

Insurance

# Does ERM matter?\*


Enterprise risk management in the insurance industry

A global study

June 2008



\*connectedthinking

PRICEWATERHOUSECOOPERS 



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## Foreword

Can enterprise risk management (ERM) in the insurance industry deliver the anticipated strategic benefits of more assured risk control and a more incisive basis for decision-making and if so, how?

Welcome to 'Does ERM matter? Enterprise risk management in the insurance industry', the 2008 follow-up to our global survey report published in 2004.

PricewaterhouseCoopers<sup>1</sup> latest study confirms that most insurers' ERM programs have matured significantly since 2004. However, the survey findings raise important questions about whether ERM is sufficiently embedded in and relevant to the business to meet the demands of an increasingly complex risk environment and ever more exacting investor, regulator and rating agency expectations. More effective embedding would also enable participants to realize the benefits of ERM in helping to identify and move quickly on opportunities.

Drawing on one of the most detailed and far-reaching studies of ERM ever carried out in the insurance industry, this report seeks to discern whether ERM can make a difference by strengthening risk control and strategic planning, and if so identify the critical attributes for success. It is part of our continuing commitment to research, debate and the development of risk management best practice.

We trust that this study will provide insights and practical guidance that will enable your company to enhance its ERM program.

**Paul Horgan**



Leader of Global Insurance Risk and Capital Team  
PricewaterhouseCoopers (US)

<sup>1</sup> 'PricewaterhouseCoopers' refers to the network of member firms of PricewaterhouseCoopers International Limited, each of which is a separate and independent legal entity.

# Introduction

## Executive summary

Can enterprise risk management (ERM) really deliver the anticipated competitive benefits? Even if it can, are insurers genuinely committed to the transformation this is likely to require in how they run their businesses?



An increasing number of insurers and other financial services businesses are developing ERM programs to strengthen the control of ever more complex risk profiles and provide a more informed and assured basis for decision-making. However, the credit crisis has highlighted systematic risk management failures within many financial services businesses. Since many of the worst-affected companies had developed what they believed were robust and sophisticated ERM capabilities, it is important to ask whether ERM can actually deliver the strategic advantages of enhanced risk control and better understanding of the extent and composition of risk-taking, and if so, what attributes make ERM effective – in short, does ERM matter and if so how?

We have analyzed the results of our latest survey of ERM in the insurance industry with these questions in mind. We have also examined the findings to assess how ERM has matured since our previous study in 2004, while also gauging respondents' priorities for and commitment to further development. Clearly companies that choose to take part in such a survey are likely to have a particular commitment to ERM. However, through detailed cross-sectional analysis of the survey results, we have tried to determine how far they are prepared to go in continuing to embed ERM into their businesses and hence discern whether they genuinely believe ERM can confer competitive benefits in the long term.

In judging whether and how ERM can be effective we have drawn on analysis of the attributes that enabled some companies to minimize losses in the recent market turmoil and looked at why others proved more susceptible.<sup>2</sup> What this assessment underlines is that while ERM can, in our opinion, make a difference, it can only succeed as a sustainable and effective management discipline if it is sufficiently relevant to, consistently embedded within and fully embraced by risk-takers, rather than just group level management or risk professionals.

### Is ERM fit for purpose?

Judged against the criteria of its business relevance and extent of integration into their businesses, the survey results indicate that respondents have made significant progress in a number of key ERM areas since our previous study in 2004, although considerable work still lies ahead (see box overleaf).

ERM is a strong Board priority and chief risk officers have an increasing influence on the design and monitoring of ERM. However, the necessary firm-wide understanding of the objectives and responsibilities relating to ERM remains limited and may undermine its incorporation into day-to-day business considerations. Ultimately, this lack of integration means that ERM programs may simply be perceived as an additional layer of bureaucracy within the business rather than being integral to how it is run.

Respondents believe that ERM is now more embedded into their strategic planning than in our 2004 study. However, there appears to be insufficient alignment between the overall risk appetite and the setting, monitoring and enforcement of risk limits on the ground. The quality of risk data and usability of model analysis also have some way to go before they can provide a genuinely enhanced basis for decision-making.

### Are insurers committed to progress?

Naturally, we would not expect to see fully mature ERM programs at this stage. ERM is still a relatively young management discipline and key components ranging from economic capital modeling to more systematic operational risk management present challenging new frontiers for many organizations. It is therefore notable that our survey reveals a strong commitment to further progress. This includes continuing investment in economic capital modeling and greater incorporation of the

ERM programs may simply be perceived as an additional layer of bureaucracy within the business rather than being integral to how it is run.

<sup>2</sup> This assessment draws on both PricewaterhouseCoopers analysis and the findings of a number of recent market studies including 'Observations on risk management practices during the recent market turbulence', a report published by the Senior Supervisors Group on March 6, 2008 (the Group brings together senior supervisors from the US, UK, France, Germany and Switzerland).

analysis into strategic planning, along with the development and refinement of risk governance, monitoring and reporting.

However, the survey raises important questions about the extent to which these developments are being embraced by frontline teams and how far they are being driven by heightened regulatory and rating agency expectations rather than a genuine belief that ERM can significantly enhance business performance. As recent experience indicates, companies that fail to embed ERM thinking into the heart of their decision-making or simply seek to meet stakeholder expectations are unlikely to achieve their ERM objectives.

Embedding ERM into day-to-day decision-making and business activities is a tough challenge, demanding important changes in

the way companies formulate their strategy and judge, reward and communicate their performance. While the tone from the top is critical, effective ERM cannot be imposed by the Board or senior management. Business teams need to be convinced that it can help them to make more informed decisions and enhance their ability to create value if it is to matter to them. Companies need to gauge how far down the road they want to go in driving ERM into their businesses against the perceived value that can be gained from this investment.

The following report is designed to help insurers compare their own progress against industry benchmarks and identify priorities for future action. It can also help them to judge their ERM objectives against their capacity for change and hence discern whether ERM does and should matter for their particular business.





## Progress in ERM

Our 2004 study of ERM in the insurance industry found that while ERM had moved onto the boardroom agenda, most respondents were still grappling with the technical and organizational challenges of implementing effective ERM capabilities. Four years on, our follow-up survey reveals strong development in some areas, although considerable work ahead in others:

### Strong progress

Most respondents are at least fairly confident (44% are very confident) that they have clearly defined their risk appetite, although alignment of risk appetite and key business decisions is often limited.

Nearly 80% of respondents have a scenario- and model-building capability, compared to only around a half in 2004.

Growing influence of chief risk officer and clear trend towards Board-level ERM committee.

### Some progress

Most ERM functions have at least begun to take on responsibility for setting firm-wide standards for risk management, compared to less than half in 2004.

Most respondents are at least fairly confident that ERM is embedded into strategic planning (42% are very confident compared to 4% in 2004), although the risk information, communication and organization to make this possible are sometimes less than adequate.

Nearly half of respondents are fully confident that their ERM program enables them to communicate a portfolio view of risk to senior management, compared to 36% in 2004, although some of the necessary risk aggregation is still patchy.

Nearly 40% of participants have achieved and most of the rest expect to achieve better allocation of capital as a result of developing economic capital modeling.

Nearly 70% of participants now have a process for identifying emerging risks, but only around a half of them are even fairly confident that it is working effectively (4% are fully confident).

### Limited progress

A third of respondents are fully confident that they have defined clear roles, responsibilities and accountabilities for ERM, compared to 31% in 2004.

Business units within more than three-quarters of participants do not base their risk tolerances on the broad risk appetite and tolerance levels set by senior management.

Most respondents do not have procedures for limit monitoring and exception approval and more than 70% accept that the enforcement of risk thresholds is not operating effectively.

Less than 40% of respondents rate their risk data or systems strategy as excellent or good, only a marginal improvement since 2004.

More than half of participants provide regular and detailed risk disclosure to rating agencies (53% compared to 46% in 2004), but less than 30% report regularly about risk to shareholders.

## Overview

Our latest survey of ERM in the insurance industry charts progress since our 2004 study and examines the mounting challenges ahead.



## About this survey

This study of ERM in the insurance industry is based on a survey of 53 insurers carried out in the second half of 2007 and first quarter of 2008.

The survey population represents a cross-section of geographies (17 with headquarters in Europe, 16 based in North America, 11 in the Asia-Pacific region and 9 in Bermuda). The sample also brings together a balance of life, non-life and multi-line companies, along with a selection of reinsurers. Where stated for purposes of comparison, we have divided participants into small (less than \$1 billion in annual revenue), medium (\$1-\$5 billion) and large (more than \$5 billion) company respondents. Around two-thirds have revenue of more than \$1 billion and half more than \$5 billion.

The people completing the questionnaires were predominantly CROs or others directly responsible for designing and overseeing ERM, although some specific sections were often delegated to specialist personnel within the organization.

The survey is a follow-up to an earlier study published in 2004, bringing in more respondents than before (53 compared to 44 in 2004). While some questions from the previous survey were repeated to enable direct comparison, we also updated and refined the questionnaire to reflect evolving expectations and challenges. A particular focus was the identification and management of emerging risks. We have also broadened the scope of enquiry and analysis in the developing areas of operational risk and

economic capital modeling. The underlying objective was to investigate how ERM programs have developed and matured since 2004 and how well the industry is equipped to meet evolving market and stakeholder demands, while identifying priorities for future work. We have also sought to discern how relevant and valuable ERM is and can be in meeting the needs and aspirations of insurers – in short, does it matter?

We would like to thank our survey respondents for kindly providing so much time, input and insight. Their significant investment in taking part in this comprehensive survey is a testament to their commitment to industry-wide collaboration and the development of best practice in the area of ERM.

### Individual benchmarking

The findings and participants have been categorized by company size, sector and operating territory. This has enabled our specialist teams to provide each of the respondents with a detailed and objective comparative analysis of strengths and weaknesses in relation to their peers and the industry as a whole.

If you would like us to help you complete the questionnaire and provide a scorecard of your company's ERM maturity, please speak to your PricewaterhouseCoopers representative or contact one of the survey team or Global Insurance Leadership Team members listed on pages 97-8.

