traded products for managing interest rate risk as well as FX risk. This preference likely reflects the corporate inclination to customize their exposures in a way that is not permitted by exchange-traded products. But it may also be based on other advantages, such as speed of execution and legal documentation.

Options are used much less frequently than linear (swap, forward, or FRA) contracts. This could reflect the fact that most interest rate exposures—like those resulting, for example, from debt instruments in place—are fixed, as opposed to the kind of “contingent” exposures for which the flexibility of an options-based strategy is well suited. The scarcity of options use could also reflect the preference of companies to avoid paying a premium to purchase option products that would have to be expensed against earnings.

Figure 13 Proportion of Companies Using Each Instrument to Hedge Each FX Risk

	Foreign Currency Debt	Forwards	Futures	Swaps	Options on Futures	OTC Options	Exchange Traded Options
Foreign Repatriations	14%	73%	6%	35%	6%	15%	2%
Hedge on Balance Sheet AR & AP	27%	66%	7%	38%	8%	20%	4%
Off Balance Sheet Commitments	11%	54%	6%	21%	7%	28%	4%
Anticipated Transactions (> 1 Yr)	7%	54%	5%	21%	6%	33%	1%
Anticipated Transactions (< 1 Yr)	7%	68%	7%	21%	7%	30%	4%
Committed M&A Transactions	16%	68%	4%	23%	6%	26%	3%
Anticipated M&A Transactions	11%	41%	0%	15%	9%	39%	2%
Hedge Profit and Loss Statement	14%	42%	6%	29%	5%	12%	2%
Hedge Balance Sheet (Book Value)	33%	46%	6%	34%	6%	11%	1%
Economic/Market Value Balance Sheet	19%	23%	3%	29%	10%	10%	3%

Figure 14 Relative Importance of Interest Rate Risk Management Products

Factors	% 3 or 4	% 3 or 4
Swaps		84%
Forward contracts (OTC)		29%
Forward rate agreements (FRAs)		23%
OTC options		19%
Future contracts (exchange traded)		16%
Options on futures		12%
Exchange traded options		6%

**Commodity Products.** The strategy of choice for managing commodity price exposure is to use negotiated agreements<sup>21</sup>, followed by pricing policy, OTC contracts, and natural hedges. Unlike the management of FX and interest rate risk, companies often rely on non-financial counterparties—their customers and suppliers—rather than market-makers to manage commodity risks. This is not to suggest that companies do not use OTC and exchange-traded contracts to manage commodity exposures. In certain sectors—base metals, coffee, tea and cocoa, oil, precious metals and refined products—more than 30% of the companies with exposures reported using exchange-traded contracts to manage them.

In sum, commodity risk management appears to be more closely tied into the normal course of business than other types of financial risk management. We also see this in the observation that, for almost 70% of the companies, the department responsible for commodity risk management is not the treasury, but rather a purchasing department or operating unit.

21. Shown as *Negotiated agreements with suppliers or customers* in the survey itself.

22. For further details about the cash management part of the survey, see: K. Lins, H.

### Note on the Role of Cash

As reported earlier in Figure 6, six of the top eight risks that companies face are commercial as opposed to financial in nature. How do companies manage these business risks? The cash management section of the survey provided a strong clue as to how companies use the finance function to manage them. When asked why they held excess cash, the top CFO answer was that it provides a “buffer against cash flow shortfalls”—in other words, it functions as a general purpose risk management vehicle. In addition, holding excess cash addresses financing risk, one of the two top rated financial risks. In explaining why they held excess cash, companies cited the “time it takes to raise money when funds are needed” as the fourth most important factor and “level of uncertainty about future investment opportunities” as the fifth. The logical conclusion, then, is that cash management is an important aspect of the way companies handle a broad range of business risks.<sup>22</sup>

### Frequency of Risk Management

In a survey document, it is difficult to assess the extent to which companies are exposed to different risks and to which the exposures are managed. Such assessments require a more detailed understanding of the inherent risks and their post-risk management exposures. Compounding the difficulty, when risks are managed using, say, option strategies, there are many different ways of measuring the extent of risk management.

