

# Chapter - 1

## Risk Management: An Introduction

*“A business has to try to minimise risks. But if its behaviour is governed by the attempt to escape risk, it will end up by taking the greatest and least rational risk of all: the risk of doing nothing.”*

*-Peter Drucker<sup>1</sup>*

### Introduction

We live in a world of risk. Some risks are totally unexpected. The September 11, 2001 World Trade Centre attacks in the US, the Tsunami of December 2004, Hurricane Katrina of August 2005, and the Mumbai terrorist strikes of November 2008 are good examples. Other risks can be identified but the magnitude and extent are difficult to estimate. The sub prime crisis is a good example. Not all risks are so unpredictable or unexpected or difficult to estimate. By closely monitoring the business environment and streamlining internal systems and processes, companies can anticipate the risks associated with changing technology, changing customer tastes, changing interest and currency rates, changing competitive conditions, etc. This book provides a conceptual framework for dealing with some of these risks in a systematic and coordinated way across an organization. To keep the scope of the book manageable, the focus will be on financial risks. Other risks will be considered in passing.

### Exhibit.1.1

<i>Major upheavals in recent years</i>		
1971	:	Breakdown of Bretton Woods
1973	:	Oil shock
1987	:	US Stock market crash
1989	:	Crash of the Nikkei Index
1994	:	Mexican Peso crisis
1997	:	Asian currency crisis
1998	:	Russian rouble crisis/collapse of LTCM
2000	:	Dotcom bust
2001	:	WTC terrorist attack
2007	:	Sub Prime Crisis
2008	:	Collapse of Bear Stearns, Lehman, AIG,

### Understanding risk management

Risk management has returned to the top of the agenda in the wake of the sub prime meltdown. Lehman Brothers, Bear Stearns and Merrill Lynch no longer exist. The US government has acquired a major equity stake in Citibank, while the UK government has done so in the case of Royal Bank of Scotland. Many European banks are in trouble and might well have collapsed but for government intervention. For all practical purposes, much of the British banking system has been nationalized. In a few days during October

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<sup>1</sup> Managing for Results

2008, the entire banking system in Iceland collapsed and was taken into public ownership. The country's average income fell from 160% of that of the US in 2007 to 80% by 2009. And as the credit crisis has spread from banking to other sectors, we have seen corporates also getting sucked into the whirlpool. The American automotive giants, General Motors (GM), Ford and Chrysler are in big trouble. President Barack Obama has announced comprehensive bail out plans for GM and Chrysler. Companies like Toyota and Sony have declared losses for the first time in several years. Toyota the Japanese car manufacturer, with an impressive track record of revenue and profitability growth over the years, announced in the last week of August 2009 that it would slash worldwide production.

Quite clearly, risk management systems failed to deliver the goods during the recent crisis. And the price paid by the global economy has been heavy. It is evident that financial institutions and companies need to develop and apply a far more robust and integrated risk management framework that can inspire the confidence of shareholders. From identifying risk to measuring it and controlling it, the entire risk management process will have to undergo a major overhaul in the coming years.

To start with, top management will have to be hands on when it comes to understanding and managing risk. This is not a new concern. As the *Economist*<sup>2</sup> once put it: —Top managers often fail to understand properly the firm's sensitiveness to different types of risk..... managers and boards too often regard risk management as a matter for financial experts in the corporate treasury department rather than as an integral part of corporate strategy.¶ But recent incidents such as the collapse of Bear Stearns where CEO Jimmy Cayne was enthusiastically taking part in bridge tournaments while the bank was collapsing, have reinforced this concern. Similarly, the Swiss bank, UBS had admitted on its website that its top management should have asked more probing questions when the bank's traders were building huge positions in sub prime mortgages.

Another concern is the way in which companies deal with different risks in a piecemeal fashion. For example, many banks dealt with credit and market risk separately in the build up to the sub prime crisis. The credit risk in case of many sub prime assets became market risk as market indices moved, leading to heavy mark-to-market losses.

An organization wide view of risk management can greatly improve efficiencies, generate synergies and most importantly result in a deeper understanding of risk exposure. Which is why banks like UBS have now started to integrate the management of credit risk and market risk. That is also why many companies are taking a serious look at Enterprise Risk Management (ERM), which addresses some fundamental questions:

- What are the various risks faced by the company?
- What is the magnitude of each of these risks?
- What is the frequency of each of these risks?
- What is the relationship between the different risks?
- How can the risks be managed to maximize shareholders' wealth?

