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Financial Enterprise Risk Management

Paul Sweeting

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FINANCIAL ENTERPRISE RISK MANAGEMENT

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Financial Enterprise Risk Management

Financial Enterprise Risk Management provides all the tools needed to build and maintain a comprehensive ERM framework. As well as outlining the construction of such frameworks, it discusses the internal and external contexts within which risk management must be carried out. It also covers a range of qualitative and quantitative techniques that can be used to identify, model and measure risks, and describes a range of risk mitigation strategies. Over 100 diagrams are used to help describe the range of approaches available, and risk management issues are further highlighted by various case studies. A number of proprietary, advisory and mandatory risk management frameworks are also discussed, including Solvency II, Basel III and ISO 31000:2009.

This book is an excellent resource for actuarial students studying for examinations, for risk management practitioners and for any academic looking for an up-to-date reference to current techniques.

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Preface

This book began life as a sessional paper presented to the Institute of Actuaries in Manchester and, some months later, to the Faculty of Actuaries in Edinburgh. Its presentation occurred at around the same time that a new subject on enterprise risk management was being developed for the UK actuarial exams. This made it a good time to expand the paper into something more substantial, with detailed information on many of the techniques that were only mentioned in the initial work. It also means that the book has benefited greatly from the work done by the syllabus development working party, led by Andrew Cairns and managed by Lindsay Smitherman.

I found myself writing this book during a time of crisis for financial institutions around the world. Financial models have been blamed for a large part of this crisis, and this criticism is, to an extent, well-founded. It is certainly tempting to place far too much reliance on very complex models, ignoring the fact that they merely represent rather than replicate the real world. Some senior executives have also been guilty of seeing the output of these models but not understanding the underlying approaches and their limitations. Finally, many models have been designed seemingly ignorant of the fact that the data histories needed to provide parameters for these models are simply not available. However, at least as big an issue is that many non-financial risks were allowed to thrive in the years before the crisis.

Many of the techniques described in this book are quantitative, and such risk modelling and management techniques can be very helpful. However, there are a number of ways in which risk can be quantified. Furthermore, these risk measures do not paint a complete picture. It is important to appreciate the limitations of these types of models, the circumstances in which they might fail and the implications of such failure. It is also crucial to understand that just because a risk is unquantifiable, it does not mean that it should be ignored. Some of the most important – and dangerous – risks cannot be modelled; however, they can frequently be identified and often managed.

All risks should be considered together: this holistic approach is fundamental to enterprise risk management. Whilst identifying the extent – or even the existence – of individual risks is important, looking at the bigger picture is vital. Looking at the interaction between risks can highlight concentrations of risk, but also the potential

diversifying or even hedging effect of different risks. It is also important to recognise that risk is not necessarily synonymous with uncertainty. Risk is only bad if the outcome is adverse, and these types of risks can be described as downside risks. Upside risks also occur – these are opportunities – and without them, there would be no point in taking risks at all.

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1

An introduction to enterprise risk management

1.1 Definitions and concepts of risk

The word 'risk' has a number of meanings, and it is important to avoid ambiguity when risk is referred to. One concept of risk is uncertainty over the range of possible outcomes. However, in many cases uncertainty is a rather crude measure of risk, and it is important to distinguish between upside and downside risks.

Risk can also mean the quantifiable probability associated with a particular outcome or range of outcomes; conversely, it can refer to the unquantifiable possibility of gains or losses associated with different future events, or even just the possibility of adverse outcomes.

Rather than the probability of a particular outcome, it can also refer to the likely severity of a loss, given that a loss occurs. When multiplied, the probability and the severity give the expected value of a loss.

A similar meaning of risk is exposure to loss, in effect the maximum loss that could be suffered. This could be regarded as the maximum possible severity, although the two are not necessarily equal. For example, in buildings insurance, the exposure is the cost of clearing the site of a destroyed house and building a replacement; however, the severity might be equivalent only to the cost of repairing the roof.

