

## CHAPTER 12

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**RISK MANAGEMENT- FIRST PRINCIPLES**

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If there is a theme that runs through this book, it is that risk underlies and affects every decision that a business makes, and that risk management is not just risk hedging. In this chapter, we review what we know about risk in general and how best to deal with it in practice, and restate ten principles that should govern both risk assessment and risk management.

**1. Risk is everywhere**

Individuals and businesses have only three choices when it comes to dealing with risk. The first is to denial: do not acknowledge that risk exists and hope it goes away. In this idealized world, actions and consequences are logical and there are no unpleasant surprises. The second is fear, take the opposite tack and allow the existence of risk to determine every aspect of behavior. Covering behind the protection of insurance and risk hedges, you hope to be spared of its worst manifestations. Neither of these approaches puts you in any position to take advantage of risk. But there is a third choice: accept the existence of risk, be realistic about both its odds and consequences, and map out the best way to deal with it. This, in our view, is the pathway to making risk an ally rather than an adversary.

One of the reasons the study of risk is fascinating is that the nature of risk has changed and continues to change over time, making old remedies dated and requiring constant reinvention. In the last 20 years, there are three broad trends that have emerged in the shifting landscape of risk.

- Risk is global: As businesses, economies and markets have become global, so has risk. To illustrate the interconnectedness of markets and the possible “contagion” effects of risk, consider a small but telling example. On February 27, 2007, investors in the United States woke up to the news that stocks in Shanghai had lost 9% of their value overnight. In response, not only did the Dow drop more than 400 points (about 4.3%), but so did almost every other market in the world.

- Risk cuts across businesses: In contrast to earlier times, when risks tended to be sector focused, what happens in one sector increasingly has spillover effects on others. In early 2007, for instance, the laxity with which credit had been offered to customers with poor credit histories opened up that entire market, called the sub-prime loan market to a potential shakeout. Analysts following Yahoo, the internet search company, worried that its revenues and earnings would be hurt because so much of the advertising on web sites comes from lenders in the sub-prime market.
- The Emergence of Financial Market Risk: As firms have flocked to financial markets to raise both debt and equity and become increasingly sophisticated in their use of the derivatives markets, they have also made themselves more vulnerable volatility in these markets. A firm with healthy operations can be put on the defensive because of unanticipated turbulence in financial markets. Across the worlds, firms are finding that risk can and often does come from financial rather than product markets.

As risks become more international, spread across sectors and encompass both financial and product markets, it should be no surprise that firms are finding fewer and fewer safe havens. As little as 20 years ago, there were still firms that operated in relatively secure habitats, protected by governments or geography against competition. They could predict their revenues and earnings with a fair degree of certainty and could make their other decisions on how much to borrow or pay in dividends accordingly. In the United States, there were large sections of the economy that were insulated from risk; the regulated phone and power companies may not have had stellar growth but they did have solid earnings. In Europe, protection from foreign competition allowed domestic companies in each country to preserve market share and profits even in the face of more efficient competitors overseas.

There is one final point to be made about the ubiquity of risk. In the last decade especially, it can be argued that the balance of power between businesses and consumers has shifted decisively in the consumer's favor. Armed with better information and more choices, consumers are getting better terms and, in the process, lowering profits and increasing risk for businesses.

*Risk Management 1 : Your biggest risks will come from places that you least expect them to come from and in forms that you least expected them to take. The essence of good risk management is to be able to roll with the punches, when confronted with the unexpected.*

## **2. Risk is threat and opportunity**

In chapter 2, we presented the Chinese symbol for risk as the combination of danger and opportunity. Again and again, we have returned to this theme with a variety of examples. Market volatility can ruin you or make you wealthy. Changing customer tastes can lay your entire market to waste or allow you to dominate a market. Business failures and large losses come from exposures to large risks but so do large profits and lasting successes.

The trouble with risk management is that people see one side or the other of risk and respond accordingly. Those who see the bad side of risk, i.e. the danger side, either argue that it should be avoided or push for protection (through hedging and insurance) against it. On the other side are those who see risk as upside and argue for more risk taking, not less. Not surprisingly, their very different perspectives on risk will lead these groups to be on opposite sides of almost every debate, with the other side tarred as either “stuck in the mud” or “imprudent”.

