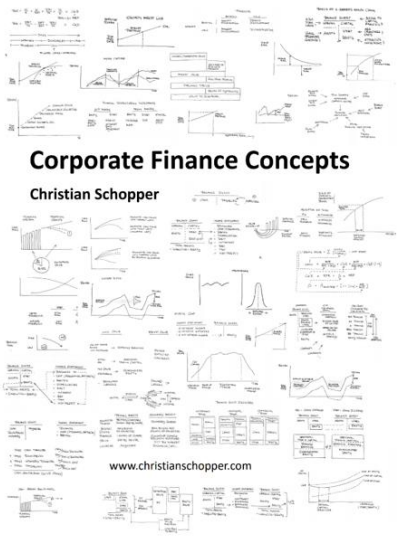
Risk Strategy

Thougths and Reflections

2014

For more concepts click on:



Introduction

There is no future without risk.

Unknown

He either fears his fate too much or his deserts are small,

Who dare not put it to the touch to win or lose it all.

James Graham (1612–1650)
Scottish general

One of the problems which has plagued those attempting to predict the behaviour of capital markets is the absence of a body of positive microeconomic theory dealing with conditions of risk

William Sharpe
1990 Nobel Prize in Economics

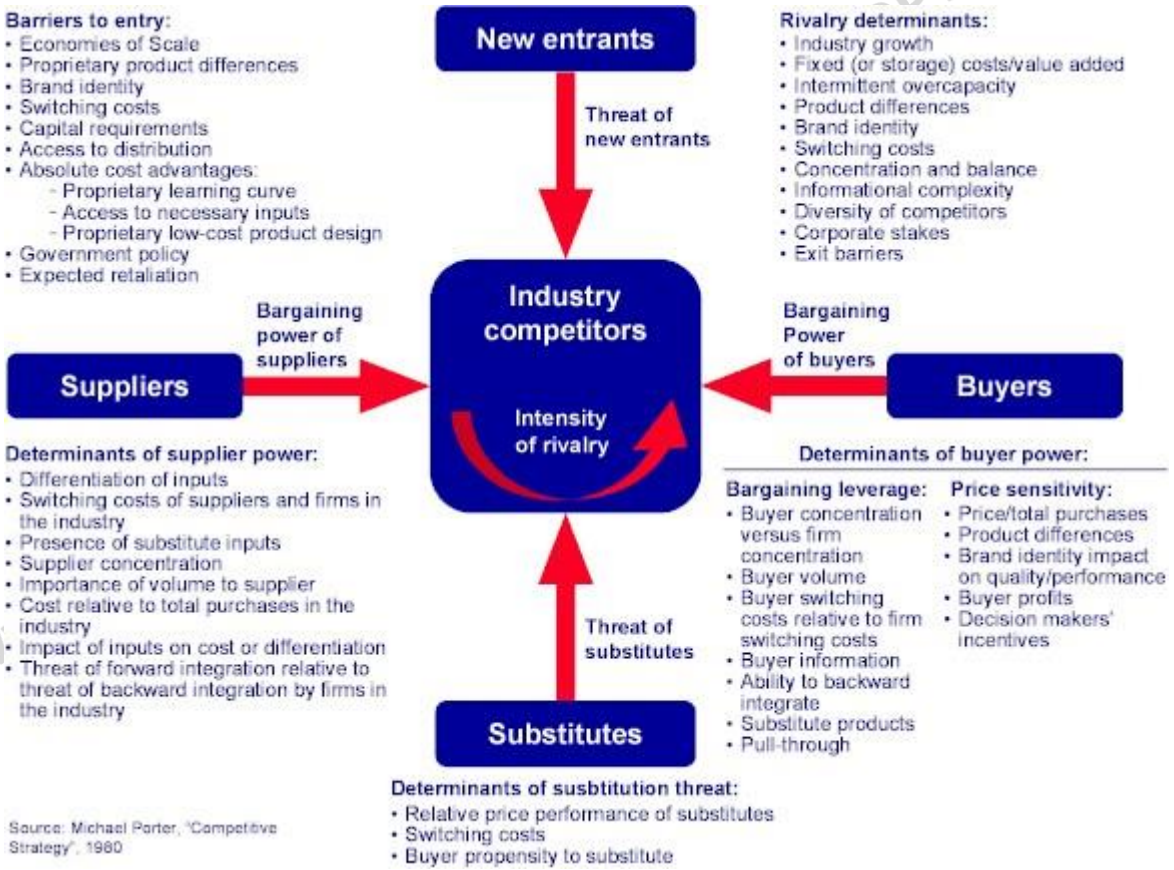
- What might occur?
  - From trivial to catastrophic …
- Probability of occurrence?
- The extent to which we can control or manage it?

The Chinese Symbol for “Crisis”

The first symbol is the symbol for “danger,” …
… while the second is the symbol for “opportunity,” …
… making risk a mix of danger and opportunity

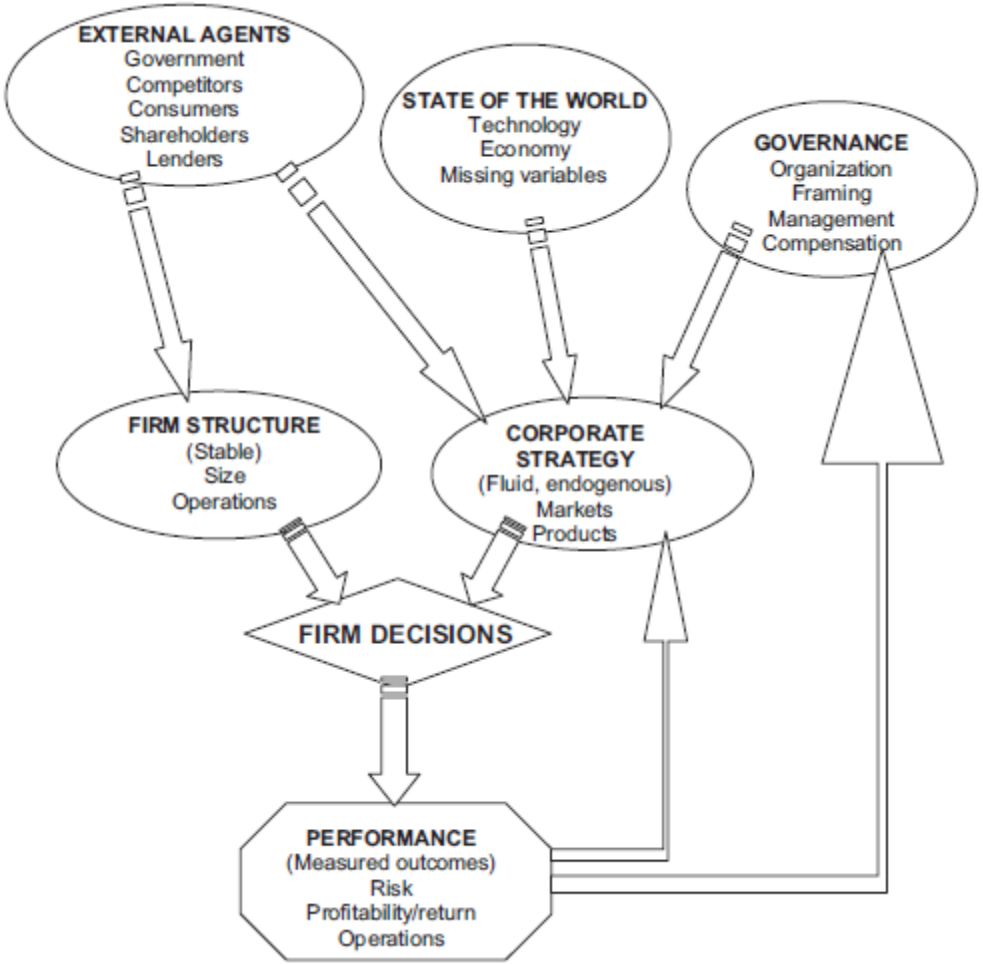
You cannot have one without the other

Porter´s 5 Forces



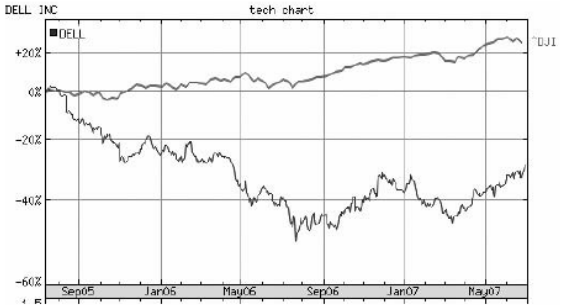
Firm Risk

- **This framework will be followed in developing a body of theory behind firm risk, and showing how it can be managed strategically to add value**
- **Risk and return are determined by a set of common underlying factors in the firm's structure and strategy**



The Dell Case - … Anything Else that Can Go Wrong?

- August 2006, as DJI up, Dell -45%
  - Market share slipped
  - Criticisms about customer service
  - Largest ever electronics product recall
  - SEC probe (accounting practices)
  - Threat of suspension following late filings of financial reports
  - Stream of executives left …



July 2006	Profits slump Drops behind HP as leading US PC manufacturer
7 August 2006	Article in *Barron's* starts: 'Is Dell at death's door?'
August 2006	Recalled 4.2 million PC batteries in largest electronics product recall
	Announced SEC had been probing accounting practices
September 2006	Postponed analysts briefing
December 2006	NASDAQ advised in breach of listing requirements due to late filing of accounting reports
19 December 2006	CFO resigns
31 January 2007	Michael Dell steps back in as CEO

- Recurring crises of the type that enmeshed Dell are occurring under **three sets of pressures**
  - Growing **complexity of systems**
    - Economies of scale
    - Integration of manufacturing and distribution systems
    - More closely coupled processes … readily snowball into major disasters
  - Deregulation and intense **competition**
    - Take more strategic risks
    - Given executives' poor decision-making record, an increase in the scale and frequency of strategic risks leads to more disasters
  - Corporate re-engineering and expanding markets, and the need to maintain **returns in an era of low inflation**

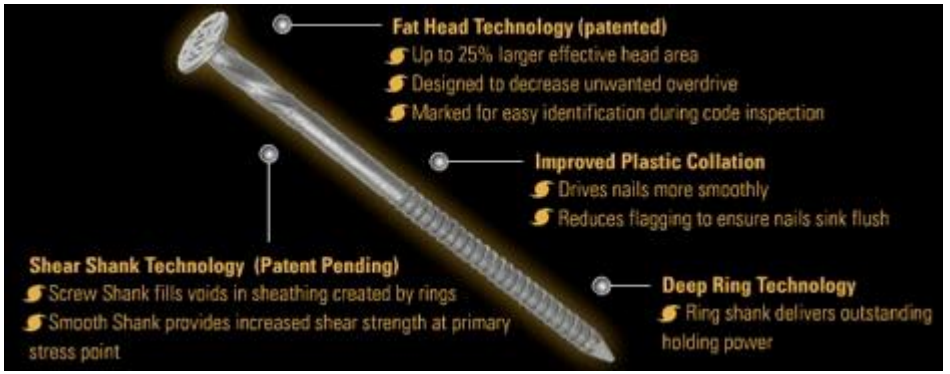
- **Conventional risk management techniques** have reached a point of **diminishing returns**
  - **Only effective against point-sourced risks**, but are unable to stem the steady rise in firm-level risks

The Sequence of Things …

- **A similar perspective comes in the domino theory of Heinrich (1959) which argues that accidents are part of a chain of events involving characteristics of the victim and environment, …**
- **… a human error that leads to emergence of a hazard or unsafe act, …**
- **… followed by an accident and possible injury**

For want of a nail the shoe was lost
For want of a shoe the horse was lost
For want of a horse the rider was lost
For want of a rider the battle was lost
For want of a battle the kingdom was lost
And all for want of a horseshoe nail.