## Key findings

**The extent to which ERM is integrated into the day-to-day decision-making and frontline risk-taking of the business is often limited.**

Less than half of the survey participants are confident that ERM has been embedded into their strategic planning, resource allocation and performance management. This is reflected in the limited extent to which ERM has permeated the strategic direction and risk-taking activities within many organizations. For example, around 70% of participants accept that risk management considerations are not integrated into their strategic planning. Only around 30% consider their risk assessment to a 'great extent' in setting their underwriting policy. Less than 20% have fully developed and implemented ways to base process improvements on an analysis of risk events.

The articulation and application of risk appetite are critical in defining and enforcing the amount of risk a business is willing to accept in the pursuit of value and therefore a key cornerstone of the effective embedding of ERM. It is therefore surprising that business units within more than three-quarters of participants do not base their risk tolerances on the broad risk appetite and tolerance levels set by senior management. Only 14% report that risk limits have been fully defined and boundaries established for each risk category. Nearly 40% do not align their risk appetite with changes in strategic direction and around half do not align it with the development of new products. As a result, overall enterprise-level risk appetite may not always be taken into account by many participants when making key business decisions.

Clearly many companies are finding it difficult to define and articulate their risk appetite in a way that can be translated into tangible limits, objectives and priorities on the ground. These difficulties may be compounded by the fact that short-term profit considerations rather than risk-adjusted measures tend to be the primary performance objective within

many participants. For example, the most important risk preferences in setting the risk limits for personal and commercial lines are underwriting profitability rather than any risk-adjusted criteria.

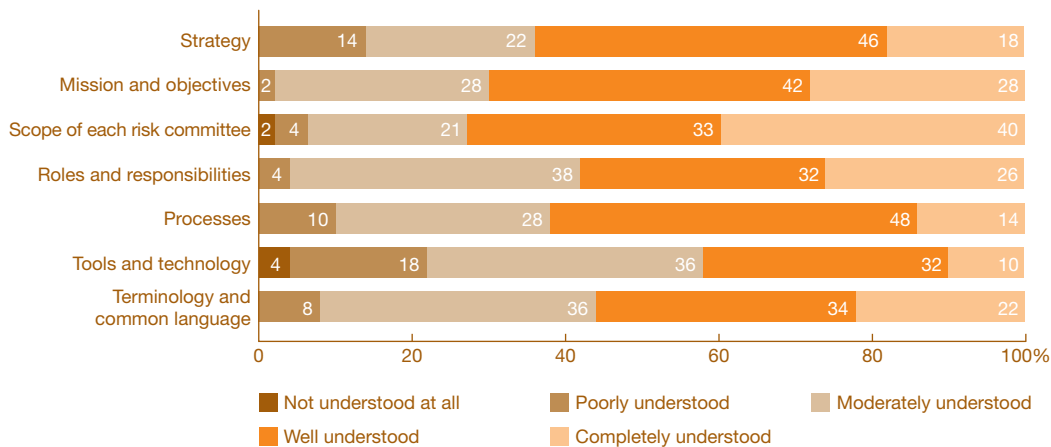
The operational application of ERM also demands that limits and controls are rigorously monitored and enforced. However, most respondents do not have procedures for limit monitoring and exception approval and more than 70% accept that the enforcement of limit thresholds is not operating effectively. The communication, escalation and risk learning procedures for breaches in limits may also be insufficiently proactive and systematic. Only around 30% of participants have early warning systems to detect when volumes are approaching the maximum threshold, and less than 40% have processes for identifying and analyzing why limits are breached.

These findings highlight wider questions about the structure, organization and level of integration of risk management within the business. The CRO and corporate risk function should ideally focus on developing an ERM program that is appropriate for the organization, results in effective monitoring and managing risk from a portfolio-wide perspective, and ensures that business functions have access to the tools, information and other support they need to monitor, measure and manage risk effectively within their areas of direct responsibility. However, CROs and their teams may not be providing this critical input and direction. Less than 40% of participants report that the ERM unit is responsible for setting firm-wide standards for risk management and that the practice is operating effectively. A lack of standardization can leave risk to be managed in a series of separate silos and may mean that comparable data leads to different conclusions in different units. This can undermine the consistency of the application of risk tolerances and inhibit the ability to take a portfolio view of risk. It can also affect the willingness of the business to fully embrace the ERM program.

Ideally, business units should assume primary responsibility and accountability for the risks they take in accordance with the overall risk appetite and standards set by the CRO and corporate risk team. As Figure 1 highlights, however, the mission, terminology and roles and responsibilities are not clearly understood within many organizations. Clearer definition and establishment of roles and responsibilities and closer interaction between risk and business teams could help to make better use of the risk management activities that are already in operation across the business. However, less than half of participants report a high level of

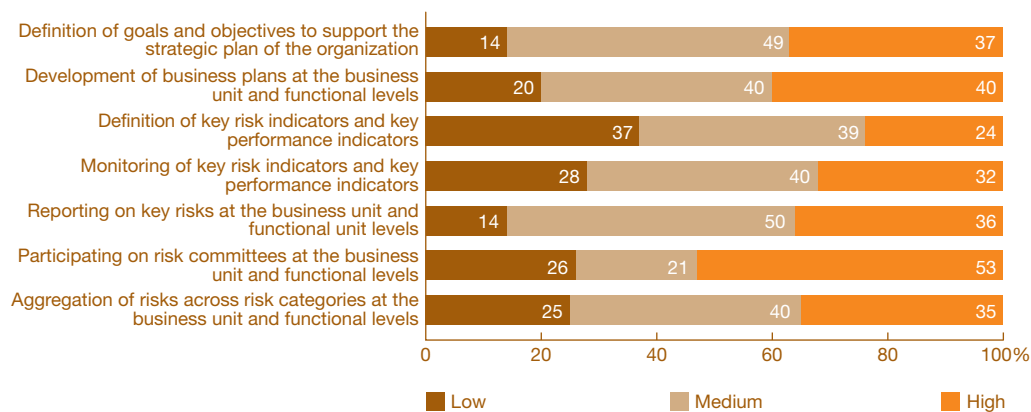
interaction between risk and business teams in the definition and monitoring of key risk and performance indicators and the aggregation of risk across different categories. In addition, there does not appear to be sufficient interaction between business and risk management teams in how risk limits and objectives are set and enforced (see Figure 2). Poor collaboration between risk and business teams can create confusion about who 'owns' risk and how it should be managed. More broadly, it may mean that risk management is seen as someone else's job and that ERM is not really relevant to them.

Figure 1 Understanding of the key elements of ERM



Source: PricewaterhouseCoopers Global ERM Survey

Figure 2 Interaction between business and risk management



Source: PricewaterhouseCoopers Global ERM Survey

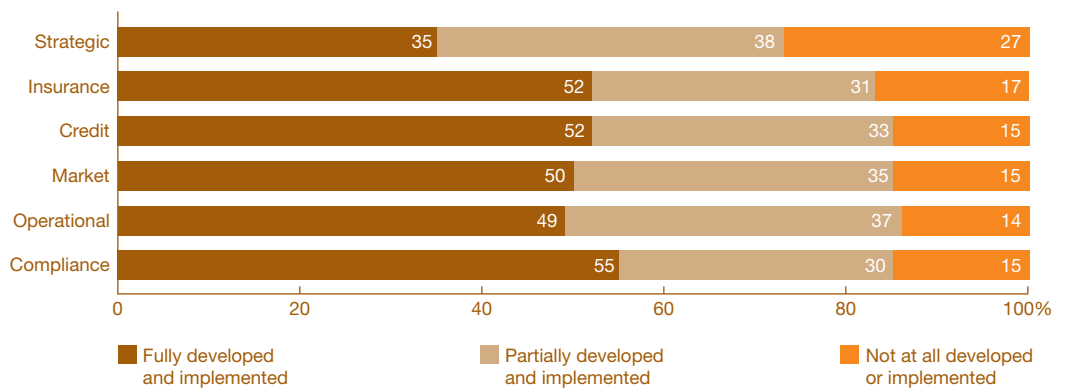
Figures 3a and 3b indicate that the self-assessment tools and methodologies needed to underpin the effective integration of governance, risk management and compliance into business operations are, within many participants, not yet up and running. The slow pace of integrating self-assessment processes runs counter to many business leaders' desire to break down the separation of risk management into distinct silos. These silos can lead to needless duplication and potential confusion, while hampering growth and other areas of strategic execution.

Less than 40% of respondents report that the development and implementation of qualitative risk assessment tools and methodologies for

strategic risk are fully up and running. It is further notable that only a third of participants report that the measurement, monitoring and management of operational risk are well embedded into day-to-day processes. Clearly, these and other areas of development and implementation will take time. Operational risk in particular is a relatively new and challenging frontier. However, maturity is arguably the key to realizing the value of ERM in this area and an important test of the commitment to further progress.

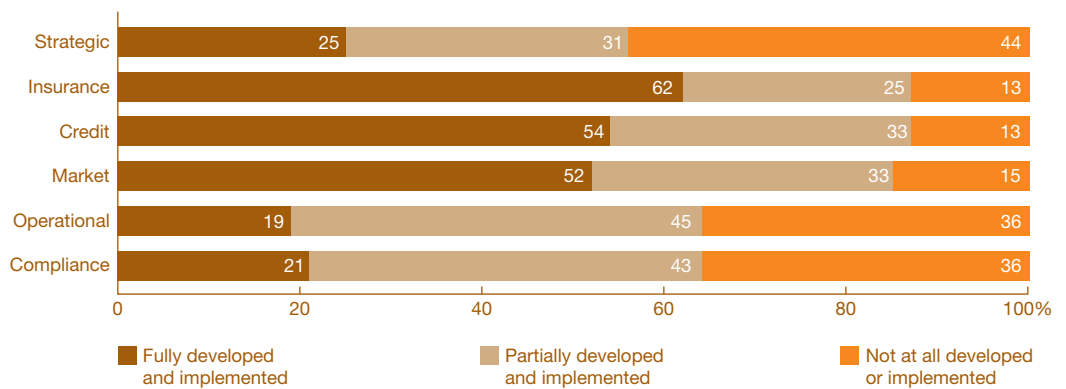
**The effectiveness of ERM is often inhibited by the insufficient quality and reliability of risk information and analysis.**

**Figure 3a Development and implementation of qualitative risk assessment tools and methodologies**



Source: PricewaterhouseCoopers Global ERM Survey

**Figure 3b Development and implementation of quantitative risk assessment tools and methodologies**



Source: PricewaterhouseCoopers Global ERM Survey

Less than 40% of respondents believe that their risk data and systems are good or excellent. Nearly half do not believe that their risk information supports their risk objectives. The lack of confidence in model outputs is especially noticeable across the survey group. Nearly three-quarters of respondents do not believe that their economic model output has gained full acceptance from business units or influences day-to-day decision-making. Barely a quarter discern that their economic capital modeling provides substantial value in defining their risk appetite, setting risk limits or improving strategic planning.