Risk is a combination of potential upside with significant downside and requires a more nuanced approach. If we accept the proposition that we cannot have one (upside) without the other (downside), we can become more realistic about how we approach and deal with risk. We can also move towards a consensus on which risks we should seek out, because the upside exceeds the downside, and which risks are imprudent, not because we do not like to take risk but because the downside exceeds the upside.

*Risk Management 2: Risk is a mix of upside and downside. Good risk management is not about seeking out or avoiding risk, but about maintaining the right balance between the two.*

### **3. We are ambivalent about risks and not always rational about the way we assess or deal with risk.**

In keeping with risk being a combination of danger and opportunity, we, as human beings, have decidedly mixed feelings about its existence. On the one hand we fear it and its consequences while on the other we seek it out, hoping to share in the profits. We see this in the behavior of both investors and businesses, as they seesaw wildly from taking too much risk in one period to too little in the next.

While the traditional theory on risk has been built on the premise of the “risk averse” rational investor with a well-behaved preference function, studies of actual risk taking behavior suggest that our attitudes towards risk taking are more complicated. To begin with, it is true that we are generally risk averse, but the degree of risk aversion varies widely across the population. More troublingly, though, risk aversion seems to vary for the same individual, depending upon how choices are framed and the circumstances of the choice. For instance, an individual who is normally risk averse can become risk seeking when given a chance to make back money lost on a prior gamble. In fact, behavioral economics and finance have developed as disciplines largely on the basis of findings such as these that suggest that our behavior when confronted with risk is not always rational, at least as defined in classical economics, and often predictable.

*Risk Management 3: Managing risk is a human endeavor and a risk management system is only as good as the people manning it.*

### **4. Not all risk is created equal**

Risk comes from different sources, takes different forms and has different consequences but not all risk is created equal when it comes to how it affects value and it should be managed. To provide one very concrete example, most conventional risk and return models draw a line between risks that affect one or a few firms and are thus diversifiable and risks that affect many or all firms and are not diversifiable. Only the latter risk is rewarded in these models, on the assumption that investors in firms are diversified and can mitigate their exposure to the former.

In fact, there are a number of other dimensions on which we can categorize risk with implications for risk management.

- Small versus Large Risks: Risks can be small or large, depending upon the potential impact that they can have on a firm's value. A small risk can be ignored or passed through to investors with little or no worry, but a large risk may need to be assessed and managed carefully because of its potential to cause the firm's demise. Given that size is relative, it is entirely possible that the same risk can be small to one firm (say GE or Siemens) while being large to another.
- Symmetric versus Asymmetric risks: While we described risk as a combination of danger and opportunity, the upside and the downside are not necessarily symmetric. Some risks offer a small chance of a "very large" upside with a high probability of a "limited downside" whereas other risks offer the opposite combination. Why would it matter? In addition to feeding into some established quirks in risk aversion (loss aversion and a preference for large positive payoffs, for instance), it has implication for whether the risk will be managed (risks with very large downside are more likely to be insured, even if the probability is small) and how we manage it (whether we use derivatives, futures or insurance).
- Short term versus Long term: There are some risks that manifest themselves in the near term whereas other risks take longer to have an effect on firm value. Depending upon what they see as their competitive advantages, firms may try to exploit long term risks and protect themselves against short term risks.
- Continuous versus Discontinuous: There is some risk that firms are exposed to continuously and have consequences over even small time periods – exchange rates can change and interest rates can move up or down over the next minute. Other risks, such as damage from a terrorist incident or a hurricane, occur infrequently but can create significant damage. While different risk hedging tools exist for each, it can be argued that discontinuous risk is both more damaging and more difficult to hedge.

Earlier in the book, we suggested that a risk inventory, where we listed all potential risks facing a firm, was a good beginning to the risk management process. Breaking the risks down into its components – firm specific or market, small or large, symmetric or asymmetric (and if so in what way), continuous versus discontinuous and short term or long term – will make the risk inventory a more useful tool in risk management.

Finally, the saying that risk is in the eye of the beholder does have a foundation. After all, we can look at the risk in an investment through the eyes of the immediate decision makers (the line managers), their superiors (the top managers) or investors in that firm (who are often mutual funds or pension funds). As a generalization, risks that seems huge to middle managers may not seem as large to top managers, who bring a portfolio perspective to the process, and be inconsequential to investors in the firm, who have the luxury of having diversification work its wonders for them.