Benjamin Franklin



Principal Risk Management Techniques

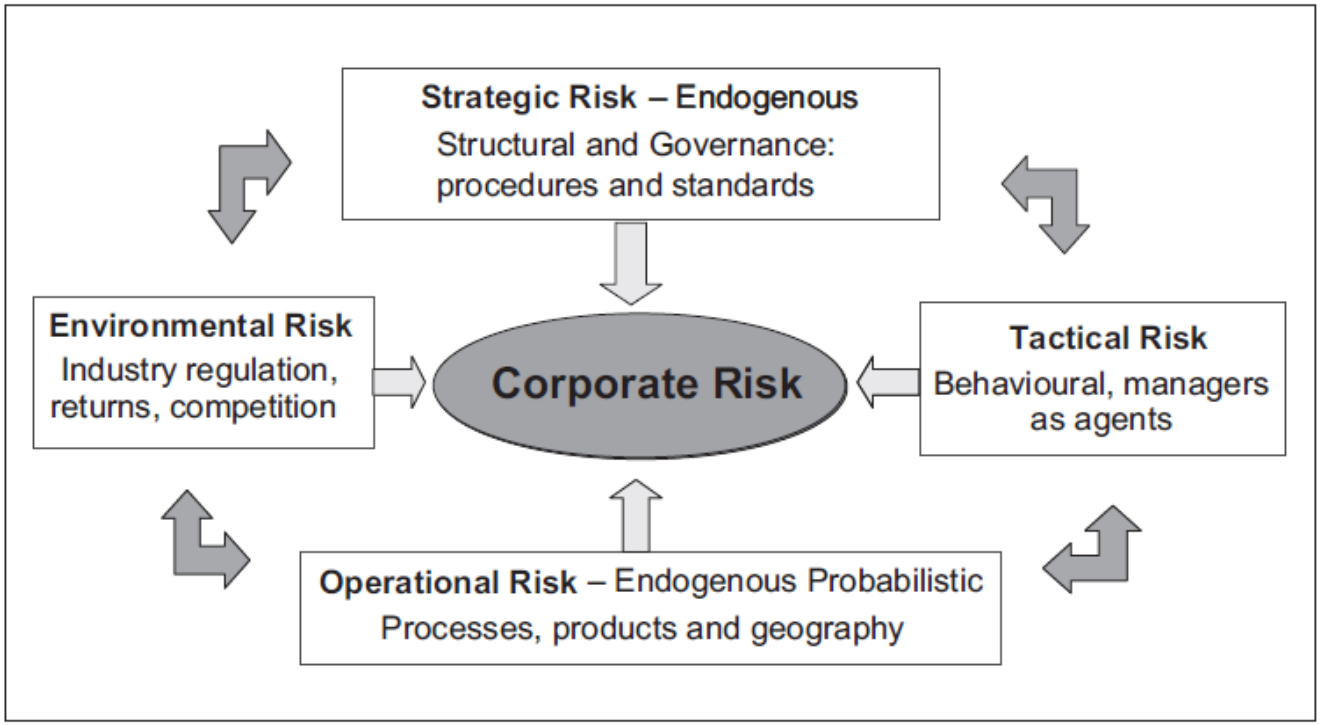
- **Intuitively the integration of risk management and corporate finance should be easy because they are fungible**
- **Each of these strategies has economic consequences that are identical to those of financial risk management products**

- Intuitively the integration of **risk management and corporate finance** should be easy because they are **fungible**
  - **However**, each of these strategies has **economic consequences** that are identical to those of financial risk management products

Strategic Risk Objective	Economic Consequences	Management Perspective	Finance Perspective
Avoid	Opportunity costs of foregone strategy	Preclude	Zero-weighting
Transfer	One-time cost to avoid contingent event	Sharing (Joint Ventures) Outsourcing	Hedging Securitization
Insure	Annuity to payout contingent event	Insurance	Debt
Retain	Write-off costs of contingent event	Self-insurance	Asset liability management Diversification
Reduce		Enterprise risk management	Equity

Sources of Firm Risk

- **A challenge for development of an integrated approach to risk management is that the many different measures of firm risk are generally treated as mutually exclusive**

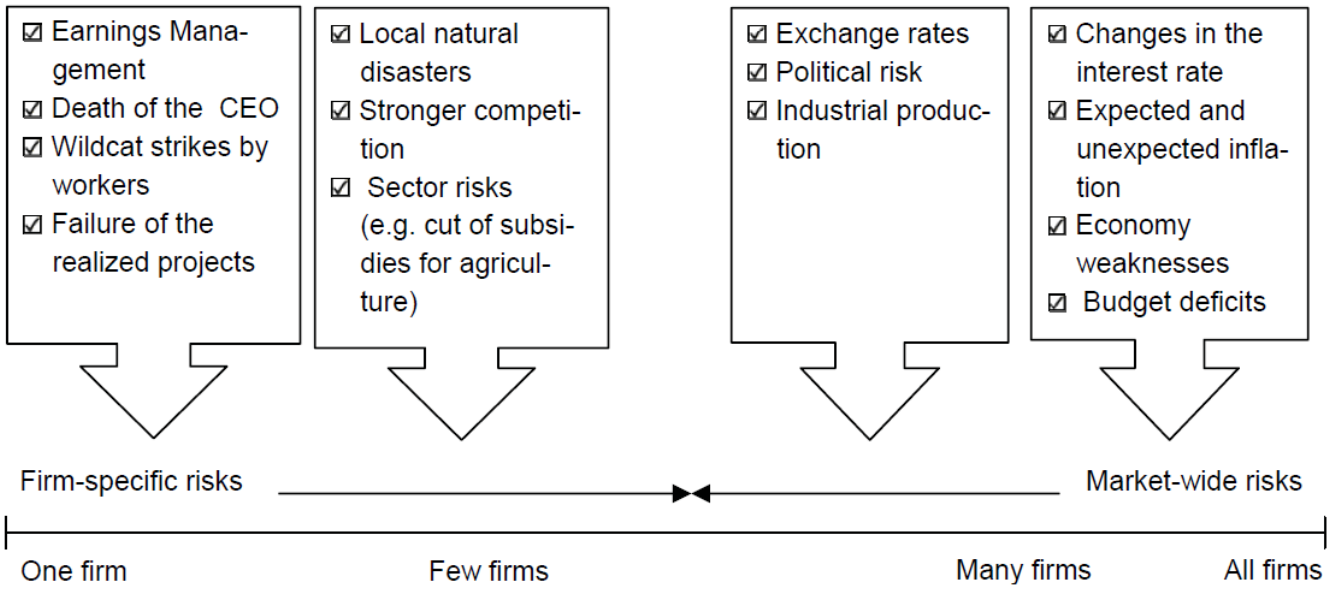


Drivers, Controls and Measures of Firm Risk

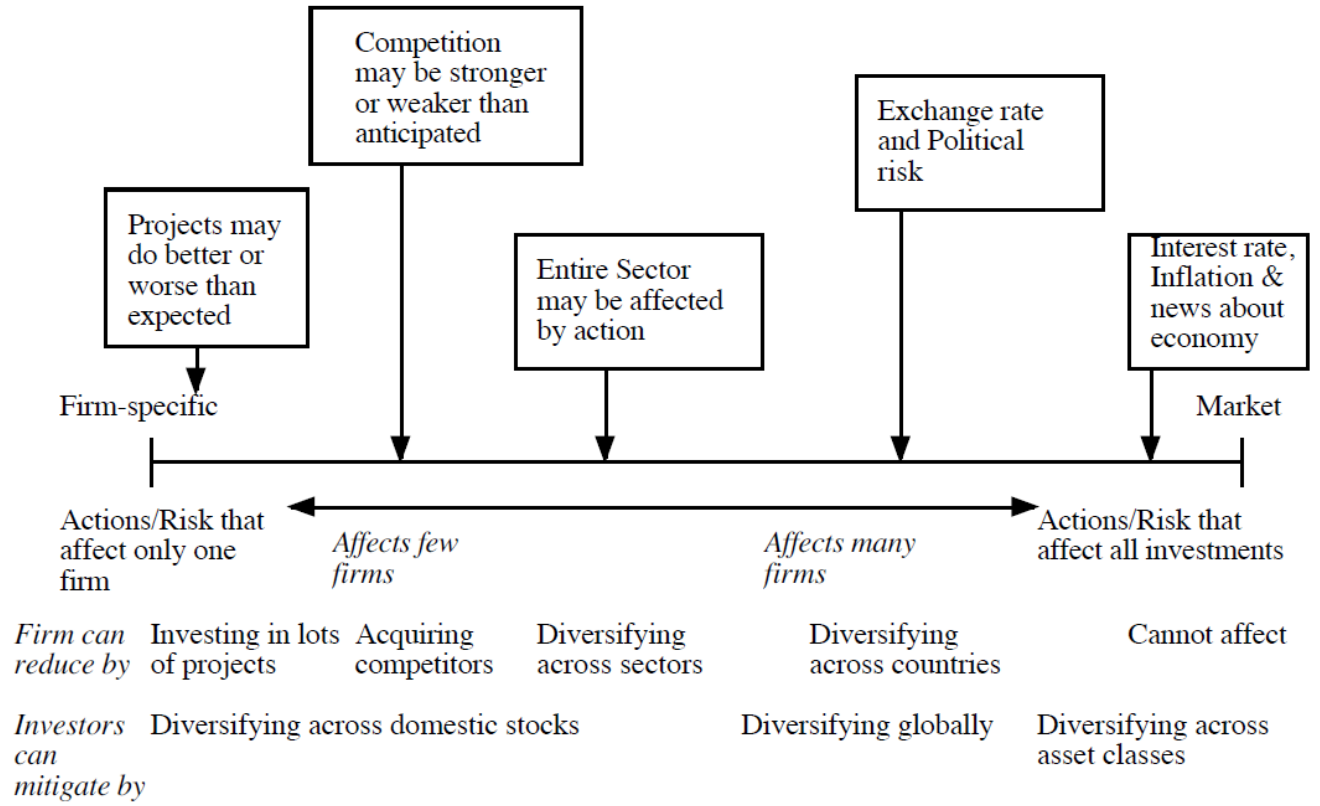
- **It can sometimes be hard to distinguish between firm-level and point-source risks**
- **Consider the risk of default that comes from elevated gearing levels**
- **This can occur in an era of low interest rates, and thus be systematic; or gearing can be lifted as a deliberate policy by individual company managements and be firm-specific**

Locus	Fundamental Drivers	Controls (Exogenous and endogenous to firm)	Indicators
Firm-Level Business Risks			
Economic environment	Demography Technology Entrepreneurship	External analysts Boards Lobbyists	Failure rate of companies
Political environment	Investment Government policy	External analysts Electorates Boards	Stability: election outcomes, wars, terrorism
Financial markets	Investment Hurdle returns	External analysts Boards	Shareholder returns
Natural disasters	Probability		Insured losses
Agency problems	Manager incentives Manager hubris	Legislation Shareholder activism External analysts	CEO tenure Corporate scandals
Competitive environment	Industry legislation Competitor activities Technology and innovation	External analysts Boards	Industry concentration
Strategy	Human capital Scope	Boards Stakeholders Advisors	Relative ROCE Competitive position
Point-Source Business Risks			
Operations	Processes Market regions Assets	Legislation Codes of conduct Procedures Knowledge	Crises Accident rates Environmental quality
Finance	Debt, credit policy Market attractiveness Competitive position	Creditors Financial markets and investors	Default rate Relative profitability
Compliance	Operations Organizational culture	Knowledge Governance Audit	Legislative breaches Reputation

Internal and External Risk Sources

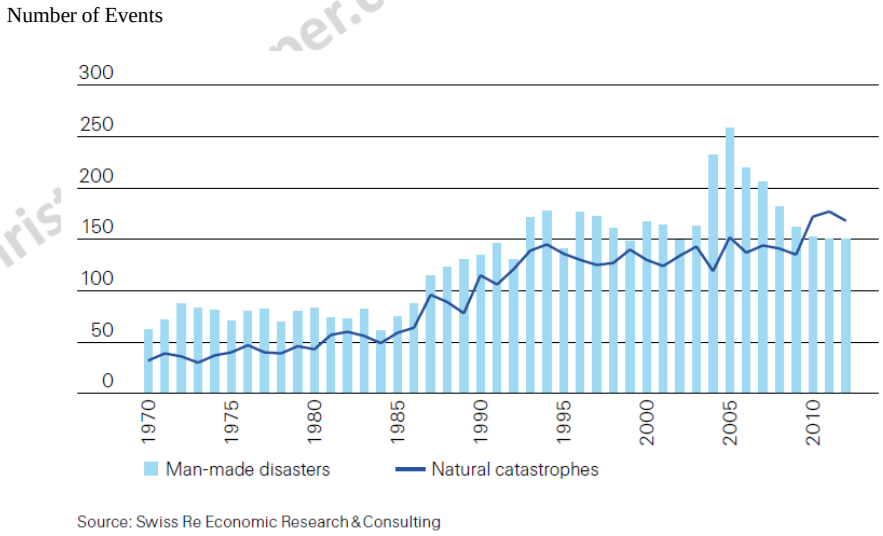


Internal and External Risk Sources (cont´d)



Sources of Losses and Damage

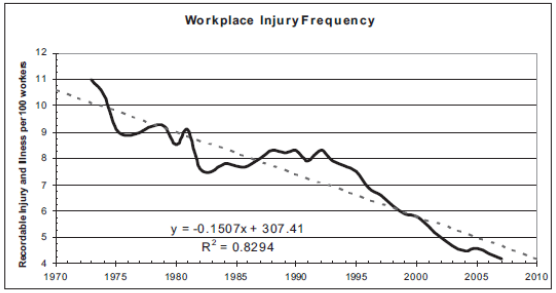
- While historically **natural disasters** cause the **most damage** …
  - … whether measured as insured loss or loss of life
- … the **frequency of man-made disasters** was historically **higher**



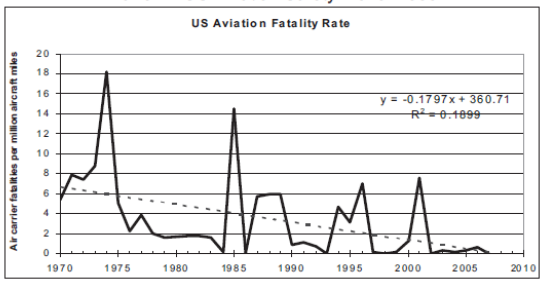
Source: Swiss Re Economic Research & Consulting

Point-Source Corporate Risks vs Firm-Level Strategic Risk

Panel A: US Workplace Safety :1973–2004



Panel B: US Aviation Safety: 1970–2003



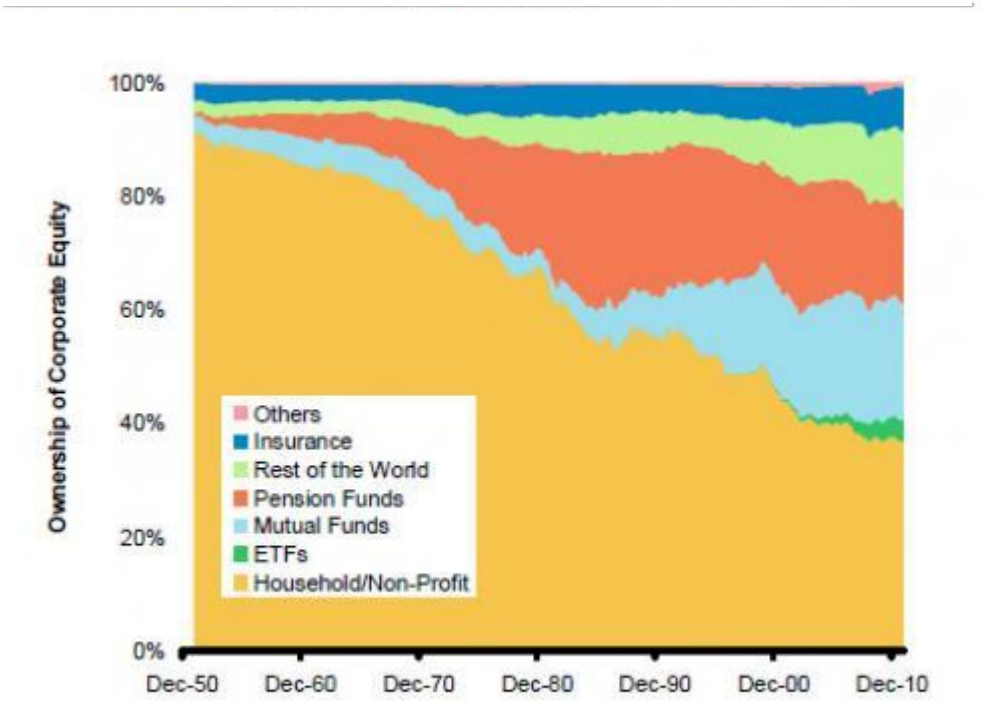
: Economy-wide stock price volatility (1972–2012)

Graphic: Deloitte University Press | DUPress.com

Source: CRSP US Stock Database ©200903 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business; Deloitte analysis.

