

STRATEGIC RISK MANAGEMENT

Why would risk-averse individuals and entities ever expose themselves intentionally to risk and increase that exposure over time? One reason is that they believe that they can exploit these risks to advantage and generate value. How else can you explain why companies embark into emerging markets that have substantial political and economic risk or into technologies where the ground rules change on a day-to-day basis? By the same token, the most successful companies in every sector and in each generation – General Motors in the 1920s, IBM in the 1950s and 1960s, Microsoft and Intel in the 1980s and 1990s and Google in this decade- share a common characteristic. They achieved their success not by avoiding risk but by seeking it out.

There are some who would attribute the success of these companies and others like them to luck, but that can explain businesses that are one-time wonders – a single successful product or service. Successful companies are able to go back to the well again and again, replicating their success on new products and in new markets. To do so, they must have a template for dealing with risk that gives them an advantage over the competition. In this chapter, we consider how best to organize the process of risk taking to maximize the odds of success. In the process, we will have to weave through many different functional areas of business, from corporate strategy to finance to operations management, that have traditionally not been on talking terms.

Why exploit risk?

It is true that risk exposes us to potential losses but risk also provides us with opportunities. A simple vision of successful risk taking is that we should expand our exposure to upside risk while reducing the potential for downside risk. In this section,, we will first revisit the discussion of the payoff to risk taking that we initiated in chapter 9 and then look at the evidence on the success of such a strategy.

Value and Risk Taking

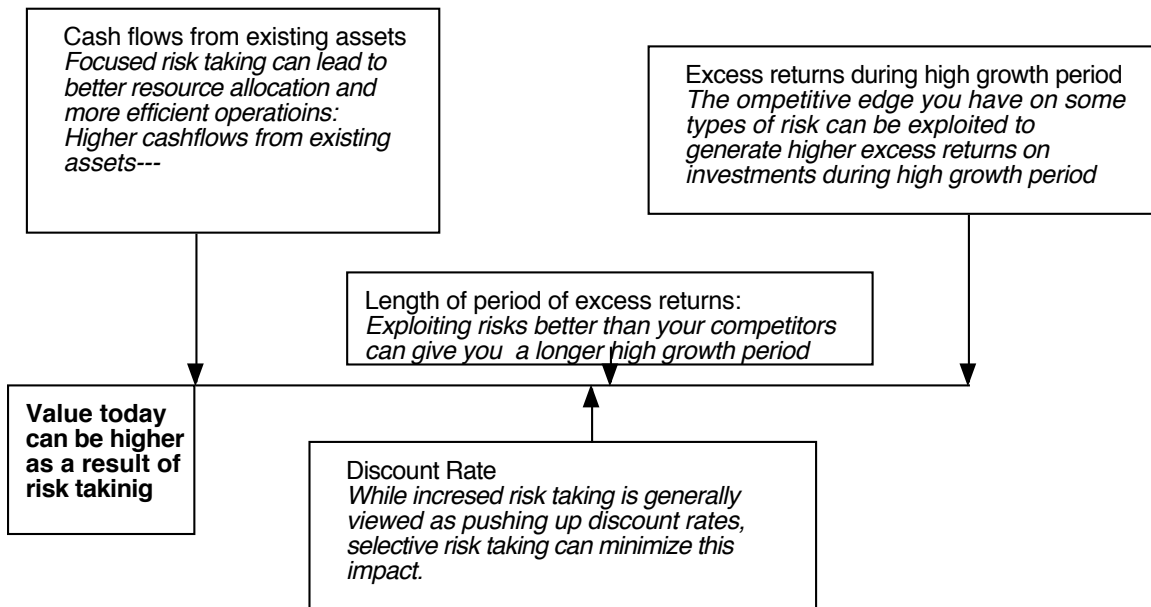
It is simplest to consider the payoff to risk in a conventional discounted cash flow model. The value of a firm is the present value of the expected cash flows, discounted back at a risk-adjusted rate and derives from four fundamentals – the cash flows from

existing investments, the growth rate in these cash flows over a high-growth period accompanied usually by excess returns on new investments, the length of this high growth period and the cost of funding (capital) both existing and new investments. In this context, the effects of risk taking can manifest in all of these variables:

- The cash flows from existing investments reflect not only the quality of these investments and the efficiency with they are managed, but also reflect the consequences of past decisions made by the firm on how much risk to take and in what forms. A firm that is more focused on which risks it takes, which ones it avoids and which ones it should pass through to its investors may be able to not only determine which of its existing investments it should keep but also generate higher cash flows from these investments. A risk-averse company that is excessively cautious when investing will have fewer investments and report lower cash flows from those investments.
- The excess returns on new investments and the length of the high growth period will be directly affected by decisions on how much risk to take in new investments and how well is both risk is assessed and dealt with. Firms that are superior risk takers will generate greater excess returns for longer periods on new investments.
- The relationship between the cost of capital and risk taking will depend in large part on the types of risks taken by the firm. While increased exposure to market risk will usually translate into higher costs of capital, higher firm-specific risk may have little or no impact on the costs of capital, especially for firms with diversified investors. Being selective about risk exposure can minimize the impact on discount rates.

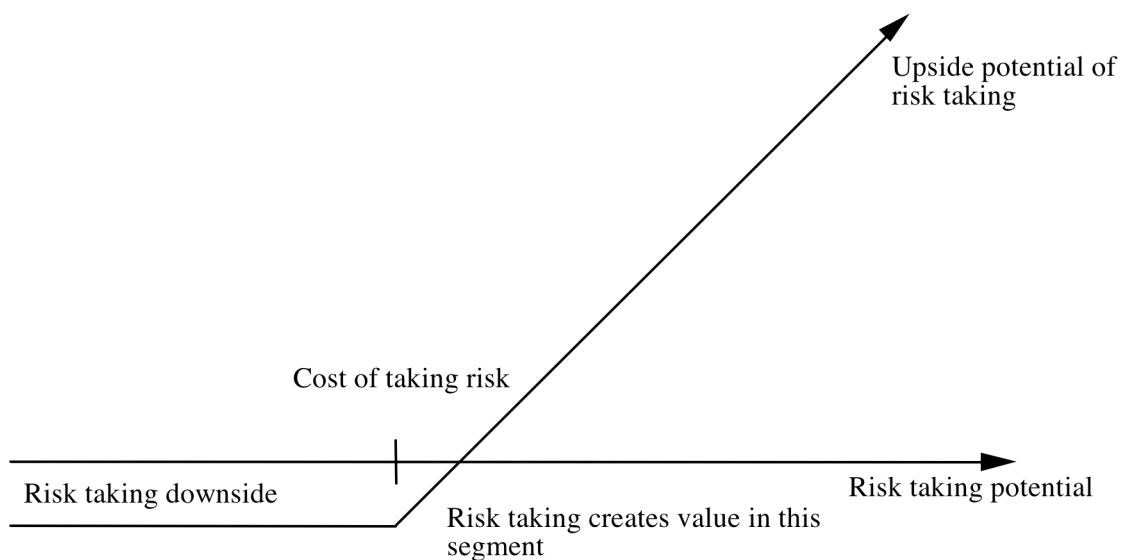
The final and most complete measure of good risk taking is whether the value of a firm increases as a consequence of its risk taking, which, in turn, will be determined by whether the positive effects of the risk taking – higher excess returns over a longer growth period – exceed the negative consequences – more volatile earnings and a potentially higher cost of capital. Figure 11.1 captures the effects of risk taking on all of the dimensions of value.