Risk can also refer to the problems and opportunities that arise as a result of an outcome not being as expected. In this case, it is the event itself rather than the likelihood of the event that is the subject of the discussion. Similarly, risk can refer to the negative impact of an adverse event.

Risks can also be divided into whether or not they depend on future uncertain events, on past events that have yet to be assessed or on past events that have already been assessed. There is even the risk that another risk has not yet been identified.

When dealing with risks it is important to consider the time horizon over which they occur, in terms of the period during which an organisation is exposed to a particular risk, or the way in which a risk is likely to change over time. The link between one risk and others is also important. In particular, it is crucial to recognise the extent to which any risk involves a concentration with or can act as a diversifier to other risks.

In the same way that risk can mean different things to different people, so can enterprise risk management (ERM). The key concept here is the management of all risks on a holistic basis, not just the individual management of each risk. Furthermore, this should include both easily quantifiable risks such as those relating to investments and those which are more difficult to assess such as the risk of loss due to reputational damage.

A part of managing risks on a holistic basis is assessing risks consistently across an organisation. This means recognising both diversifications and concentrations of risk. Such effects can be lost if a 'silo' approach to risk management is used, where risk is managed only within each individual department or business unit. Not only might enterprise-wide concentration and diversification be missed, but there is also a risk that different levels of risk appetite might exist in different silos. Furthermore enterprise-wide risks might not be managed adequately with some risks being missed altogether due to a lack of ownership.

The term 'enterprise risk management' also implies some sort of process – not just the management of risk itself, but the broader approach of:

- recognising the context;
- identifying the risks;
- assessing and comparing the risks with the risk appetite;
- deciding on the extent to which risks are managed;
- taking the appropriate action; and
- reporting on and reviewing the action taken.

When formalised into a process, with detail added on how to accomplish each stage, then the result is an ERM framework. However, the above list raises another important issue about ERM: that it is not just a one-off event that is carried out and forgotten, but that it is an ongoing process with constant monitoring and with the results being fed back into the process.

It is important that ERM is integrated into the everyday way in which a firm carries out its business and not carried out as an afterthought. This means that risk management should be incorporated at an early stage into new projects.

Such integration also relates to the way in which risks are treated since it recognises hedging and diversification, and should be applied at an enterprise rather than at a lower level.

ERM also requires the presence of a central risk function (CRF), headed by chief risk officer. This function should cover all things risk related, and in recognition of its importance, the chief risk officer should have access to or, ideally, be a member of board of the organisation.

Putting an ERM framework into place takes time, and requires commitment from the highest level of an organisation. It is also important to note that it is not some sort of 'magic bullet', and even the best risk management frameworks can break down or even be deliberately circumvented. However, an ERM framework can significantly improve the risk and return profile of an organisation.

1.2 Why manage risk?

With this discussion of ERM, it is important to consider why it might be desirable to manage risk in the first place. At the broadest level, risk management can benefit society as a whole. The effect on the economy of risk management failures in banking, as shown by the global liquidity crisis, give a clear illustration of this point.

It could also be argued that risk management is what boards have been appointed to implement, particularly in the case of non-executive directors. This does not mean that they should remove all risk, but they should aim to meet return targets using as little risk as possible. This is a key part of their role as agents of shareholders. It is in fact in the interests of directors to ensure that risks are managed properly, since it reduces the risk of them losing their jobs, although there are remuneration structures that can reward undue levels of risk.

On a practical level, risk management can also reduce the volatility in an organisation's returns. This could help to increase the value of a firm, by reducing the risk of bankruptcy and perhaps the tax liability. This can also have a positive impact on a firm's credit rating, and can reduce the risk of regulatory interference. Reduced volatility also avoids large swings in the number of employees required – thus limiting recruitment and redundancy costs – and reduces the amount of risk capital needed. If less risk capital is needed, then returns to shareholders or other providers of capital can be improved or, for insurance companies and banks, lower profit margins can be added to make products more competitive.