Institutional Ownership of Securities

- **Are regulatory oversight and internal corporate governance processes inadequate to ensure effective control of modern industrial risks?**



Source: Federal Reserve Bank, Morgan Stanley QDS

Why Organizations Take Risks

- **There is a rich literature in psychology that uses people's responses to questions to assess their personality, including risk propensity**
- **These and similar questions are combined into many questionnaires that rate individuals' risk propensity**
- **Whilst quizzes indicate individuals' attitudes towards risk, how do such attitudes arise? Why do some people climb mountains whilst others lounge on the couch?**

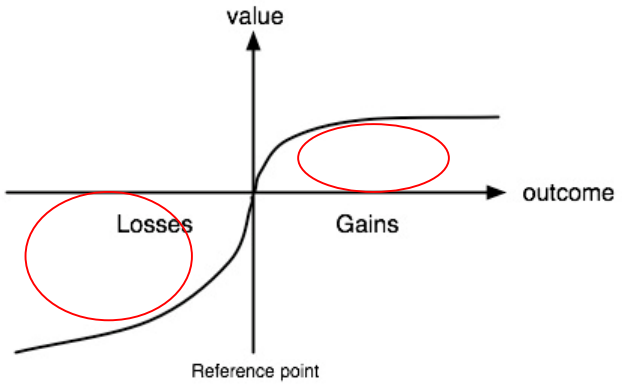
Attribute	Question	Source
Tolerance of ambiguity	Many important decisions are based on insufficient information	Budner (1962)
Need for achievement	I set difficult goals for myself which I attempt to reach	McClelland (1961)
Need for risk	I would like to undertake an interesting experience even if it is dangerous	Keinan (1984)
	I like to play it safe	Pennings (2002)
	In general, I am less willing to take risks than my colleagues	
Instrumental risk taking	To achieve something in life one has to take risks	Zaleskiewicz (2001)
Level of decision maker's control	Risk is higher when facing situations we do not understand	
Impulsivity	I've not much sympathy for adventurous decisions	Rohrmann (1997)
Susceptibility to boredom	I become bored easily	
Interpersonal competitiveness	I have always wanted to be better than others	Griffin-Pierson (1990)
Sociability	I am calm and relaxed when participating in group discussions	Robinson, Shaver and Wrightsman (1991)
Achievement motivation	Successful people take risks	Austin, Deary and Willock (2001)
	I prefer to work in situations that require a high level of skill	Casssidy and Lynn (1989)
Locus of control (external – importance of chance)	When I get what I want it's usually because I'm lucky	Levenson (1974)
	Risky situations can be made safer by planning ahead	
Type A personality	I regularly set deadlines for myself	Williams and Narendran (1999)
	Compared to the average manager, I give much more effort	
	If I play a game (e.g. cards) I prefer to play for money	Zaleskiewicz (2001)
Life satisfaction	I have gotten more of the breaks in life than most of the people I know	Robinson, Shaver and Wrightsman (1991)
Competence	In general I am very confident of my ability	Robinson, Shaver and Wrightsman (1991)
Locus of control (external – powerful others)	My life is chiefly controlled by powerful others	Levenson (1974)
Egalitarian preference	Everyone should have an equal chance and an equal say	Robinson, Shaver and Wrightsman (1991)

Prospect Theory

- **Non-linearity in probabilities means that lower probabilities are overweighted, whilst people underweight moderate and high probabilities**
- **As a result, except close to the reference level, decision makers are relatively insensitive to differences in probability and outcome between events which are commonly encountered**

A descriptive model of decision making under risk

- People derive **value** or utility from **changes in wealth relative to a reference level** …
  - … rather than from absolute wealth levels
- The value function is **asymmetrical**
  - **Losses hurt more than gains feel good** (loss aversion)
  - This **differs from expected utility theory**, in which a rational agent is indifferent to the reference point. In expected utility theory, the individual only cares about absolute wealth, not relative wealth in any given situation
- A convex curve for losses evidencing risk embrace as decision makers see little difference in outcomes as losses escalate



Outcomes of Common Management Strategies

- **A range of common firm strategies have high rates of failure including acquisitions, research and development projects, company formation, mineral exploration, new product launches, quality programmes and senior executive recruitment**
- **There is clear consistency in these poor results from common business strategies as none differs significantly from their mean of 25 per cent**

Decision Setting	Success Rate
R&D projects that: meet their expected market share achieve financial success	 20 per cent 27 per cent
Drugs that return cost of capital	30 per cent
Information technology (IT) projects that come in on-time, under budget with promised functionality	16–25 per cent
Proportion of major transportation projects where cost estimate is met	14 per cent
Probability of making an economic mineral discovery from a typical exploration budget: Australia (1955–1985) Canada (1945–1979)	 28 per cent 35 per cent
Proportion of mergers and acquisitions with a positive financial outcome	17–40 per cent
Ten year survival rate for new firms in USA listed since 1980 manufacturers between 1963 and 1982	 < 38 per cent 20 per cent
New product launches	< 20 per cent
Proportion of quality programmes that achieve tangible improvements	< 33 per cent
Survival rates for electronics joint ventures	16 per cent
Proportion of externally hired Presidents of US firms that survive 4 years	36 per cent
Sources, respectively: Davis (1985) and Palmer and Wiseman (1999); Nichols (1994); The Standish Group (1995) and Whiting (1998); Flyvbjerg, Holm and Buhl (2002); Mackenzie and Doggett (1992) and Mackenzie (1981); KPMG (1999) and Henry (2002); Fama and French (2003) and Camerer and Lovallo (1999); Roskelly (2002); Harari (1993); Park and Ungson (1997); and Ciampa and Watkins (1999)	

Interim Conclusion

- Firms face two distinct types of risk
  - Low-level **point-source risks**
  - More complex **firm-level strategic risks**

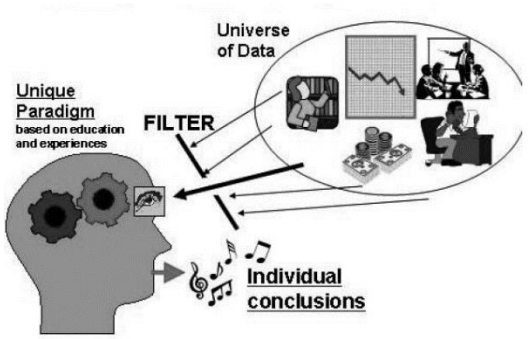
- Risks are changing along quite different trajectories
  - Drivers are exogenous factors – such as regulation and technology – that have significantly changed firms' risk propensity and are likely to continue

- Although **low-level risks appear are under control,** this is **not true of strategic risks**
  - Traditional risk management techniques have had a natural focus on point sources of risk whose seriousness has fallen under the scrutiny of auditors et al …
  - The surprise is that the dichotomous development of risks – towards higher firm-level risks and lower point-source risks – has been scarcely recognized

Decision Making Paradigm

- **Reflexivity means that social systems such as organizations and markets have a significant component of indeterminacy**
- **It is hardly surprising to find that normative models of decision making which ignore human or social factors such as biases and behavioural pressures are usually ineffective, as are approaches adapted from the physical sciences which rely upon total separation between events and observations**

- A decision maker faces a huge **universe of data** which must be **filtered to be manageable**, …
- … and then **processed through** their own **personal paradigm** that is unique for its knowledge and competencies
- The result is that a shared **problem with** a readily available **dataset will lead to differing individual conclusions**



Decision Making Paradigm (cont´d)

Cognitive Biases

Decision makers may repress uncertainty and act on simplified models they construct.

1. Formulate goals and identify problems
Prior hypothesis: problem identification is affected by erroneous beliefs
Adjustment and anchoring: influence of previous judgments and values
Reasoning by analogy: impose simpler analogies to complex situations
Escalating commitment: increase commitment when a project is failing

2. Generate alternatives
Single outcome: focus on a single goal or preferred alternative
Impossibility: discard non-preferred alternatives by inferring that it is impossible to implement
Denying value trade offs: over-valuation of a preferred alternative
Problem sets: imposing an often-used problem solution

3. Evaluate alternatives and choice
Insensitivity to predictability: ignoring the reliability of information
Illusion of validity: observations may reflect a different concept or data can be confounded
Insensitivity to sample size: generalizing from a small data sample or a limited set of examples
Devaluation of partial description: discounting alternatives that are only partially described

Cognitive biases can arise at all stages of the decision-making process
They can all lead to bad decision outcomes!

Source: Charles Schwenk, *Cognitive Simplifications Processes in Strategic Decision-Making*, 1984.

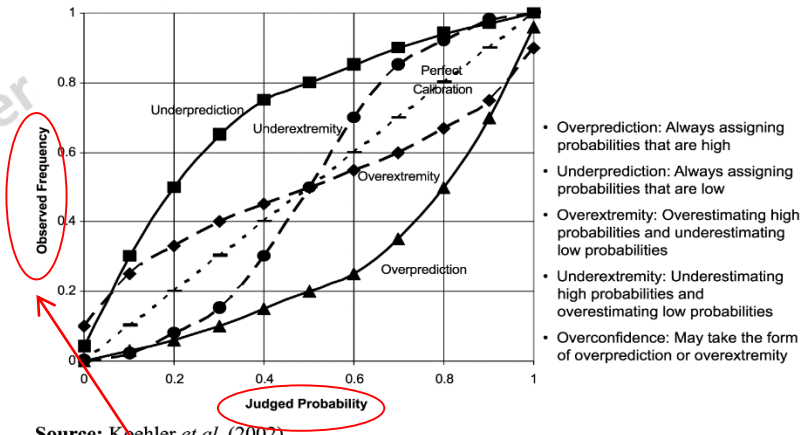
Accuracy of Uncertain Judgements

Findings

- In multiple domains - including management - **expert accuracy** is, in general, **no better than chance**
- **Increased experience**, however, is often accompanied by an **unjustified** increase in **self-confidence …**

Practical implications

- While the dynamic nature of decision making in organizations renders the development of a codified, reliable knowledge base potentially unachievable, …
- … there is value in recognizing these limitations, and employing tactics to explore more thoroughly both problem and solutions spaces



Source: Koehler *et al.* (2002)

Predicted to happen

Actually did happen

Accuracy of Uncertain Judgements (cont´d)

Assume an event has a probability of occurrence of P, and prediction has an error rate of q. For N events: what proportion of predictions will actually occur?

The outcomes can be modelled simply. Of N events:

- PN will occur; but q.PN of these will not be predicted.
- (1-P)N will not occur, but q.(1-P)N will be predicted

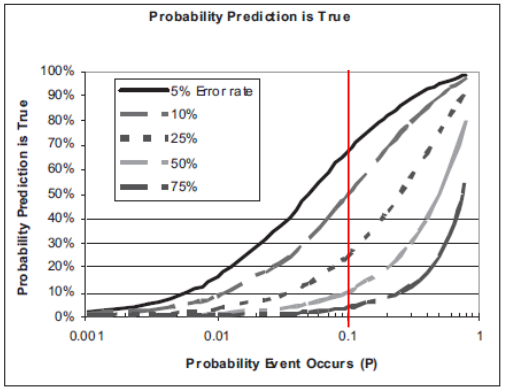
The outcomes are shown in the table below

Actual Outcome	Predicted Outcome	
	Occurrence	Non-occurrence
Occurrence	(1-q).PN	q.PN
Non-occurrence	q.(1-P)N	(1-q).(1-P)N
Total	P.N + q.N - 2 q.PN	2qP.N + N – q.N – P.N

Thus the probability that a predicted outcome will actually occur is equal to:

$$\text{Probability of Correct Prediction} = \frac{(1-q)P}{P+q-2qP}$$

This is shown graphically below. The horizontal axis shows the value of P, or probability of an event's occurrence; and the vertical axis shows the error rate of the test, q. The lines show various probabilities that a prediction proves true [in Bayesian terms this is Pr(Occurrence|Predicted Occurrence)] .