Figure 11.1: Risk Taking and Value



The other way to consider the payoff to risk taking is to use the real options framework developed in chapter 8. If the essence of good risk taking is that you increase your share of good risk – the upside- while restricting your exposure to bad risk – the downside – it should take on the characteristics of a call option. Figure 11.2 captures the option component inherent in good risk taking:

Figure 11.2: Risk Taking as a Call Option



In other words, good risks create significant upside and limited downside. This is the key to why firms seek out risk in the real options framework, whether it is in the context of higher commodity price volatility, if you are an oil or commodity company with undeveloped reserves, or more uncertain markets, if you are a pharmaceutical company considering R&D investments. If we accept this view of risk taking, it will add value to a firm if the price paid to acquire these options is less than the value obtained in return.

Evidence on Risk Taking and Value

It is easy to find anecdotal evidence that risk taking pays off for some individuals and organizations. Microsoft took a risk in designing an operating system for a then nascent product – the personal computer- but it paid off by making the company one of the most valuable businesses in the world. Google also took a risk when it deviated from industry practice and charged advertisers based on those who actually visited their sites (rather than on total traffic), but it resulted in financial success.¹ The problem with anecdotal evidence is that it can be easily debunked as either luck – Microsoft and Google happened to be at the right place at the right time - or by providing counter examples of companies that took risks that did not pay off – IBM did take a risk in entering the personal computer business in the 1980s and had little to show for this in terms of profitability and value.

The more persuasive evidence for risk taking generating rewards comes from looking at the broader cross section of all investors and firms and the payoff to risk taking and that evidence is more nuanced. On the one hand, there is clear evidence that risk taking collectively has led to higher returns for both investors and firms. For instance, investors in the United States who chose to invest their savings in equities in the twentieth century generated returns that were significantly higher than those generated by investors who remained invested in safer investments such as government and corporate bonds. Companies in sectors categorized as high risk, with risk defined either in market terms or in accounting terms, have, on average, generated higher returns for investors than lower risk companies. There is persuasive evidence that firms in sectors with more

volatile earnings or stock prices have historically earned higher returns than firms in sectors with stable earnings and stable stock prices. Within sectors, there is some evidence albeit mixed, that risk taking generates higher returns for firms. A study of the 50 largest U.S. oil companies between 1981 and 2002, for instance, finds that firms that take more risk when it comes to exploration and development earn higher returns than firms that take less.²

On the other hand, there is also evidence that risk taking can sometimes hurt companies and that some risk taking, at least on average, seems foolhardy. In a widely quoted study in management journals, a study by Bowman uncovered a negative relationship between risk and return in most sectors, a surprise given the conventional wisdom that higher risk and higher returns go hand-in-hand, at least in the aggregate.³ This phenomenon, risk taking with more adverse returns, has since been titled the “Bowman paradox” and has been subjected to a series of tests. In follow up studies, Bowman argued that a firm’s risk attitudes may influence risk taking and that more troubled firms often take greater and less justifiable risks.⁴ A later study broke down firms into those that earn below and above target level returns (defined as the industry-average return on equity) and noted a discrepancy in the risk/return trade off. Firms that earned below the target level became risk seekers and the relationship between risk and return was negative, whereas returns and risk were positive correlated for firms earnings above target level returns.⁵

In conclusion, then, there is a positive payoff to risk taking but not if it is reckless. Firms that are selective about the risks they take can exploit those risks to advantage, but firms that take risks without sufficiently preparing for their consequences can be hurt badly. This chapter is designed to lay the foundations for sensible risk assessment, where

¹ Battelle, J., 2005, *The Search: How Google and its Rivals Rewrote the Rules of Business and Transformed our Culture*, Penguin Books, London.

² Wallis, M.R., 2005, *Corporate Risk Taking and Performance: A 20-year look at the Petroleum Industry*. Wallis estimates the risk tolerance measure for each of the firms in the sector by looking at the decisions made by the firms in terms of investment opportunities.

³ Bowman, E.H., 1980, A risk/return paradox for strategic management, *Sloan Management Review*, v21, 17-31.

⁴ Bowman, E.H, 1982, Risk Seeking by Troubled Firms, *Sloan Management Review*, v23, 33-42.

⁵ Fiengenbaum, A. and H. Thomas, 1988, Attitudes towards Risk and the Risk-Return Paradox: Prospect Theory Explanations, *Academy of Management Journal*, v31, 85-106.

firms can pick and choose from across multiple risks those risks that they stand the best chance of exploiting for value creation.

How do you exploit risk?

In the process of doing business, it is inevitable that you will be faced with unexpected and often unpleasant surprises that threaten to undercut and even destroy your business. That is the essence of risk and how you respond to it will determine whether you survive and succeed. In this section, we consider five ways in which you may be make use of risk to gain an advantage over your competitors. The first is access to better and more timely information about events as they occur and their consequences, allowing you to tailor a superior response to the situation. The second is the speed with which you respond to the changed circumstances in terms of modifying how and where you do business; by acting faster than your competitors, you may be able to turn a threat into an opportunity. The third advantage derives from your past experience with similar crises in the past and your knowledge of how the market was affected by those crises, enabling you to respond better than other firms in the business. The fourth derives from having resources – financial and personnel – that allow you to ride out the rough periods that follow a crisis better than the rest of the sector. The final factor is financial and operating flexibility; being able to change your technological base, operations or financial structure in response to a changed environment can provide a firm with a significant advantage in an uncertain environment. The key with all of these advantages is that you emerge from the crises stronger, from a competitive position, than you were prior to the crisis.

The Information Advantage

During the Second World War, cryptographers employed by the allied army were able to break the code used by the German and Japanese armies to communicate with each other.⁶ The resulting information played a crucial role in the defeat of German forces in Europe and the recapture of the Pacific by the U.S. Navy. While running a business may not have consequences of the same magnitude, access to good information

is just as critical for businesses in the aftermath of crises. In June 2006, for instance, the military seized power in Thailand in a largely bloodless coup while the prime minister of the country was on a trip to the United States. If you were a firm with significant investments in Thailand, your response would have been largely dependent upon what you believed the consequences of the coup to be. The problem, in crises like these, is that good intelligence becomes difficult to obtain, but having reliable information can provide an invaluable edge in crafting the right response.

How can firms that operate in risky businesses or risky areas of the world lay the groundwork for getting superior information? First, they have to invest in information networks – human intelligence as the CIA or KGB would have called it in the cold war era – and vet and nurture the agents in the network well ahead of crises. Lest this be seen as an endorsement of corporate skullduggery, businesses can use their own employees and the entities that they deal with – suppliers, creditors and joint venture partners – as sources of information. Second, the reliability of the intelligence network has to be tested well before the crisis hits with the intent of removing the weak links and augmenting its strengths. Third, the network has to be protected from the prying eyes of competitors who may be tempted to raid it rather than design their own. A study of Southern California Edison's experiences in designing an information system to meet power interruptions caused by natural disasters, equipment breakdowns and accidents made three general recommendations on system design:⁷

- (a) Have a pre-set crisis team and predetermined action plan ready to go before the crisis hits. This will allow information to get to the right decision makers, when the crisis occurs.
- (b) Evaluate how much and what types of information you will need for decision-making in a crisis, and investing in the hardware and software to ensure that this information is delivered in a timely fashion.