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<sup>2</sup> February 10, 1996.

We will examine the theme of integrated risk management in more detail in a later chapter.

#### **Risk identification at Pitney Bowes**

While risk management is critical for financial institutions, corporates too are realizing the importance of risk management. Pitney Bowes, the postal machine maker is a good example. In recent years, this company has started to take risk management very seriously. The company's enterprise risk management system identifies and prioritizes potential risks to the business – financial, environmental and societal. These risks are assessed in terms of probability, severity and status of mitigation plans. Sixteen categories of risk have been identified. The risks identified are reviewed by a senior management Risk Steering Committee and the Board of Directors. Each risk is assigned to a senior executive. The firm has taken the view that risk management is a philosophy, not merely numbers. As a senior executive mentions<sup>3</sup>, –We have a much more holistic discussion about a business and why we have it. It becomes strategic, instead of simply, do we get insurance to cover a potential loss?

### **The benefits of risk management**

What is the rationale for risk management? Does risk management really benefit the shareholders? After all many of the risks a company faces, are specific to it. Portfolio theory argues that shareholders are rewarded only for systematic risk. Unsystematic risk, i.e., risk specific to a company can be diversified away by purchasing shares in a reasonably large number of companies. If shareholders can manage risk more efficiently on their own, by buying shares in various corporations, should companies really manage risk? The answer is an emphatic yes.

#### **Exhibit.1.2**

<i>How Risk Management adds value</i>
<ul style="list-style-type: none"> <li>▪ Enterprise Risk management creates value at both a —macro or company-wide level and a —micro or business-unit level.</li> </ul>
<ul style="list-style-type: none"> <li>▪ At the macro level, ERM creates value by enabling senior management to quantify and manage the risk-return tradeoff that faces the entire firm.</li> </ul>
<ul style="list-style-type: none"> <li>▪ At the micro level, ERM becomes a way of life for managers and employees at all levels of the company.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Incorporating risk in decision making ensures optimal use of capital.</li> </ul>

*Source:* Brian Nocco, Rene Stultz, —Enterprise Risk Management: Theory & Practice<sup>4</sup>.|

For starters, shareholders do not have all the information needed to manage the risks a company faces. Moreover, even if they had, individual shareholders would find it inefficient and expensive to manage risks on their own. The transaction costs would be too high if a large number of small hedging transactions are undertaken. Finally, distress situations are eminently avoidable. During such situations, significant value destruction takes place as the assets of the company trade at unrealistically low prices. Recall the collapse of Bear Stearns in March 2008 and Lehman Brothers in September 2008.

*Prudent risk management ensures that the firm's cash flows are healthy so that the immediate obligations and future investment needs of the firm are both adequately taken*

<sup>3</sup> Time, 22 December 2008, company website, [www.pb.com](http://www.pb.com)

<sup>4</sup> Journal of Applied Corporate Finance, Fall 2006.

*care of*. Firms typically run into cash flow problems because they fail to anticipate or handle risks efficiently. These risks include *market risks* such as vulnerability to interest rate, stock index, commodity price and exchange rate movements. Then there are *credit risks* which arise because of excessive investments in the same asset class or lending to the same customer segment. They also include *liquidity risks* such as liquidity black holes, which result when the entire market shifts to one side, with sellers finding it difficult to find buyers. Firms may also fail to anticipate *business risks* when the demand suddenly falls or a rival starts taking away market share aggressively with a new business model or technological innovation. Then there are various examples of companies failing to manage *operational risk* effectively because of poor systems and processes.

Risk management helps in sustaining the staying power of an organization. In 1993, Metallgesellschaft which tried to cover the risk associated with its long term contracts through oil futures ended up losing a huge amount. The star studded team at hedge fund, Long Term Capital Management could do little as unexpected interest rate and currency movements brought the fund to the edge of bankruptcy in 1998. In both the cases, the positions taken were fundamentally sound. But there were serious doubts about their ability to tide through the crisis. Indeed, much of the sub prime crisis has been about liquidity. Under the circumstances, liquidity has become the most potent weapon in many sectors. Liquidity gives the comfort to sustain day-to-day operations and more importantly make those vital investments that are needed to sustain the company's competitiveness in the long run. Sound risk management goes a long way in ensuring that the organization has the required liquidity to function effectively even in bad times.