- The accuracy or reliability of a test depends not just on the test itself, but also on the frequency of the event
  - **For events with a low frequency** (everything from earthquakes and species extinction to corporate collapse and global disasters), **judgements need to be extremely accurate to have any value** …

Examples of Tangible Real Options

- **Although real options have limitations, their current neglect is unfortunate as they do have practical application when the holder enjoys the right to exercise a contractual agreement**
- **Insurance, for instance, can be thought of as a put option, which is contingent on the occurrence and outcome of an insurable event such as fire or flood damage. In the event of damage covered by insurance, the insurance company pays the loss in value less a deductible**

	Option Type	Option Premium	Strike Price	Market Value
Undeveloped mineral deposit	Call	Lease cost	Project development cost	NPV of contained minerals
Patent	Call	Acquisition cost	Project development cost	Discounted cash flow from sale of product
Operating lease	Call	Net cost of lease vs. buy	Written down value of asset	Market value of asset
Lease renewal	Call	Nil (?)	Market rental less costs of relocation	Market rental
Insurance	Put	Insurance premium	Deductible	Insured loss
Self-insurance	Put	Balance sheet reserve	Market value of insured asset	Insured loss
Term life insurance	Put	Insurance premium	Nil	Value of insured life

Risk Management using Options to Defer Action

- **Some risk management strategies can contain optionality, or embedded real options**
- **The latter enable decisions to be taken in stages, or deferred until uncertainty is removed**

Locus/Type of Risk	Risk Minimization	Optional Risk
Equipment failure	Preventative or scheduled maintenance	Repair after failure
Product development	Invest in R&D	License or acquire new technologies as needed
Market entry	Establish own operations	Use agent or joint venture

Strategic Foresight

- **Strategic foresight is a growing practice in corporate foresight in large companies**
- **Strategic foresight can be practiced at multiple levels, including:**
- **Personal - *Personal and professional goalsetting and action planning***
- **Organizational - *Carrying out tomorrows' business better***
- **Social - *Moving toward the next civilisation - the one that lies beyond the current hegemony of techno/industrial/capitalist interests***

- **The table summarizes a number of views on major drivers of future change**
- **Such changes usher in a new environment that must be factored in to decisions**
- **But how can a useful view of the future be developed given forecasters' poor record?**

- Many decisions are made in a context where **conventional wisdom** about the present holds true
- **Conversely**, other areas will be buffeted by **significant change** which must be factored into decision making

- In a context of **strategic foresight** scanned inputs, forecasts, alternative futures exploration, analysis and feedback are used to produce or alter plans and actions of an organization
- Thereby, considerations of **possible futures** (alternative futures) and of **probable futures** (forecasts, predictions) are important to developing a preferred future (plan)

	Strategic Foresight	***Business Issues***	***McKinsey***	***Coleman***
Political	• Instability from pollution and resource depletion		• Centres of economic activity shift profoundly • Big business comes under increasing scrutiny	• Regional dynamics • Sustainable business processes
Economic	• Knowledge as value adding	• Knowledge management • Shareholder value	• Public-sector activities balloon • Natural resource demand grows, with strain on the environment • Non-traditional business models flourish	• Falling commodity prices • Implacable competitiveness
Technological	• Digital revolution and ubiquitous chips • Biotechnology	• Innovation • E-Business • Disruptive technology	• Connectivity transforms the way people live and interact • Management becomes more scientific	• Critical mass of technologies
Social	• Social division based on digital literacy • Globalization	• Growth • Organization • Globalization	• Consumers grow and age • Global labour strategies become essential • Economics of knowledge change	• Rise of individualism • Output focus
??	Unexpected events			• Factor X

CorpFinCE
Corporate Finance Central Europe

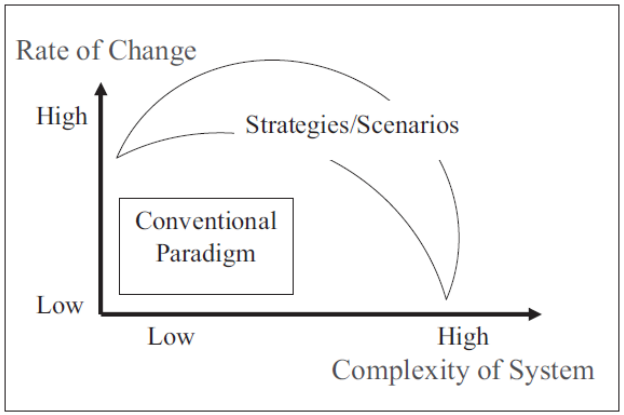
Predictability of Systems

- **Consider sytem dynamic models …**

When attempting strategic foresight, it is necessary to think about the **requirements** for any **system to be amenable to meaningful predictions**

1. It must be **defined and closed**
   - A process that is not understood and quantified and is open to multiple forces will behave erratically and cannot be realistically predicted
   - It is virtually **impossible** to **predict systems** that are **complex** or **chaotic** such as weather and currencies …

2. The **number of elements being predicted must be small** enough to ensure homogeneity of response
   - And they must fit within a reliable causal model, for which there is valid data

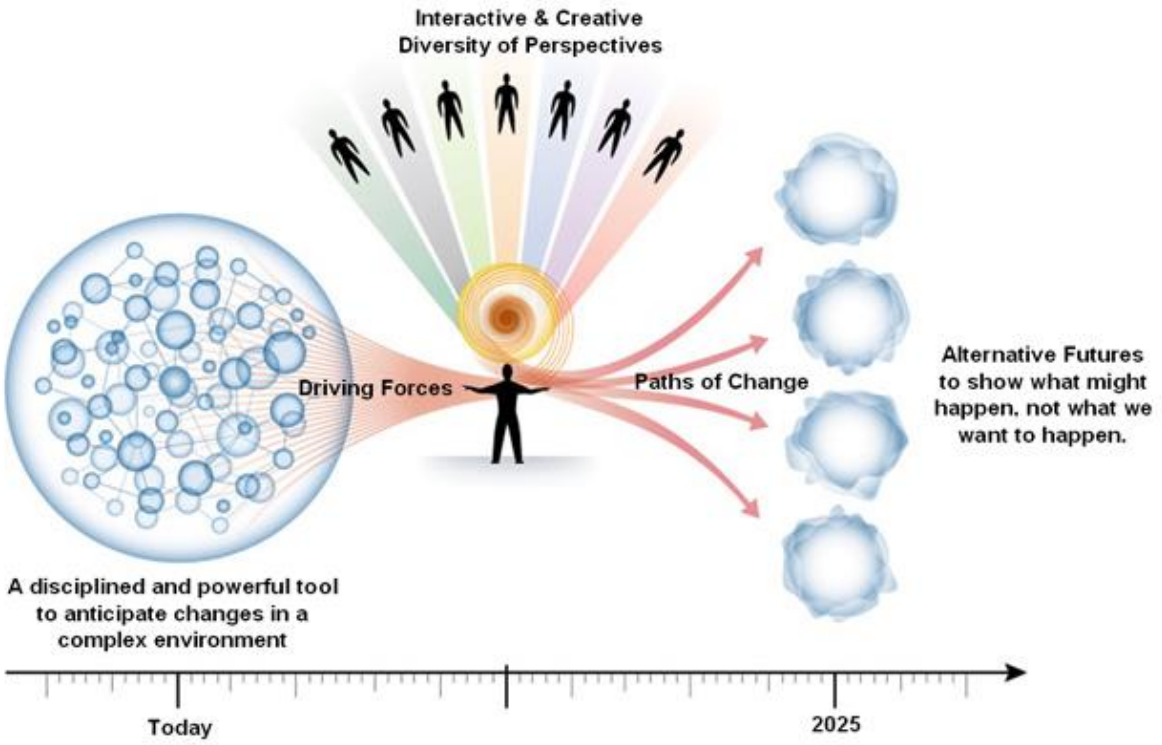


Probabilistic Approaches

- **One problem with risk-adjusted value approaches is that analysts are required to condense their uncertainty about future outcomes into a set of expected cash flows**
- **Probabilistic approaches take a richer and more data-intensive view of uncertainty, allowing for extreme outcomes, both good and bad**
- **In the process, a better sense of how risk can affect a venture is developed, and enables consideration of appropriate ways to manage this risk**

- **Sensitivity Analysis**
  - "What if?" questions about **key inputs** and look at the **impact on value**
  - Examine extreme outcomes and evaluate the sensitivity of the outcome to changes in individual assumptions
- **Scenario Analysis**
  - Estimate the outcomes and value under **viable scenarios** in the future (from very good to very bad ones) and **attaching probabilities**
  - Best employed when the outcomes of a project are a function of the macroeconomic environment and/or competitive responses
- **Decision Trees**
  - Some firms face **sequential risks**, a situation in which it is necessary to move through one stage successfully before proceeding to the next stage
- **Simulations**
  - Allows for the deepest assessment of uncertainty because it lets analysts **specify probability distributions of values** - rather than a single expected value for each input - about which they feel uncertain
- **Value at Risk (VAR)**
  - Value at Risk, or VaR, measures the **potential loss in value** of a risky asset or portfolio over a **defined period** for a **given confidence interval**

Scenario Planning



Scenario Planning (cont´d)

Define the scope of the analysis, and tease out the focal issue or key decision

- Develop **data** on the decision
  - Covering factors such as industry size, competitors, substitutes, policies, technologies, profitability
- Identify key **trends**
  - Using PEEST (political / economic / environmental / scientific / technological) or STEEP, Five Forces, competitive analysis and other models of how the area of decision operates
- Understand the **drivers** of these trends, and rank them by importance
- Bring drivers together into **scenario themes**
- **Reduce** the number of scenarios (ideally 2-3)
  - Often giving them descriptive names
- **Elaborate the story** behind each scenario
  - Check for consistency and plausibility
- **Identify** the **issues** arising
  - Does the organization have adequate competencies?
  - What contingency plans need to be made?
  - What no-regrets actions can be taken?
- Think of scenarios as a **long time** (e.g. 10-year) journey
- Develop **milestones** of what should be seen along the way as each scenario unfolds

Scenario Planning Example: Retail Petrol Supply

First Step: Identify key drivers and outlook

Key Forces

- Demand: Cars *Travel distance* Fuel economy
- Quality: environment and engine technology
- Location of demand changes
- Internal and international trade
- Price of crude oil: petrol price elasticity; taxes
- GDP: petrol consumption is economically sensitive

Underlying Drivers

- Standard of living: cars, travel
- Environmental expectations: emissions
- Engine/vehicle technology: substitutes
- Internal migration

Second Step: Develop scenarios and list their implications for strategy

Scenarios

- *Green Death* Strong environmental pressures, perhaps driven by climate change, which reduce demand and lift taxes, encouraging substitutes
- *Raging Fire* Continuing rise in living standards and dispersion of ageing population to lifestyle locales with strong demand growth (silver birds)

Implications

- *Green Death:* competencies in alternatives and policy lobbying; new lower cost business model under restructuring and strong competition
- *Raging Fire:* capacity expansion, improved logistics, upgrade customer buying experience

Scenario Planning Example: Safe the World …

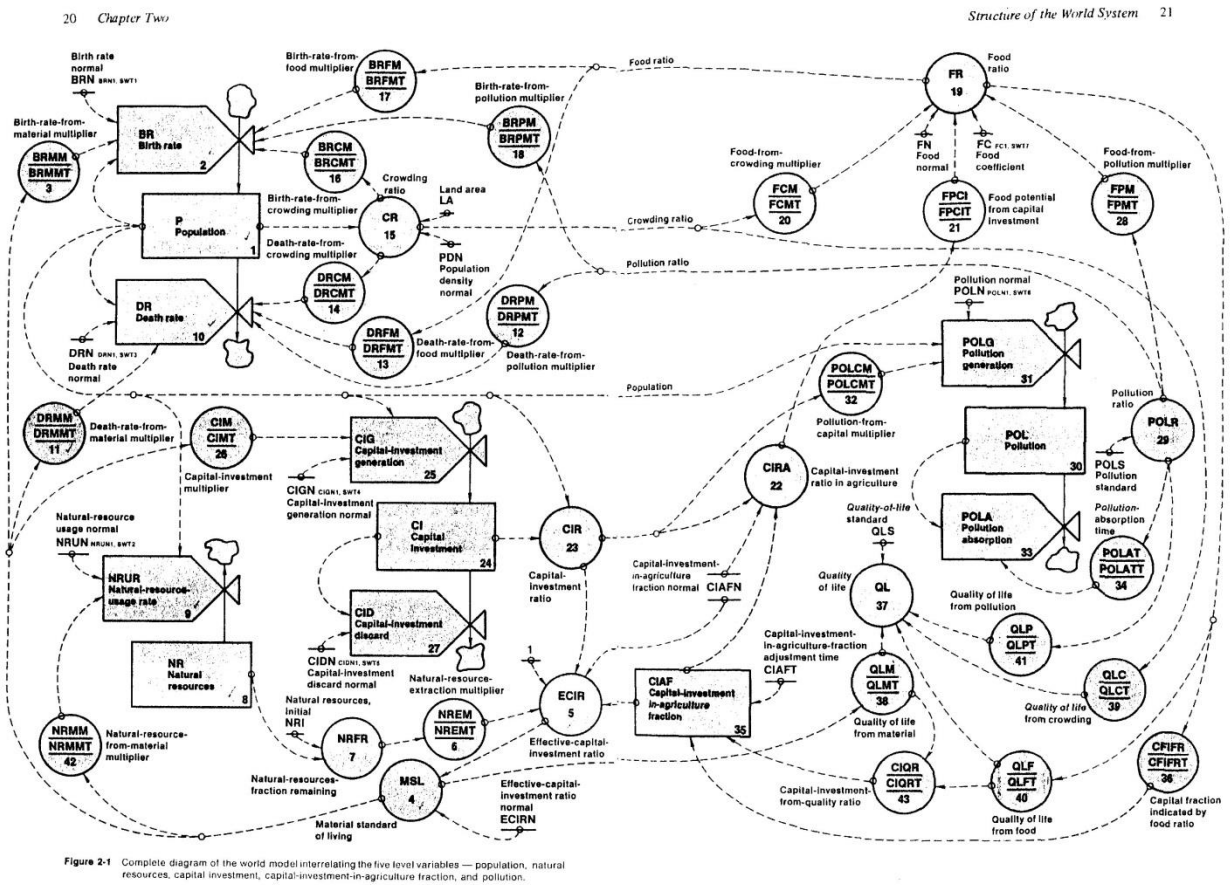


Figure 2-1 Complete diagram of the world model interrelating the five level variables — population, natural resources, capital investment, capital-investment-in-agriculture fraction, and pollution.

