Institute and Faculty of Actuaries

Guidance to Directors on Risk Management, Internal Control and Related Financial and Business Reporting

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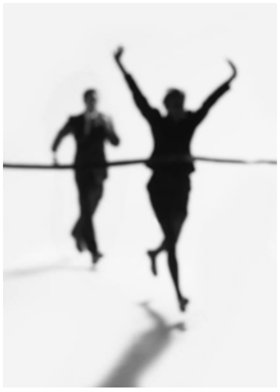
Question:

A. Have read the guidance and have been / will be working on implications

B. Aware of the proposed guidance and key themes

C. Little knowledge and here to learn

"if actuaries can't make more work for themselves out of this then heaven help them"



Current FRC Guidance for Directors

- Commonly referred to as the "Turnbull" Guidance
- First issued in 1999
- Revised guidance dated October 2005
- The Guidance supports the requirements of the Combined Code (now the UK Corporate Governance Code – September 2012)

Corporate Governance Code – Risk Management & Internal Control

Main Principle (C2):

The board is responsible for determining the nature and extent of the significant risks it is willing to take in achieving its strategic objectives. The board should maintain sound risk management and internal control systems.

Code Provision (C2.1)

The board should, at least annually, conduct a review of the effectiveness of the company's risk management and internal control systems and should report to shareholders that they have done so. The review should cover all material controls, including financial, operational and compliance controls.

Elements Covered by 2005 Guidance

Current Annual Review Process In Practice (example from FTSE 100 insurer)

- Carried out by Risk Function and presented to the Audit (or Risk) Committee of the board
- Senior Management Certification Process
  - Maintained the Risk Management System (incorporating the system of internal control)
  - Reported significant control breakdowns during the year and have taken, or are taking, necessary actions to remedy these reported breakdowns; and
  - Taken steps to identify any relevant information that the external auditors should be made aware of (and have made the auditors aware of any such information).
- Review of Control Issues & Mitigating Actions
- Review of the ERM Framework
- Review of Proposed External Disclosures
- Compliance Review against FRC Guidance

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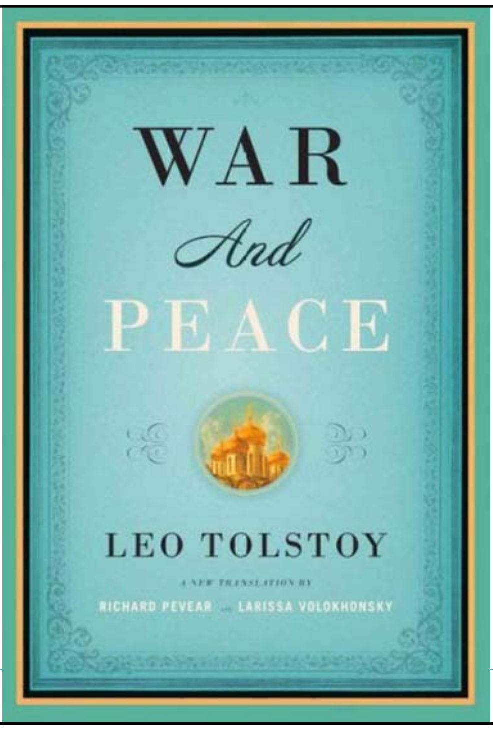
The New Draft Guidance

Consultation History

- The Sharman Inquiry
  - Launch – March 2011
  - Preliminary Report – November 2011
  - Final Report – June 2012
- Sharman Implementation Consultation – January 2013
- Risk Management, Internal Control and the Going Concern Basis of Accounting – November 2013
- Proposed Revisions to the UK Corporate Governance Code – April 2014



Corporate Governance Code

C.1.3 Current

The directors should report in the annual and half-yearly financial statements that the business is a going concern, with supporting assumptions and qualifications.

C.1.3 Proposed

In annual and half-yearly financial statements, the directors should state whether they considered it appropriate to adopt the going concern basis of accounting in preparing them, and identify any material uncertainties to the company's ability to continue to do so over a period of at least twelve months from the date of approval of the financial statements.