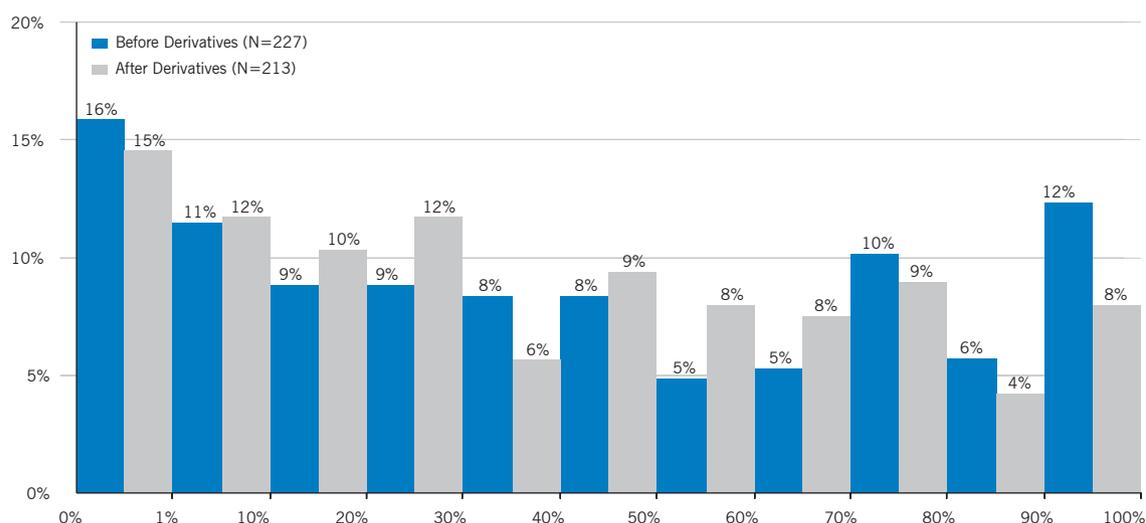
With these limits of our survey in mind, we asked companies to estimate, for each of the three underlying financial risk exposures—FX, interest rates, and commodities—both the likelihood and the extent to which they manage these risks to get a rough sense of whether they consciously measure and attempt to reduce their risk exposures.

Servaes, and P. Tufano, 2009, “What drives corporate liquidity: An international survey of cash holdings and lines of credit”, Working paper University of Utah, London Business School, and Harvard Business School.

Figure 15 **FX Risk Management Frequency**

Factors	Frequency	Frequency	Extent
Hedge On Balance Sheet AR & AP		62%	63%
Hedge Anticipated Transactions (< 1yr)		56%	51%
Hedge Foreign Repatriations		39%	52%
Hedge Off Balance Sheet Commitments		35%	47%
Hedge Committed M&A Transactions		29%	56%
Hedge Anticipated Transactions (> 1yr)		25%	39%
Hedge Balance Sheet (Book Value)		23%	43%
Hedge Profit and Loss Statement		22%	41%
Economic/Market Value Balance Sheet		7%	30%
Undertake directional trading		7%	na
Arbitrage		5%	na
Hedge Economic/Competitive Exposures		5%	27%
Hedge Anticipated M&A Transactions		5%	31%
Exploit Relative Value Opportunities		4%	na

Figure 16 **Proportion of Floating Rate Debt Before and After Use of Derivatives**



**Foreign Exchange Rates.** To get a sense of the aim and scope of their FX risk management programs, we asked companies how frequently and to what extent they managed the different types of FX exposures. With respect to frequency, we asked: “How often do you engage in FX risk management?” with the choices being never (0), sometimes (1), frequently (2), and always (3). We also asked what percentage of the exposures were hedged (extent of hedging).

As reported in Figure 15,<sup>23</sup> the median company in our survey reported that it “frequently” or “always” hedges balance sheet receivables or payables, as well as transactions

anticipated within one year. The median firm also said it “sometimes” hedges repatriations, anticipated transactions beyond one year, off balance sheet contractual commitments, and committed M&A transactions. At the same time, the median firm also reported that it “never” manages risks associated with the P&L statements, anticipated M&A transactions, book value balance sheets, market value balance sheets, or economic/competitive exposures. This preference for managing the risks associated with certain or contractually obligated future cash flows may be related to the accounting treatment of these transactions,- as will be discussed later. The

23. The average amount of hedging among firms who sometimes, frequently or always hedge is shown in the column marked Extent.