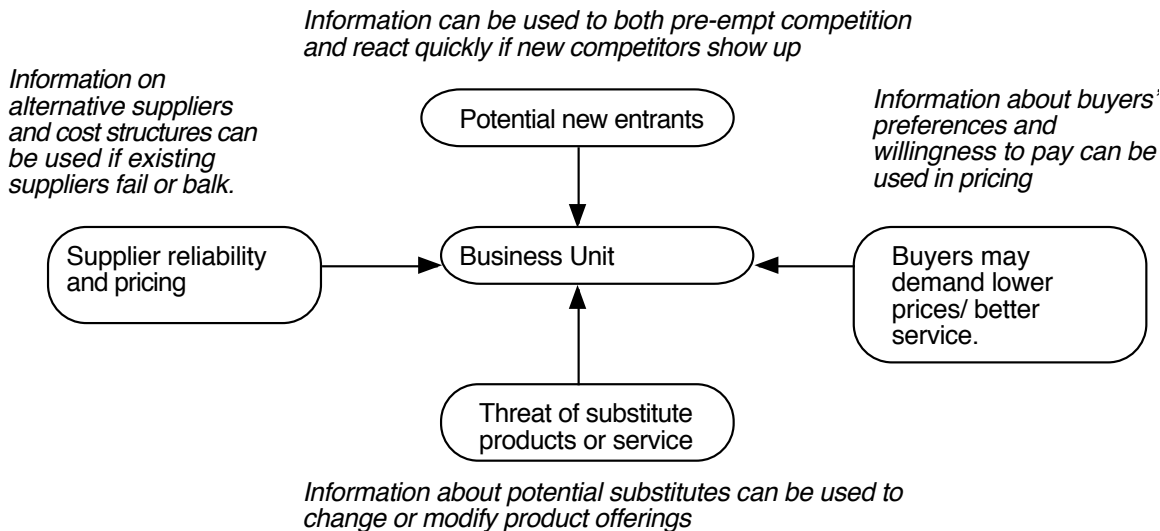
⁶ Code breakers at Bletchley Park solved messages from a large number of Axis code and cipher systems, including the German Enigma machine.

⁷ Housel, T.J., O.A. El Sawry and P.F. Donovan, 1986, Information Systems for Crisis Management: Lessons from

- (c) Develop early warning information systems that will trigger alerts and preset responses.

As companies invest billions in information technology (IT), one of the questions that should be addressed is how this investment will help in developing an information edge during crises. After all, the key objective of good information technology is not that every employee has an updated computer with the latest operating system on it but that information flows quickly and without distortion through the organization in all directions – from top management to those in the field, from those working in the trenches (and thus in the middle of the crisis) to those at the top and within personnel at each level. Porter and Millar integrate information technology into the standard strategic forces framework and argue that investments in information technology can enhance strategic advantages. In figure 11.3, we modify their framework to consider the interaction with risk:

Figure 11.3: Information Technology and Strategic Risks



As information becomes both more plentiful and easier to access, the challenge that managers often face is not that they do not have enough information but that there is too much and that it is often contradictory and chaotic. A study by the Economist Intelligence Unit in 2005 confirmed this view, noting that while information is everywhere, it is often disorganized and difficult to act on, with 55% of the 120 managers that they surveyed agreeing that information as provided currently is not adequately prioritized. The key to using information to advantage, when confronted with risk, is that

there be a screening mechanism that not only separates reliable from unreliable information but also provides decision makers with the tools to make sense of the information.

As a final point, it is worth emphasizing that having better information is one part of successfully exploiting risk but it is not a sufficient or even necessary pre-condition. A study of intelligence in military operations found that while good intelligence is a factor in success, it is only one factor, and there are cases where armies have failed despite having superior information and succeeded notwithstanding poor information.

The Speed Advantage

When case studies are written of effective responses to crises, whether they are political or economic, they generally highlight the speed of response. One reason Johnson and Johnson was able to minimize the damage ensuing from the Tylenol poisoning scare in the mid 1980s was that it removed bottles of the pills immediately from store shelves and responded with a massive public relations blitz, warning consumers about the dangers, while reassuring them that it had matters under control. In contrast, the Federal Emergency Management Administration (FEMA) was lambasted for the slowness with which it responded to the breaching of levies in New Orleans in 2005, in the aftermath of Hurricane Katrina. J&J's actions did not just reduce the costs from the tampering incident but the goodwill and credibility gained by their response might have actually made the incident a net benefit for them in the long term.⁸ In essence, the company turned into practice the adage that every threat is also an opportunity.

So, what determines the speed of the response? One factor is the quality of the information that you receive about the nature of the threat and its consequences – the information advantage that we noted in the last section is often a key part of reacting quickly. The second factor is recognizing both the potential short term and long-term consequences of the threat. All too often, entities under threat respond to the near term effects by going into a defensive posture and either downplaying the costs or denying the

⁸ Johnson and Johnson consistently has ranked at the top of firms for corporate reputation in the years since the Tylenol scare, showing that the way in which you respond to crises can have very long term consequences.

risks when they would be better served by being open about the dangers and what they are doing to protect against them. The third factor is understanding the audience and constituencies that you are providing the response for; Johnson and Johnson recognized that their key group that needed reassurance was not analysts worried about the financial consequences but potential future customers. Rather than downplay the threat, which would have been the response that reassured investors, the firm chose to take the highlight the potential dangers and its responses. While no one template works for every firm, the most successful respondents to crisis maintain a balance between stockholders, customers and potential or actual victims of the crisis.⁹

In effect, it is not just that you respond quickly to crises, but the appropriateness of the response that determines whether you succeed in weathering the crisis and emerging stronger from the experience. The organizational structure and culture of firms also seem to play a role in how effective they are at responding to challenges. An examination of the practices of Japanese manufacturers concluded that firms that responded quickly to market changes tended to share information widely across the organization and its partners and to have small teams that were allowed to make decisions without senior management overview.¹⁰ A study of the decision processes at four firms in the microcomputer industry, with the intent of uncovering the determinants of the speed of this response, found that firms that succeeded were able to straddle paradoxical positions: they were able to make decisions quickly but carefully, they had powerful CEOs who co-existed with a powerful top management team, and they made innovative and risky decisions while providing for safe and incremental implementation.¹¹

⁹ Firms often have to weigh the interests of stockholders against crisis victims. A study that looked at accidents found that stockholders suffer losses when managers are overly accommodating to victims in accidents, but that accommodation is often the best option when companies are embroiled in scandal (and thus cannot blame Mother Nature or external forces). Marcus, A.A. and R.S. Goodman, 1991, Victims and Shareholders: The Dilemma of Presenting Corporate Policy during a crisis, *Academy of Management Journal*, v34, 281-305.

¹⁰ Stalk, Jr., G., and T. M. Hout, 1990, *Competing Against Time: How Time-Based Competition Is Reshaping Global Markets*, The Free Press, New York.

¹¹ Bourgeois, L.J. and K.M. Eisenhardt, 1988, Strategic Decision Processes in High Velocity Environments: Four Cases in the Microcomputer Industry, *Management Science*, v34, 816-835.

The Experience/ Knowledge Advantage

While it is true that no two crises are exact replicas, it is also true that having experienced similar crises in the past can give you an advantage. In economies with high and volatile inflation, for instance, firms develop coping mechanisms ranging from flexible pricing policies to labor contracts that are tied to changing inflation. Thus, a surge in inflation that is devastating to competitors from more mature markets (with stable inflation) is taken in stride by these firms. In a similar vein, firms that are in *countries that are subject to frequent currency devaluations or real economic volatility organize themselves in ways that allow them to survive these crises.