Corporate Governance Code – Risk Management & Internal Control

Main Principle (C2): Minor Change

The board is responsible for determining the nature and extent of the ~~significant~~ **principal** risks it is willing to take in achieving its strategic objectives. The board should maintain sound risk management and internal control systems.

Code Provision (C2.1) - NEW

The directors should confirm in the annual report that they have carried out a robust assessment of the principal risks facing the company, including those that would threaten its business model, future performance, solvency or liquidity. The directors should describe those risks and explain how they are being managed or mitigated.

Corporate Governance Code - continued

Code Provision C2.2 – NEW

Taking account of the company's current position and principal risks, the directors should explain in the annual report how they have assessed the prospects of the company, over what period they have done so and why they consider that period to be appropriate. The directors should state whether they **have a reasonable expectation that the company will be able to continue in operation and meet its liabilities as they fall due over the period of the assessment, drawing attention to any qualifications or assumptions as necessary.**

Corporate Governance Code - continued

Code Provision 2.3 – Minor Revisions

The board should monitor the company's risk management and internal control and, at least annually, carry out a review of their effectiveness, and report on that review in the annual report. The monitoring and review should cover all material controls, including financial, operational and compliance controls.

Board risk responsibilities

- Risk appetite
- Risk Culture
- Risk identification and evaluation
- Control, management and mitigation of risks
- Risk management and internal control system
- Management incentives
- Assurance
- External communication

Considerations

- Values and behaviours (communication, incentives etc)
- How to ensure there is adequate discussion at the board
- The skills and experience of the board and management
- The flow of information to and from the board
- Board committees
- Assurance requirements

Establishing the Risk Management & Internal Control Systems

The risk management and internal control systems encompass the policies, culture, organisation, behaviours, processes, systems and other aspects of a company that, taken together;

- Facilitate efficient operations… emerging risks … response
- Reduce likelihood and impact of poor judgement in decision making….

Focus on assessment of Gross and Net risks

Review

- Continuous monitoring
- Annual Assessment
  - Risk appetite
  - Risk culture
  - Integration of risk management with considerations of strategy and capital and business planning processes
  - Principal risks
  - Risk and internal control system, internal audit and other sources of assurance
  - Assessment of effectiveness of ongoing monitoring
  - Significant control failings or weaknesses
  - Effectiveness of public reporting processes

Communication

- Distinct but related disclosures in the annual report and accounts
  - Reporting on the principal risks facing the company and how they are managed or mitigated
  - Reporting on whether the directors have a reasonable expectation that the company will be able to continue in operation and meet its liabilities as they fall due
  - Reporting on on the going concern basis of accounting
  - Reporting on the review of the risk management and internal control system (and how they relate to financial reporting process)

So what's new ?

- Solvency and Liquidity Risks (?)
- Stress Tests and Reverse Stress Tests (?)
- More description of expectations and good practice
- Questions for Boards to consider ~~and warning indicators~~
- Viability Statement

Level of Detail – Risk Culture Example

- The system of internal control should be embedded in the operations of the company and form part of its culture.

Level of Detail – Risk Culture Example

- The Board must determine the desired culture within the company.
- The board's responsibilities are ensuring the appropriate culture and reward systems have been embedded throughout the organisation.
- The board should consider, amongst other things:

  the values and behaviours that it wishes to instil in the company, and whether this has been achieved.