Conditions Promoting Risk and Poor Decision Making

- This table recognizes that the environment around a decision shapes its risks, and lists indicators of potentially weak decision making

Environmental Factor	Contribution to Elevated Risk
Anxiety for income	Pursuit of earnings overrides sound investment criteria
Compromise of investment principles	Investments do not meet established criteria, possibly due to stakeholder influences, anxiety for income, biased compensation and competitive pressures
Incomplete record keeping	Financial decisions are not properly documented, including gaps in supporting analysis
Failure to document contractual arrangements	Sales or contracts are negotiated without full documentation or approvals
Inadequate scrutiny of routine processes	Familiarity breeds contempt
Excessive optimism	Allows known weaknesses or risks to be downplayed in light of optimistic expectations about outcomes
Ignoring warning signs	Failure to monitor or heed forward indicators of risks, such as increased frequency of minor losses or defects
Lack of supervision	Inadequate involvement of management in initial decisions, and monitoring of ongoing operations
Technical incompetence	Staff lack the skills and experience in operations
Overextended resources	Resources – human, capital and financial – are inadequate to meet the needs of ongoing operations
Internal competition	Compromises procedural requirements

Adapted from: US Federal Reserve (1997) *Branch and Agency Examination Manual*

Quick Risk Quiz

- This table involves eleven questions with yes-no answers that have been linked to poor risk outcomes
- Around 70% of organizations with a score of four or more are likely to experience a crisis in any 3 years (Coleman, 2006)

Think about whether your organization:	
1. Is in a regulated industry	Yes/No
2. Has many complex activities	Yes/No
3. Has direct investments offshore	Yes/No
4. Produces finished consumer goods or services	Yes/No
5. Has a high level of internal competition	Yes/No
6. Has implemented repeated cost-cutting	Yes/No
7. Cuts corners to get results	Yes/No
8. Is expanding rapidly	Yes/No
9. Has a Board with expertise in all areas of operations	Yes/No
10. Has an ethical approach to business	Yes/No
11. Appoints best candidates as managers	Yes/No

Scoring Questions 1–7: 1 for `Yes', 0 for `No';
Questions 8–11: 0 for `Yes', 1 for `No'.

Does Risk Impact Shareholder Value?

- **Shareholders expect that firms will manage risks**
  - Not only to reduce unwanted outcomes but also the consequent **adverse impact on value**
  - Thus sound risk management programmes are an important management responsibility.

- Risk impacts shareholder value and **risk management can add value**
  - Thus risk management becomes a **strategic process** in which **risks** are **eliminated**, **managed** or **accepted** according to their relative costs and benefits and with the objective of adding shareholder value

- However, increasing **risk beyond the point of maximum return** is **not rewarded** and will progressively reduce the expected return

- And, a firm or portfolio has an **optimum level of risk**

- Drucker (1967) argued that there were **some risks that a firm cannot afford *not* to take**

Enterprise Risk Management

- Recognize the **existence** of risk
- **Understand** each risk's **mechanism** and its **probability** of occurrence
- Provide motivation to institute **controls**
- Establish a **framework** which sets a target for the **ideal risk mix**
- Develop **tools for managing risks** which are appropriate to their probability of occurrence and consequences
- **Implement** a risk management system
- **Monitor** results and regularly revisit the strategy

Taxonomy of Firm Risk

- **Developing a comprehensive listing of possible risk outcomes requires thinking from different perspectives**
- **The typical approach to determining potential risks is a checklist to facilitate brainstorming**

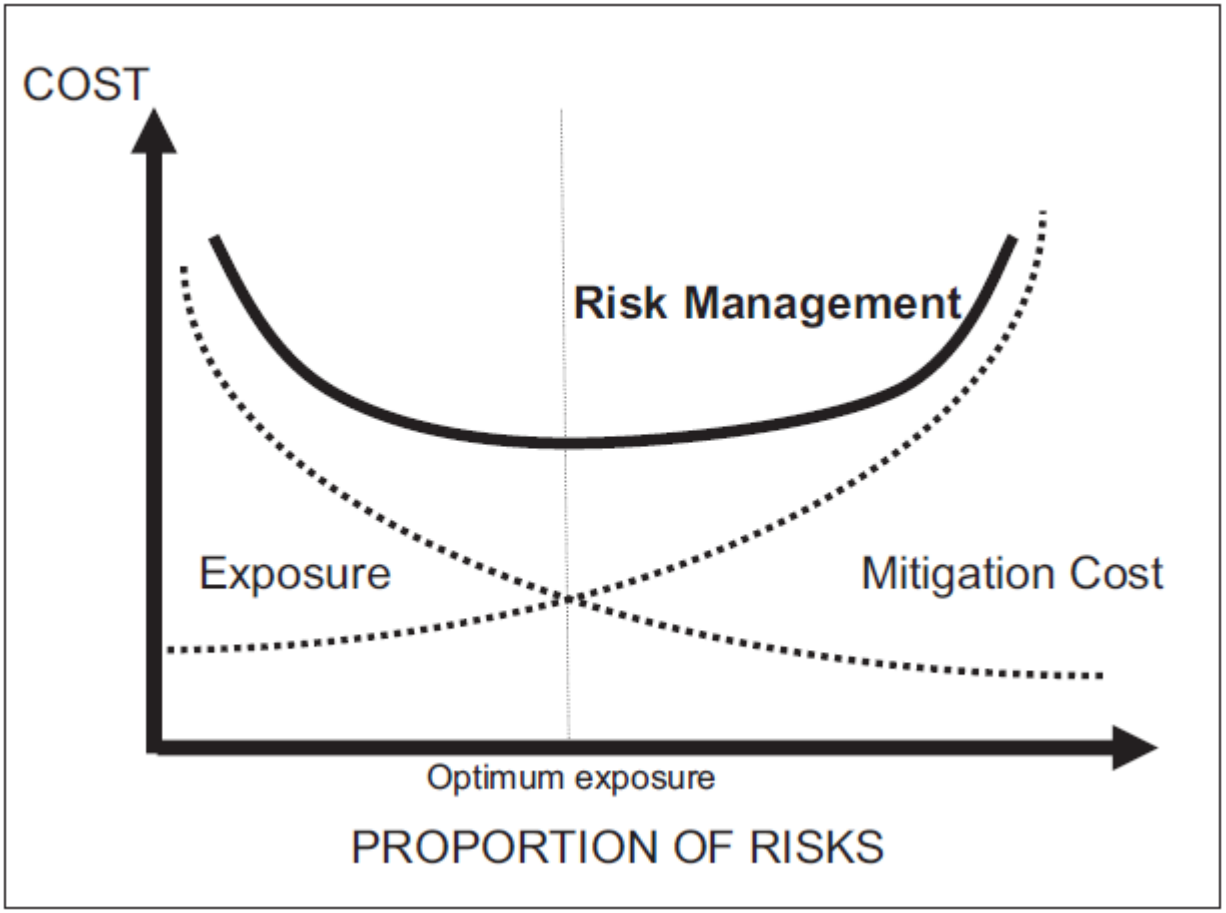
Firm-Level Strategic Focus	Financial Risk	Operational Risk
Investment	• Financial Markets: commodities, interest rates, exchange rates	• Consumer markets • Technology and processes
Organization structure	• Balance sheet	• Staff
Competition	• Price	• Market share • Product range
Assets	• Liquidity • Counterparties (credit and settlement)	• Property, plant and equipment • Security, safety (including third parties)
Employees	• Theft • Cost	• Availability • Training • Safety, industrial relations
Regulation	• Fines	• Contractual
Intellectual property (competencies)		• Data and knowledge • Processing systems (IT)
Stakeholders	• Shareholders	• Employees • Customers • Suppliers • Community

Tangible and Intangible Risk

	Source	Risk exposure
Tangible	Natural events	• Assets and staff • Supply chain
	Political and social environment	• Legislation • Operations
	Customers	• Market • Credit
	Products	• Quality • Price • Demand
	Operations	• Accidents • Product liability • Fraud and malpractice
	Finance	• Revenues and costs • Liquidity
	Compliance	• Reputation • Diversity
Intangible	Structure Organization	• Risk propensity • Right person-right job
	Community	• Constraints • Cultural limits/rubbing points
	Technology	• Breakthrough, opportunity
	Competitors	• Breakthrough • Drive for change/lower cost
	Knowledge	• Strategy gaps, errors
	Skills and competencies	• Knowledge
	Strategy	• Insufficient information or analysis • Model mis-specification
	Reputation	• Innovation • Competitive strength

Financial Optimization of Risk Management

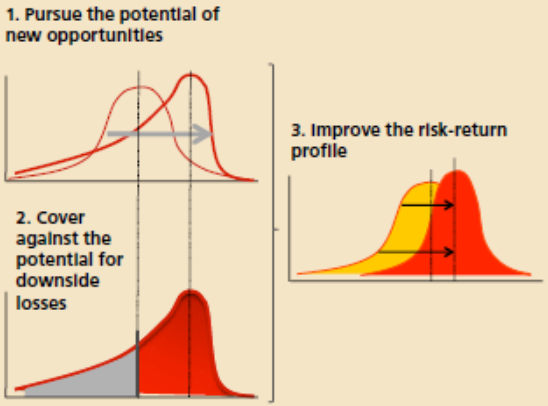
- **The most obvious motivation to control risks is to reduce their financial impact**
- **This, of course, involves a cost-benefit analysis, because – no matter how a risk is managed – there will be some cost involved**
- **Intuition suggests that risk management inevitably reaches a point of diminishing returns, where the residual risk is so small that no effort is justified in further reduction**



How Risk Management Affects Value

Creating Value from Risk Management

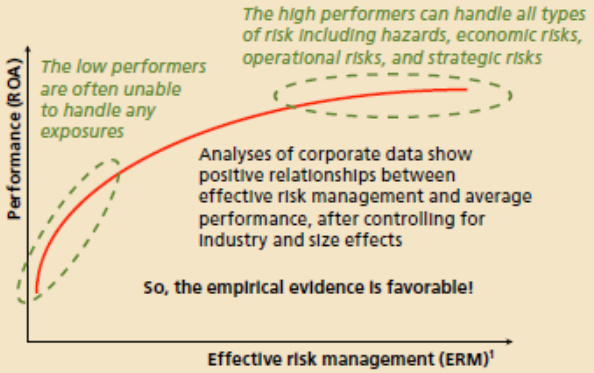
Exploit upside potential – reduce downside risk



Effective risk management can increase the average return and reduce the variance in return.

The Value of Risk Management

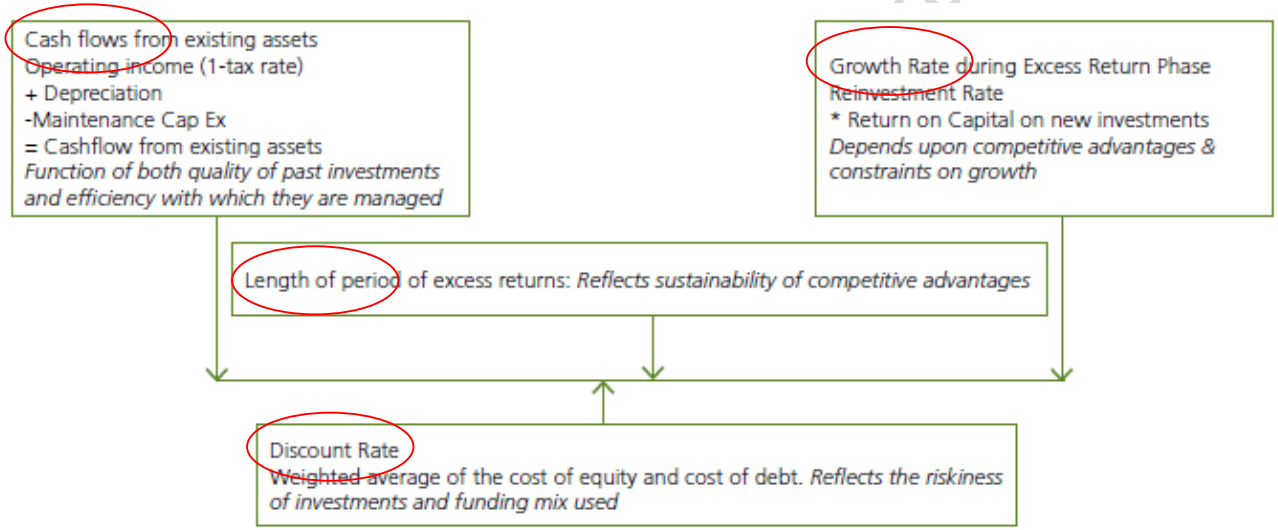
Does it pay to avoid potential losses and take advantage of new opportunities?