### **Categorising uncertainty**

Organisations face various types of uncertainty. Milliken<sup>5</sup> has classified uncertainty into three broad categories.

- *State Uncertainty*: This refers to the unpredictability of the environment. Causes of state uncertainty are:
  - a) Volatility in the environment
  - b) Complexity in the environment
  - c) Heterogeneity in the environment
- *Effect Uncertainty*: This is the uncertainty about the impact of external events on the organization.
- *Response Uncertainty*: This refers to the unpredictability of the organization's responses to external developments.

Oliver Williamson<sup>6</sup>, well known for his work on transaction cost economics and the 2009 Economics Nobel Prize winner has drawn a distinction among *environmental / external uncertainty*, *organisational/internal uncertainty* and *strategic uncertainty*.

- Environmental uncertainty arises due to random acts of nature and unpredictable changes in consumer preferences.

<sup>5</sup> Academy of Management Review, 1987, Volume 12.

<sup>6</sup> -Handbook of Industrial Organization, Volume I, 1989.

- Organisational uncertainty refers to the lack of timely communication among decision-makers, each of whom has incomplete information. This leads to lack of coordination and consequently, poor decisions.
- Strategic uncertainty is created by misrepresentation, non-disclosure and distortion of information and results in uncertainty in the relations a firm has with suppliers, customers and competitors.

The great Peter Drucker, identified four types of risk<sup>7</sup>:

- The risk that is built into the very nature of the business and which cannot be avoided.
- The risk one can afford to take
- The risk one cannot afford to take
- The risk one cannot afford not to take

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#### **Exhibit 1.4**

<i>Challenges in implementing Integrated Risk Management</i>
▪ Risk management as a discipline has evolved unevenly across different functional areas.
▪ In finance, the preoccupation has been with hedging and discount rates. Little attention has been paid to the upside.
▪ In strategy, the focus has been on competitive advantage and barriers to entry.
▪ Risk management at most organizations is splintered.
▪ There is little communication between those who assess risk and those who make decisions based on those risk assessments.

The Economist Intelligence Unit divides risks into four broad categories.

- *Hazard risk* is related to natural hazards, accidents, fire, etc. that can be insured.
- *Financial risk* has to do with volatility in interest rates, exchange rates, stock markets and commodity markets, defaults on loans, asset-liability mismatch, etc.
- *Operational risk* is associated with systems, processes and people and deals with issues such as succession planning, human resources, information technology, control systems and compliance with regulations.
- *Strategic risk* stems from an inability to adjust to changes in the environment such as changes in customer priorities, competitive conditions and geopolitical developments.

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<sup>7</sup>Managing for Results

### Exhibit 1.5

<i>The Enterprise Risk Management process</i>	
▪	Identify the risk.
▪	Quantify the risk to the extent possible.
▪	Prevent or avoid the risk wherever possible.
▪	Transfer the risk if holding it is not consistent with the company's business strategy.
▪	If the risk is core to the business, hold it and manage it by modifying the operations, processes.
▪	Diversify the risk where appropriate by building a portfolio of businesses.
▪	Insure the risk, if it has to be held but is difficult to manage internally.
▪	Increase capital if the risk has to be held and is difficult to transfer.
▪	Assess the risk intelligently and decide whether it is more important to preserve the possibility of extremely good outcomes or to reduce the possibility of very bad outcomes.

*The method of classifying risks is not as important as understanding and analysing them. Indeed, the very nature of uncertainty implies that it is difficult to identify all risks, leave alone classify them.* Each company should carefully examine its value chain and come up with its own way of categorising the uncertainties associated with its important value adding activities. Then, it can quantify these uncertainties to the extent possible and decide which risks to hold and which to transfer.

In this book, we will concentrate on banks and financial institutions. We will look at the following risks in detail:

- Market risk
- Credit Risk
- Operational risk
- Liquidity risk

### Exhibit 1.6

#### Risk Categories at Credit Suisse

Management risks	Strategy risk	Outcome of strategic decisions or developments
	Reputation risk	Damage of our standing in the market
Chosen risks	Market risk	Changes in market factors such as prices, volatilities, correlations
	Credit risk	Changes in the creditworthiness of other entities
	Expense risk	Difference between operating expenses and income in a crisis
Consequential risks	Operational risk	Inadequate or failed internal processes, people and systems; or external events
	Liquidity risk	Inability to fund assets or meet obligations at a reasonable price

Source: Credit Suisse Annual Report, 2008.