  As with all aspects of good governance, the effectiveness of risk management and internal control ultimately depends on the individuals responsible for operating the systems that are put in place. In order to ensure the appropriate risk culture is in place it is not sufficient for the board simply to set the desired values. It also needs to ensure they are communicated by management, incentivise the desired behaviours and sanction inappropriate behaviour, and assess whether the desired values and behaviours have become embedded at all levels. This should include consideration of whether the company's leadership and management style and structures, human resource policies and reward systems support or undermine the risk management and internal control system.
- The board should consider the impact of the values and culture of the company, and the way that teams and individuals are incentivised, on the effectiveness of the (risk management) system.
- The annual assessment should consider the desired culture within the company and whether this culture has been embedded

CASE STUDIES (to be finalised)

Disclaimer: This case studies are being developed on behalf of the Institute and Faculty of Actuaries (IFOA) to illustrate the capabilities of actuaries and the potential contribution of actuarial techniques to industry sectors outside the traditional actuarial areas of operation. The case study is a desk-top exercise which considers a number of risks applicable to a hypothetical company in one of those industries for the purposes of demonstration only, but the risk assessments were not performed in conjunction with relevant experts from those industries and so are not complete or conclusive. The IFoA does not accept any responsibility and/or liability whatsoever for the content or use of this document. This document does not constitute advice and should not be relied upon as such. The IFoA does not guarantee any outcome or result from the application of this document and no warranty as to the accuracy or correctness of this document is provided. You assume sole responsibility for your use of this case study, and for any and all conclusions drawn from its use. The IFoA hereby excludes all warranties, representations, conditions and all other terms of any kind whatsoever implied by statute or common law in relation to this report, to the fullest extent permitted by applicable law

Pharmaceutical Industry

- Pharmaceutical companies are making a great contribution to the UK economy, higher than most other high-tech industries
- This sector has, over the past decade, generated an ever-widening trade surplus reaching a little over £2.8 billion in 2013
- The UK's pharmaceutical sector invests approximately £13.3 million every day in R&D
- The pharmaceutical industry employs around 68,000 people directly in the UK – 23,000 of those are in highly-skilled research and development roles

COMPANY DESCRIPTION

- Company XYZ is a British-Swedish multinational pharmaceutical and biologics company headquartered in London, United Kingdom
- It is among the world's top ten largest pharmaceutical company measured by 2012 prescription drug sales and has operations in over 100 countries
- Company has a portfolio of products for major disease areas including cancer, cardiovascular, gastrointestinal, infection, neuroscience, respiratory and inflammation

SAMPLE RISK REGISTER

Risk Type	Risk Name	Description	Likelihood	Impact	Probability
Product Pipeline Development	(multiple) Compound failure to pass clinical trials	Insufficient efficacy demonstrated, or side effects	Very low	Effects reputation of R&D and operating results	0.5%
	Failure to enforce patent	Some markets have limited enforcement	low	Revenue reduction	2.5%
Economic	Economic downturn	Reduces healthcare spend	Medium		10%

METHOD

- Model uses stochastic simulation to project the company's Profit & Loss account over the next 5 years

Scenario 1 :Combination of Product liability and pipeline risk

- It is assumed that the two risks, product liability and product pipeline, are uncorrelated
- Model shows the variability in profits in combination with a large product liability claim

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- Poisson distribution has been used to simulate **Product liability risk** and Pareto distribution has been chosen to model its impact upon occurrence
- **Product pipeline risk**: The model projects forwards estimated expenditure on the drug development and also estimates its sales revenue and then applies different normal distributions to these estimates

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ab7 Pareto is considered a suitable distribution to model the severity of large losses for certain lines of business such as general liability insurance.
aparna bansal, 21/10/2014

ab8 normal dostribution has been used as it captures the variations and uncertainities.
aparna bansal, 21/10/2014

ab9 due to binary nature (i.e. . it either occurs or it doesn't)of the risk, poisson distribution has been used.The assumption used in the model is that this risk event will occur on average every 25 years.
aparna bansal, 21/10/2014

ab10 Product Liablity risk is the risk of mass claims against the company due to undetected harmful drugs
aparna bansal, 21/10/2014

ab11 Product pipeline risk is the risk involving the uncertainity of future profitability which is dependent on new products coming on line. In other words, this is the risk that the cost of developing a new drug in the pipeline and also the revenue from this new drug is not as estimated at the outset.
aparna bansal, 21/10/2014

KEY INFERENCE

Product liability risk and Product pipeline risk are principal risks for this company and these can be modelled effectively using actuarial techniques