1ERM = the ability to handle external market volatilities and generate smooth net cash inflows or earnings over time

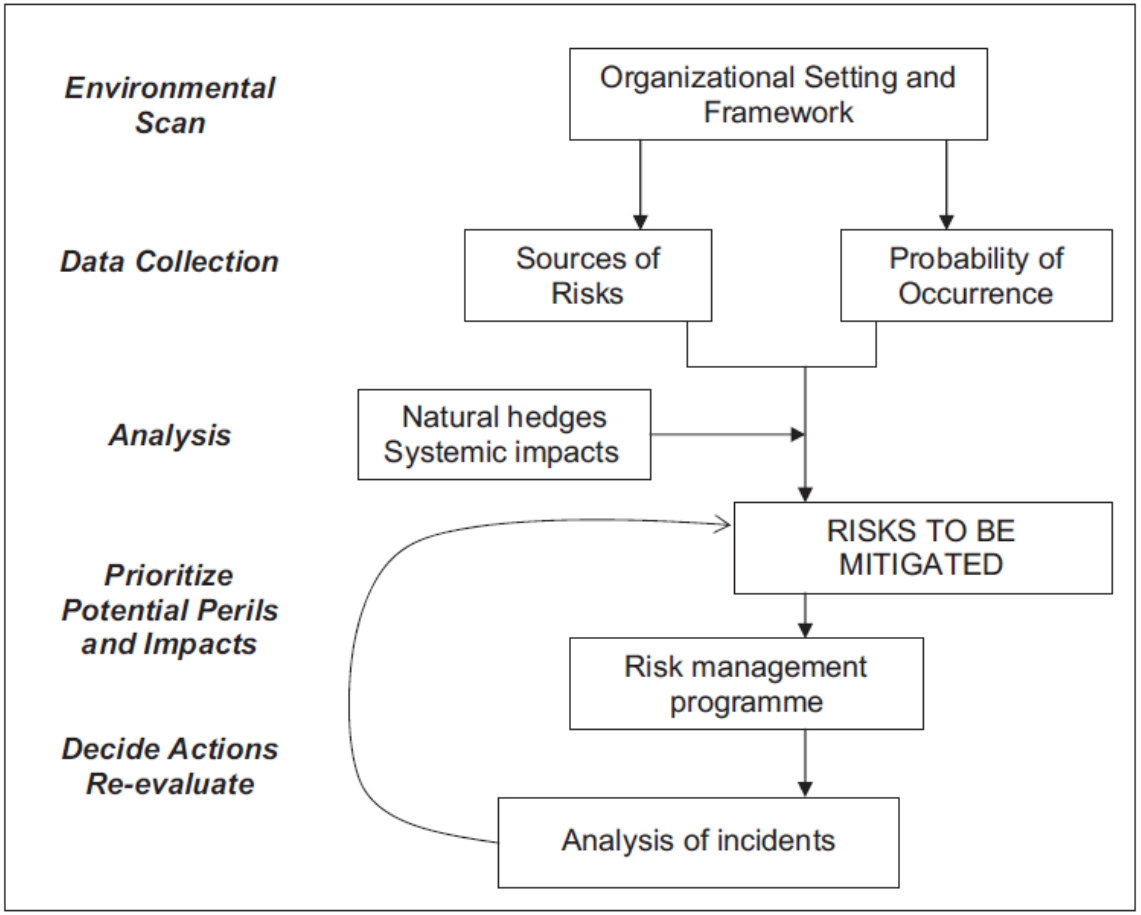
Source: Andersen, T. J., 2008, The Performance Relationship of Effective Risk Management: Exploring the Firm-Specific Investment Rationale, Long Range Planning, 41(2).

Factors Influencing the Value of a Business

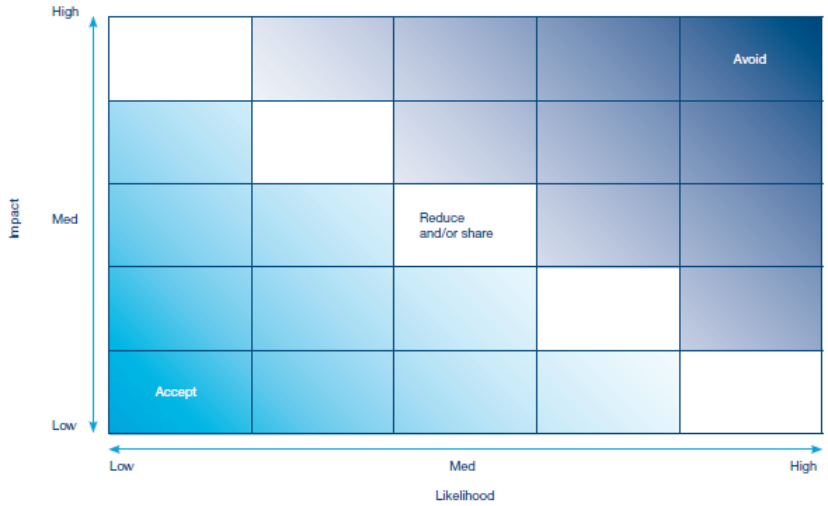


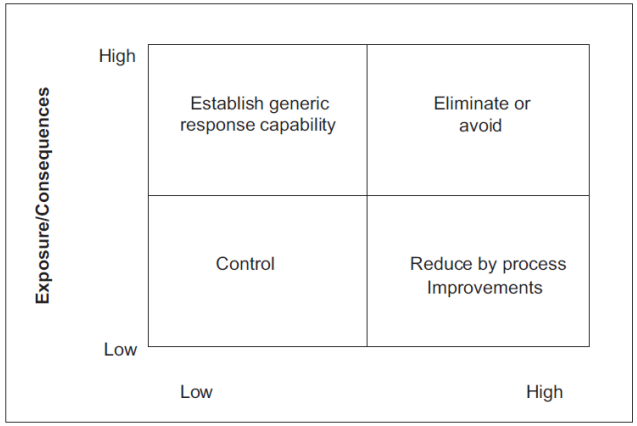
Integrated Risk Evaluation and Management

- **Key is providing an environment where risk management is part of the culture**
- **The concept of a risk chain sees risk analysis, evaluation and management as a series of intertwined steps**

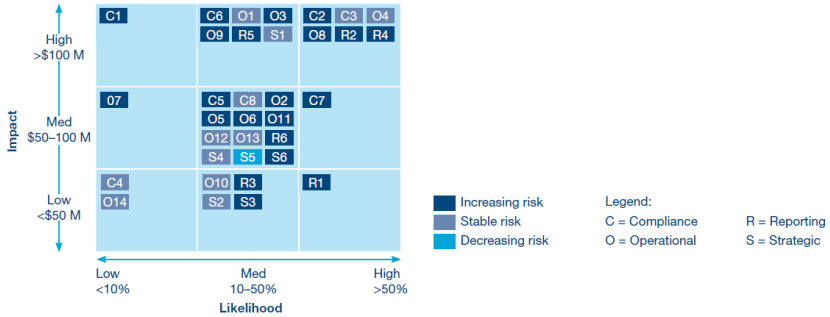


Risk Maps





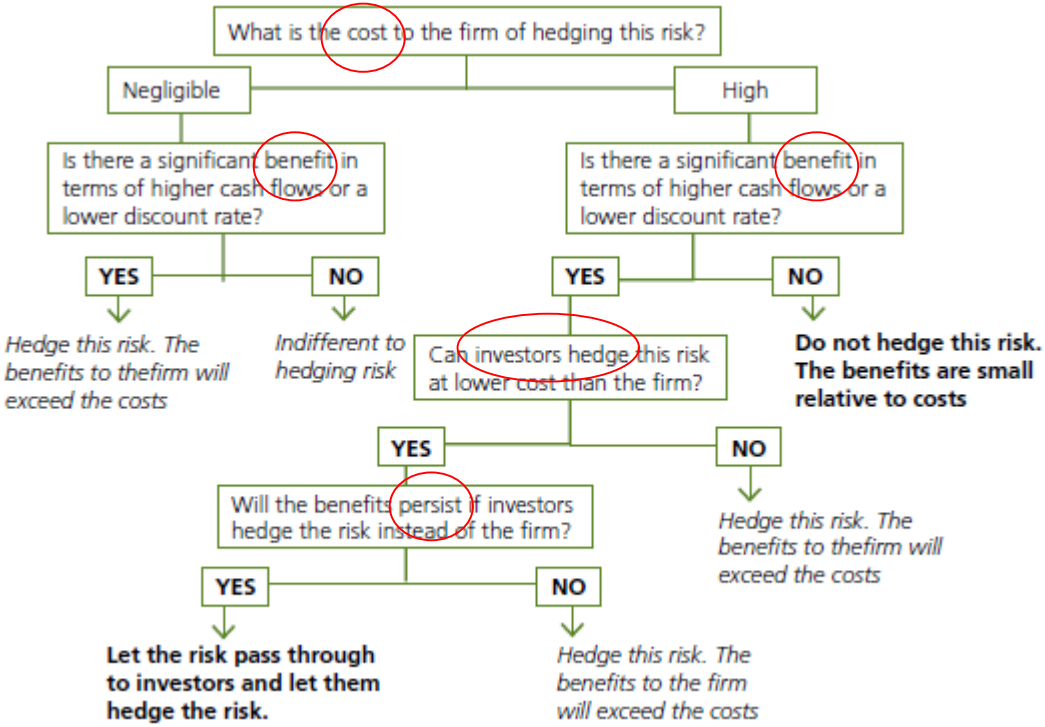
Risk Maps (cont´d)



Categories	Description
[C1] Compliance	Non-compliance with laws, regulations, or policies
[C2] Ethics and integrity	Fraudulent, illegal, or unethical acts
[C3] Intellectual property	Inability to enforce patents and trademark; infringement
[C4] Legal and disputes	Changing laws, liabilities, and commercial disputes
[C5] Product quality	Producing off-spec products
[C6] Product safety	Unsafe products
[C7] Regulatory	Changing regulations threaten competitive position
[C8] Tax	Failure to adequately support tax positions
[O1] Catastrophic loss	Major natural or manmade disaster; terrorism
[O2] Customer	Failure to follow customer preferences/needs
[O3] Efficiency	Inefficient operations
[O4] Engineering	Inability to design and manage facilities projects
[O5] Environmental	Environmental incidents or exceedances
[O6] Equipment	Plant equipment failure
[O7] Health and safety	Health and safety incidents harm employees
[O8] IT	Failure of IT systems; cyber attack
[O9] People	Lack or loss of qualified employees

Categories	Description
[O10] Security	Security breaches at company sites
[O11] Sourcing	Lack of access to key raw materials; failure of supplier
[O12] Supply chain	Failure of transportation and logistics network
[O13] Technology	Development of new, potentially disruptive technologies
[O14] Weather	Prolonged, adverse weather conditions
[R1] Commodity	Variability and increasing trends in commodity prices
[R2] Credit	Failure of customers or counterparties to perform
[R3] FX	Volatility in foreign exchange rates
[R4] Interest rate	Variability in interest rates
[R5] Investment	Financial market volatility impacts investments
[R6] Process design and execution	Failure in the design and execution of key management processes
[S1] Alliance	Inefficient or ineffective alliance, joint venture, affiliation
[S2] Capital adequacy	Lack of access to capital or liquidity
[S3] Competitive	Actions of competitors or new market entrants
[S4] Industry	Industry changes threaten industry attractiveness
[S5] Macroeconomic	Changes in broad economic conditions
[S6] Political	Adverse actions by foreign governments

When Is It Appropriate to Hedge Risk?