Figure 17 **Impact of Commodity Risk Management**

Risk	Pre Hedging	Post Hedging	Absolute Reduction	Proportional Reduction
Natural Gas	3.1	1.9	1.2	38%
Sugar	3.0	1.9	1.1	38%
Precious metals	3.1	2.1	1.0	32%
Coffee, Tea, Cocoa	3.4	2.4	1.0	29%
Base metals	3.5	2.5	0.9	27%
Grains and oilseeds	2.8	1.9	0.9	31%
Electricity	3.0	2.2	0.9	28%
Refined products	2.7	1.9	0.8	30%
Paper and pulp	2.8	2.1	0.7	26%
Construction products	2.7	1.9	0.7	27%
Natural rubber	2.8	2.1	0.7	25%
Oil	3.2	2.5	0.6	20%
Dairy products	2.9	2.4	0.5	18%
Livestock, meat and fish	2.6	2.1	0.5	18%
Lumber and related products	2.8	2.4	0.4	15%

median firm also claimed that it “never” engaged in speculative trading (directional trading or exploitation of relative value opportunities) or (perceived) arbitrage. At the same time, though, a larger fraction of companies reported adjusting the details of hedges based on market conditions, a form of market timing (discussed in more detail subsequently).

We also asked those companies that said they managed each FX exposure at least some of the time to indicate the fraction of their exposure that is hedged. As also reported in Figure 15, companies reported that they hedged more than half of all transactional exposures (balance sheet receivables and payables), foreign repatriations, and short-term anticipated transaction. Moreover, those companies that said they hedged committed M&A transactions reported hedging over half of the FX risk. Other types of transactions are managed less frequently and less extensively. For example, only 5% of companies said they hedged economic or competitive exposures, and when they do, only one quarter (27%) of the exposure is hedged.

### Interest Rates

To get a sense of interest rate risk management (at least through the use of derivatives), we posed the question: “in your last reporting period and on a consolidated basis, what proportion of your debt was floating rate before and after the use of

derivatives?” Differences between these two snapshots were viewed as an indication of the extent to which companies are using derivatives to manage their interest rate exposures.<sup>24</sup>

As reported in Figure 16, the median company in our sample reported changing its floating mix by 10 percentage points either up or down (as compared with the median firm’s pre-derivative mix of 35% floating rate).<sup>25</sup> While part of this adjustment likely reflects management’s view of future interest rate movements, with the aim of reducing future interest costs, such adjustments may also be aimed at stabilizing reported net income and cash flow.

### Commodity Prices

In the case of commodities, we asked companies to rank exposures on a scale from 0 to 6, ranging from “none” to “core exposure”.<sup>26</sup> They also ranked the exposures both before and after taking risk management activities into account, thereby giving us a sense of the degree to which risk management affects exposures.

As shown in Figure 17, there is some reduction in exposures, but they are by no means eliminated. In fact, on the basis of a separate calculation, we also concluded that only 6% of all exposures listed by companies are completely hedged (that is, correspond to a post-hedging level of “0”).

But such evidence of partial hedging is by no means surprising. In fact, it is completely consistent with the view that a company’s shareholders are better positioned than the companies themselves to manage “idiosyncratic risks” (like those stemming from commodity prices) simply by holding diversified portfolios. In this view of the world, the primary function of corporate risk management is to eliminate “catastrophic outcomes”<sup>27</sup>—the possibility that a large and abrupt swing in commodity prices could put a company into financial distress, preventing it from making good on strategic investments and carrying out its business plan.

### Accounting Treatment

In recent years, accounting rules around the world have changed the way that companies account for various hedges. Some argue these standards make risk management—or at least the use of derivative-based risk management strategies—less attractive.