## **A brief history**

Risk management is not exactly a new idea. One of the earliest examples of risk management appears in the Old Testament of the Bible. An Egyptian Pharaoh had a dream. His adviser, Joseph interpreted this dream as seven years of plenty to be followed by seven years of famine. To deal with this risk, the Pharaoh purchased and stored large quantities of corn during the good times. As a result, Egypt prospered during the famine. Similarly, in Matsya Avatar, Lord Vishnu asked Sage King Satyavratha to put one pair of each species safely on board the ship that would help them escape the deluge the Lord was planning to unleash. This ensured the perpetuation of different flora and fauna.

The modern era of risk management probably goes back to the Hindu Arabic numbering system, which reached the West about 800 years back. The Indians developed the system while the Arabs played a key role in spreading the knowledge to the west. Without numbers, it would have been impossible to quantify uncertainty. But mathematics alone was not sufficient. What was needed was a change in mindset. This happened during the Renaissance, when long-held beliefs were challenged and scientific enquiry was encouraged. The Renaissance was a period of discovery, investigation, experimentation and demonstration of knowledge. As theories of probability, sampling and statistical inference evolved, the risk management process became more scientific. Many risk management tools used by traders today originated during the 1654-1760 period. The pioneers of the Renaissance age included Luca Pacioli, Girolamo Cardano, Galileo, Blaise Pascal, Pierre de Fermat, Chevalier de Mere and Christiaan Huygens.

Strangely enough, gamblers played a major role in the advancement of probability theory. A landmark problem they tried to solve was how to estimate the probability of a win for each team after an unfinished game of cards. These ideas were later supplemented by advances such as the regression to the mean by Francis Galton in 1885 and the concept of portfolio diversification by Harry Markowitz in 1952.

More sophisticated risk management tools have been developed in recent decades. These include models for estimating value-at-risk, volatility, probability of default, exposure at default and loss given default. A landmark event in the history of risk management was the development of the Black Scholes Merton Option Pricing Model in 1973. Thanks to better understanding of various domains, quantitative models and the availability of computing power, it has become possible to quantify risk to a large extent. Yet, as the recent sub prime crisis has demonstrated, these numbers are of little use if mature human judgment is not exercised, by the people involved.

*For a more detailed account of the history of risk management, please see annexure at the end of this chapter.*

## **Risk fundamentals**

There are some fundamentals about risk that need to be carefully understood.

*Risk can neither be avoided nor eliminated completely. Indeed, without taking risk, no business can grow. If there were no risks to take, managers would be without jobs!*

The Pharaoh in the earlier example was obviously taking a risk in the sense that his investment would have been unproductive had there been no famine. Microsoft has laid huge bets on its next operating system, Windows 7. But without this investment, Microsoft realises it may lose its market share as the threat from Google intensifies. Similarly, Tata Motors has made a huge investment in buying out Daewoo's truck division in South Korea. The Tatas have also purchased the luxury marque, Jaguar, realising that without this kind of investment they may become a marginal player in the global automobile market.

In short, risk management is as much about managing the upside as the downside. But as John Fraser and Betty Simkins<sup>8</sup> mention, *the upside should not become a distraction* and dilute the focus of tactical risk management. The upside should be dealt with during periodic strategic planning exercises or when circumstances change in a big way. But once the strategy is in place, ERM should focus on the downside: —By keeping shifts in strategy and discussions of the upside apart from normal operations, companies avoid having their management and staff distracted by every whim or misunderstood opportunity.¶

**Exhibit 1.7**  
**Risk categories at Deutsche Bank**

<b>Credit Risk</b>	This risk arises from all transactions that give rise to actual contingent or potential claims against any counterparty. The bank distinguishes three kinds of credit risk. Default risk, Country risk and Settlement risk.
<b>Market Risk</b>	This risk arises from the uncertainty due to changes in interest rates, equity prices, foreign exchange rates and commodity prices.
<b>Liquidity Risk</b>	This is the possibility of being unable to meet payment obligations when they are due or having to fund them at very high costs.
<b>Operational Risk</b>	This is the possibility of suffering losses in relation to employees, contractual specifications, technology, infrastructure failure etc. This definition includes legal and regulatory risk but excludes business and reputational risk.
<b>Reputational Risk</b>	This is the risk that publicity concerning a transaction, counterparty or business practice involving a client will have a negative impact on the public's trust in the bank.
<b>Business Risk</b>	This is the risk arising out of potential changes in general business conditions, such as the market environment, client behavior and technological changes.