How important is experience in dealing with crises? A study of political crises that looked at leaders as diverse as Talleyrand, Wellington, Bismarck, Metternich and Gromyko, whose stewardship extended across decades and multiple crises, concluded that their lengthy tenure in office made them better as crisis managers.¹² Studies of decision making by board members in a variety of different environments conclude that decisions are made more quickly if decision makers are more experienced.¹³ Finally, an analysis of the International Monetary Fund (IMF) as a crisis manager from its inception in 1944 until the peso crisis that hit Mexico in 1994 establishes a similar pattern of improvement, where the organization learned from its mistakes in initial crises to improve its management in subsequent ones. In summary, experience at both the individual and institutional level lead to better and quicker decisions when faced with risk.

How does a firm that does not operate in unstable environments and thus does not have the history acquire this experience? There are at least three possible routes:

- It can do so the painful way by entering new and unfamiliar markets, exposing itself to new risks and learning from its mistakes; this is the path that many multinational companies have chosen to take in emerging markets. Citigroup, Nestle and Coca Cola are all good examples of firms that have been successful

¹² Wallace, M.D. and P. Suedfeld, 1988, Leadership Performance in Crisis: The Longevity-Complexity Link, *International Studies Quarterly*, v 32, 439-451.

¹³ Judge, W.Q. and A. Miller, 1991, Antecedents and Outcomes of Decision Speed in Different Environmental Contexts, *Academy of Management Journal*, v34, 448-483. Similar results are reported in Vance, S.C., 1983, *Corporate Leadership: Boards, Directors and Strategy*, McGraw Hill, New York.

- with this strategy. The process can take decades but experience gained internally is often not only cost effective but more engrained in the organization.
- A second route is to acquire firms in unfamiliar markets and use their personnel and expertise, albeit at a premium. In recent years, this is the path that many firms in developed markets have adopted to enter emerging markets quickly. The perils of this strategy, though, are numerous, beginning with the fact that you have to pay a premium in acquisitions and continuing with the post-merger struggle of trying to integrate firms with two very different cultures. In fact, in the worst-case scenario, multinationals end up with target firms in new markets that are clones and drive away the very talent and experience that they sought to acquire in the first place. As a result of these and other factors, there is evidence that these acquisitions are more likely to fail than succeed.¹⁴
 - A third and possibly intermediate solution is to try to hire away or share in the experience of firms that have experience with specific risks. You can do the former by hiring managers or personnel who have crisis experience and the latter by entering into joint ventures. In 2006, Ebay provided an illustration of the latter by replacing its main web site in China, which had been saddled with losses and operating problems, with one run by Beijing-based Tom Online. When Ebay entered the Chinese market in 2002, it used its standard technology platform and centralized much of its decision-making in the United States, but found itself unable to adapt quickly the diversity and the speed of change in the market. Tom Online's expertise in the market and its capacity to move quickly were strengths that Ebay hoped to draw upon in their joint venture.

Even within markets, the importance of knowledge and experience can vary widely across sectors. Professional service firms such as consultants, investment banks and

¹⁴ Studies of cross border acquisitions find that the record of failure is high. A study of acquisitions by U.S. firms found that cross-border acquisitions consistently delivered lower returns and operating performance than domestic acquisitions; see Moeller, S.B, and F.P., Schlingemann, 2005, Global Diversification and Bidder Gains: A Comparison between Cross-border and Domestic Acquisitions, *Journal of Banking and Finance*, v29, 533-564.. Similar results have been reported for U.K firms (Chatterjee, R and M. Aw, 2000, The performance of UK firms acquiring large cross-border and domestic takeover targets, Judge Institute of Management Studies Research Paper WP07/00, Cambridge, United Kingdom.) and Canadian firms (Eckbo, B.E., and K.S. Thorburn, 2000, Gains to bidder firms revisited: Domestic and foreign

advertising agencies are built on the learning and experience that they have accumulated over time, and use the knowledge to attract more customers and to provide better services. In fact, Knowledge Management or KM is the study of how best to use this accumulated know-how and experience in growing and volatile markets as a competitive advantage.¹⁵ To provide an illustration of how firms are marrying accumulated knowledge with advances in information technology, consider the Knowledge On-Line (KOL) system devised by Booz Allen & Hamilton, the consulting firm. The system captures and shares the “best practices” of its more experienced consultants as well as synthesizing the ideas of its experts in ways that can be generalized across clients, with the intent of building on learning over time.

The Resource Advantage

Having the resources to deal with crises as they occur can give a company a significant advantage over its competitors. Consider, for instance, the market meltdown that occurred in Argentina in 2001, when the country defaulted on its foreign currency debt and markets essentially shut down. Companies that had the foresight to accumulate large cash balances and liquid assets before the crisis were not only able to survive but to also buy assets owned by more desperate competitors for cents on the dollar. Illustrating the two-tier system that has developed in many emerging markets, Argentine companies with depository receipts (ADRs) listed in the United States were able to use their continued access to capital to establish an advantage over their purely domestic counterparts. Having cash on hand or access to capital proved to be the defining factor in success in this crisis. There are other resources that firms can draw on to deal with risk, including human capital. An investment bank with more experienced and savvy traders is in a better position to survive a crisis in its primary trading markets and perhaps even profit from the risk.

The link between capital access – either through markets or by having large cash balances – and survival during crises is well established. A study of emerging market

acquisitions in Canada, *Journal of Financial and Quantitative Analysis*, 35(1), 1-25.)

companies that list depository receipts on the U.S. stock exchanges notes that the increased access to capital markets allowed these firms to be freer in their investment decisions and less sensitive to year-to-year movements in their cashflows.¹⁶ There was also a consequent increase in stock prices for these companies after cross listings. Similarly, studies of cash balances at companies finds evidence that cash holdings are higher at riskier companies in more unstable economies, primarily as protection against risk.¹⁷

How can firms go about establishing a capital advantage? For private businesses, it can come from being publicly traded, whereas for publicly traded firms, increased capital access can come from opening up their investor base to include foreign investors (by having foreign listings or depository receipts) and from expanding their debt from bank loans to include corporate bonds. Note that there is a cost associated with this increased access to capital; for private business owners, it is the potential loss of control associated with being publicly traded firms, whereas foreign listings, especially for emerging market companies, can increase the need and the cost of information disclosure as well as put pressure for better corporate governance. Similarly, holding a large cash balance listing may create costs for a company in non-crisis periods; the cash balance will generate low (though riskless) returns and may increase the likelihood that the firm will be taken over.

Flexibility

In the 1920s and 1930s, Ford and General Motors fought the early skirmishes in a decades long battle to dominate the automobile business. While Henry Ford introduced the Model T Ford, available in one color (black) and one model, and generated the

¹⁵ Surveys of consulting firms find that a very high percentage of them have tried to build knowledge management systems, marrying information technology advances with the expertise of the people working at these firms.

¹⁶ Lins, K., D. Strickland, and M. Zenner, 2005, Do non-U.S. firms issue equity on U.S. stock exchanges to relax capital constraints? *Journal of Financial and Quantitative Analysis*, 40, 109-134.

¹⁷ Custodio, C. and C. Raposo, 2004, *Cash Holdings and Business Conditions*, Working Paper, SSRN. This paper finds strong evidence that financially constrained firms adjust their cash balance to reflect overall business conditions, holding more cash during recessions. Firms that are not financially constrained also exhibit the same pattern, but the linkage is much weaker. Their findings are similar to those in another

benefits of economies of scale, General Motors adopted a different strategy. The company emphasized a more adaptable design, and a production line that could be revamped at short notice to reflect changing customer desires.¹⁸ The flexibility that GM acquired as a consequence allowed them to win that battle and dominate the business for several decades thereafter. In an ironic twist, as oil prices shot up in 2004 and 2005, and GM and Ford struggled to convince customers to keep buying their existing line of SUVs, minivans and other gas guzzlers, it was Toyota that was able to modify its production processes to speed up the delivery of its hybrid entry – the Toyota Prius – and put itself on a path to being the most profitable automobile manufacturer in the world. In both cases, being able to modify production, operating and marketing processes quickly proved key to being able to take advantage of risk.