RISK MITIGATION

- **Product liability risk:**
  - New drugs must meet stringent requirements before being made available to the public
  - Indemnity cover can be taken against this risk
- **Product pipeline risk**
  - By having multiple product developments

Further discussion with the industry experts could lead to enhancement in the model and results

Hospitality Industry

- The hospitality industry is a broad category within the service industry that includes lodging, event planning, theme parks, transportation, cruise line, and also tourism industry
- The hospitality industry is a several billion dollar industry that mostly depends on the availability of leisure time and disposable income

COMPANY DESCRIPTION

- Throughout most of its history the well-established company focussed primarily on the pub and brewery industry. However, since the turn of the century, it has refocused its' businesses in hotels and restaurants
- The company has several brand names as part of its portfolio, with the businesses primarily located in the UK
- They have seen rapid growth over the last few years

SAMPLE RISK REGISTER

Risk	Risk Type	Chance of Occurrence	Financial Impact	Mitigation Strategy Available?
PR advertising going wrong - Damage to brand image	Reputational Risk	Possible	Moderate	Yes
Foreign exchange rate fluctuations affecting tourism	Market Risk	Almost Certain	Moderate	No
Salaries -Minimum wage increases above inflation	Financial Risk	Likely	Moderate	No
Serious health or provenance issue relating to food	Operational Risk	Possible	Major	Yes
Property Tax Increases (Mansion Tax for Businesses)	Market Risk	Possible	Major	No

METHOD

- The risks modelled include property, foreign exchange and inappropriate public relations exercise
- Deterministic model has been developed to assess impact on company's financials in specified stressed scenarios. The model simulate the performance of a trading year for a given scenario

IMPACT OF SCENARIOS

- Poor PR leading to significant drop in sales
- Significant appreciation of sterling, making the UK a less attractive place to visit, this results in a significant reduction of hotel revenue
- Market crash similar to 2008, leading to significant fall in business travel and fall in hotel revenue
- Staff and utilities costs has been lowered to allow for the drop in occupancy, but not to the same extent as some of them are fixed cost

FINANCIAL ANALYSIS

	Base Position	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Combined**
£ m	Stress ---->	PR	Currency	Property	All
Intangible	223.0	134.5	223.0	223.0	134.5
Property	3530.8	3530.8	3530.8	2824.6	2824.6
Others	36.2	36.2	36.2	36.2	36.2
Total Asset	3790.0	3701.5	3790.0	3083.8	2995.3
Current Asset	231.3	231.3	231.3	231.3	231.3
Total Asset	**4021.3**	**3932.8**	**4021.3**	**3315.1**	**3226.6**

	Base Position	Scenario 1	Scenario 2	Scenario 3	Combined
£ m	Stress ---->	PR	Currency	Property	All
Non Current Liabilities					
Financial Liabilities	541.3	541.3	541.3	541.3	541.3
Pension Assets	-1570.6	-1570.6	-1630.4	-1367.4	-1427.2
Pension Liabilities	2104.9	2104.9	2456.9	2104.9	2456.9
Others	126.9	126.9	126.9	126.9	126.9
Total Liabilities	1202.4	1202.4	1494.7	1405.6	1697.8
Current Liabilities	617.9	617.9	617.9	617.9	617.9
Total Liabilities	**1820.3**	**1820.3**	**2112.5**	**2023.5**	**2315.7**
Net Asset	**2201.0**	**2112.5**	**1908.7**	**1291.6**	**910.9**