These findings are perhaps not surprising given the time and effort required to develop effective modeling capabilities and gain buy-in and confidence from within the business. Further progress and maturity could help to realize the full value of what has, within many participants, been substantial investment in modeling capabilities, along with ensuring that companies meet regulatory and rating agency expectations around how effectively modeling is governed and how outputs are applied within the business.

Building confidence in the model analysis requires credible data and a reliable infrastructure of governance, operation and validation. However, nearly 60% of respondents believe that the control environment surrounding model data input, model outputs and model updates is moderate or weak. To bring risk considerations into the forefront of business planning and performance management would also ideally require integrated measures ('common language') that bridge risk and finance; yet most participants accept that the alignment of risk and financial metrics is limited at best. Closer alignment between risk and finance functions could provide more robust business plans and projections and a more balanced and coherent view of how the business is performing. As our survey revealed, the potential synergies between economic capital models, International Financial Reporting Standards (IFRS) and EU Solvency II are likely to provide a valuable catalyst for further alignment. Respondents identified an integrated reporting structure, data systems and modeling capabilities as the key synergies they are seeking to pursue, although most are still at the beginning stages of achieving them.

Ideally, risk analysis should also include forward-looking insights to enable business teams to identify and evaluate emerging threats and opportunities. Yet, nearly three-quarters of respondents reported no correlation between risk indicators and their use in predictive analytics.

Ultimately, building risk considerations into effective decision-making demands a comprehensive risk perspective. More than 40% of participants strongly agree and a further 25% slightly agree that their ERM program enables them to communicate a portfolio view of risk to senior management and the Board. However, the quality of the underlying risk information needed to provide this portfolio view does not always bear out managements' perception. For example, most respondents do not believe that their aggregation methodologies are capable of contributing to a portfolio view of risk.

**Many respondents are still grappling with the challenges of developing effective ERM governance.**

As we have already highlighted, understanding of roles and responsibilities within the ERM program is less than clear and the necessary interaction between risk and business units is often limited. Moreover, only a quarter of participants believe that their ERM program is sufficiently proactive, despite this being a key objective of participants in our 2004 study.

The CRO is at the heart of effective risk governance, providing objective influence and challenge on the risks being taken and retained as part of a culture that welcomes such input and questioning. To be effective the CRO requires the independence, standing and authority to make his or her views count. It is notable that the CRO communicates directly with the Board on certain risk management issues within around 60% of respondents, although this does not necessarily reflect a formal reporting line. In turn, the CEO and Board should have a portfolio view of risk and ideally have the ability and readiness to actively direct and, where necessary, challenge risk management and its underlying assumptions. In this regard, some 40% of respondents have a Board-level ERM committee and nearly a quarter are considering its establishment.

**To be effective the CRO requires the independence, standing and authority to make his or her views count.**

Training and development should ideally encompass commercial and managerial as well as technical areas to ensure that risk teams can support and work with the business.

Good people are clearly critical to developing the status and effectiveness of ERM. It is therefore perhaps telling that few respondents felt able to answer the question about the industry's ability to attract, hire and train competent risk managers, suggesting that this may be an area that requires fresh focus and development. The often limited ability to identify and develop appropriate skills is further highlighted by the fact that less than half of participants have set qualification standards for risk management personnel in many of the risk categories set out in Figure 4. Moreover, more than 40% report that recruiting risk IT professionals is a low priority within their organization, compared to 16% who see it as an important objective.

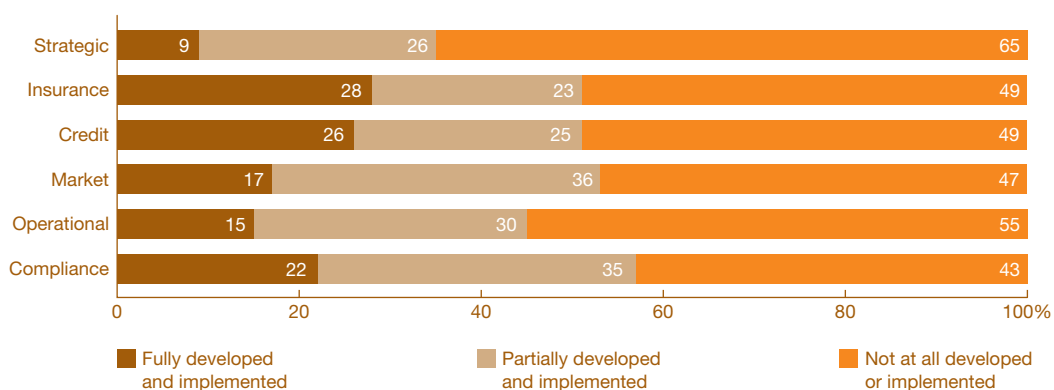
Training and development should ideally encompass commercial and managerial as well as technical areas to ensure that risk teams can support and work with the business. Companies also need to be proactive in ensuring that talent is a key part of their strategic planning, while working with academic and professional bodies to ensure that skills and qualifications are appropriate for both current and future needs. In turn, training will clearly be essential in developing understanding and engagement within the wider business. However, less than 20% have at this point established risk management training for the business and believe that it is working effectively.

The survey provides interesting insights into the ability of insurers to control their downside risks and realize opportunities in a more complex and uncertain risk environment.

Key issues on the insurance industry risk agenda include the softening in non-life premium rates, heightened capital constraints and growing expansion into new and emerging markets. Insurers also face the inherent risks of increasingly complex product offerings and growing reliance on ever more advanced models. Indeed, this increasing sophistication demands greater oversight around the models and the underlying data.

Clearly, there is a danger that poor information or 'blind reliance' on complex models can generate false confidence and encourage a company to accept too much risk. Equally, limited risk information and insight could lead to an over-cautious approach in which they assume too little risk or tie up capital that could be better invested elsewhere. The key tests of an insurer's ability to deal with these challenges would include the quality, timeliness and reliability of its risk assessment; the effectiveness of aggregation monitoring and management and its confidence and ability to use its risk analysis to identify commercial opportunities. Our survey highlights that further work may be required across all these areas.

Figure 4 Qualification standards for risk personnel



Source: PricewaterhouseCoopers Global ERM Survey



While nearly 70% of respondents have a process to identify emerging risks, less than a half are quite confident and only a handful fully confident that it is operating effectively. As Figure 5 highlights, processes for identifying emerging issues within specific risk categories, including compliance, operational and strategic risks, are yet to be fully developed within most participants. Moreover, only 20% make full use of risk learning to deliver swift feedback on emerging risks and trends and incorporate this into pricing and model assumptions. Where stress testing is carried out it is only followed up intermittently (annually in 63% of respondents), which is surprising given the need for frequent re-appraisal, update and validation of assumptions highlighted by the recent credit turmoil. Improving the ability to identify, monitor and manage emerging risks should be a key focus for today's insurers. This includes bringing together industry and stakeholders in the development of best practice and effective control of systemic risk.

As outlined earlier, satisfaction with the control over model outputs is limited. The potential question marks over the validity of outputs are further highlighted by the fact that a significant proportion do not use economic scenario generators in their economic capital modeling, a key factor in building unforeseen variables into business planning.

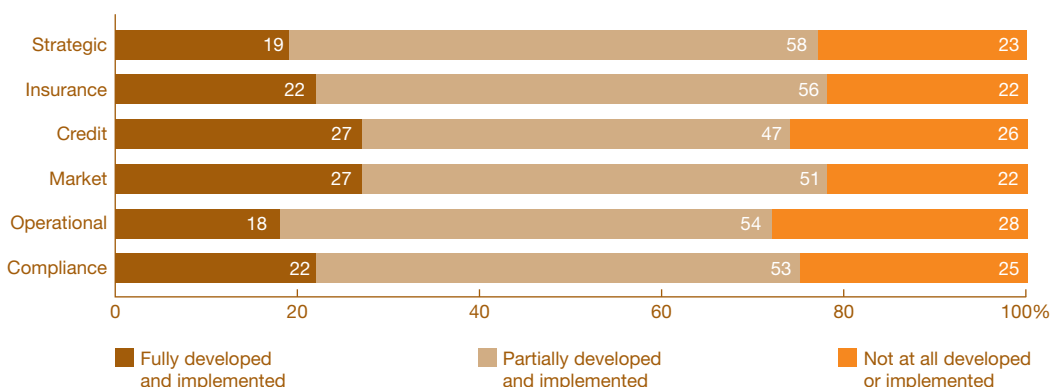
Insurers have enhanced their ability to manage market movements, but as non-life pricing softens, it is notable that few respondents are very confident that they have the necessary tracking, aggregation management and rigor of underwriting control to analyze and respond to market movements in a proactive, decisive and disciplined way (see Appendix A on page 89 for a full outline of how respondents manage market movements).

The ability of respondents to identify and respond to emerging opportunities is called into question by the fact that more than a third do not use risk/reward considerations in making decisions about whether to seize opportunities. Only 10% have a process to align their assessment of emerging opportunities with their risk appetite. The potential limitations of risk/reward assessments are further underlined by the lack of alignment between risk and financial metrics outlined earlier.

**Respondents recognize the need for further development.**

Many participants recognize the need for further development. For example, nearly half of participants plan to improve their Asset Liability Management (ALM) metrics in the coming year and another 30% in the next

**Figure 5 Processes for identifying emerging risks within risk categories**



Source: PricewaterhouseCoopers Global ERM Survey

one to three years. More than a third plan to develop their risk indicators and loss event database for operational risk.

More generally, many respondents have set ambitious ERM rating targets. More than three-quarters have set a benchmark, of which 52% aspire to very strong to excellent and 35% strong. Among the areas that are likely to require further work to achieve this are the application of model outputs within the business, including input into risk appetite, improved capital allocation and alignment with business planning and execution.

These improvements are likely to be critical in securing business buy-in, meeting stakeholder expectations and ultimately realizing the full value of these capabilities.