Under the new rules, derivatives positions are reported at “fair value,” with all changes in value recorded in either the income statement or an equity account. The extent to which changes in value affect income depends on whether the hedge qualifies for so-called hedge accounting. To gain

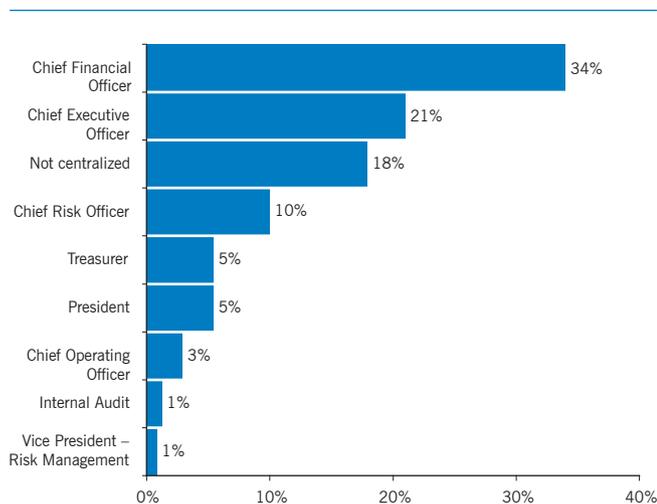
24. Of course, companies also manage their interest rate risks through the selection of which debt instruments to issue. Here we more narrowly discuss the management of interest rate exposure using derivatives. We also recognize that in some instances, derivatives may be used at the outset of a debt issuance, rather than reflecting some “fine tuning” later on.

25. The signed average (recognizing that some firms increased and others decreased their floating mix) was only 2%, due to the offset of firms that increased and decreased floating rate exposures.

26. We defined Substantial Exposure as meaning a large exposure that may cause significant volatility in cash flows. Core Exposure was defined as an exposure central to the business of the company and obvious to all investors (e.g., gold price exposure for a gold mining company).

27. See R. Stulz, 1996, “Rethinking Risk Management,” *Journal of Applied Corporate Finance* 9 (3), 8–25 and N. Doherty and C. Smith, 1993, “Corporate Insurance Strategy: The Case of British Petroleum,” *Journal of Applied Corporate Finance* 6 (3), 4–15.

Figure 18 **Most Senior Person Responsible**



hedge accounting treatment, however, the hedge must meet various conditions that can limit the firm's ability to hedge from an economic perspective. Hence, many observers have argued that such rules have made companies less willing to engage in derivative-based risk management strategies.

For each of the three main exposures—FX, interest rates and commodities—we asked companies:

- Whether their risk management policies have been materially affected by the accounting rules.
- How the introduction of the relevant rules has affected their ability to hedge from an economic perspective.
- How important achieving “hedge accounting” treatment is when examining alternative strategies.

Forty percent of the respondents that engage in risk management reported that at least some of their risk management policies have been materially affected by the introduction of the new accounting standards. A large fraction of the affected companies feel that their ability to hedge from an economic perspective has been compromised. Finally, companies that are materially affected also believe that qualifying for hedge accounting is very important when evaluating risk management alternatives. These findings suggest that the reporting requirements for derivatives have had a substantial effect on risk management practice.<sup>28</sup>

### Management of the Risk Management Function

Risk management activities tend to involve relatively few employees and account for a fairly small share of finance departments' budgets. In our survey, 51% of the responding companies had eight or fewer employees who “spent the

majority of their time on risk management activities.” About 20% of the firms had between 8 and 15 employees, and only 28% had more than 16 full-time employees engaged in risk management. And when we asked CFOs to estimate the percentage of “total direct operating costs for finance activities (personnel, systems, outside vendors and consultants, etc.) is devoted to risk management activities,” 70% of the companies said that risk management consumed less than 10% of the finance budget. (But this estimate may have changed since we conducted this survey in 2005).

When we asked for the title of the most senior person responsible for risk management (Figure 18), only 10% of the companies reported having a Chief Risk Officer (CRO) who functioned as the senior most person in their firm responsible for risk management. It is more common for the CFO to be identified as the senior risk executive (34%), followed by the CEO (21%).<sup>29</sup>

Interestingly, 18% of the companies reported that their risk function was “not centralized,” with multiple parties sharing responsibility. This is broadly consistent with the results in the commodity risk section of our survey, where companies with material commodity exposures reported that their commodity risk management activities were conducted by either the purchasing group (59%) or an operating unit (13%). Our take on this finding is that such decentralized risk management activities can work as long as the information and oversight functions are centralized. Some degree of coordination is necessary to avoid duplicative risk management activities or, worse, the inadvertent creation of new exposures.<sup>30</sup>

### Benchmarks

To manage risks, one must first measure them. We expected that a group that devotes much attention to measuring would also be measured. We accordingly asked respondents to identify the measures employed to evaluate the risk management function.