	Definition	Impact on Liabilities	Impact on Assets	Impact on P&L	Overall impact
Scenario 1 PR	Inappropriate public relations exercise/ Reputational Damage	No impact on non-current liabilities and current liabilities.	Only goodwill a part of intangible will get impacted. It is assumed to fall by 50%. Thus total asset decreases	Hotel revenues are expected to fall. The fall in hotel revenues will impact variable component of Employee Benefit and Utilities. Both will fall. Other items on P&L will not get impacted. Company is expected to have a loss.	Company will be able to sustain in this scenario.
Scenario 2 Currency	Gilt fall by 1%, Appreciation in sterling (Currency appreciation)	Pension asset and liabilities will increase. Pension liabilities will increase more than assets. Other items will not get impacted. Thus total liabilities will increase	No impact is expected on items of Asset side.	Hotel revenues are expected to fall. The fall in hotel revenues will impact variable component of Employee Benefit and Utilities. Both will fall. Other items on P&L will not get impacted. Company is expected to have a profit	Company is in comfortable position to sail through this scenario.
Scenario 3	Property and Equity prices fall by 20%	Pension Asset will reduce as its equity and property portion falls. Other items will not be impacted. Total liabilities is expected to increase	Property is expected to fall. Other items will not be impacted. Total Asset will fall	No impact on P&L items is expected.	Net Asset will fall but company will not face any major problem
Combined Case	Combination of above three scenarios.	Pension asset will have positive effect but negative effect. Overall it will decrease. Pension liabilities will increase. Total liabilities will increase	Goodwill is assumed to fall by 50% making intangible fall. Property is expected to fall by 20%. Other items will not be impacted. Thus total assets will decrease	Hotel and retail store revenues are expected to fall by 50% and 20% respectively. The fall in revenues will impact variable component of Employee Benefit and Utilities. Both will fall. Other items on P&L will not get impacted. Company is expected to have a loss	In this scenario, absorbing a loss of approximately twice the net profit in base case may be difficult for the company.

KEY INFERENCE

- Combined impact of all scenarios is that the company is projected to have a net asset of £ 910.9m . Absorbing a loss of approximately twice the net profit in base case will be difficult for it. It may have to sell its property, which will be very difficult in this scenario. So, company may be able to survive in the scenario but will face serious illiquidity risk

RISK MITIGATION

- Carrying out checks in line with current Health & Safety regulations
- Increasing the audits to include risk assessments of suppliers and keeping up to date with any developments of risks within the hospitality sector
- The concentration of its assets in UK Property could also lead to liquidity issues in the future. The company could investigate the possibility of entering into a sale and lease back agreement for the property it owns
- Investigating the viability of contingency loans

Oil and Gas Industry

- Oil and gas industry is one of the main supplier of energy for transportation. It also supplies raw material for producing polymers used in medicines, plastics, and clothing
- This industry provided more than 70% of UK's total primary energy consumption with oil used for transport and gas for heating
- On comparison with the yearly totals for 2012 and 2013, net profits dropped by around 23% in 2013 to £3,306 million, with gross profits falling by around 7% to £8,670 million, largely due to lower production

Crude Oil Price History Chart

Source : Energy Information Administration

COMPANY DESCRIPTION

- The Company specialises in upstream production and has been growing steadily over the past 5 years
- The company's strategic objective is maximisation of shareholders' value by sensible investments and participation in projects yielding stable rate of return on capital
- The company has declared a dividend both in 2012 and 2013 and is showing strong financial position over the past 5 years
- The company several current projects in the North Sea, Asia and Africa

SAMPLE RISK REGISTER

Category	Risk	Description	Modelled Risk
Economic	Commodity Price	Volatility and decreases in oil or natural gas prices leading to worsened operating results and future prospects.	Yes
Environmental	Natural Disaster	Natural catastrophe leading to interrupted or reduced production or industrial accident	Yes
Operational	Industrial Accident	Major accident or oil spill resulting in loss of life, environmental damage, regulatory fines, civil liability, loss of licence to operate and reputational damage.	Yes
Political	Political Instability	Disruption of supply due to war, civil war, guerrilla attack, terrorism or other political instability.	Yes
Resource	Resource Availability	Material change in estimates regarding oil and gas reserves or development potential.	Yes
Economic	Joint ventures	Lack of full ownership and control	No