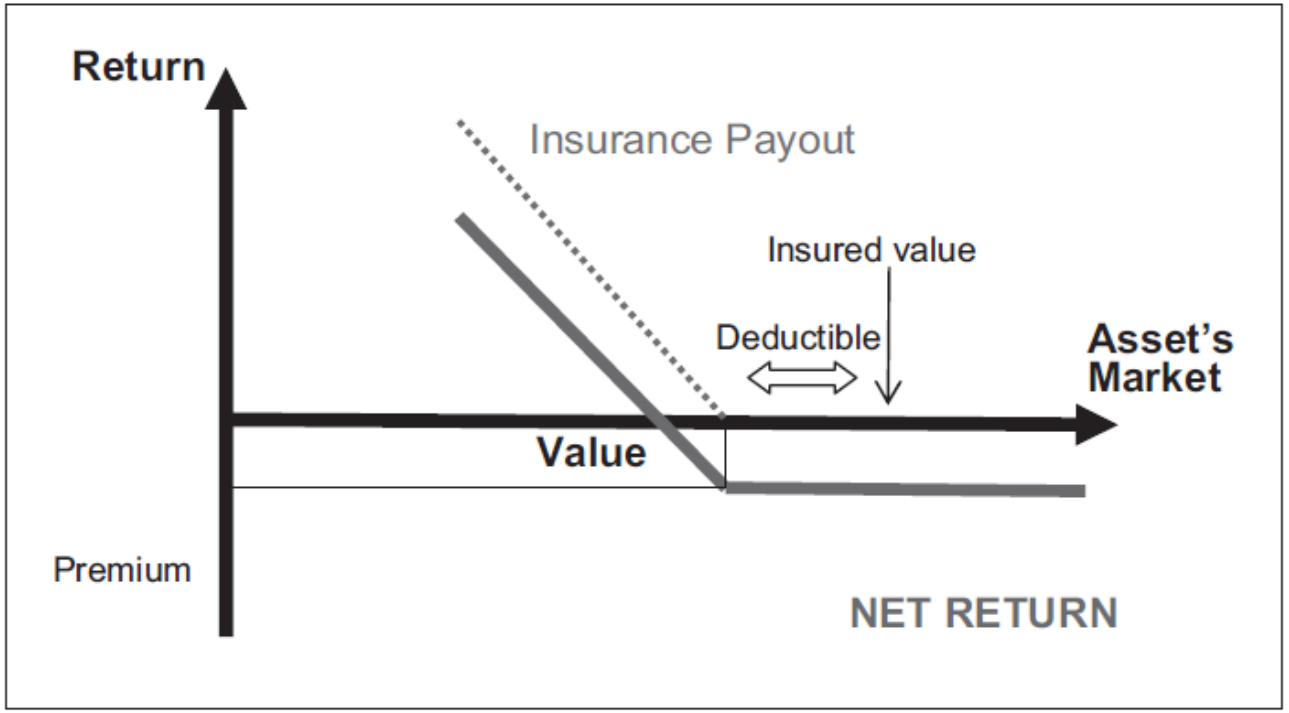
Risk Insurance

Given that **insurance relies on pooling and large numbers**, …
… insurable events have a number of core characteristics

- The **number** of insured entities must be **large** relative to the frequency of loss
- The **frequency** of expected loss must be **quantifiable**
- The **event** must be clearly **definable** and its loss must be financially quantifiable, or else payouts cannot be readily established
- The **loss** needs to be **uncertain**, which means that the distribution of events is random and the pool must contain members who will not suffer loss
- **Individual losses** must be **independent**, so that there is no concentration of exposures and only a small proportion of the pool is impacted at any one time
- It must be **possible** for the pool **to protect** against adverse selection whereby a disproportionate number of firms with relatively high probability of loss seek cover, which results in transfer of wealth from low- or average-risk firms to high-risk firms

Pay-off line from Insurance

- **The pay-off line for an insurance policy is identical to that of a conventional put option**
- **Inclusion of a deductible makes the insurance policy out of-the-money; and it is an American-style option because it can be exercised at any time before expiry**



Types of Derivatives

Over-the-Counter (OTC) Derivatives
Forward foreign exchange
Non-deliverable forwards
Currency swaps
Interest rate swaps

Exchange-Traded Derivatives
Currency options
Interest rate futures
Commodity futures
Options on futures

Securitizations
Collateralized debt obligations
Mortgage-backed securities

Exotic Options, Structured Products and Non-Traditional Derivatives
Weather, oil, natural gas and electricity derivatives
Asian options, barrier options, basket options, compound options, look back options, binary options

Integrating ALM into Corporate Finance

- ALM in financial institutions deals with market-based assets and liabilities that have well-defined historical data that enable rigorous statistical techniques to match both sides of the balance sheet under a variety of scenarios

- ALM has found **less use in non-financial corporations where data is not as comprehensive**, and the objective – maximizing return from assets – differs from that of banks and insurance companies, which is to earn a spread between assets and liabilities

- ALM, though, has strategic advantages by facilitating integration of risk management and financial strategy

Chief Risk Officer

If everything seems to be under control, you're just not going fast enough

Mario Andretti
Formula One World Champion

- Provide **leadership** for ERM
  - Integrate all risk management functions, staff and responsibilities across the company within the CRO's group
- **Coordinate** internal and external risk **reporting**
- **Ensure compliance** with stock exchange and regulatory requirements for risk management
- **Improve incorporation of risk** into the firm's strategy and programmes

- Unfortunately many **benefits** of better risk management are **difficult to measure**
  - Closer integration of risk measures into project evaluations and operations.
  - Better matching of risk propensity to decisions

Determining Key Risk Indicators

- Actual **loss experience**
  - This should be broader than just net P&L impacts and include events that do not have material costs (especially 'near misses' and disruption to customers, employees and operations)
  - Results should be categorized by business line and loss type
- The firm's best thinking on risks it faces
  - This includes **anticipated risks** (particularly selfassessment such as the 'ten top risks we face') with **probabilities** and **consequences**
- **Value at risk**, particularly for financial measures
- **Firm and industry data** on risks, mapped as consequences vs. probability
- **Milestones** that are **indicative of scenarios for credible generic risks** in terms of consequences and required responses
  - The implication is that passing a milestone should trigger heightened awareness of this risk
- Organizational '**red flags**' such as executive turnover; legal or ethical charges; reporting errors; and backlogs in production and accounting

Generic Key Risk Indicators

- **Developing a set of KRIs will combine generic measures of standard pressure points that affect any organization …**
- **… along with more granular yardsticks that relate to the organization's mission and to its proprietary products and services, processes and plant, finances, and suppliers, customers and employees**

Risk Type	Leading Risk Indicator
Poor financial performance	• Profitability and return relative to benchmarks and competitors • Earnings 'disappointments'
Weak competitive position	• Relative share performance • Loss of market share • Relative performance using financial and operating measures
Management's failure to react in a timely fashion to developments	• Internal – missed financial and operating targets; budget and project overruns • External – 'shocks'
Deterioration in reputation	• Opinion of analysts • Business media reports
Occurrence of unacceptable losses of value	• 'Shocks' to share price • Fines or charges associated with finances (theft) or operations (environment, OHS)
Supply chain	• Inventory stock out • Spoilage/shrinkage
Product quality	• Customer complaints • Quality defects • Customer attrition
Compliance	• Audit
Process integrity	• System failure
Operational efficiency	• Incidents, even when minor
Organization	• Staff turnover • Employee absence • Decline in productivity
Finances	• Credit quality • Working capital

Example: Top Key Risk Indicators in Banking

- Organization
  - Staff turnover; employee complaints
- Counterparty/Customer
  - Credit quality; failed trades; client complaints; new accounts; customer attrition
- Internal Processes
  - Inventory (cash) losses; market risk limit excesses; expenses; investigations underway
- Audit and compliance
  - Risk and control self assessment audit scores and issues; compliance breaches
- Technology
  - System downtime
- Criminal activities
  - Theft, fraud (internal and external)
- External threats
  - IT system intrusions; economic indicators
- Consequential position requirements are:
  - Independence and high-level support
  - Adequate span of control of activities

Governance and Ethics

KEY TOPICS in RISK GOVERNANCE

1. Risk Governance at Board Level

- Extent to which Board (including external or independent directors) is involved in defining risk appetite, control structure and organization
- Awareness and understanding by Board of risk exposures
- Mandate and practical workings of Board-level risk and/or audit committees in reviewing risk management and effectiveness of controls

2. Risk Governance at Executive Management Level

- Involvement in risk decisions by executive committee, risk awareness of top management
- Mandate and practical workings of executive-level risk committees
- Risk measures and considerations used by executive management in determining capital allocation and overall capital adequacy decisions

3. Risk Governance – Risk Management Organization and its Influence

- Reporting lines and authority of risk management functions
- Mission of risk control: monitoring/measuring/reporting vs. active management and mitigation
- Independence/autonomy of risk organization
- Centralized vs. decentralized risk organization, integrated vs. silo risk control, extent of adoption of enterprise-wide risk management concepts
- Existence and implementation of enterprise-wide risk management concepts
- Veto power and forcefulness of risk control/management on new and existing products
- New product approval procedures
- Process for the dissemination of risk principles, preferences, risk-taking decision authorities, policies and procedures
- Steps taken to provide education and training for broader personnel in risk matters

Example: A Practical Director's Manual

- Board **decisions** are comprehensively **minuted** and action items recorded for follow up until satisfactorily completed
- **Policies** are **established** in important areas, particularly those where the firm faces risks
  - These are reviewed periodically
- An **effective system of internal controls** and audit monitors compliance with policies and reports regularly
- Directors satisfy themselves that they **understand** the **assumptions** and processes behind each decision, and that they are reasonable
- **Decisions** required of the Board are adequately **supported**, with sufficient **time** for evaluation and discussion
- The Board is regularly and accurately **informed** of performance against historical and leading indicators of desired outcomes
- Directors have **access to management**, firm operations and advice as necessary
- Major projects are not post audited, particularly those that were unsuccessful
- The Chairman or CEO is dominant, and there is little cohesion between directors
- There is evidence of staff discontent, deteriorating results (including share price underperformance) or concern expressed by responsible outsiders (analysts, regulators, ratings agencies and the like)

Framework for Risk-Based Corporate Governance

- Get **Board composition** right
- Insist on **familiarity** with all plant and processes
- Keep risk on the Board's **agenda**
- **Test how well management understands** the uncertainties attached to existing and new processes

Critical Risk Management Questions

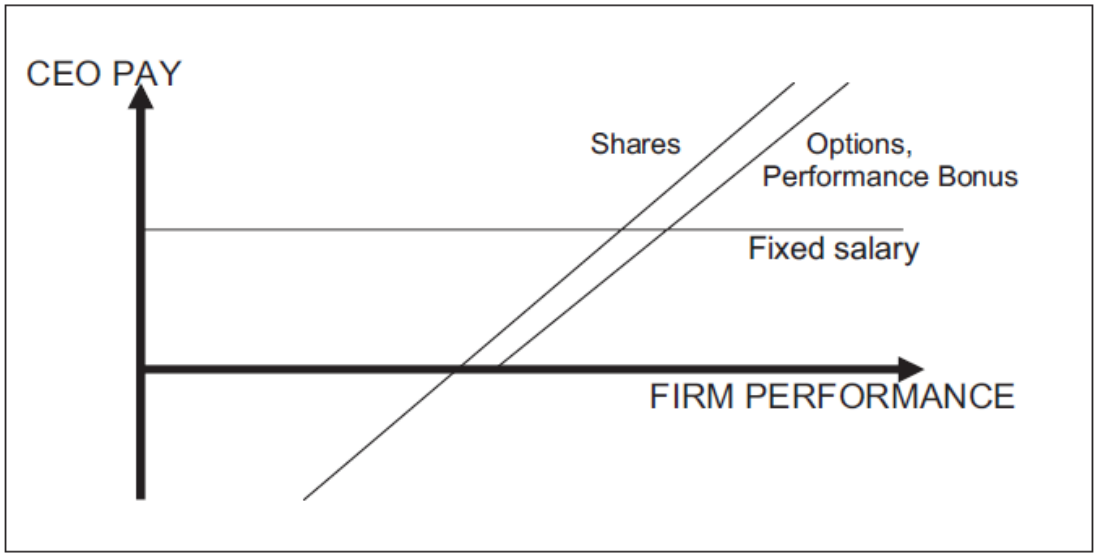
Critical Questions on Risk Environment

1. What is the firm's risk management strategy (balance between avoid-insure-manage)? What is its strategic risk appetite? What risks are acceptable and what are unwelcome?
2. Does the organization have a history of problems (including near misses) or a risk bias?
3. Are incentives in place to promote integrity? Think in terms of Five Forces as well as rewards for decision makers.
4. What is the 'frame' of the business and operating environment? Consider geography, industry, governance, assets, management objectives, moral hazard
5. What is the 'culture' of the business and operating processes? Consider organization, structure, controls, reporting, KPIs; and the psychodemographics of staff (age, background, personality, recruiting) and counterparties
6. Is this a new process? If so, how far up the learning curve are operations (training, procedures, routines, predictability).

Recruiting the CEO

- **Different compensation components have quite different pay-offs to CEOs and hence exercise different pressures on the risk propensity**

"The CEO is the single most important factor in a company's stock price …"



Impact and Lifecycle of a Crisis

- **Behavioral crises** (company or employees acting questionably or illegally) have the **greatest short-term impact on shares**
- **Operational crises** (when the company's functioning is halted due to a major product recall or environmental disaster) have a modest impact in the first two days of the crisis breaking but the **greatest long-term effect on share price** …
- **Corporate crises** (companies where the financial wellbeing is affected such as liquidity issues or material litigation) made up more than one quarter of companies experiencing a share drop on day one
- **Informational crises** (when companies IT such as system failures or hacking) were of **moderate concern** to the markets

The Biggest Risk of All: Getting Strategy Right

Companies which judge risks well are long-lived and are:

- **Sensitive** to their **environment** and keep feelers out
  - Tuning in to what is going on and facilitating timely response
- Cohesive with a **strong** sense of **identity**
  - an idea of community with management priorities focussed on the health of the organization
- **Tolerant**
  - Especially of activities at the margin (including experiments and eccentricities) which stretch their understanding of what is possible
- **Conservative in financing**

Five factors seem critical in strategic success:

- **Clarity of strategic objectives** and decisions that are consistent and well chosen
- Successful **execution** of strategies and decisions
- **Competency in large transactions**, particularly mergers and acquisitions, given that most firm failures involve a failed major acquisition
- Timely and effective **response** to new information and environmental **changes** so that the firm moves with market trends
- Effective **risk management** that includes adequate resourcing of risky strategies and ruthless termination of incorrect decisions

Appendix

Excursion: National Risk Strategy – Examples of National Risks

Country	Category	Event
Britain	Technology	BSE contamination of meat supplies
		Delays in passport processing following new computer system in 1999
France	Governance	Uncontrolled rioting in multiple cities in November 2005
Ireland	Governance	Conspiracy to cover up criminal activity of paedophile priests
Thailand	Economic	1997 currency collapse
	Governance	Weeks-long airports blockade in 2008
	Natural event	Boxing Day 2004 tsunami
United States	Economic	2007–8 stock market collapse and credit crisis
	Governance	Threatened impeachment of President Clinton
		Collapse of Enron
		Revelation of market abuses by fund managers
	Natural event	Destruction of New Orleans by Hurricane Katrina
	Technology	Electricity blackouts in August 2003
	Terrorism	9-11 attacks on New York and Washington