As reported in Figure 19, almost half of the companies (46%) said that “our company does not explicitly measure (the performance of our) risk management activities.” When presenting this finding to corporate audiences, we received a number of explanations, including the sheer difficulty of defining and then measuring the success of a risk management group. Those companies that have attempted to measure the performance of their risk management groups have used metrics that aim to quantify the impact on overall performance, instead of evaluating the group as either a profit or a cost center. In our view, establishing a risk management function as a profit center is a prescription for trouble.

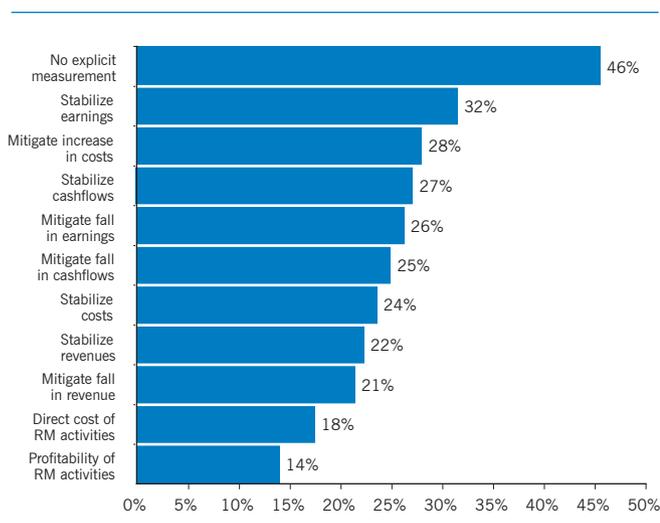
28. For more details on the impact of hedge accounting on risk management, see K. Lins, H. Servaes, and A. Tamayo, “Does Derivative Accounting Affect Risk Management? International Survey Evidence”, Working paper, University of Utah and London Business School.

29. In a complementary paper, we noted that CFOs reported spending an average of about 14 hours a month on risk management activities which is somewhere around the

mean for all activities. See CFO Views, available at [faculty.london.edu/hservaes/globalsurvey.htm](http://faculty.london.edu/hservaes/globalsurvey.htm).

30. For example, suppose that a purchasing manager wanted to hedge supplies of a certain component and agreed to pay a fixed amount in some foreign currency. If this new currency exposure was not incorporated into the computation of firm-wide FX exposure, it could create unhedged currency risks.

Figure 19 **Measuring Risk Management**



For those companies that do evaluate their risk management, the most common measurement of its effectiveness was its ability to stabilize earnings (cited by 32% of the companies), with the stabilization of cash flows (cited by 27%) coming close behind. The mild preference for earnings over cash flow is somewhat surprising, at least to the extent that preventing financial distress, and not earnings management, is the goal of the program. Thus, it was reassuring that when we went on to ask our respondents to identify “which of the following financial items do you focus on in your risk management program?” the clear top choice was operating cash flows, followed by financing cash flows, balance sheet values, accounting earnings, and investment cash flows. Nevertheless, the fact that accounting earnings continues to be the most frequently evaluated element of the program suggests that there may be an important disconnect between the goals of risk management programs, as understood by top management and corporate boards and by the risk managers themselves.

### Latitude and Discretion

Within any business function, it is not unusual to give line managers decision-making latitude. To assess the discretion given to risk managers, the oversight of their activities, and the extent of active management of exposures, we asked a set of parallel questions in the three subsections on foreign exchange, interest rate, and commodity risks.