Appendix A on pages 89-91 sets out respondents' own assessment of their progress to date and where they may need to develop further. It is notable that in relation to a range of key 'maturity' criteria including governance, controls and escalation, no more than half of respondents report that the practice is in place and operating effectively.



# Realizing the full value of ERM

## ERM at the crossroads

ERM has come to a crossroads as investment in and expectations of ERM have soared, yet many insurers have yet to realize the full benefits.



Our 2004 study found that while participants had a strong commitment to ERM, most were still struggling to get beyond the design and planning stage. Four years on, ERM has reached a critical juncture. Boards and senior management are looking for ERM to help them strike the right balance between risk and reward amid mounting competition, a more volatile risk climate and a softening of non-life rates. At the same time, analysts, investors, regulators and rating agencies are heightening the pressure on insurers to put risk considerations at the heart of their strategy and operations.

Our latest survey reveals that while participants have made strong progress on several fronts, ERM has yet to be consistently embedded in the decision-making and frontline risk-taking operations of many organizations. As Boards and senior management continue to examine their current ERM models and their future objectives they may well be asking themselves whether ERM is really integral and relevant to their businesses. This assessment is likely to draw on the lessons learned from the recent turmoil in the credit and broader financial markets.

### Rising expectations

Increasing stakeholder scrutiny has been a key driver for the recent development of ERM and is set to raise the bar still further in the coming years.

Analysts and investors are demanding more information about risk management and capital positions. A global survey of analysts' opinions on insurance disclosure carried out by PricewaterhouseCoopers in 2007 found that market professionals are particularly keen

to learn more about companies' risk appetite and the sensitivity of risk positions to market movements and emerging risks, while receiving information that would enable them to judge the validity of managements' underlying risk assumptions.<sup>4</sup>

Rating agencies are increasingly evaluating risk management as part of their overall assessment of financial strength. EU Solvency II could provide further impetus for the development of ERM by encouraging a more holistic and systematic approach to risk management. The common evaluation criteria for rating agency and Solvency II assessments include the strength of risk monitoring, reporting and control, the effectiveness of risk-based capital allocation and the extent to which risk awareness is integrated into governance, decision-making and strategic execution within the business (see box – Raising the bar, overleaf). As such, ERM is likely to have an increasingly critical impact on the overall cost of capital and how capital is allocated within the business.

If we look at the Standard and Poor's (S&P) assessment by way of example, it is notable that few insurers' ERM capabilities have so far been rated as 'excellent' (3% of 274 companies reviewed in 2008) or 'strong' (10% in 2008); a further 83% were 'adequate' and 4% were 'weak'.<sup>5</sup> While some firms may be approaching this benchmark, it is likely that the bar will continue to rise as evaluation criteria become more exacting and more rigorously applied; leaving some companies at risk of falling behind and seeing their ratings actually decline. Equally, while the third Solvency II quantitative impact study (QIS 3) concluded that no extra capital would be required in the European insurance market

3 'Global Challenge: Optimizing capital in a softening market', a report of the Bermuda Insurance 2007 conference, published by PricewaterhouseCoopers.

4 'Insurance reporting at the crossroads: What do analysts think', published by PricewaterhouseCoopers in November 2007.

5 'Enterprise risk management: ERM development and the insurance sector could gain strength in 2008', published by Standard and Poor's, March 24, 2008.

'One of the reasons S&P has such a strong focus on ERM is that we believe it provides a forward-looking measure of a management team's ability to manage through challenging and rapidly changing environments.'

**Mark Puccia, Managing Director, Financial Institutions Ratings, Standard & Poor's**

as a whole, it found that 16% of participants would need to raise additional capital as a result of the introduction of a risk-oriented system.<sup>6</sup> Our survey found that even more (30%) anticipate higher capital demands.

The recent turmoil and asset write-downs in the credit markets and the ensuing liquidity crisis have highlighted the increasing complexity, volatility and uncertainty of a constantly evolving risk environment. A recent study by the Senior

Supervisors Group (SSG), a body that brings together financial services regulators from the US, UK, France, Germany and Switzerland, concluded that 'firms that avoided such problems demonstrated a comprehensive approach to viewing firm-wide exposures and risk, sharing quantitative and qualitative information more effectively across the firm and engaging in more effective dialogue across the management team'.<sup>7</sup> The 'adaptive' assessment, communication and response to

### Raising the bar

Regulatory and rating agency assessments are raising the bar for ERM within the insurance industry. Key developments include Standard and Poor's annual review of ERM practices<sup>8</sup> and Fitch's economic capital model, 'Prism', which strongly aligns with the goals of ERM.<sup>9</sup> AM Best assesses the quality of risk management as part of its evaluation of financial strength. While AM Best does not require a formal ERM program, it sees it as an increasingly important element of effective risk management, especially within larger and more complex organizations.<sup>10</sup> And while Solvency II in the EU does not specifically advocate ERM, its focus on the integrated measurement, management and embedding of a broad range of risks has strong parallels with an ERM approach.

Common evaluation criteria for assessing risk management/ERM within the Solvency II and main ratings agency frameworks include:

- The comprehensiveness and effectiveness of an insurer's risk identification, measurement, monitoring and control processes;
- The ability of the organization to identify, monitor and respond to emerging risks;
- The rigor of the governance of risk management processes;
- The extent to which risk awareness and an understanding of its implications are embedded into the culture, governance, business planning and capital allocation of the organization;
- The extent to which risk appetite can be articulated and translated into tangible guidelines for risk-taking on the ground;
- The timeliness and effectiveness of the communication and escalation of risk information;
- The extent to which risk modeling and analysis are used and have gained understanding and buy-in from within the business; and
- The ability of the risk function to influence and challenge decisions.

(See Appendix B on pages 92-3 for a more detailed outline of rating agency and Solvency II expectations and evaluation criteria).

6 'CEIOPS report on its quantitative impact study for Solvency II', November 2007.

7 'Observations on risk management practices during the recent market turbulence', published by the Senior Supervisors Group on March 6, 2008.

8 'Enterprise risk management: ERM development and the insurance sector could gain strength in 2008', published by Standard and Poor's, March 24, 2008.

9 Fitch Ratings: '2006 Capital scores for European insurers'.

10 AM Best: 'Risk management and the rating processes in insurance companies', March 5, 2007.

risk information enabled management to 'alter underlying assumptions to reflect current circumstances' and exercise 'critical judgment and discipline' (see box below – Lessons of the credit and liquidity crises).

To date, the bulk of the losses have fallen most heavily on banks and capital market businesses rather than insurers, although the potential for significant losses in areas ranging from credit to Directors & Officers' claims

remains. As many banks had invested considerable sums in developing their ERM capabilities over several years, the failure of some programs to prevent these losses has heightened some observers' scepticism about the usefulness of ERM. It is certainly important to examine the lessons that can be learned from ERM's ability to deal with these market events, including how risk is managed and built into strategic decisions.

### Lessons of the credit and liquidity crises

In March 2008, the Senior Supervisors Group (SSG) published the results of a study into why some companies managed to anticipate and respond effectively to the emerging threats and over-concentrations of risk and why others proved more susceptible to them.<sup>11</sup>

The study concluded that while some institutions believed that their ERM programs were up to speed, there were marked variations in the level of senior management oversight, focus on emerging risks and decisiveness with which risk considerations were anticipated, communicated and acted upon. Largely as a result, some firms proved more susceptible to the subsequent losses than others. In particular, the study cited the failure of leadership teams to adequately 'challenge business lines' assumptions', 'test the accuracy of valuations' or respond 'on a timely basis...despite an array of data indicating rising stress in the sub-prime mortgage market'.

The key attributes of companies that largely avoided the problems as identified in the SSG study are as follows:

- Effective alignment of strategy and risk appetite;
- Ability to identify and accurately represent risk in a timely manner within risk measurement, monitoring and reporting systems;
- Better understanding of risk concentrations, correlations and their potential implications, based on effective risk analytics and underpinned by regular validation, calibration and adjustment;
- Ability and readiness of senior management to understand and, where necessary, challenge underlying risk assumptions;
- Effective communication of risk to decision-makers and appropriate escalation of issues for action;
- Consistent implementation of risk management practices and standards across businesses and geographies; and
- A culture that builds risk considerations into performance objectives and management in key areas such as unit targets and individual incentives.

<sup>11</sup> 'Observations on risk management practices during the recent market turbulence', published by the Senior Supervisors Group on March 6, 2008.

‘The survey provides valuable insights into the key challenges many insurers face in translating ERM into value and how these are being addressed, including the critical importance of building ERM into governance and decision-making structures.’

**Thomas C. Wilson,**  
Chief Risk Officer,  
Allianz SE

## Return on investment

The development of survey participants’ ERM programs can be judged against two yardsticks: Progress since our earlier study in 2004 on the one hand and their ability to deal with a tougher risk climate and more exacting stakeholder expectations on the other – the ‘rising bar’ (see pages 29-34 for detailed comparison).

Judged against 2004, the status of ERM has been greatly enhanced and many respondents have made important steps in implementing and developing their ERM capabilities. Enabling better risk/reward decision-making and increasing shareholder value are seen as the main advantages of ERM, which would confirm that participants recognize ERM’s potential value as a strategic enabler. From an implementation perspective, more than two-thirds of respondents at least slightly agree that they have defined an ERM framework that is efficient and effective (35% strongly agree); that risks are identified, measured and quantified to a great extent (28% strongly agree) and that their ERM program enables them to communicate a portfolio view of risk to the Board and senior management (49% strongly agree). In 2004, less than half slightly agreed and very few strongly agreed. Moreover, nearly half of respondents now report that ERM governance structures are in place and are being managed proactively, compared to only 14% in 2004.

However, a different picture emerges when the results of our survey are judged against the rising bar. In particular, the findings raise critical questions about whether ERM is sufficiently embedded into the business within many respondents and whether their ERM programs have the informational and organizational foundations to make this possible. Even where managements’ own rating of the reliability of key aspects of their ERM program is strong, this is not always borne out in practice. For example, participants are generally confident that their ERM program provides management with a portfolio view of risk. However, more than two-thirds of participants do not have consistent criteria for risk identification and more than 80% accept that their aggregation methodologies for all risks are no more than basic, which would make a genuinely portfolio view of risk difficult.