While a flexible response to changing circumstances can be a generic advantage, it can take different forms. For some firms, it can be production facilities that can be adapted at short notice to produce modified products that better fit customer demand; this is the advantage that GM in the 1920s and Toyota in 2005 used to gain market share and profits. Alternatively, firms that have production facilities in multiple countries may be able to move production from one country to another, if faced with risks or higher costs.¹⁹ For other firms, it can be arise from keeping fixed costs low, thus allowing them to adjust quickly to changing circumstances; the budget airlines from Southwest to Ryanair have used this financial flexibility to stay ahead of their more cost burdened competitors. As with the other competitive advantages that facilitate risk taking, flexibility comes with a cost. A firm that adopts a more open and flexible operating or production process may have to pay more up front to develop these process or face higher per unit costs than a firm with a more rigid manufacturing process that delivers better economies of scale. Southwest Airlines, for instance, has traded off the lost revenues from using regional

paper by Baum, C.F., M. Caglayan, N. Ozkan and O. Talvera, 2004, *The Impact of Macroeconomic Uncertainty on Cash Holdings for Non-financial Service Firms*, Working Paper, SSRN.

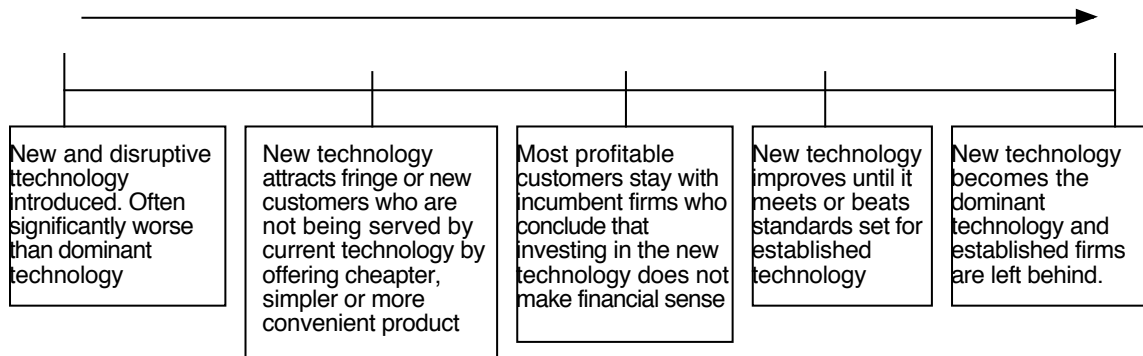
¹⁸ Alfred Sloan, the CEO of GM, introduced the concept of dynamic obsolescence, where designs and product characteristics were changed an annual basis, both to reflect changing customer tastes and to influence customers. At the same time, he also hired Harley Earl, a design genius, to invent a 'styling bridge' that would allow multiple models to share the same design, thus saving both cost and time in development.

¹⁹ Kogut, B. and N. Kulatilaka, 1994, Operating Flexibility, Global Manufacturing, and the Option Value of a Multinational Network, *Management Science*, v40, 123-139.

airports (such as Islip in New York and Burbank in Los Angeles) against the flexibility it obtains in costs and scheduling to establish an advantage over its more conventional competitors in the airline business. The value of preserving the flexibility to alter production schedules and get into and out of businesses has been examined widely in the real options literature, presented in more detail in chapter 8.

In the late 1990s, corporate strategists led by Clayton Christensen at Harvard presented the idea of disruptive innovations, i.e., innovations that fundamentally change the way in which a business is done, and argued that established firms that generate profits from the established technologies are at a disadvantage relative to upstarts in the business.²⁰ Christensen distinguished between two types of disruption – “low end disruption” targeted at customers who do not need the performance valued by customers at the high end (and do not want to pay those prices) and “new market disruption” targeting customers not served by existing businesses. He used the disk drive business to illustrate his case and presented the process through which a new technology displaces an existing one in five steps (shown in figure 11.4):

Figure 11.4: Disruptive Technology
The triumph of disruptive technology



Christensen’s thesis was a provocative one since it suggested that past successes in a business can conspire against a company that tries to adapt to new technology or changes

²⁰ Christensen, Clayton M. (1997). *The Innovator's Dilemma*. Harvard Business School Press. He makes five points about disruptive technologies: (1) Initially, the disruptive technology under performs the dominant one (2) They serve a few fringe and new customers with products that are cheaper, simpler, smaller or more convenient than existing products (3) The disruptive technology initially is targeted at small and less profitable markets and thus not viewed as a threat by established companies (4) The disruptive technology improves over time until it matches or even beats the dominant technology (5)

in the way business is done. As an example of disruptive technology, consider the growth of the University of Phoenix, an online university aimed at part time and working students who wanted a university degree at relatively low cost (in both time and resources). Their established competitors – conventional universities – have too much invested in the traditional form of schooling, and consider an online university degree to be sub-standard relative their own offerings, to offer much of a challenge. The interesting question is whether online universities will be able to use technology to ultimately challenge universities at their own game and eventually beat them. Those in the disruptive technology school were also able to buttress their arguments by pointing to the advent of online businesses in the dot-com boom and the incapacity of conventional companies to contest young start-ups; Amazon.com was able to take business away from brick and mortar retailers because it could invest itself fully to online retailing, whereas its more established competitors had to weigh the costs created for its existing businesses.

While the message delivered by studies of disruptive technologies is sobering for established companies, there are ways in which a few of them have learned to thrive even as markets, products and technologies change. In an examination of 66 consumer markets and the survivors and failures within these markets, Tellis and Golder conclude that incumbent companies that survive and beat back upstarts tend to share several characteristics: they prize innovation and are paranoid about challenges and they are also willing to cannibalize existing product lines to introduce new ones.²¹ For the former, they provide the examples of Procter and Gamble, Intel and Microsoft and Gillette's willingness to undercut its own shaving market with new razors is offered as an illustration of the latter. An alternative path to success was provided by Apple Computers and its success with both iTunes, a clearly disruptive technology that upended the traditional music retailing business, and the iPod. First, Apple chose to target businesses outside of their own traditional domain, thus reducing the cost to existing business; Apple was primarily a computer hardware and software company when it entered the music business. Second, Apple created an independent "iTunes" team to make decisions on the music business that would not be contaminated by the history, culture or business

²¹ Tellis, Gerard J. and Golder, Peter N. (2001). *Will and Vision: How Latecomers Grow to Dominate Markets*. New York: McGraw Hill.

concerns of the computer business. In effect, it created a small, independent company internally, with its innovative zeal and energy, while preserving the resources of a much larger enterprise.

Building the Risk Taking Organization

Firms that gain an advantage from risk taking do not do so by accident. In fact, there are key elements that successful risk-taking organizations have in common. First, they succeed in aligning the interests of their decision makers (managers) with the owners of the business (stockholders) so that firms expose themselves to the right risks and for the right reasons. Second, they choose the right people for the task; some individuals respond to risk better than others. Third, the reward and punishment mechanisms in these firms are designed to punish bad risk taking and encourage good risk taking. Finally, the culture of the organizations is conducive to sensible risk taking and it is structured accordingly. In this section, we consider all four facets in detail.