Source: Deutsche Bank Annual Report, 2008.

*Risk management should not be viewed in absolute terms.* It is often about making choices and tradeoffs between various kinds of risk. These choices and tradeoffs are closely related to a company's assumptions about its external environment. In the Indian pharma industry, players like Dr Reddy's Laboratories are challenging the patents of global players as the generics market in the US opens up with many blockbuster drugs going off patent. But another leading player, Nicholas Piramal (Nicholas), believes in a different approach - partnering with global majors. Nicholas does not want to challenge patents but wants to join hands with large players in various areas such as contract manufacturing. CEO Ajay Piramal believes that Nicholas' capabilities in managing

<sup>8</sup> —Ten common misconceptions about Enterprise Risk Management,¶ Journal of Applied Corporate Finance, Fall 2007.



strategic alliances with the big guns in the pharma industry will stand the company in good stead in the coming years.

**Exhibit 1.8**  
**Risk Management vs. Risk Hedging**

	<b>Risk Hedging</b>	<b>Risk Management</b>
<b>View of risk</b>	Risk is a danger	Risk is a danger & an opportunity
<b>Objective</b>	Protect against the downside	Exploit the upside
<b>Approach</b>	Financial, Product oriented	Strategy/cross functional process oriented
<b>Measure of success</b>	Reduce volatility in earnings, cash flows, value	Higher value
<b>Type of real option</b>	Put	Call
<b>Primary impact on value</b>	Lower discount rate	Higher & sustainable excess returns
<b>Ideal situation</b>	Closely held, private firms, publicly traded firms with high financial leverage or distress costs	Volatile businesses with significant potential for excess returns

*Ref:* Aswath Damodaran, —Strategic Risk Taking – A Framework for Risk Management,|| Wharton School Publishing, 2008.

*Risk Management should not be confused with the risk hedging.* Risk management is more strategic, cross functional, process oriented and has the pay off of a call option. This means that while the downside is protected, opportunities are pursued for maximizing the upside. While risk hedging aims at reducing earnings volatility, risk management aims at maximizing the value of the firm. See Exhibit 1.8

*All risks are not equally important.* Without a clear understanding of the impact and frequency of different risks, some relatively unimportant risks may receive more attention than they warrant. As a result, there may be sub optimal utilization of corporate resources. Risks must be classified according to their frequency and potential impact, to facilitate prioritization.

*Not all risks are external.* Very often, the risks organizations assume have more to do with their own strategies, internal processes, systems and culture than any external developments. For example, the collapse of the Hyderabad based Global Trust Bank (GTB) in 2004 had more to do with poor management control systems than any other kind of risk. GTB took heavy risks while lending money to low credit worthy customers and investing money in the capital markets. The board failed to ask the right questions and impose the necessary checks and balances.

The crisis at UTI in 2001 was again due more to internal than external factors. UTI made a number of questionable investments in the late 1990s. There is considerable evidence that systems and processes were routinely violated when UTI's fund managers purchased risky stocks.

Every company needs to grow its revenues and generate adequate profits to survive in the long run. Unprofitable or stagnating companies are doomed to failure. So, investments, which are needed to stay ahead of competitors, cannot be avoided. And any investment does carry some amount of risk. Risk management ensures that these risks are identified, understood, measured and controlled. By understanding and controlling risk, a firm can take better decisions about pursuing new opportunities and withdrawing from risky areas.

*Risk management cannot be completely outsourced.* Companies must be clear about what risks to retain inhouse and what risks to transfer. In general, retaining risks makes sense when the cost of transferring the risk is out of proportion to the probability and impact of any damage. The first step for managers is to understand what risks they are comfortable with and what they are not. Often, companies are not comfortable with risks caused by volatile financial markets. This is probably why financial risk management, which deals with volatility in interest and exchange rates, has become popular among non banking organisations in the past few decades. Companies also tend to transfer those risks which are difficult to measure or analyze. A good example is earthquakes, where an insurance cover often makes sense. On the other hand, companies often prefer to retain risks closely connected to their core competencies. Thus, a software company like Microsoft would in normal circumstances, not transfer technology risk, but would in all likelihood hedge currency risk. These are only general guidelines. Ultimately whether to retain the risk or to transfer it should be decided on a case-to-case basis.