*Risk Management 4: To manage risk right, you have to pick the right perspective on risk and stay consistent through the process to that perspective. In other words, if you choose to view risk through the eyes of investors in the firm, you will assess and behave accordingly.*

## **5. Risk can be measured.**

There is a widespread belief even among risk managers that some risks are too qualitative to be assessed. This notion that some risks cannot be evaluated, either because the likelihood of occurrence is very small or the consequences too unpredictable can be dangerous, since these are exactly the types of risks that have the potential to create damage. As we have argued through this book, the debate should be about what tools to use to assess risk rather than whether they can be assessed. At the risk of sounding dogmatic, all risks can and should be assessed, though the ease and method of assessment can vary across risks.

There are two keys to good risk assessment. The first is better quality and more timely information about the risks as they evolve, so that the element of surprise is reduced. The second is tools such as risk-adjusted discount rates, simulations, scenario analysis and VaR to convert the raw data into risk measures. On both, it can be argued that we are better off than we were in earlier generations. There is more information available to decision makers, with a larger portion of it being provided in real time. The tools available have also become more accessible and sophisticated, with technology lending a helping hand. Thus, a Monte Carlo simulation that would have been required the services of a mainframe computer and been prohibitively costly thirty years ago can be run on a personal computer with a very modest outlay.

The advances in risk assessment should not lead to false complacency or to the conclusion that risk management has become easier as a consequence for three reasons. First, as we noted earlier in this chapter, the risks being assessed are also becoming more global and complex and it is an interesting question as to whether the improvements in information and assessment are keeping up with the evolution of risk. Second, risk management is still a relative game. In other words, it is not just how well a business or investor assesses risk that matters, but how well it does it relative to the competition. The democratization of information and tools has leveled the playing field and made it possible for small firms to take on much larger and more resource-rich competitors. Third, as both the data and the tools become more plentiful, picking the right tool to assess a risk (and it can be different for different risks) has become a more critical component of success at risk management.

*Risk Management 5: To pick the right tool to assess risk, you have to understand what the tools share in common, what they do differently and how to use the output from each tool.*

## **6. Good risk measurement/assessment should lead to better decisions**

Superior information and the best tools for risk assessment add up to little, if they do not lead to better decisions when faced with risk. In many businesses, those who assess risk are not necessarily those who make decisions (often based on those risk assessments) and this separation can lead to trouble. In particular, risk assessment tools are often not tailored to the needs of decision makers and are often misread or misused as a consequence.

The problems have their roots in why we assess risk in the first place. There are some who believe that assessing risk is equivalent to eliminating it and thus feel more secure with an analysis that is backed up by a detailed and sophisticated risk assessment. There are others who use risk assessments, not to make better decisions, but as cover, if things do not work out as anticipated. Still others think that risk assessment will make them more comfortable, when they have to make their final judgments. The reality is that risk assessment makes us aware of risk but does not eliminate it, and cannot be used as an excuse for poor decisions. Finally, the irony of good risk assessment is that it may

actually make you more uncomfortable as a decision maker rather than less; more information can often lead to more uncertainty rather than less.

For risk assessments to lead to better decisions, there are three things that we need to do better:

(1) If risk is assessed and decisions are made by different entities, each one has to be aware of the other's requirements and preferences. Thus, risk assessors have to understand what decision makers see as the major issues, and tailor both the tools chosen and the output to these needs and constraints. At the same time, those who make decisions have to recognize the flaws and limitations of the information used by risk assessors and understand at least the broad contours of the tools being used to assess risk.

(2) The risk assessment tools have to be built around the risks that matter rather than all risks. As we noted in an earlier section, we are faced with dozens of risks, of different types and with different consequences and some of these risks matter far more than others. Keeping risk assessment focused on that which matters will make it more useful to decision makers; a shorter, more focused risk assessment is more useful than one that is comprehensive but rambling.

(3) Risk assessment should not become an exercise in testing out only the downside or the bad side of risk, even though that may be what worries decision makers the most. A good risk assessment will hold true to the complete measure of risk and provide a picture of both upside potential and downside risk.