Corporate Governance

If there is a key to successful risk taking, it is to ensure that those who expose a business to risk or respond to risk make their decisions with a common purpose in mind – to increase the value of their businesses. If the interests of the decision makers are not aligned with those of those who own the business, it is inevitable that the business will be exposed to some risks that it should not be exposed to and not exposed to other risks that it should exploit. In large publicly traded firms, this can be a difficult task. The interests of top management can diverge from those of middle management and both may operate with objectives that deviate significantly from the stockholders in and the lenders to the corporation.

In recent years, we have seen a spirited debate about corporate governance and why it is important for the future of business. In particular, proponents of strong corporate governance argued that strengthening the oversight that stockholders and directors have over managers allows for change in badly managed firms and thus performs a social good. There is also a risk-related dimension to this discussion of corporate governance. At one end of the spectrum are firms where managers own little or

no stake in the equity and make decisions to further their own interests. In such firms, there will be too little risk taking because the decision makers get little of the upside from risk (because of their limited or non-existent equity stakes) and too much of the downside (they get fired if the risk does not pay off). A comparison of stockholder controlled and management controlled banks found that stockholder controlled banks were more likely to take risk.²² In general, managers with limited equity stakes in firms not only invest more conservatively but are also more likely to borrow less and hold on to more cash. At the other end of the spectrum are firms where the incumbent managers and key decision makers have too much of their wealth tied up in the firm. These insider-dominated firms, where managers are entrenched, tend to take less risk than they should for three reasons:

- The key decision makers have more of their own wealth tied up in the firm than diversified investors. Therefore, they worry far more about the consequences of big decisions and tend to be more leery of risk taking; the problem is accentuated when voting rights are disproportionately in incumbent managers hands.
- Insiders who redirect a company's resources into their own pockets behave like lenders and are thus less inclined to take risk. In other words, they are reluctant to take on risks that may put their perquisites at peril.
- Firms in countries where investors do not have much power also tend to rely on banks for financing instead of capital markets (stock or bonds), and banks restricts risk taking

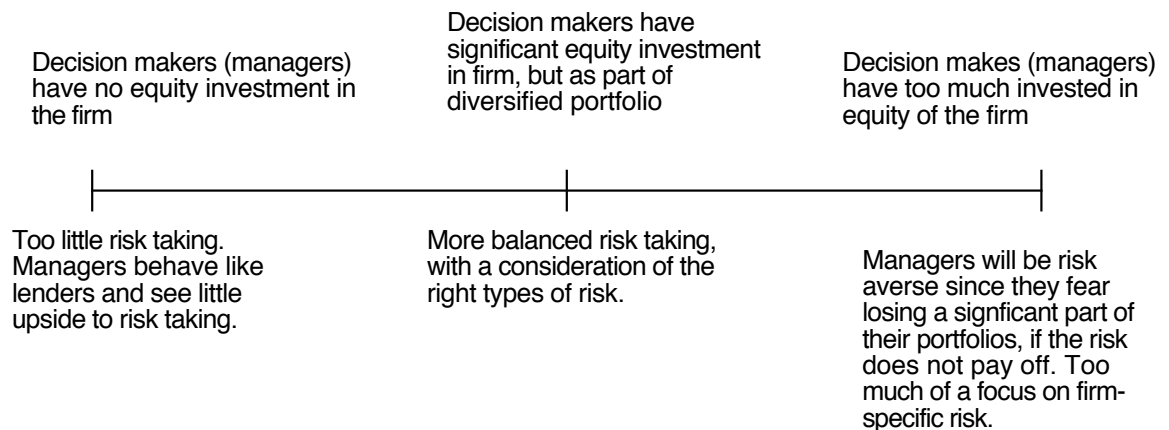
The link between corporate governance and risk taking is not only intuitive but is backed up by the evidence. A study of 5452 firms across 38 countries looked at the link between risk taking and corporate governance by defining risk in terms of standard deviation in EBITDA over time, as a percent of total assets and relating this number to measures in corporate governance.²³ Firms that have less insider control in markets where investors were better protected – i.e., high in corporate governance – tend to take more risk in operations. These results are reinforced by studies of family run businesses (i.e. publicly traded firms that are controlled and run by the founding families). In a more direct test of

²² Saunders, A., E. Strock and N.G. Travlos, 1990, Ownership Structure, Deregulation and Bank Risk Taking, *Journal of Finance*, v45, 643-654.

how firms are affected by crisis, an examination of Korean firms in the aftermath of the 1997 Korean financial crisis found that firms with higher ownership concentration by foreign investors saw a smaller reduction in value than firms with concentrated insider and family ownership, suggesting that the latter responded to risk not as well as the former.²⁴

Given that there is too little risk taking at either end of this ownership spectrum, the tricky part is to find the right balance. Figure 11.5 illustrates the relationship between corporate ownership and risk taking:

Figure 11.5: Corporate Governance and Risk Taking



The appropriate corporate governance structure for the risk taking firm would therefore require decision makers to be invested in the equity of the firm but to be diversified at the same time, which is a tough balance to maintain since one often precludes the other. The venture capital and private equity investors who provide equity for young, high growth firms are perhaps the closest that we get to this ideal. They invest significant amounts in high-growth, high-risk businesses, but they spread their bets across multiple investments, thus generating diversification benefits.

Personnel

All the crisis management and risk analysis courses in the world cannot prepare one for the real event, and when confronted with it, some people panic, others freeze but

²³ John, K. L. Litov and B. Yeung, 2005, Corporate Governance and Managerial Risk Taking: Theory and Evidence, Working Paper.

a few thrive and become better decision makers. Keeping a cool head while those around you are losing theirs is a unique skill that cannot be taught easily. These are the individuals that you want making decisions during crises, and businesses that manage to hire and keep these people tend to weather risk better and gain advantages over their competitors.

To understand the characteristics of a good crisis manager, it is perhaps best to consider why individuals often make bad decisions when faced with risk. In a study of the phenomenon, Kahneman and Lovallo point to three shortcomings that lead to poor decisions in response to risk:²⁵

- a. Loss Aversion: In a phenomenon that we examined in chapter 4, we noted that individuals weight losses more than equivalent gains when making decisions. As a consequence, inaction is favored over action and the status quo over alternatives since loss aversion leads to an avoidance of risks.
- b. Near-proportionality: Individuals seems to be proportionately risk averse. In other words, the cash equivalent that they demand for a 50% chance of winning \$ 100 increases close to proportionately as the amount is increased to \$ 1000 or \$ 10000 or even \$ 100,000.²⁶ This behavior is not consistent with any well behaved risk-aversion function, since the cash equivalent should decrease much more dramatically as the size of the gamble increases. In decision terms, this would imply that managers are unable to differentiate appropriately between small risks (which can be ignored or overlooked) and large risks (which should not be).
- c. Narrow decision frames: Decision makers tend to look at problems one at a time, rather than consider them in conjunction with other choices that they may be facing now or will face in the future. This would imply that the portfolio effect of

²⁴ Baek, J., J. Kang and K.S. Park, 2004, Corporate Governance and Firm Value: Evidence from the Korean Financial Crisis, Working Paper.

²⁵ Kahneman, D. and D. Lovallo, 2006, Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking, Management Science, v39, 17-31.

²⁶ For instance, an individual who accepts \$ 20 a certainty equivalent for a 50% chance of winning \$ 50 will accept close to \$ 200 for a 50% chance of winning \$ 500 and \$2000 for a 50% chance of winning \$ 5000. Kahneman and Lovallo note that the scaling is not perfectly proportional but close enough to provoke questions about rationality.

a series of risky decisions is not factored in fully when evaluating each decision on its own.