As Nocco and Stultz<sup>9</sup> mention, —... in making decisions whether to retain or transfer risks, companies should be guided by the principle of comparative advantage in risk bearing. A company that has no special ability to forecast market variables has no comparative advantage in bearing the risk associated with most variables. In contrast, the same company should have a comparative advantage in bearing information intensive, firm-specific business risks because it knows more about these risks than anybody else.¶ Indeed, the paradox of risk management is that by reducing non core exposure, it gives companies the confidence to take more risk and exploit opportunities in their core business.

*The approach towards quantifying risk is different from that used in valuation.* A brief mention may be made here of the differences between the two approaches. While valuation focuses on the expected present value, risk management is concerned with the distribution of future value. While valuation concentrates on the centre of the distribution, risk management is more concerned with the tails. See Exhibit 1.9.

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<sup>9</sup> Journal of Applied Corporate Finance, Fall 2006.

**Exhibit 1.9**  
**Valuation & Risk Management approaches**

	<i>Valuation</i>	<i>Risk Management</i>
<b>Principle</b>	Expected discounted value	Distribution of future value
<b>Focus</b>	Centre of distribution	Tails of distribution
<b>Horizon</b>	Current value, discounting	Future value
<b>Precision</b>	High precision needed	Less precision needed

Ref: Aswath Damodaran, —Strategic Risk Taking – A Framework for Risk Management,| Wharton School Publishing, 2008.

### **Behavioral Issues in Risk Management**

Behavioral issues play an important role in risk management. Studies have shown that many New York taxi drivers, set themselves a daily income target. Once they reach their target, they close shop for the day. This tendency to work less on a busy day when easy money is there to be made, defies rational logic. Indeed, such anomalies drive the point home, that while taking decisions with financial implications, logic often takes the backseat. Indeed, that is how the field of Behavioral Finance has developed. This is a new approach to finance that argues that some financial phenomena can be better understood by considering that human beings are not always rational. Behavioral finance has two building blocks<sup>10</sup>. The first is limits to arbitrage. Market dislocations may persist and may not be corrected quickly by arbitrage as traditional finance theory would suggest. The second is psychology which sustains deviations from full rationality.

The behaviours of people are strongly guided by perceptions. Two components of risk influence people's perceptions – the *fear factor* and the *control factor*. When we are very much afraid of the outcome or feel less in control, we perceive the risk to be more. On the other hand, when we are not afraid of the outcome or feel more in control, we perceive the risk to be less.

Scholars, Daniel Kahneman (the 2002 Nobel Prize Winner) and the late Amos Tversky, pioneers of behavioral finance make an important point about how people perceive gains and losses. When looking at a potential gain, people tend to be risk averse and when they look at a potential loss, they are more risk loving. They gain less utility from winning \$1000 than what they would forgo if they lose \$1000. This asymmetry is especially relevant in the case of a financial loss or gain but can also apply to other situations.

How people perceive gains and losses also depends on the frame of reference. For example, managers who have incurred a major loss may be quite happy if the loss is less than what they had expected. Similarly, the choice of a strategy may depend on the way the possible outcomes are presented.

*Cognitive bias* in decision making is also an important point to be considered. People tend to give greater weight to information which is more easily available or recalled. The tendency to focus more attention on a particular fact or event, just because it is more visible or fresh in our minds is called *availability heuristic*. According to Werner De

<sup>10</sup> Nicholas Barberis, Richard Thaler, —A Survey of Behavioral Finance,| Working Paper, September 2002.

Bondt and Richard Thaler, a significant proportion of market volatility is explained by overreaction to recent news.

People often hold beliefs which are plainly at odds with the evidence, usually because they have been held and cherished for a long time. This is referred to as *cognitive dissonance* or in more common parlance, *denial*. Many people also tend to be influenced by outsiders' suggestions. This may happen even when it is clearly known that the person making the suggestion is not necessarily well informed. Evidence indicates that people also tend to take bigger gambles to maintain the status quo.

People often have an exaggerated notion of their ability to control events. Consequently, they do not pay adequate attention to extreme possibilities. When people think they are in control of circumstances, when they are actually not, they underestimate the risks involved. The tendency on the part of people to think they have a greater influence on events than is actually the case is called *magical thinking*. Conditions that encourage illusion of control include stress, too much focus on results (without a periodic reflection of what is going on) and a series of positive outcomes.