Within many participants, there appears to be minimal alignment between risk appetite and how the business is actually run. This includes limited consideration of the implications of risk appetite in areas such as changes in strategic direction and the development of new products, along with insufficient alignment between risk appetite parameters and the setting and enforcement of ground-level underwriting and investment limits. As a key foundation for matching the firm’s capacity to take risk with its strategy and operational execution, the application of risk appetite is fundamental to an effective ERM program and is a key criterion by which rating agencies judge insurers’ ERM programs.

The difficulties of applying risk appetite highlight the fact that ERM is still primarily a top-down process within many organizations. As our survey confirms, the essential input and buy-in from frontline business teams and risk-taking functions are often limited. Underlying difficulties include a lack of consistency in how risks are identified, monitored and measured across the company and insufficient firm-wide understanding of the rationale for ERM, along with the organizational structures and allocation of roles and responsibilities needed to make it work.

Many respondents also recognize that their risk data and systems are not always fit for purpose and that understanding and control over capital modeling are still far from satisfactory. Accordingly, communication and escalation of risk information is often patchy and risk assessments have surprisingly little influence on the development of policies, business planning and tactical execution, one of the areas of potential weakness highlighted in the SSG report. It is also noticeable that many participants are still finding it difficult to monitor and manage emerging risks, and that few respondents appear to be using their ERM knowledge to identify and capitalize on unfolding opportunities, rather than simply mitigating their exposures.

## Commitment to progress

It is not surprising that our survey highlights areas for further development and refinement. Embedding ERM is a complex process and has only moved onto the Board agenda in recent years, with heightened stakeholder



pressure adding particular urgency. However, it is also a question of aspiration. In particular, companies that simply look to meet regulatory and rating agency demands rather than embracing ERM may find that they will continue to be dissatisfied with the results and fail to realize the full competitive benefits.

It is notable that there is a high degree of correlation between our respondents' self-assessment and the independent review undertaken by S&P (see Appendix C on pages 94-5), which indicates that participants are generally realistic about where further work may be required. This realism could also be seen as evidence of their commitment to the continued development of their ERM programs. Further indications of their commitment are the high target ratings (most of those who specified a target rating are working towards 'strong' or 'excellent' on the S&P scale, for example); the ambitious plans in areas ranging from modeling to operational risk management; and, not least, respondents' readiness to take part in such a detailed and time-consuming survey.

### Going the extra mile

To work, however, ERM needs strong buy-in from risk-takers in the business. Leadership teams therefore need to assess how relevant ERM is to the culture and priorities of their particular organization and hence how far they wish to go in making it a fundamental element of how they manage and operate their business. The factors driving this assessment will vary from company to company based on their specific size, complexity and challenges. Aspects of a fully developed ERM program may not be appropriate for some businesses and alternative ways to manage risk may be appropriate or preferred.

If companies do decide to take ERM to the next level, they will need to develop a much stronger firm-wide understanding of its mission and objectives; a clearer allocation of appropriate roles and responsibilities and the ability to leverage risk management capabilities that already exist within the company. Making ERM work also requires an influential role for the CRO, including a clear

mandate to challenge risk positions and ensure that appropriate action is taken (see 'Attributes of a good CRO' on page 27).

Clearly, it is important to ensure that the risk profession can draw on a steady supply of talent. It is therefore worth noting that our survey highlighted a high degree of uncertainty about the industry's ability to attract, hire and train competent risk managers, with few participants even answering the question. Equally, business people should include risk management within their skills set. However, less than 20% of respondents had established risk management training for business teams or believed it was working effectively.

Underlying considerations include bringing business people into risk teams and vice-versa. It is notable, for example, that Zurich Financial Services recently appointed Axel Lehmann, formerly CEO of its North American Commercial Division, as its Group CRO, and elevated the position to Group Executive Committee status. 'In today's complex environment, I am pleased that we can appoint someone with Axel's record of success and proven leadership to the enhanced risk management role,' said James Schiro, Group CEO of Zurich. 'Our elevation of the CRO role to Group Executive Committee status – and the filling of that role with a seasoned operational leader – reflects a deep commitment to ensuring an integrated approach to risk issues.'<sup>12</sup>

### The challenges ahead

2008 is likely to provide an immediate challenge to the efficacy and organizational relevance of ERM as insurers face market and economic stress and, for non-life companies, a softening of rates, along with the resulting constraints on available capital. Within this challenging environment, effective ERM could help companies to sustain investor confidence, identify commercial opportunities and allocate scarce capital where it can earn its best risk-adjusted return. This testing risk climate could also help to pinpoint areas where further ERM development and implementation work may be required. Ultimately, the test of this pressure can help to discern whether ERM can and really should matter.



12 ZFS media release, December 12, 2007, and AGM statement, April 3, 2008.

## Identifying and closing the gaps

This section of the survey report looks in more detail at the foundations of effective ERM, how ERM is developing within today's evolving risk environment and the areas that may require management attention as the bar for ERM continues to rise.



## Defining effective ERM

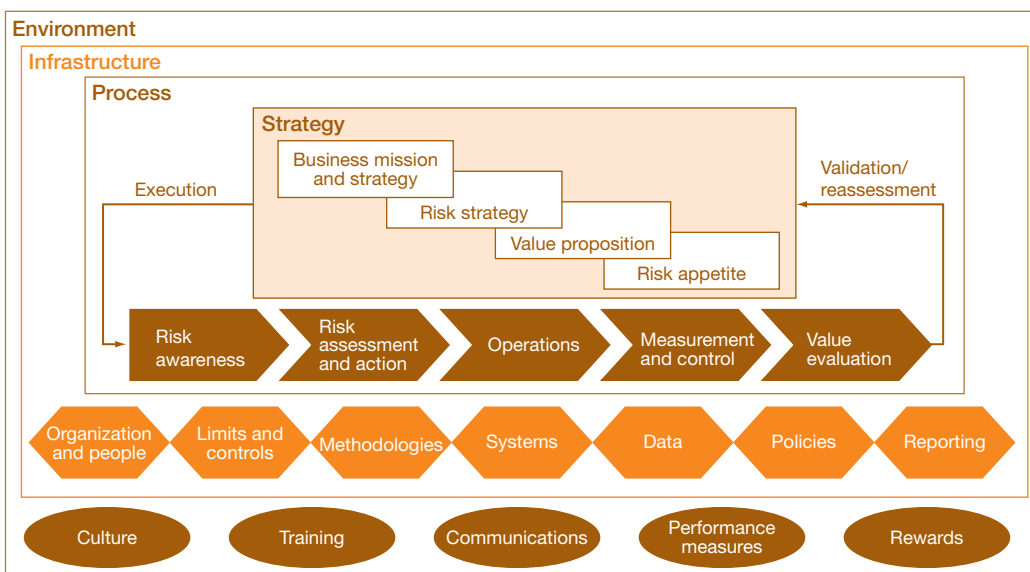
Insurance is a risk business and clearly there can be no reward without taking at least some risk. The key aim of an effective ERM program is to provide the necessary checks, communication and risk-informed decision-making to achieve the right balance between risk and reward. A better understanding of risk can not only help insurers to manage their exposures more effectively, but also capitalize on opportunities, improve organizational performance and ultimately enhance long-term shareholder value.

As our survey confirms, it is essential to define and articulate the scope and objectives of the ERM program. This includes consideration of the risk classes to be addressed and the extent of alignment with business planning, strategic execution and performance management. This assessment forms part of a wider evaluation of how deeply the company intends to embed ERM into the fabric of the enterprise. As Figure 1 highlights, the next step is the design and development of an ERM framework that promotes risk awareness in the four dimensions of strategy, process, infrastructure and environment.

The strategy includes the definition of how much risk the company is prepared to accept in the pursuit of reward (risk appetite). The process sets out the mechanics of how the risk/reward strategy is assessed, executed, validated and updated as risks emerge and opportunities arise. This is underpinned by an infrastructure of organization, systems and reporting, along with the limits, controls and methodologies through which ground-level risk management objectives are set, monitored and enforced as part of a consistent and comprehensive portfolio view of risk. Finally, there is an environment that seeks to make all this possible through training, communication and the development of a risk-conscious culture, along with the risk-based performance measurement and reward criteria that ensure risk is a visible and telling element of how business teams define their objectives and judge their performance.

As our survey further confirms, the practicalities of how to implement this framework and ensure that it delivers the expected objectives and benefits are the central challenges of ERM development. Investment and Board-level impetus are clearly critical. However, it is often the organizational and cultural dimensions of

Figure 1 Illustrative ERM framework



Source: PricewaterhouseCoopers

Through our industry research and work with clients we have developed a set of guiding principles for making ERM work in practice and helping to deliver the desired benefits.

ERM embedding that can make the difference between whether or not the program is effective and relevant to the business.

Through our industry research and work with clients we have developed a set of guiding principles for making ERM work in practice and helping to deliver the desired benefits. This includes providing an effective foundation of governance, understanding and accountability to manage risk, realize opportunities and meet regulatory, rating agency and other stakeholder expectations (these principles are also the yardsticks against which we have evaluated survey participants' ERM development and the priorities for action – see pages 29-34):

#### **Organization and governance**

- Robust Board/senior management direction and oversight;
- Coherent Board and management committee structure to facilitate effective reporting and oversight;
- Enterprise risk function led by a CRO with credibility, stature and clear reporting relationship with CEO (see 'Attributes of a good CRO' on page 27);
- Clear definition and allocation of firm-wide roles and responsibilities;
- Clear firm-wide understanding of ERM objectives and responsibilities; and
- Regular review of big and/or complex transactions.

#### **Strategic planning and risk appetite**

- Clear links between business objectives and risk appetite;
- Clear links between risk-based capital modeling and strategic planning; and
- Ensuring understanding, confidence and use of economic capital evaluations within the business.

#### **Policies and procedures**

- Ability to articulate and translate risk appetite into tangible risk preferences and tolerances on the ground;
- Setting and enforcing firm-wide risk limits;

- Consistent, well-understood and enforced policies and procedures; and
- Policies and procedures anchored in clear documentation to ensure consistent application.

#### **Risk identification and representation**

- Portfolio view of risk;
- Consistent processes for identifying, monitoring and measuring risks across different businesses and risk classes; and
- Systematic procedures to anticipate and respond to emerging risks.