In summary, managers have trouble dealing with risk because the possibility of losses skews their decision making process, the inability to separate small risks from large risks and the failure to consider the aggregate effect of risky decisions.

Good risk takers then have a combination of traits that seem mutually exclusive. They are realists who still manage to be upbeat; they tend to be realistic in their assessments of success and failure but they are also confident in their capacity to deal with the consequences. They allow for the possibility of losses but are not overwhelmed or scared by its prospects; in other words, they do not allow the possibility of losses to skew their decision-making processes. They are able to both keep their perspective and see the big picture even as they are immersed in the details of a crisis; in terms of decision making, they frame decisions widely and focus in on those details that have large consequences. Finally, they can make decisions with limited and often incomplete information (which is par for the course in crisis) and make reasonable assumptions about the missing pieces.

How can firms seek out and retain such individuals? First, the hiring process should be attuned to finding these crisis managers and include some measure of how individuals will react when faced with risky challenges. Some investment banks, for instance, put interviewees to the test by forcing them to trade under simulated conditions and taking note of how they deal with market meltdowns. Second, good risk takers are often not model employees in stable environments. In fact, the very characteristics that make them good risk takers can make them troublemakers during other periods. Third, it is difficult to hold on to good risk takers when the environment does not pose enough of a challenge for their skills; it is very likely that they will become bored and move on, if they are not challenged. Finally, good risk takers tend to thrive when surrounded by kindred spirits; putting them in groups of more staid corporate citizens can drive them away very quickly.²⁷

²⁷ This may explain why risk taking is geographically concentrated in small parts of the world – Silicon Valley in California is a classic example. While technology firms grow around the world, Silicon Valley still attracts a disproportionately large share of innovative engineers and software developers.

Reward/Punishment Mechanisms

Once you have aligned the interests of decision makers with those of claimholders in the firm and hired good risk takers, the reward and punishment mechanism has to be calibrated to reward good risk taking behavior and punish bad risk taking behavior. This is a lot harder than it looks because the essence of risk taking is that you lose some or even a significant amount of the time. Consequently, any system that is purely results oriented will fail. Thus, an investment bank that compensates its traders based on the profits and losses that they made on their trades for the firm may pay high bonuses to traders who were poor assessors of risk but were lucky during the period and penalize those traders who made reasoned bets on risk but lost. While it may be difficult to put into practice, a good compensation system will therefore consider both processes and results. In other words, a trader who is careful about keeping an inventory of risks taken and the rationale for taking these risks should be treated more favorably than one with chaotic trading strategies and little or no explanation for trading strategies used, even if the latter is more successful.

Converting these propositions about compensation into practice can be complicated. In the last three decades, firms in the United States have experimented with different types of compensation to improve risk taking and to counteract the fact that managers, left to their own devices, tend to be risk averse and reject good, risky investments. In fact, managerial risk aversion has been offered as motivation for conglomerate mergers²⁸ and excessive hedging against risk²⁹. Firms first added bonuses based upon profitability to fixed salaries to induce managers to take more upside risk, but discovered that higher profitability in a period is not always consistent with better risk taking or higher value for the firm. Starting in the 1970s, firms shifted towards to equity-based compensation for managers, with stock grants in the company being the most common form. There is mixed evidence on the question of whether equity-based compensation increases risk taking among managers. While some of the earlier studies suggested that equity compensation may result in managers becoming over invested in

²⁸ Amihud, Y., and B. Lev, 1981, Risk reduction as a managerial motive for conglomerate mergers, *Bell Journal of Economics* 12, 605-617.

²⁹ Smith, C.W., and R.M. Stulz, 1985, The determinants of firms' hedging policies, *Journal of Financial*

firms and consequently more risk averse³⁰, a more recent study of a change in Delaware takeover laws concludes that risk taking is lower when managers are not compensated with equity.³¹

In the 1990s, the move towards equity compensation accelerated and shifted to equity options. Since options increase in value, as volatility increases, there were some who worried that this would lead to too much risk taking, since it is conceivable that there are some risky actions that can make firms worse off while making options more valuable. In fact, option-based compensation can have an impact on a number of different aspects of corporate finance including financing and dividend policy; managers who are compensated with options may be less likely to increase dividends or issue new stock since these actions can lower stock prices and thus the value of their options.³² The research on this topic is inconclusive, though. In general, studies that link between risk taking and option based compensation have not been conclusive. While some studies indicate no perceptible increase in risk taking, others do establish a link.³³ A study of oil and gas producers finds that firms where managers are compensated with equity options are more likely to be involved in risky exploration activity and less likely to hedge against oil price risk.³⁴ An analysis of CEO behavior between 1992 and 1999 also finds that increased option grants are associated with higher volatility in stock prices in subsequent years, though the magnitude of the increase is modest.³⁵ We would hasten to add that the increase in risk taking, by itself, is not bad news, since that is what equity compensation is designed to do. However, there seems to be little evidence in these studies and others

and *Quantitative Analysis* 20, 391-405.

³⁰ Ross, S. A., 2004. Compensation, incentives, and the duality of risk aversion and riskiness. *Journal of Finance* 59, 207-225.

³¹ Low, A., 2006, Managerial Risk-Taking Behavior and Equity-based Compensation, Working Paper, Ohio State University. This paper concludes that firms where CEO compensation is not tied to equity returns tend to take about 10% less risk than firms where compensation is more equity based.

³² MacMinn, R.D. and F.H. Page, 2005, Stock Options and Capital Structure, Working Paper. This study finds that option compensated managers are more likely to use debt than equity.

³³ Carpenter, J. N., 2000. Does option compensation increase managerial risk appetite? *Journal of Finance* 55, 2311-2331.

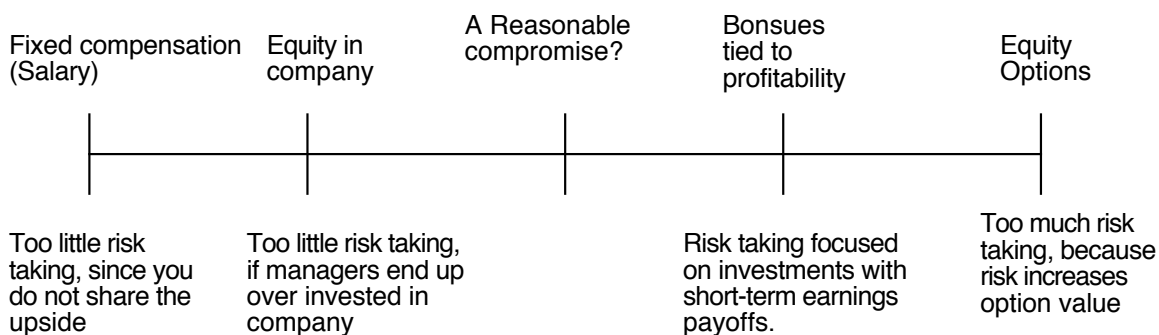
³⁴ Rajgopal, S. and T. Shevlin, 2001, Empirical Evidence on the Relation between Stock Option Compensation and Risk Taking, Working Paper, University of Washington.