Improved risk management can lead to a better trade-off between risk and return. Firms are more likely to choose the projects with the best risk-adjusted rates of return, and to ensure that the risk taken is consistent with the corporate appetite for risk. Again, this benefits shareholders.

These points apply to all types of risk management, but ERM involves an added dimension. It ensures not only that all risks are covered, but also that they are covered consistently in terms of the way they are identified, reported and treated. ERM also involves the recognition of concentrations and diversifications arising from the interactions between risks. ERM therefore offers a better chance of the overall risk level being consistent with an organisation's risk appetite.

Treating risks in a consistent manner and allowing for these interactions can be particularly important for banks, insurers and even pension schemes, as this means that the amount of capital needed for protection against adverse events can be determined more accurately.

ERM also implies a degree of centralisation, and this is an important aspect of the process that can help firms react more quickly to emerging risks. Centralisation also helps firms to prioritise the various risks arising from various areas of an organisation. Furthermore, it can save significant costs if extended to risk responses. If these are dealt with across the firm as a whole rather than within individual business lines, then not only can this reduce transaction costs, but potentially offsetting transactions need not be executed at all. Going even further, ERM can uncover potential internal hedges arising from different lines of business that reduce or remove the need to hedge either risk.

Having a rigorous ERM process also means that the choices of response are more likely to be consistent across the organisation, as well as more carefully chosen.

Another important advantage of ERM is that it is flexible – an ERM framework can be designed to suit the individual circumstances of each particular organisation

ERM processes are sometimes implemented in response to a previous risk management failure in an organisation. This does mean that there is an element of closing the stable door after the horse has bolted, and perhaps of too great a focus on the risk that was faced rather than potential future risks. It might also lead to excessive risk aversion, although introducing a framework where none has existed previously is generally going to be an improvement.

A risk management failure in one's own organisation is not necessarily the precursor to an ERM framework. A high-profile failure in another firm, particularly a similar one, might prompt other firms to protect themselves against

a similar event. An ERM framework might also be required by an industry regulator, or by a firm's auditors or investors.

ERM can be used in a variety of contexts. It should be considered when developing a strategy for an organisation as a whole and within individual departments. Once it has been decided what an organisation's objectives are, the organisation must consider what risks might exist to stop them being achieved. The organisation must then consider how to assess and deal with the risks, considering the impact on performance both before and after treating the risks identified. Importantly, the organisation needs to ensure that there is a framework in place for carrying out each of these stages effectively.

ERM can also be used when developing new products or undertaking new projects by considering both the objectives and the risks that they will not be met. Here, it is also possible to determine the levels of risk at which it is desirable to undertake a project. This is not just about deciding whether risks are acceptable or not; it is also about achieving an adequate risk-adjusted return on capital, or choosing between two or more projects.

Finally, ERM is also important for pricing insurance and banking products. This involves avoiding pricing differentials being exploited by customers, but also ensuring that premiums include an adequate margin for risk.

1.3 Enterprise risk management frameworks

ERM frameworks typically share a number of common features. The first stage is to assess the context in which the framework is operating. This means understanding the internal risk management environment of an organisation, which in turn requires an understanding of the nature of an organisation and the interests of various stakeholders. It is important to do this so that potential risk management issues can be understood. The context also includes the external environment, which consists of the broader cultural and regulatory environment, as well as the views of external stakeholders.

Then, a consistent risk taxonomy is needed so that any discussions on risk are carried out with an organisation-wide understanding. This becomes increasingly important as organisations get larger and more diverse, especially if an organisation operates in a number of countries. However, whilst a consistent taxonomy can allow risk discussions to be carried out in shorthand, it is important to avoid excessive use of jargon so that a framework can be externally validated.

Once a taxonomy has been defined, the risks to which an organisation is exposed must be identified. The risks can then be divided into those which are