For each exposure, we asked whether the company had some kind of benchmark against which to compare the performance of the elements of its hedging program. As shown in Figure 20, the majority of companies that engage in risk management reported not using explicit benchmarks,

though in each case there were significant minorities (45%, in the case of FX risk) that did. And as reported in Figure 21, for those companies that said they do use benchmarks, the most common were spot rates (used by 53–64% of companies, depending on the exposure). In the case of FX risk, however, use of a “fully-hedged” benchmark was slightly more common than use of spot rates (56% versus 53%). For companies that use spot rates, we offer the caution that such benchmarks can provide risk managers with a “trading” mentality, evaluating their success in predicting price movements instead of their ability to use FX gains and losses to cushion expected changes in operating cash flows and earnings.

For those companies that set up benchmarks, we asked the follow-up question: “How much latitude does the person or team entrusted with risk management have in deviating from the benchmark?” with choices ranging from none (0) to broad (5). As reported in Figure 22, virtually all companies with benchmarks acknowledged that their risk managers had some latitude to change the timing and size of hedges depending on market conditions, a form of market timing.

### Market Views

For companies with and without benchmarks, we also asked whether they materially changed the timing or size of hedges, or actively took positions, as result of their market views. Figure 23 reports whether companies reported taking active positions. About half of the respondents said that they never actively take positions in the three underlying markets. But this, of course, implies that the other half does take positions, with a few (3–4%) indicating that they do so often. At the same time, a far larger fraction of companies said that their market views caused them to adjust the timing (73%–84%) and size (72%–85%) of hedges, at least somewhat. Although most companies would not describe this use of market views as “active management,” it does suggest that it is difficult to remove all trace of speculative risk taking from corporate hedging activities.

We also asked whether companies that use a benchmark to assess the performance of specific risk management activities were less likely to take active positions. As reported in Figure 24,<sup>31</sup> over 40% of the companies with no benchmarks reported allowing “some” active management, a percentage that increases to 58% for companies that have benchmarks. Thus, companies that have more controls tend to give their risk managers and traders somewhat more latitude, which is consistent with their greater ability to monitor trading activities.

### Challenges and Opportunities

When we asked CFOs about their satisfaction with different finance functions, risk management ranked in the middle of

31. The data in this figure are aggregated from three question pairs.

Figure 20 Use of Benchmarking

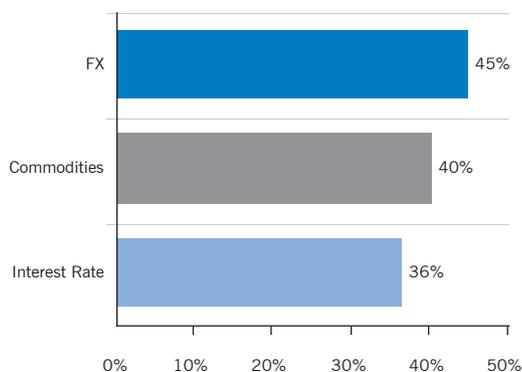


Figure 21 Benchmarks

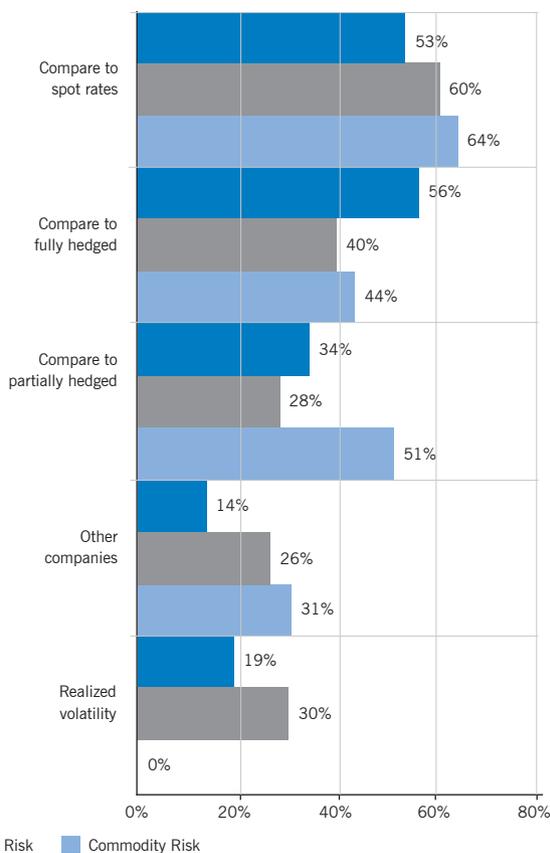
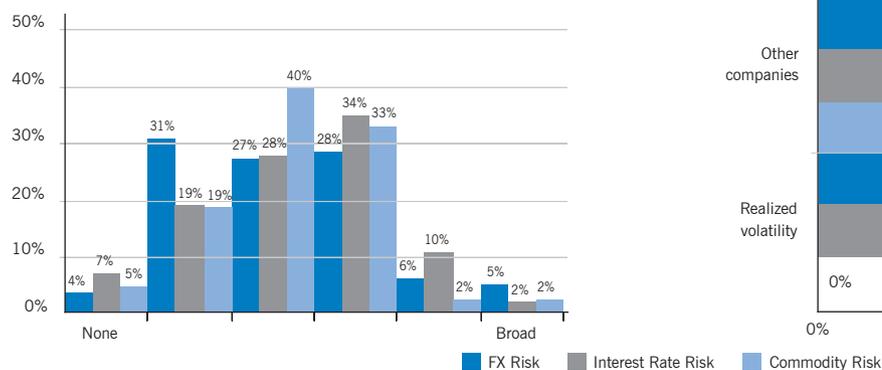