#### **Risk measurement and reporting**

- Comprehensive risk measurement (Value at Risk (VaR), sensitivity, credit exposure, stress testing and scenario analysis);
- Common metrics for risk and finance;
- Regular analysis of risk positions and risk exposures; and
- Regular monitoring of changes in risk profile.

#### **Risk communication and escalation**

- Timely reporting of risks to Board/senior management;
- Systematic limit monitoring;
- Monitoring of model governance and usage;
- Risk-adjusted performance measurement;
- Analysis of risk events and identification of required remedial action as part of a systematic process of risk learning; and
- Regular testing of key controls.

#### **Infrastructure**

- Ensuring appropriate data quality and data availability for internal and external consumption;
- Development of viable risk technology architecture; and
- Training and talent management strategy to ensure sufficient skills and resources.

#### **Stakeholder disclosure**

- Credible, intelligible and comprehensive risk disclosure.

## Attributes of a good CRO

If ERM is the orchestra then the CRO is its conductor, facilitating the appropriate performance of the score set by senior management and bringing together all the various elements of risk management into a seamless whole.

Independence and executive authority are fundamental to CROs' ability to fulfill and balance their roles of oversight, advice and challenge. In particular they need to have appropriate standing compared to other executives, including those on the corporate ERM/risk committee. They also need to have a portfolio view of risk, thorough understanding of the business and ability to communicate effectively with all the various arms of the organization. The role should ideally be underpinned by a culture that encourages and rewards scrutiny and challenge, even if this appears to go against the prevailing strategic grain.

The CRO needs to be a key partner in the body ultimately responsible for risk, whether this is the executive, audit or other committee. This includes providing timely, reliable and accessible information to guide decisions, ensuring that the agenda reflects the most important existing and emerging risks and ensuring that decisions are enacted on the ground. The key elements of this management role include the ability to provide:

- Clarity around the setting of risk tolerance, appetite and risk limits;
- Appropriate technical capabilities and market knowledge;
- A level of independence over the risk management process, including recommending how and when capital should be deployed to the business units;
- Clear and accountable focus for the management of risk;
- A monitoring and validation role that spans across the enterprise and is not limited to traditional internal controls;
- A direct reporting line to the CEO;
- Ability to communicate and interact with the Board/senior management and external stakeholders, including explanation of risk issues in practical business language rather than technical risk concepts;
- Ability to manage risk within large and possibly multinational businesses, including the development and application of consistent and integrated risk management practices;
- Coaching and advising the business in how to monitor and manage risk within a standardized enterprise-wide approach;
- Ability to work closely with the business to develop consistent ERM standards and methodologies for risk monitoring and assessment;
- Ability to work across silos by leveraging and streamlining risk capabilities across the enterprise;
- Access to appropriate tools, measures, systems and resources;
- Broader risk management skills in the core risk areas including financial, operational, compliance, strategic, market and credit risks; and
- Board should actively monitor management's ERM progress.

Some companies may question whether the CRO role is necessary. We would argue that a 'conductor' is invaluable in bringing the various elements of ERM together. For smaller organizations, the CRO can provide greater clarity around the roles, responsibilities and expectations for ERM. For larger organizations, the CRO can head a dedicated risk management function that can include formalized risk committees, policies and procedures and regularly scheduled risk reporting. Nonetheless, in the early development of ERM, project leadership under a CEO or CFO may be required.

## Evolving demands

While the guiding principles underlying effective ERM have not changed since our previous study in 2004, the demands placed on ERM programs and expectations for execution are increasing all the time.

Insurers are grappling with profit volatility, mounting competition, increasingly complex products and models and an ever more uncertain and fast-shifting risk environment. 2008 has been marked in particular by financial market instability, a softening in non-life premium rates and associated constraints on capital and borrowing. The findings of the Senior Supervisors Group report highlight the importance of risk understanding, communication, challenge and executive oversight in anticipating and mitigating emerging threats to the business (see page 21). These attributes can also help companies to identify and capitalize on opportunities and allocate limited capital more effectively.



At the same time, insurers face more rigorous regulatory, rating agency, investor and other stakeholder demands. These evolving expectations are contributing to the raising of the bar for ERM execution and casting the quality and effectiveness of their risk management under an ever more probing and comparable spotlight of scrutiny. In short, ERM is no longer a nice-to-have, but an increasingly critical determinant of an insurer's competitive viability, cost of capital and ability to sustain stakeholder confidence.

The proposed Solvency II risk-based capital regime and the ERM evaluations developed by Standard and Poor's, AM Best and Fitch are framed around a principles-based rather than rules-based approach to risk and capital management. Although insurers have the benefit of considerable discretion in how they meet these principles, the fact that few companies have been rated as more than adequate in the latest S&P ratings highlights the demanding standards being set. The stringency of supervisory review of banks under Basel II provides a telling indication of the bar being set for insurers under Solvency II, including the challenges of securing approval for the use of an internal model. Appendix B on pages 92-93 summarizes the evaluation criteria for Solvency II, S&P, AM Best and Fitch.

## Participants' progress and priorities for action

In evaluating the current maturity of ERM programs we have assessed the development of participants' ERM programs against the yardsticks of progress since our previous study in 2004 and their ability to meet today's evolving market and stakeholder demands. Some questions were retained from the previous study to allow for comparison, while new questions have been added to reflect subsequent developments and coming challenges. The evaluation is framed around the key principles set out on page 26.

Guiding principles for ERM	Latest survey findings	Progress since 2004 (where comparable)	Priorities for action
<b>Organization and governance</b>			
Robust Board/senior management direction and oversight	66% strongly agree and 23% slightly agree that <b>ERM is a Board/CEO priority</b>	<b>Already well-developed in 2004</b> (75% strongly agreed and 22% slightly agreed that ERM was a Board/CEO priority, ahead of 2008)	The Board needs to set the ERM policy, ensure that there is a viable framework for understanding and managing risk on an enterprise-wide basis and provide objective oversight across business operations
Coherent Board and management committee structure to facilitate effective reporting and oversight	43% have a <b>Board-level ERM committee</b> and 24% are planning to set one up. 68% have a corporate-level risk committee	<b>Clear trend towards Board-level ERM committee.</b> (Proportion with corporate risk committee the same)	Developing <b>clear committee charters</b> , ensuring probing dialogue and timely and actionable reporting. This includes an annual risk practices assessment and quarterly risk reporting
Enterprise risk function led by a CRO with credibility, stature and clear reporting relationship with CEO	<b>CRO has primary responsibility for designing and monitoring ERM</b> in 60% of participants	<b>Growing presence and influence of CRO</b> (31% had CRO responsible for design and monitoring of ERM)	Ensuring that the CRO has the appropriate attributes and <b>a strong voice within the executive committee</b>
Clear definition and allocation of firm-wide roles and responsibilities	<b>Only 34% are very confident</b> and 39% are reasonably confident that they have defined clear roles, responsibilities and accountabilities for ERM	<b>Limited progress</b> (31% were very confident that they had defined clear roles, responsibilities and accountabilities for ERM)	Clearly defined and documented responsibilities; <b>elimination of silos and application of firm-wide ERM standards</b> and effective leveraging of existing capabilities; underpinned by effective monitoring, oversight and readiness to challenge
Clear firm-wide understanding of ERM objectives and responsibilities	<b>Only 18% are fully satisfied</b> and 46% are fairly satisfied that the ERM strategy is understood and 26% are very confident and 32% fairly confident that the roles and responsibilities are fully understood within their organization	<b>Some progress</b> (only 4% were fully satisfied that their ERM strategy was understood and 9% very confident that roles and responsibilities were fully understood), <b>but still considerable work ahead</b>	Understanding and buy-in requires clear leadership, <b>training, communication and alignment with incentives</b> and performance objectives/management
Regular review of big and/or complex transactions	<b>Only 18% routinely model or monitor high-risk transactions</b> against expected maximum loss		Clear designation of authority for approval and thorough evaluation of impact on risk profile, including <b>stress testing and regular re-testing</b>

Guiding principles for ERM	Latest survey findings	Progress since 2004 (where comparable)	Priorities for action
<b>Strategic planning and risk appetite</b>			
Clear links between business objectives and risk appetite	49% strongly agree that ERM is embedded into strategic planning. 32% are very confident that their risk assessment process is effective and linked to strategic planning	Some progress (only 4% were very confident that ERM was embedded into strategic planning or that their risk assessment process was effective and linked to strategic planning), but still considerable work ahead	Re-design of strategic planning to explicitly incorporate risk, including use of risk-adjusted metrics to guide decisions, judge performance and set incentives
Clear links between risk-based capital modeling and strategic planning	39% have achieved and 59% expect to achieve better allocation of capital as a result of implementing economic capital within their organization and 18% have achieved and 69% expect to achieve changes in strategic direction as a result	Some progress (most were still at relatively early stages of development and implementation), but further to come	Use of risk-based modeling to develop a risk-adjusted basis for decision-making, performance evaluation and reward; underpinned by the incentives of more effective use of capital and a more sustainable balance between risk and reward
Ensuring understanding, confidence and use of economic capital evaluations within the business	Only 27% believe that they have been very effective and 29% fairly effective in gaining business buy-in for economic capital models and ensuring that they influence day-to-day decisions.		Ensuring that information is timely, reliable, understood and actionable by management; while ensuring credibility through frequent validation, updating and sense-checking of underlying assumptions
<b>Policies and procedures</b>			
Ability to articulate and translate risk appetite into tangible risk preferences and tolerances on the ground	44% are very confident and 33% are fairly confident that they have clearly defined their risk appetite. However, business units within only 26% of respondents base their risk tolerances on the broad risk appetite and tolerance levels set by senior management		Linking the overall definition of the risk appetite with limits at the business unit level, which can be used to control day-to-day activities
Setting and enforcing firm-wide risk limits	Only 22% are very confident and 24% fairly confident that their procedures for enforcement of limit thresholds are operating effectively		Creation of a formal and comprehensive limit structure that begins with the overall risk appetite, allocates down to business unit and geographic levels and provides practical parameters for the control of the business