N Barberis, M Huang and T Santos<sup>11</sup> point out another behavioral anomaly, the *house money effect*. Individuals are more willing to take risks with found money (money obtained easily) than with earned money.

Another behavioural issue which has an adverse impact on risk management is misinterpretation of past events. Once something happens, people tend to think that they could easily have predicted it. This is called *hindsight bias*. When something happens and people condition themselves into believing they predicted it, when they actually did not, it is called *memory bias*.

### Exhibit 1.10

<i>Risk management: First principles</i>	
▪	<i>Risk is everywhere:</i> Our biggest risks will come from places that we least expect them to come from and in unanticipated forms.
▪	<i>Risk is threat and opportunity:</i> Good risk management is about striking the right balance between seeking out and avoiding risk.
▪	<i>We are ambivalent about risks and not always rational:</i> A risk management system is only as good as the people manning it.
▪	<i>Not all risk is created equal:</i> Different risks have different implications for different stakeholders .
▪	<i>Risk can be measured:</i> The debate should be about what tools to use to assess risk than whether they can be assessed.
▪	<i>Good risk measurement should lead to better decisions:</i> The risk assessment tools should be tailored to the decision making process.
▪	<i>The key to good risk management is deciding which risks to avoid, which ones to pass through and which to exploit:</i> Hedging risk is only a small part of risk management.
▪	<i>The pay off to better risk management is higher value:</i> To manage risk right, we must understand the value drivers of the business.
▪	<i>Risk management is part of everyone's job:</i> Ultimately, managing risks well is the essence of good business practice and is everyone's responsibility.
▪	<i>Successful risk taking organizations do not get there by accident:</i> The risk management philosophy must be embedded in the company's structure and culture.
▪	<i>Aligning the interests of managers and owners, good and timely information, solid analysis, flexibility and good people is key:</i> Indeed, these are the key building blocks of a successful risk taking organization.

<sup>11</sup> -Prospect Theory and Asset Prices,|| Quarterly Journal of Economics, Vol. 116, 2000, pp. 1-53.

Ref: Aswath Damodaran, —Strategic Risk Taking – A Framework for Risk Management,|| Wharton School Publishing, 2008.

The tendency to believe that past patterns will repeat themselves in the future is another pitfall in risk management. People are adept at finding patterns even when they do not exist. This phenomenon of treating events as representative of some class or pattern is called *representativeness heuristic*.

Thaler points out the role of *mental accounting* which refers to the way individuals and households keep track of financial transactions. People tend to evaluate risks separately than in an integrated fashion. If these risks were evaluated with a broader perspective, investors would be less risk averse. Shlomo Benartzi and Richard Thaler<sup>12</sup> have used this concept to explain why equity shares command such a high premium over bonds in the capital markets. Investors tend to focus more on the short-term volatility of shares than their long-term returns. Consequently, they demand a premium as compensation. Instead, if they concentrated on the long term returns offered by shares, they would not perceive them to be much riskier than comparable bonds. In the case of Metallgesellschaft, the German oil refiner, though the long term position was hedged, the top management became pretty much concerned about short term losses. Which is why, they decided to unwind their futures positions even though they were working fine on a long term basis.

J C Cicchetti and J A Dubin<sup>13</sup> (1994) studied customers who were prepared to pay 45 cents per month as insurance against having to incur a telephone wiring repair cost of \$55 with only a .005 probability. The expected loss in the event of a repair was only (.005) (55) or approximately 28 cents per month. Millions of customers in the US have been known to buy similar protection. If utility-maximising customers had rational expectations about the probability of needing repair, it is unlikely that they would buy the protection.

There are various other behavioral anomalies, a brief mention of some of which is in order here. *Contamination effects* allow irrelevant but proximate information to influence a decision. The *affect heuristic* allows preconceived value judgments to interfere with our assessment of costs and benefits. *Over confidence in calibration* leads us to underestimate the confidence intervals within which our estimates will be robust. *Bystander apathy* makes us abdicate individual responsibility when in a crowd. The *problem of induction* makes us generalize on the basis of insufficient information.

<sup>12</sup>—Myopic Loss Aversion and the Equity Premium Puzzle,|| Quarterly Journal of Economics, Vol. 110.1, 1995, pp. 73-92.