Figure 22 Latitude



a list of 19 choices. Where risk management stood out was on the proverbial “to do” list for CFOs. When asked “do you think your company should be devoting more, less, or about the same resources to the following finance functions?,” CFOs placed risk management at the top of their list of 19 choices. It was viewed as an opportunity—or a problem—that would benefit from additional resources.

To get some idea of the opportunities for improvement, we asked survey respondents “which elements of your risk management program do you think need improvement?” They could select choices ranging from none (0) to substantial improvement required (5). We constructed this list to capture the big categories of programs: risk identification, risk measurement, risk management, and communication. As with the identification of costs, relatively few companies identified any substantial opportunities for improvement.

As reported in Figure 25, the biggest perceived opportunity for improvement was in increasing employee understanding, which was identified by a third of our respondents as requiring “substantial improvement” (with only 16% of companies saying that little or no improvement is neces-

sary). This suggests that respondents seek a more widespread risk-based culture throughout the organization, consistent with their view that risks—especially commercial risks—are widespread in their organizations. This finding is also consistent with the earlier finding that risk measurement tools are much less common in strategic planning. We can also see this in the slow adoption of valuation methodologies that take account of uncertainty, such as real options analysis.

In terms of the current scope of the risk management function, 27% of companies said they were looking for substantial improvements in the measurement of quantifiable risks (while only 15% felt little or no need for improvement in this area.) Nearly twice as many companies were dissatisfied with risk measurement as were satisfied with it. Measuring quantifiable risks is a “bread and butter” activity of a risk management group, and this expressed level of dissatisfaction is consistent with our general sense that companies are uncomfortable with risk management groups whose performance is not measured. Over 20% of our companies said they were seeking substantial improvement in their awareness and understanding of unquantifiable risks, and about a quarter