Excursion: National Risk Strategy – Failures in Prediction

- **Whilst it is easy to brainstorm a shopping list of potential hazards, many identified risks can be pretty much a black box which are hard to understand and quantify**
- **However, this is essential to a correct response given the huge cost of prediction failures**

False Positives		**False Negatives**	
Date	**Event**	**Date**	**Event**
1970s	Looming global crises on overpopulation and commodity shortages		Disasters following launches of space shuttles *Challenger* (1986) and *Columbia* (2003)
1995	Global *Ebola* virus pandemic	2001	Enron collapse
1998–9	Millennium Bug or Y2K	2002–4	Travel warnings on Bali
2003	WMD in Iraq	2007–8	Safety of credit derivatives
2005–6	Avian bird flu pandemic		

Excursion: National Risk Strategy – Risk Management Model

- **This model adopts the conventional approach to risk management of observerationalize-respond:**
- **First set out the broad categories of risk; identify their sources; …**
- **… then establish parameters to measure their frequency and impact; …**
- **… and finally understand their drivers so that appropriate management strategies can be put in place**

Category	Locus	Indicators	Fundamental Drivers[1]	Controls/Response[2]
National security	Regional insecurity	Failed states	• Political weakness • Slow economic growth	• Administrative support, investment • Adequate defence
	Domestic unrest Terrorism	Political volatility Riots	• International factors • Unequal opportunities	• Adequate forward defence • Group-specific support
	Natural disasters	Extreme weather Earthquakes Volcanic eruptions	• Climate modifiers • More vulnerable assets	• Understand science • Disaster-proof social fabric
	Disease	Outbreaks	• International factors	• Monitor emergence
	Competitiveness	Terms of trade Import demand	• International factors • Declining commodity prices	• Diversify investment base
Critical systems	Infrastructure overload or failure	Unreliability of systems Congestion and collapse	• Population and prosperity • Inadequate investment • Close coupling of systems	• Precautionary principle • Reduce system demand • Develop alternatives
	Industrial disasters	Events	• Inherently risky technologies	• Isolate risky facilities • Precautionary principle
	Food chain contamination	Events	• Terrorism • New high-risk technologies	• Watchdog vigilance • Precautionary principle
Major institutions	Corporate failures	Crises and collapses Operational incidents	• Market failure	• Watchdog vigilance • Improved accountability
	Bureaucratic failures	Incidents of incompetence	• Weak monitoring and reporting	
	Regulatory failures	Incidents of incompetence Market abuses		• Watchdog vigilance • Integrate monitoring systems

Excursion: National Risk Strategy – Risk Management Model

Category	Locus	Indicators	Fundamental Drivers[1]	Controls/Response[2]
Individual behaviours	Horrendous violence	Massacres Serial crimes	• Psychopaths	• Restrict weapons • Constrain potential offenders
	Social breakdown	Riots	• Race • Socio-economic inequity	• Promote integration
	Lifestyle diseases	Diabetes, obesity, cancer	• Poor lifestyle choices • Socio-economic inequity	• Increase personal accountability • Promote better lifestyles

[1] Most also include weak governance, poor ethics and lack of accountability.
[2] Most include improved intelligence; better crisis management; enhanced stakeholder expectations; and improved generic response capabilities.

Examples of Corporate Crises in Australia

Attribute	Category	Example
Cause	Natural event	Sudden death of Qantas passenger with DVT in 2000
	Man-made	Macquarie Bank employee charged with insider trading in 1997
Source	Inside firm	National Bank board room dispute following unauthorized trading losses in 2004
	Outside firm	Cyclone Larry destroyed banana crop in 2006
Location in firm	Confined	Legionnaire's disease killed patrons at Melbourne Aquarium in 2000
	Widespread/virtual	Contamination of Mobil-supplied avgas in 1999
Assets damaged	Tangible	Pasminco collapse in 2001 following trading losses
	Intangible	Cash-for-comment in 1999 after radio broadcasters promoted bank activities
Behaviour	Legislative breach	Recall of Panadol tablets in 2000 following deliberate strychnine contamination
	Legal activities	Criticism of BHP in 1994 over environmental damage at Ok Tedi mine
Extent of impact	Confined to firm	LPG tank at Boral's Sydney facility exploded in 1990
	Industry wide	Breast implant class actions around the world after late 1980s

Taxonomy of Crisis Types

	Tangible (Operations)	Intangible
Internal	Sabotage Supplier/utility failure Natural disaster	Regulation Takeover Theft
	Product defect Fire, explosion Svstems failure	Labour dispute Ethical breach Theft

Australian Corporate Crises 1990 to 2001

	1990–1992	1993–1995	1996–1998	1999–2001	TOTAL
Type of Crisis					
Product Defect	1				1
Operational	2	7	9	11	29
Financial		1	1	2	4
Organizational		2	2	2	6
Regulatory/Legal	1	2	2	1	6
Threat/Extortion	2	2	2	3	9
Industry Involved					
Agriculture		1	2		3
Mining & Resources		4	1	2	7
Manufacturing	4	5	7	5	21
Wholesale & Retail		1			1
Transport	1			5	6
Banking & Finance		1	1	2	4
Services	1	2	5	5	13
TOTAL	6	14	16	19	55

Chaotic Sequencing of Crises

- **Anyone who has participated in a crisis knows they have a life, and – like all living beings – pass through stages …**

Stage	Personal Reactions	Organizational Reactions
Trigger/Incident	Not acknowledged or remedied	Recognition
Build-up	Denial, isolation, stress	Emotional response builds
Crisis	Grief, anger	Anger and outrage
Post-crisis	Recrimination, reaction	Litigation, regulation
Recovery	Radical change or collapse	Reputation fallout

Plan B

Critical Question: Is Plan B in Place?

Is there a mechanism to independently monitor operational performance (including customer feedback) for defects and lead indicators of crisis?

Are there adequate resources to identify and fix problems before they escalate?

Are resources pre-positioned to cope with generic crises? This includes nominated staff and identified facilities.

Who is the 'Red Adair'* of each potential crisis?

What is our crisis strategy?

* Paul N. 'Red' Adair (1915–2004) helped pioneer the technology of extinguishing oil well fires and fought major blazes including those following a 1968 Bass Strait blowout, the Piper Alpha North Sea platform explosion in 1988 and the 1991 Kuwaiti oil well fires. His exploits were immortalised in the movie *Hellfighters* starring John Wayne.

Selected Rules on Crisis Management

Don't let lawyers run the show – they are defensive and focus on worst outcomes.
Don't let engineers run the show – they focus on the optimum solution.
Don't let marketers run the show – they focus on a minority of critical customers.
Prevent the possibility of any further damage.
Establish a strategy team to get ahead of the crisis.
Establish an operations team to oversee planning and execution.
Appoint an external auditor to monitor compliance against all commitments.
Ensure the voice of the customer, employee and shareholder (and other key stakeholders if appropriate) is heard.
Get outside help from experts in critical areas.
Ensure a high-profile firm presence in the field.
Recognize crises unfold slowly: implement no-regrets initiatives, cast action nets wide, suspect systematic problems, prudently overreact.
Clearly define what is meant by clean, safe, repaired or whatever and stick to it.
Aggressively protect reputation: do not say or do anything unethical, sloppy or untrue.
Plan for the long haul and over-resource everyone.
Emphasize the 'soft issues': make space for people; watch stress, morale and health. Insist on teamwork.
Over-communicate in a sympathetic and comprehensive style.
Identify opponents, stumbling blocks and trouble spots: tackle them soon and hard.
Pay special attention to telegenic impact sites.
Be extremely sensitive to any victims and their families.
Assure counterparties that they are being treated ethically.
Define stakeholders broadly (include analysts, rating agencies, lenders) and communicate regularly and openly.
Beware the 'distant fields syndrome': things you don't understand (which is most things in a crisis) are never simple.
Don't ignore the need for proper controls and procedures.
Keep good records, but resist the temptation to compile reports.
It is never too late in a crisis to start following these rules.

Key Questions for Any Crisis Manager

- Details of the crisis
  - What occurred; where; when?
  - What damage has occurred: people (who, level of injuries), facilities?
  - What third parties have been affected?
  - Is the crisis contained; is the site secure?
  - What are the medium- to longer-term consequences?
  - How much confidence is there in these details?

- Responsibility
  - Who is responsible for the incident?
  - What, if any, liability is involved?
  - What has been said publicly?
  - Is an immediate apology in order?

- Notification
  - External: government, regulators, stock exchange, financiers.
  - Stakeholders: media, community.
  - Internal: executives, employees, shareholders, customers, suppliers.

Key Questions for Any Crisis Manager (cont´d)

- Response capability
  - Are internal resources adequate: employees, managers, financial?
  - What expert assistance is available: technical, media, support?
  - Can additional resources be brought to bear?
  - Is a 'hot line' required for people to call in?

- Strategic outlook
  - Are there any potential long-term health or other impacts?
  - Are there any particularly sensitive features: environmental, process, location?
  - What are the expected and likely worst-case scenarios?
  - Is business continuity assured?
  - What are supply chain impacts, including third parties?
  - Is a briefing package available: site records, layouts, inspections, performance?
  - Are other facilities open to a similar incident?
  - Is the incident serious enough to concern ratings agencies and counterparties?

- Response plan
  - What is the recovery strategy?
  - Who is responsible for crisis management: overall and key components?
  - Who is onsite: is a senior executive visit required?
  - Have crisis response centres been established and staffed?
  - What are the response objectives: are capabilities matched?
  - What is the communications strategy: spokesman, timetable, attitudes?
  - What are the long-term objectives of the response: key messages?

Key Questions for Any Crisis Manager (cont´d)

- Response performance
  - Are adequate procedures and controls in place within the response team?
  - Is an independent third party monitoring compliance and equity?
  - How will brand and reputation be protected?

- Legal and liability issues
  - Is immediate baseline data required: drug/alcohol tests, air/water samples?
  - Are records, reports, logs and other documents securely retained?
  - Should any aspects of the response be recorded by minutes or video?
  - Does a compensation scheme need to be established?
  - Are third-party responses being monitored?
  - Will the incident lead to any contractual breaches?

- Insurance
  - Does insurance cover apply: has the insurer been notified?
  - Is a loss adjuster or onsite insurance expert required?

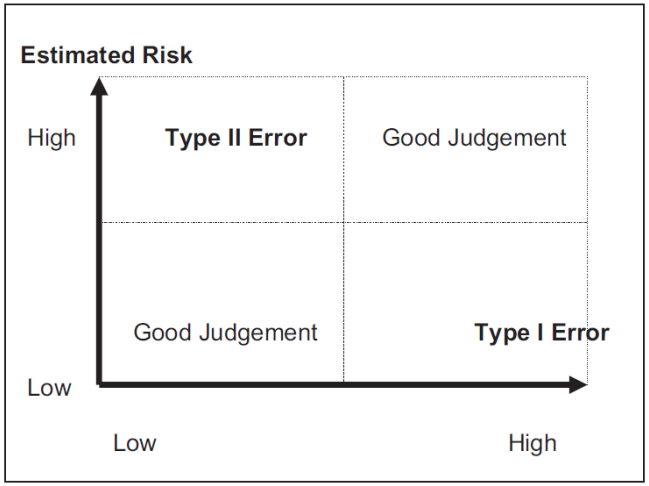
Preliminary Conclusion: Management of Corporate Crisis

- Adopt a policy of prudent over-reaction on the basis that information is permanently inadequate and crises usually move further than anticipated
- Recognize that the crisis has come from a major mistake, and so adopt zero tolerance for under-performance and further error
- Listen for the voice of the customer and ensure stakeholder needs – customer, community, employee and shareholder – receive respectful consideration.
- Pay great attention to communications:
  1. Never make a statement that is not 100 per cent correct and completely comprehensive: do not shade the truth;
  2. Never commit to anything that cannot be achieved, or which may be regretted later;
  3. Provide an excess of information using all media including Internet sites, internal communications and background briefings;
  4. Keep the firm's best advocates – customers, employees and shareholders – fully informed;
  5. Ensure the top person is highly visible.
- Recognize that many of the human problems surrounding crises reflect the fact that it is in large measure a grieving process

Preliminary Conclusion: Errors in Risk Judgement

Poor management of strategic risks leads firms to make two types of error in decisions on risk

- Type I error decides incorrectly that a risk is low
  - This leads to failed acquisitions, crashed space shuttles and plant explosions.
  - Failure is incorrectly rejected as improbable
- Type II error decides incorrectly that a risk is too high
  - This leads to refusal to accept reasonable risks and brings the opportunity costs from foregoing good investments and strategies



Preliminary Conclusion: The Paradox

Two paradoxes emerge as corollaries of changes that have occurred in corporate risk

- First: The majority of risks facing firms are old
  - As expected by the general consensus that we live in more dangerous times, the frequency of industrial disasters grew exponentially during the twentieth century
  - Surprisingly, though, most of the increase in disaster frequency was due to explosions and fires; little of it came from new technologies such as chemicals and radiation

- Second: The largest firm-level losses in value emerge from conscious decisions that have gone wrong
  - This leads to the sobering fact that most crises emerge in well-established processes where
  - management had neglected the risk being run, which is typical with financial disasters, or from deliberate strategies that fail

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