<sup>13</sup> A Microeconomic analysis of risk aversion and the decision of self insure,|| Journal of Political Economy, Vol. 102, 1994, pp. 169-186.

Risk management must take into account all these behavioral issues. Ultimately, risks are identified, measured and controlled by people. So human psychology cannot be separated from risk management. It is important to note that —normal rather than —rational behaviours are at work while taking risk.

One way to resolve the problem of individual biases is to ask employees to operate in cross functional teams. The advantage of a collective approach to beliefs about risk and the frame of reference is that individual biases can be minimised and team members can exercise a restraining influence on each other. Goldman Sachs developed the tradition of partners coming together to evaluate major risks and approve important decisions. This has no doubt contributed to the bank's strong risk culture.

### Concluding Notes

In their seminal paper, —The Balanced score card – Measures that drive performance<sup>14</sup> Robert Kaplan and David Norton have emphasised the need for evaluating the performance of an organisation from four different angles – customer perspective, internal perspective, innovation and learning perspective and shareholder perspective. The Balanced ScoreCard considers financial measures that represent the outcome of past actions. At the same time, it incorporates operational measures relating to customer satisfaction, internal processes and attempts at innovation and improvement, all of which drive future financial performance. Similarly, when we talk of risk management, the various business risks which organisations face must be considered along with the financial risks. *Ultimately, financial risks are the outcome of business strategy. The role of financial risk management is to minimise uncertainty regarding cash flows; but the very source of these cash flows is the type of business which the company runs and the type of strategic decisions it makes.* While much of this book is about financial risks, we will from time to time illustrate through examples the linkages between business risk and financial risk.

Till the early 1990s, in most organisations across the world, an integrated approach to risk management was lacking. The formation of risk management departments was mainly aimed at reducing the total insurance premium paid or the transaction costs incurred while hedging risk. From the mid-1990s onwards, this philosophy has been changing. The range of risks which companies have to manage has widened. Various strategic and operational risks have become more important than insurable risks. The need to take a company wide view of risks is becoming increasingly felt.

Boards are realizing that each major initiative needs to be examined on the basis of a risk return framework. That is why risk-adjusted-return-on-capital and capital allocation across businesses are being emphasized by banks. As US Federal Reserve governor Randall Kroszner remarked<sup>15</sup>, —Assessing potential returns without fully assessing the corresponding risks to the organization is incomplete and potentially hazardous, strategic analysis. But in the run up to the sub prime crisis, this principle was conveniently

<sup>14</sup> Harvard Business Review, January – February, 1992.

<sup>15</sup> Time, 22 December 2008.

violated. Credit Default Swaps (CDS) and Collateralized Debt Obligations (CDO) were used merrily without understanding the risks involved. Rational analysis would have indicated that the meager excess returns which these instruments promised, were not justified in relation to the risk involved. But with compensation by and large linked to sales and not risk adjusted returns, risk management took a back seat.

Looking back, it is clear that during a boom, risk managers who play the devil's advocate are often not taken seriously enough. But a few CEOs have demonstrated their vision. CEO Ed Clark decided to withdraw Toronto-Dominion, the Canadian bank from structured products because he did not fully understand these products. As he remarked,<sup>16</sup> —I am an old school banker. I don't think you should do something that you don't understand, hoping there is somebody at the bottom of the organization who does.¶ A similar philosophy helped Jamie Dimon, the CEO of J P Morgan Chase avoid the problems which many other banks ran into because of sub prime mortgages.

Let us end with this chapter with two quotes. The more recent quote is from Niall Ferguson, one of the foremost finance historians<sup>17</sup>, in the world. Ferguson emphasizes the importance of being prepared for surprises. —The history of risk management is one long struggle between our vain desire to be financially secure and the hard reality that there really is no such thing as \_the future'..... There are only multiple, unforeseeable futures, which will never lose their capacity to take us by surprise.¶

Risk management should not be equated with caution, conservatism or cynicism or inaction. The great American president Theodore Roosevelt's famous remarks were recalled by CEO Jamie Dimon of JP Morgan Chase in the bank's 2008 annual report: —It is not the critic who counts; not the man who points out how the strong man stumbles .... The credit belongs to the man who is actually in the arena, whose face is marred by sweat and blood, who strives valiantly: who errs, who comes short again and again because there is no effort without error and shortcoming.¶