Guiding principles for ERM	Latest survey findings	Progress since 2004 (where comparable)	Priorities for action
Consistent, well-understood and enforced policies and procedures	<b>Only 37% report that the ERM function is responsible for setting firm-wide standards for risk management</b> and that the practice is operating effectively and 25% that the practice is in place but certain aspects may not be operating effectively	<b>Some progress</b> (20% reported that the ERM function is responsible for setting firm-wide standards for risk management and that the practice was operating effectively), <b>but considerable work ahead</b>	Development of consistent portfolio-wide standards capable of <b>managing risk against common criteria</b> and leveraging existing risk activities within the business
Policies and procedures anchored in clear documentation to ensure consistent application	Although <b>more than 60% have fully documented their policies and procedures for credit risk and underwriting processes</b> , only 11% report that standardized documentation for operational risk is fully in place and 31% are fully satisfied with the documentation for their economic modeling	<b>Mixed progress</b> (credit risk documentation has in particular improved, but other areas require considerable further work)	Documentation is needed to ensure rigorous and consistent management and oversight, along with <b>demonstrating this to stakeholders</b>
<b>Risk identification and representation</b>			
Portfolio view of risk	49% strongly agree and 29% slightly agree that their <b>ERM program enables them to communicate a portfolio view of risk</b> to senior management	<b>Strong progress in overall assessment</b> (36% strongly agreed that their ERM program enables them to communicate a portfolio view of risk to senior management), <b>but underlying information may be less satisfactory</b>	Development of more credible and comprehensive underlying data and a better understanding of the metrics that form part of this portfolio view
Consistent processes for identifying, monitoring and measuring risks across different businesses and risk classes	<b>Only 32% have consistent criteria for risk identification</b> and 18% report that their aggregation methodologies for all risks are any more than basic, which may make a genuine portfolio view of risk difficult		A reliable and credible portfolio view of risk demands <b>effective aggregation and consistent monitoring</b> and evaluation
Systematic procedures to anticipate and respond to emerging risks	<b>69% have a process to identify emerging risks</b> , but only 4% are very confident and 47% are fairly confident that it is operating effectively		Risk analysis should include forward-looking insights to enable business teams to identify and evaluate emerging threats. Insurers should judge their ability to respond against past events and make appropriate improvements

Guiding principles for ERM	Latest survey findings	Progress since 2004 (where comparable)	Priorities for action
<b>Risk measurement and reporting</b>			
Comprehensive risk measurement (VaR, sensitivity, credit exposure, stress testing and scenario analysis)	<b>Nearly 80% of respondents have a scenario- and model-building capability.</b> Multiple methods used to measure aggregation across asset classes. 60% stress test all their life and health products and businesses, but only 20% quarterly or more	<b>Strong progress</b> (only around a half had a scenario- and model-building capability), but more work required in enhancing the <b>regularity and reliability of evaluation</b>	Development of <b>better understanding of risk concentrations, correlations and their potential implications</b> , which needs to be based on effective risk analytics. Ability to identify and accurately represent risk in a timely manner in risk measurement, monitoring and reporting systems
Common metrics for risk and finance	<b>Only 21% strongly agree</b> and 35% slightly agree that they have an efficient basis to link risk with other financial information ('common language')		Common metrics needed to provide a <b>clearer indication of balance</b> between risk and reward
Regular analysis of risk positions and risk exposures	<b>Only 22% have defined</b> the scope of business and support functions to be included in the risk assessment process		Risk assessment needs to be timely and comprehensive to ensure that key risks are not <b>slipping through the net</b> and to provide the foundations for a more integrated approach to governance, risk management and compliance
Regular monitoring of changes in risk profile	Only 10% of the respondents report that regular production of key risk indicators (KRIs) is in place and operating effectively		KRIs should be produced on a regular and systematic basis to enable management to assess these indicators against their established risk appetite and risk tolerances



Guiding principles for ERM	Latest survey findings	Progress since 2004 (where comparable)	Priorities for action
<b>Risk communication and escalation</b>			
Timely reporting of risks to Board/senior management	Only 10% report that a full set of KRIs are available to management at any time of the month and 36% that at least some indicators are available. Only 24% report that escalation triggers are in place and operating effectively and only <b>9% report that risk communication and escalation is very effective</b>	<b>Some progress</b> (none reported that a full set of KRIs were available to management at any time of the month, although 47% reported that at least some indicators were available. Only 7% reported that escalation triggers were in place and operating effectively), <b>but considerable work ahead</b>	Timely and actionable communication of risk to decision-makers and appropriate escalation of issues for action
Systematic limit monitoring	23% report that risk limits are monitored regularly and there is a process for <b>resolving breaches</b> and 17% that the practice is in place but certain aspects may not be operating effectively		Development of effective limit monitoring and management of breaches to <b>ensure underwriting discipline</b> and avoid undetected threats
Monitoring of model governance and usage	Nearly 60% of respondents believe that the control environment surrounding model data input, model outputs and model updates is <b>moderate or weak</b>		Development of effective model governance to <b>win credibility for outputs</b> and meet stakeholder expectations
Risk-adjusted performance measurement	<b>Short-term profit considerations rather than risk-adjusted measures</b> tend to be the primary performance objective within many participants. For example, the most important risk preferences in setting the risk limits for personal and commercial lines are underwriting profitability rather than any risk-adjusted criteria		Insurers need to develop risk-adjusted view to enhance risk/reward balance, sustainability of returns and <b>effective use of capital</b>
Analysis of risk events and identification of required remedial action as part of a systematic process of risk learning	<b>Only 14% make full use of risk learning</b> to deliver swift feedback on emerging risks and trends and incorporate this into pricing and model assumptions		Development of risk learning is essential in delivering <b>swift feedback on emerging risks</b> and incorporating this into pricing and model assumptions
Regular testing of key controls	<b>Only 18% report that all risk management processes and controls are evaluated for effectiveness</b> and 37% that the practice is in place but certain aspects may not be operating effectively	<b>Some progress</b> (only 3% reported that all risk management processes and controls were evaluated for effectiveness), <b>but considerable work ahead</b>	Board and senior management need to <b>regularly evaluate the effectiveness of their ERM program</b> , drawing where appropriate on support from internal audit and external assessment

Guiding principles for ERM	Latest survey findings	Progress since 2004 (where comparable)	Priorities for action
<b>Infrastructure</b>			
Ensuring appropriate data quality and data availability for internal and external consumption	<b>Only 4% rate their data strategy as excellent and 35% as good</b>	<b>Limited progress</b> (none rated their data strategy as excellent and 32% as good), <b>and considerable work ahead</b>	<b>Informed decision-making</b> demands timely and reliable risk data
Development of viable risk technology architecture	<b>Only 4% rate their systems strategy as excellent and 33% as good</b>	<b>Limited progress, but considerable work ahead</b>	<b>Speed and reliability of reporting</b> requires effective systems
Training and talent management strategy to ensure sufficient skills and resources	<b>Only 6% have established risk management training and believe it is operating effectively</b> and 14% have training in place but believe that certain aspects may not be operating effectively		Development of training programs to <b>enhance understanding and engagement</b> within the wider business
<b>Stakeholder disclosure</b>			
Credible, intelligible and comprehensive risk disclosure	53% provide regular and detailed risk disclosure to rating agencies and 47% to regulators, although <b>only 29% report regularly to shareholders</b> . 73% communicate the results of their economic capital model to rating agencies, 60% to regulators, 51% to investors and 35% to analysts.	Risk and capital disclosure has increased, especially to rating agencies (46% discussed economic capital results with rating agencies in 2004). Economic capital results are now more comparable. However, risk and capital reporting to shareholders remains limited and <b>more work may be required to meet demands for transparency and comparability</b>	Liaising closely with different stakeholders to <b>discern the type of information they need</b> and how to ensure it is credible, intelligible and, where possible, comparable. Moving beyond minimal disclosure to use risk reporting as an opportunity to convey the <b>strengths and potential of the business</b>

ERM is still an emerging management discipline, and as our survey confirms key aspects of development will take time. Moreover, participants' own satisfaction ratings with various aspects of their ERM program affirm that they are realistic about the necessary work ahead. Particular areas of focus include the further development of risk indicators and risk-adjusted metrics, along with greater application and use of such information in guiding decisions. However,

our study and work with clients highlight key areas where even companies with reasonably longstanding ERM programs may still be facing difficulties ranging from the articulation and translation of risk appetite to the development and embedding of economic capital and operational risk management. In the next section we look in detail at the underlying elements of ERM and examine how to address some of the key challenges.

# Understanding ERM in detail

## Understanding ERM in detail

This part of the study examines the core elements of ERM. It is designed to provide industry-wide benchmarks against which individual companies can compare their own progress and identify priorities for action. It also includes guidance about some of the more challenging aspects of ERM development such as model application and the articulation of risk appetite. As such, these sections can assist project teams focussing on specific areas of ERM development.



## Governance, organization and application of ERM

**This section explores the objectives, organization and potential benefits of ERM, along with how effectively it is controlled, understood and embedded into the operational and decision-making frameworks of survey participants.**

Delivering the benefits of ERM requires effective governance and organization. This includes agreement on how much risk the enterprise is prepared to accept in the pursuit of reward (risk appetite) and how this translates into risk tolerances on the ground. It demands a clear understanding of who owns risk and who is responsible for its management within each link of the decision-making and risk-taking chain. It requires a coherent portfolio-wide perspective that integrates financial and non-financial risks through common reference data ('common language') for risk and reward and a consistent cross-functional methodology for risk identification, monitoring and management. It also calls for firm-wide coordination to break down silos and leverage all the risk management

capabilities within the business in a way that helps eliminate duplication, control costs and enhance efficiency.

In addition to meeting the demands of today's risk climate, a more coordinated approach to risk management and related governance and compliance could help insurers to meet evolving stakeholder expectations. This includes a mechanism to embed risk awareness into the running of the business. A more streamlined approach could also help to realize the potential synergies between different regulatory requirements and provide an efficient underlying foundation for meeting evolving compliance demands.

From the design and application of viable risk management tools, technologies and procedures, to the allocation of roles and responsibilities and the development of the necessary understanding and buy-in from the business, how to formulate and implement appropriate governance and organizational structures for ERM is a prominent source of

### A structured approach to risk governance and organization

- Senior management should have a firm-wide portfolio view of the risk profile; set the ERM policy and risk appetite; ensure risk appetite is translated into agreed risk tolerances for each risk and business unit and provide objective oversight across business operations and strategic execution;
- The fulcrum of risk governance is an executive committee in which risk issues are debated and actions formulated. The foundations for effectiveness are a clear charter; timely, reliable and actionable information and good identification, communication and explanation of key issues by the CRO, underpinned by a culture that prioritizes and provides appropriate incentives for sound risk management;
- The Board and/or related risk committee needs to be comfortable that management has put in place a viable framework for understanding and managing risk on an enterprise-wide basis;
- Business units should have primary responsibility and accountability for identifying, monitoring and managing the risks they take;
- Risk and control functions should design consistent methodologies for risk management; advise business teams about how to apply them and have the independence, authority and standing to provide objective influence and challenge on the risks being taken and retained; and
- Internal audit should provide independent assurance that the ERM program is operating effectively.