Figure 23 Active Position Taking

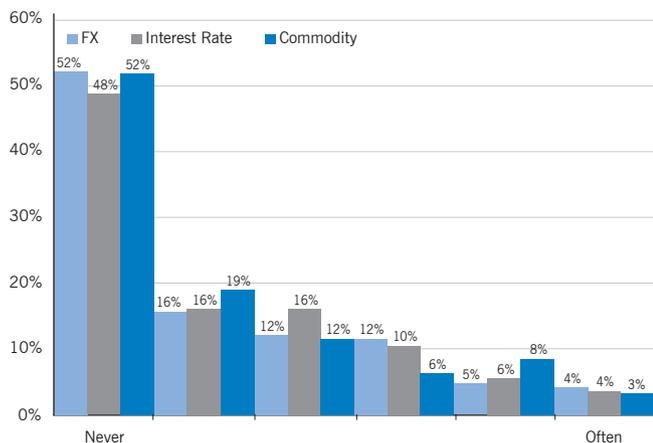


Figure 24 Frequency of Active Positions Segmented by Benchmark Practice

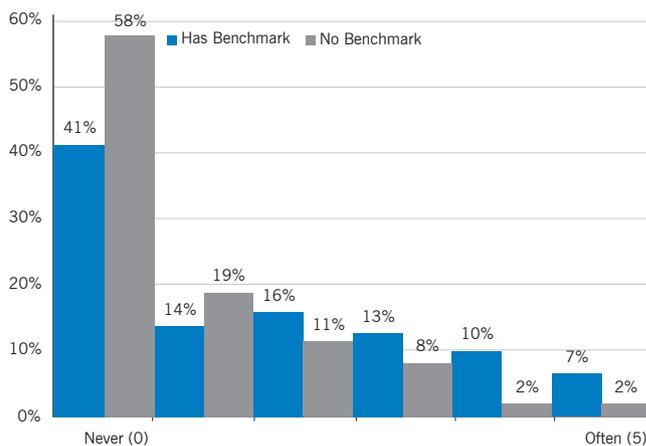


Figure 25 Areas of Improvement for Risk Management Program

Factors	% 4 or 5	% 4 or 5
Employee understanding	33%	33%
Measurement of quantifiable risks	27%	27%
Coverage (include broader set of risks)	23%	23%
Board understanding	22%	22%
Appreciation of unquantifiable risks	22%	22%
Management of risks	20%	20%
Shareholder & analyst understanding	11%	11%
Opportunistic trading activities	6%	6%

said they aimed to increase the breadth of their risk management programs by covering a broader set of risks. Both of these observations are consistent with the judgment that, for most companies, the most important risks they face are not financial risks, but the harder to quantify set of commercial or event risks.

On the whole, the respondents felt that their programs had reasonably effective controls of opportunistic trading, with only 6% saying that they sought substantial (or near substantial) improvement in this area. On the other hand, a significant number (22%) of companies said they would benefit from substantial improvement in their boards of directors' understanding of the firm's risk management program, while about half as many respondents cited the need to educate their shareholders and equity analysts. This difference, besides reflecting the typically stronger equity incentives of large investors than most corporate board members, may also represent an opportunity for companies to add value by attracting more financially sophisticated board members.

### Summary

The events of the past few years have underscored the reality that corporations are exposed to substantial risks. Companies have been criticized for failing to anticipate and plan for these risks and, in some cases, for accumulating risks with seemingly little understanding that they were doing so.

Our survey, completed in somewhat simpler times, identified some of these problems in advance. Senior finance executives acknowledged that the most substantial risks extended far beyond the CFO's direct reports. They reported that risk-based thinking was not incorporated into everyday business activities or corporate strategies. A large majority of executives said they were seeking a more widespread understanding of risk throughout their organizations—and many confessed their firms' inability, or lack of interest, in evaluating their own risk management functions.

While CFOs acknowledged that they had much to do, placing risk management at the top of their to-do list, they also saw that prior efforts had yielded good results. The benefit-cost ratio for risk management was judged to be high, at least in those cases where it could be judged. Most recognized the benefits of risk management, a view that has likely become even stronger in the wake of recent events. At the same time, however, the efforts of most companies to develop enterprise-wide risk management programs appear to have fallen well short of the comprehensive and highly coordinated programs envisioned by the proponents of such programs.

Three areas of opportunity stand out as having potential to improve corporate risk management in ways that increase firm value over an entire business cycle:

- Incorporate risk management thinking into the strategic planning process. Line executives, and not just

technicians, need to be sensitive to risks, thereby building flexibility into the firm's business plan and its execution.

- Clearly define the objectives of the risk management function, in part by developing appropriate benchmarks. The risk management process should be subject to the same rigorous evaluation process used when measuring risks throughout the business. After all, you can only assess what you measure.

- Instill a risk management culture throughout the organization. While an effective risk management function is necessary, only when employees at all levels of the company embrace risk management as part of their daily operations will the firm get maximum value from risk management.

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**Journal of Applied Corporate Finance** (ISSN 1078-1196 [print], ISSN 1745-6622 [online]) is published quarterly, on behalf of Morgan Stanley by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774. Postmaster: Send all address changes to JOURNAL OF APPLIED CORPORATE FINANCE Journal Customer Services, John Wiley & Sons Inc., 350 Main St., Malden, MA 02148-5020.

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