In short, for risk assessment to work, decision makers need to both understand and be involved in the risk assessment process, and risk assessors should not be shut out of the decision making process. The fact that the former tend to be higher in the management hierarchy can make this a difficult task.

*Risk Management 6: The tools to assess risk and the output from risk assessment should be tailored to the decision-making process, rather than the other way around.*

## **7. The key to good risk management is deciding which risks to avoid, which ones to pass through and which ones to exploit.**

Investors and businesses face a myriad of risks and it is easy to be overwhelmed. The theme of the last three chapters is that at good risk management is that some of this

risk should be passed through to investors, that some of it should be hedged and insured and that some should be actively sought out and used as a source of competitive advantage. Firms that are good at apportioning the risks they face to the right boxes have much better odds of succeeding.

The underlying fundamentals for making these choices are not complicated. You begin with the judgment on which risk or risks you want to exploit because you believe you have an advantage – better information, speedier response, more flexibility or better resources – over your competition. Looking at the risks you choose not to exploit, you have to weigh the costs of protecting yourself against a risk against the potential benefits from the protection – tax benefits, lower distress costs and a more rational decision making process. There are some risks that you may be able to reduce or eliminate through the normal course of your operations and thus are costless to hedge, but there are other risks that are costly to hedge. For these risks, the choice becomes complicated especially for publicly traded companies, since they have to compare the costs that they, as companies, would face to the costs that investors in their companies would face to eliminate the same risks. It is this comparison that would lead us to conclude that publicly traded firms are usually better off passing through a significant portion of their firm-specific risk and even exchange rate risk to their investors, rather than incur costs to hedge them. There are some risks, though, where the company is in a better position than its investors in assessing and hedging the risks. For instance, Boeing has much more information about its exchange rate risk exposure on individual contracts with foreign airlines than its investors, and be able to hedge those risks more efficiently.

*Risk Management 7: Hedging risk is but a small part of risk management. Determining which risks should be hedged, which should not and which should be taken advantage is the key to successful risk management.*

### **8. The payoff to better risk management is higher value.**

Risk managers are measured and judged on a number of different dimensions, but the only dimension that matters is how it impacts the value of the business. Good risk management increases value, whereas bad risk management destroys value. Choosing any other measure or objective can only distort the process. Consider a few alternatives.

If the success of risk management is measured by how much risk it eliminates from the process, the logical end product is that too little risk will be exploited and too much hedged. That is why firms that focus on reducing earnings or stock price volatility or the deviation from analyst forecasts will end up mismanaging risk. What about a higher stock price? It is true that in an efficient market, stock price and the value of equity move hand in hand, but there are two problems with a stock-price focus. The first is that in an inefficient market, where investors may focus on the short term or on the wrong variables (earnings variability, for instance) there may be a positive market response to poor risk management decisions. That response will fade over time, but the managers who made the decisions would have been rewarded and have moved on (or up) by then. The second is that the value of a business includes the value of its equity and other claimholders in the firm (lenders, in particular). Decisions relating to risk often alter the balance between debt and equity, and can sometimes make stockholders better off at the expense of lenders. Hence, the focus should be on the value of the business in its entirety rather than just the equity investors.

So, how do we link risk management to value? To begin with, we need much richer valuation models than the ones in use that tend to put all of the focus (at least when it comes to risk) on the discount rate. All of the inputs in a conventional valuation model, as we explained in chapter 9, from cash flows to growth rates to the length of the growth period should be a function of how well risk is managed in the firm. Only then can we see the full impact on value of increasing exposure to some risks and the consequences of hedging or passing through others. Given that most analysts value firms using earnings multiples and comparables, we need to also consider ways in which we can incorporate the full effects of risk management into these comparisons as well. Finally, it is worth exploring, as in chapter 8, how the tools in the real option tool kit can be used to capture the upside potential for risk.

*Risk Management 8: To manage risk right, you have to understand the levers that determine the value of a business.*

## **9. Risk management is part of everyone's job**

For decades, risk management was viewed as a finance function, with the CFO playing the role of risk measurer, assessor and punisher (for those who crossed defined risk limits). In keeping with this definition, risk management become focused entirely on risk assessment and risk hedging. The elevation of strategic risk management or enterprise risk management in businesses, with its willingness to consider the upside of risk, has come with one unfortunate side cost. Many firms have a person or group in charge of risk management, given primary responsibility for coordinating and managing risk through the organization. While we applaud the recognition given to risk management, it has also led others in the firm, especially in the other functional areas, to think that the existence of a risk management group has relieved them of the responsibility of having to play a role in managing risk.