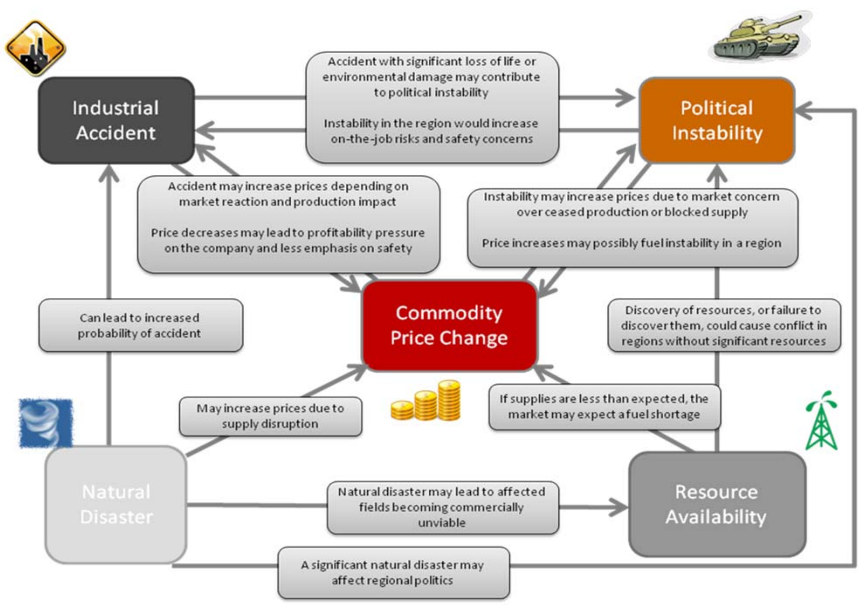
METHOD

- Stochastic model using Monte Carlo techniques, was built to assess the company's loss exposure to five key risks namely Commodity Price, Natural Disaster, Industrial Accident, Political Instability and Resource Availability; and the impact on its financial statements of the risk occurring
- The modelling process involved three steps:

➢ Modelling individual risks based on realistic loss scenarios

➢ Producing a correlation matrix to allow for the potential relationships between the five individual risks

➢ Modelling the impact of the risks on the Company's financial indicators



KEY INFERENCES

- Company is most widely exposed to the commodity price risk
- Most likely risk to occur was found to be political instability
- Most of the other loss scenarios are expected to be absorbed by the company's existing cash reserves, except for industrial accident
- Sharp commodity price drop or industrial accident occurrence saw return on capital going negative and the company running out of cash
- Rise in prices offsets most loss scenarios

RISK MITIGATION

- NATURAL DISASTER
  - ➢ Crisis management preparation
  - ➢ Review Country ABC earthquake risk
  - ➢ Insurance
- INDUSTRIAL ACCIDENT
  - ➢ Increase focus on health and safety
  - ➢ Conduct inspections and process assessments
  - ➢ Communication assessments
  - ➢ Emergency response preparation
  - ➢ Insurance

- POLITICAL INSTABILITY
  - Review and maintain security in region
  - Review exposure in high-risk regions
  - Maintain relationships with government and local population
- RESOURCE AVAILABILITY
  - Direct resources to lower risk projects
  - Invest in best available technology
  - Ensure high standards of risk analysis before committing resources

CONCLUSION

- The Actuarial profession has expertise in financial modelling and has taken the key responsibility on risk management for pension, banking and insurance industries where more onerous solvency and stress testing requirement has long been established
- Actuaries skills can be valuable to companies outside FS sector and it may involve working with industry experts so as to apply industry specific knowledge in modelling of the risks
- This is also an opportunity for Actuaries to enhance skills in risk reporting and also learn about risk management practices in other industries e.g. Operational risk management in aviation

What does this mean for companies?

- Are enhancements to the Risk Management Framework required ?
- Will annual review processes need to change ?
- Compliance review against the new guidance.
- Questions for the Board to consider (and that the risk team will need to answer!)

Questions ?

Actuarial Profession Working Party

- Multi-disciplinary working group with experience across risk, life, GI, pensions.
- Action Plan:
  - Research Corporate Attitudes & Responses
  - Research into current Risk Reporting Practice
  - Events and Engagement
  - Thought Leadership & Case Study Development
  - Promotion

Thank You

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