³⁵ Hanlon, M., S. Rajgopal and T. Shevlin, 2004, Large Sample Evidence on the Relation between Stock Option Compensation and Risk Taking, Working Paper. University of Washington. Similar conclusions are in Guay, W. R., 1999, The Sensitivity of CEO Wealth to Equity Risk: An Analysis of the Magnitude and

that the additional risk taking improves operating performance or leads to higher stock prices.³⁶

The debate currently is about the right mix of equity holdings and conventional compensation to offer decision makers to optimize risk taking. If options encourage too much risk taking and stock in the firm too little, is there a different compensation system that can encourage just the “right amount”? Figure 11.6 illustrates the balancing act:

Figure 11.6: Compensation and Risk Taking



As accounting rules on reporting employee option compensation are tightened, more firms are experimenting with restricted stock (with the restrictions applying on trading for periods after the grants) but it is unclear that this will provide a satisfactory solution. After all, standard stock issues, restricted stock and options all share a common characteristic: they reward success but not failure; as we noted, good risk taking will frequently end in failure. If the objective is to reward good risk taking behavior and punish bad behavior, no matter what the consequences, we are no closer to that objective now than we were three decades ago.

Organization Size, Structure and Culture

Compensation systems represent one part of a larger story. Organizations can encourage or discourage risk based upon how big they are, how they are structured and the culture within can also act as an incentive or an impediment to risk taking. While at least one of these dimensions (size) may seem out of a firm’s control, there are ways in which it can come up with creative solutions.

Determinants. *Journal of Financial Economics*, 1999.

³⁶ Cohen, R., B.J. Hall and L.M. Viceira, 2000, Do Executive Stock Options encourage Risk-taking? Working Paper, Harvard Business School.

The relationship between the size of a firm and its risk taking capabilities has been widely debated and researched. Earlier in the chapter, we noted the disadvantage faced by established companies when confronted with a disruptive technology; since they have too much invested in the status quo, they tend to react slowly to any challenge to that status quo. At least, at first sight, smaller firms should be more likely to innovate and take risks than larger firms because they have less to lose and more to gain from shaking up established ways of doing business. The evidence, though, suggests that the link between size and risk taking is more ambiguous. A study of small and large airlines found that while small airlines were quicker and more likely to initiate competitive challenges (and thus support the “more risk taking” hypothesis), they were less responsive to competitive challenges from than larger airlines. To summarize using sports terminology, small airlines were better at playing offense and large airlines at playing defense.³⁷ Optimally, you would like to encourage the risk taking behavior of a small firm with the defensive capabilities of a large one. The Apple experiment with iTunes, referred to earlier in the chapter, may be one way of doing this.

To see the relevance of organizational structure, let us go back to two of the competitive edges that allow firms to succeed at risk taking: timely and reliable information and a speedy response. While this may be a gross generalization, flatter organizations tend to be better than more hierarchical organizations in handing information and responding quickly. It is revealing that investment banks, operating as they do in markets that are constantly exposed to risk, have flat organizational structures, where newly hired traders on the floor interact with managing directors. In contrast, commercial banks, operating in more staid business environments, cultivate multi-layered organizations where the employees at the lowest rungs can spend their entire careers in the bank without ever coming into contact with the bank’s managers. A related issue is how much compartmentalization there is within the organization. In organizations that have to deal with risk on a continuous basis, the lines between different functions and areas of the firm tend to be less firmly drawn, since dealing with risk will require them to collaborate and craft the appropriate response. In contrast, organizations that don’t have

³⁷ Chen, M. and D.C. Hambrick, 1995, Speed, Stealth and Selective Attack: How Small Firms Differ from Large Firms in Competitive Behavior, *The Academy of Management Journal*, v38, 453-482.

to deal with crises very often tend to have more rigid separation between different parts of the business.

It is also worth noting that the trend towards diversification among many companies in the sixties and seventies, which created conglomerates such as ITT, GE and Gulf Western, may have also worked against risk taking behavior. In an admission that this component of corporate strategy had failed, Michael Porter attributed the decline in R&D spending to the presence of large, diversified corporations.³⁸ A study of corporate R&D investments provided evidence that conglomerates were less willing to innovate and the reluctance was attributed to their use of internal capital markets (where funds from one part of the business are used to cover investment needs of other parts of the business) as opposed to external markets.³⁹ This may at least partially explain why the US, with its abundance of young, technology companies has been able to lay claim to much of the growth in the sector over the last decade, whereas investments in technology have been slower in Europe where much of the investment has had to come from established corporations.

The culture of a firm can also act as an engine for or as a brake on sensible risk taking. Some firms are clearly much more open to risk taking and its consequences, positive as well as negative. One key factor in risk taking is how the firm deals with failure rather than success; after all, risk takers are seldom punished for succeeding. It was Thomas Watson who said that “the fastest way to succeed is to double your failure rate”. Good risk taking organizations treat failure and success not as opposites but as complements since one cannot exist without the other. While all of us would like to be successful in our endeavors, the irony is that the odds of success are improved as firms tolerate failure. In a 2002 article in the Harvard Business Review, Farson and Keys argue that “failure-tolerant” leaders are an essential piece of successful risk taking organizations and note that they share these characteristics:

- Every product and endeavor is treated as an experiment that can have positive or negative outcomes.

³⁸ Porter, M., 1992, Capital Disadvantage: America’s Failing Capital Investment System”, Harvard Business Review.

³⁹ Seru, A., 2006, Do Conglomerates stifle innovation? Working Paper.

- An experiment that does not yield the desired outcome but was well thought out, planned for and executed is a success. Conversely, an experiment that generates a good result but is carelessly set up and poorly followed through is a failure.
- The experiments that fail can be mined for important information that can be used to advantage later. Thus, every risky endeavor provides a payoff even when it fails to yield profits in the conventional sense. Even mistakes can be productive.
- Rather than scapegoating individuals after failed experiments, collaboration is encouraged and rewarded.

In short, failure tolerant leaders engage their employees and use the result of risky experiments, positive and negative, to advantage. If the flip side of risk aversion is irrational risk seeking, firms have to have pieces in place to prevent or at least operate as a check on 'bad' risk taking. One is to have independent and objective assessments of risky proposals to ensure that project proponents don't push biased analyses through. A second is to encourage open debate, where managers are encouraged to challenge each other on assumptions and forecasts. In summary, a willingness to accept the failures that are a natural outcome from taking risk and an openness to challenge proposals, even when they are presented by top management, characterize good risk taking organizations.

Conclusion

The essence of risk management is not avoiding or eliminating risk but deciding which risks to exploit, which ones to let pass through to investors and which ones to avoid or hedge. In this chapter, we focus on exploitable risks by first presenting evidence on the payoff to taking risk. While there is evidence that higher risk taking, in the aggregate, leads to higher returns, there is also enough evidence to the contrary (i.e., that risk taking can be destructive) to suggest that firms should be careful about which risk they expose themselves to.

To exploit risk, you need an edge over your competitors who are also exposed to that same risk, and there are five possible sources. One is having more timely and reliable information when confronted with a crisis, allowing you to map out a superior plan of action in response. A second is the speed of the response to the risk, since not all firms, even when provided with the same information, are equally effective at acting quickly

and appropriately. A third advantage may arise from experience weathering similar crises in the past. The institutional memories as well as the individual experiences of how the crises unfolded may provide an advantage over competitors who are new to the risk. A fourth advantage is grounded in resources, since firms with access to capital markets or large cash balances, superior technology and better trained personnel can survive risks better than their competitors. Finally, firms that have more operating, production or financial flexibility built into their responses, as a result of choices made in earlier periods, will be able to adjust better than their more rigid compatriots.

In the last part of the chapter, we examined how best to build a good risk-taking organization. We began with a discussion of how well aligned the interests of decision makers are with interests of the owners of the firm; corporate governance can be a key part of good risk taking. We considered the characteristics of effective risk takers and how firms can seek them out and keep them, and the compensation structures that best support risk taking. Finally, we examined the effects of organizational structure and culture on encouraging and nurturing risk taking.