While there are some aspects of risk management – risk assessment mechanics and hedging – that may be finance-related and thus logically embedded in treasury departments, there are many aspects of risk management, especially risk taking, that cut across functional areas. Taking advantage of shifts in customer tastes for a retailer requires the skills of the marketing and advertising departments. Exploiting technological change to revamp production facilities is not something that the treasury department can do much about but is more the domain of the operations department. In short, every decision made by a firm in any functional area has a risk management component. While we need a centralized group to aggregate these risks and look at the portfolio, individual decision makers have to be aware of how their decisions play out in the big picture.

*Risk Management 9: Managing risk well is the essence of good business practice and si everyone's responsibility.*

## **10. Successful risk taking organizations do not get there by accident**

As we have noted through this chapter and, in fact, all through the book, a lot of moving pieces have to work together consistently for risk management to succeed. The challenge is greater if the success has to be repeated period after period. Not surprisingly, firms that succeed at risk management plan for and are organize to deliver that success.

In chapter 11, we laid out some of the ingredients of the consistently successful risk taking organization:

- a. Alignment of interests: The key challenge in any firm, especially a large publicly traded one, is that decision making is spread through the organization and different decision makers have different interests. Some managers are motivated by rewards, in compensation tied to profits or stock prices, whereas others may be motivated by fear – that failure may lead to loss of a job. The decisions that they make may reflect those desires or fears and have little to do with what is good for the overall business. To the extent that the interests of different decision makers within the firm can be aligned with those of the owners of the firm with carrots (equity options, stock grants etc) or sticks (stronger corporate governance), risk management has a much better chance of succeeding.
- b. Good and timely information: Information is the lubricant for good risk management. If reliable information can be provided in a timely fashion to decision makers who are confronted with risk, they can (though they don't always do) make better decisions. The question of how best to design information systems in the last decade has sometimes becomes a debate about information technology but really should be focused on improving the response to risk. The test of a good information system should be how well it works during crises at delivering needed information to analysts and decision makers.
- c. Solid analysis: Information, even if it is reliable and timely, is still just data. That data has to be analyzed and presented in a way that makes better decisions possible. Having access to analytical tools such as decision trees and simulations is part of the process but understanding how the tools work and choosing between them is the more difficult component of success.
- d. Flexibility: If there is one common theme shared by all successful risk takers, it is that they are flexible in their responses to change. They adapt to changed circumstances faster than their competitors, either because they built in flexibility into their original design or because they have the technological or financial capacity to do so. Having a flat organizational structure, being a smaller organization or having less vested in existing technologies all seem to be factors that add to flexibility.

- e. People: Ultimately, good risk management is dependent on having the right people in the right places when crisis strikes. Good risk taking organizations seek out people who respond well to risk and retain them with a combination of financial rewards (higher pay, bigger bonuses) and non-financial incentives (culture and team dynamics),

*Risk Management 10: To succeed at risk management, you have to embed it in the organization through its structure and culture and get the right people.*

## **Conclusion**

As the interconnections between economies and sectors has increased and become more complex, firms have become more exposed to risk and the need to manage this risk has increased concurrently. While this increasing exposure to change has put firms at risk, it has also opened up new frontiers that they can exploit to profit. Risk is after all a combination of threat and opportunity.

Risk management as a discipline, has evolved unevenly across different functional areas. In finance, the preoccupation has been with the effect of risk on discount rates and little attention has been paid to the potential upside of risk until recently; real options represent the first real attempt to bring in the potential profits of being exposed to risk. In strategy, risk management has been a side story to the main focus on competitive advantages and barriers to entry. In practice, risk management at most organizations is splintered, with little communication between those who assess risk and those who make decisions based upon those risk assessments.

This book is an attempt to bridge the chasm not only between different functional areas = finance, strategy and operations – but also between different parts of organizations where the responsibility for risk management lie today. In the process, it makes the argument that good risk management lies at the heart of successful businesses everywhere.

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