More than 70% of respondents accept that their procedures for enforcement of limit thresholds are not operating effectively.

enquiry and debate within the insurance industry. The box on page 37 outlines our views on the ideal framework for risk governance and organization.

The findings of our survey highlight the practical difficulties of addressing these challenges. While ERM is generally more embedded within organizations than it was in our previous study in 2004, many participants still have some way to go before ERM becomes an integral element of the culture and running of the business. This includes considerable further development and refinement of the firm-wide understanding and structures examined in this section of the report.

### Key trends

- The position of CRO is now more common than in our 2004 survey. It is notable that the CRO communicates directly with the Board in some 60% of respondents;
- CROs and their ERM teams may not be providing the necessary input, standardization and support across the business. Less than 40% of participants report that the ERM unit is responsible for setting firm-wide standards for risk management and that the practice is operating effectively;
- Closer interaction between risk and business teams could help to make better use of the risk management activities that are already in operation across the business. However, less than 40% of participants report a high level of interaction between risk and business teams in the definition and monitoring of key risk and performance indicators and the aggregation of risk across risk categories;
- Understanding of the objectives, roles and responsibilities and tools and technologies underpinning ERM has improved since our 2004 study, but is still not sufficiently strong within many participants;
- The survey reveals a potential disconnect between direction from the top and risk-taking on the ground, as highlighted by the fact that business units within more than three-quarters of participants do not base their risk tolerances on the broad risk appetite set by senior management. Some 40% of respondents report no alignment

between their risk appetite and new product approval and some 30% no alignment with changes in strategic direction;

- More than 70% of respondents accept that their procedures for enforcement of limit thresholds are not operating effectively. The communication, escalation and risk learning procedures for breaches in limits may also be insufficiently proactive and systematic; and
- The self-assessment tools and methodologies needed to underpin effective risk understanding and governance are not yet up and running within most participants.

### Perceived benefits and contribution of ERM

Participants perceive the benefits of ERM in the following order:

1. Better risk/return decision-making.
2. Value creation.
3. Instilling risk awareness into the business and creating a common language of risk.
4. Portfolio view of risk.
5. Reinforcing ownership of risk/control at the business unit level.

Participants gauge how effectively ERM is contributing to their performance and value creation in the following order:

1. Improved reputation.
2. Improved shareholder value.
3. Lower volatility of earnings.
4. Ratings and regulatory relationship.
5. Improved processes for bringing new products to market.

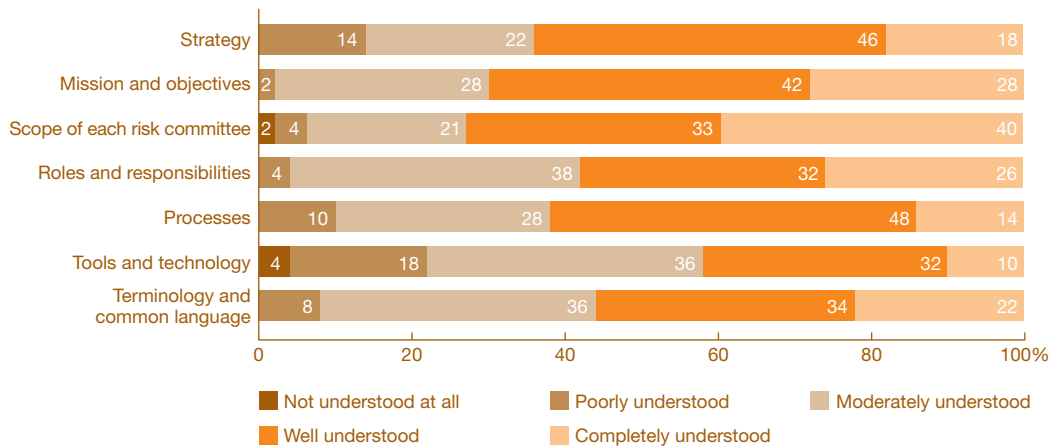
### Risk governance

More than 90% of the participants have an ERM function/structure in place compared to some two-thirds in 2004. However, less than half are confident that ERM has been embedded into their strategic planning, resource allocation and performance management.

Nearly two-thirds of respondents at least partially agree their ERM framework is both effective and efficient and is designed to



Figure 1 Understanding of the key elements of ERM



Source: PricewaterhouseCoopers Global ERM Survey

achieve the desired effects. As Figure 1 highlights, however, the allocation of roles and responsibilities is not as well understood as it should be within many organizations. This lack of clarity can lead to confusion about who owns risk and how effectively it is being considered and managed on the ground. It can also make it difficult to leverage cross-functional ERM capabilities as part of an enterprise-wide approach.

Around 60% of respondents now have a CRO. The CRO is still a relatively new position within the insurance industry (the post has been established within the past two years in 45% of respondents). Despite the newness of the position, the responsibility for designing and monitoring ERM rests mainly with the CRO, although the CFO is at the ERM helm within a significant number of respondents.

To fulfill their role, CROs should have the independence, standing and authority to provide objective influence and challenge on the risks being taken and retained. It is encouraging that the CRO communicates directly with the Board within some 60% of respondents. Their reporting line is generally either the CEO or CFO. The former is generally seen as best practice (see 'Attributes of a good CRO' on page 27).

An important component of the governance structure is the creation of formalized risk committees. There appears to be a trend towards having a risk committee at the Board level. A corporate-level ERM committee is now

standard for the industry and usually comprises a CEO, CRO, CFO, Chief Investment Officer (CIO), General Counsel and Chief Actuary. There is less standardization at the business unit level. Risk committees should ideally provide a forum for risk and business personnel to come together, analyze risk issues and formulate actionable strategies. The key attributes of an effective committee are the provision of timely, reliable and accessible information to guide decisions; ensuring that the agenda reflects the most important existing and emerging risks and ensuring that decisions are enacted on the ground.

### Setting and applying risk appetite

The risk appetite should provide the all-important direction and parameters for how risk considerations are integrated into business planning and risk tolerances on the ground. However, the survey raises questions about the extent to which risk appetite actually influences decisions or is relevant to the business:

- More than three quarters of respondents believe that their risk appetite is at least relatively well-defined (40% slightly and 37% strongly agree). Nearly 60% of participants believe their ability to define their risk appetite is strong;
- However, the articulation and translation into risk tolerances on the ground are less well-developed. Business units within only around a quarter of participants base their

A dynamic process that aligns product review with risk appetite is especially important in embedding risk into key commercial decisions.

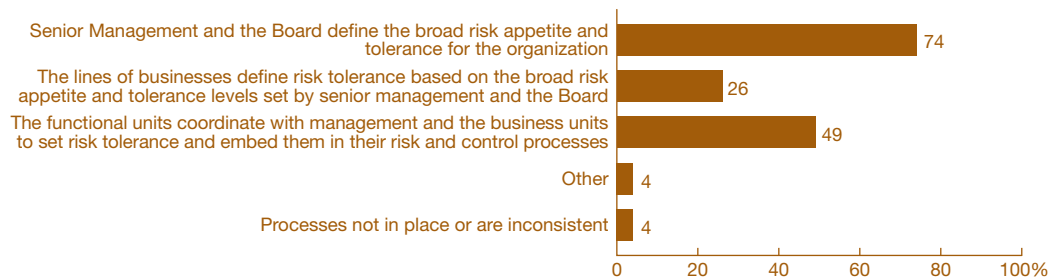
risk tolerances on the broad risk appetite and tolerance levels set by senior management (see Figure 2). Only a half of respondents bring together their risk functional units and business teams in setting their risk tolerances and embedding them in their risk and control processes;

- Some 30% of participants report no alignment between their risk appetite and strategic direction and some 30% no alignment with high-risk transactions;
- A dynamic process that aligns product review with risk appetite is especially important in embedding risk into key commercial decisions. However, nearly half of respondents report no alignment between their risk appetite and new product approval, and more than 50% no alignment with product enhancement and product mix changes (see Figure 3). It is

notable, moreover, that less than a third of participants have fully developed procedures for including strategic, compliance or operational risks in their product vetting;

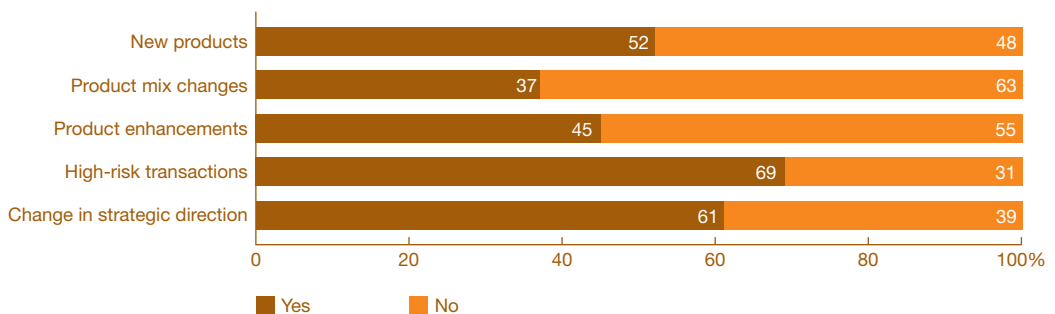
- Less than 40% of participants allocate aggregate risk tolerances to risk categories to reflect diversification benefits and risk/reward trade-offs;
- Around 40% of respondents use earnings volatility or surplus/risk of ruin/default as the primary driver for their risk appetite. Around 15% use ratings changes. A combination of these three measures is advocated by S&P; and
- Self-assessments are the most common way to monitor compliance with risk appetite. Only around a half of respondents monitor compliance through their dashboard or management information system.

Figure 2 Processes in place to define risk appetite and tolerance levels



Source: PricewaterhouseCoopers Global ERM Survey

Figure 3 Alignment between the risk appetite and product development



Source: PricewaterhouseCoopers Global ERM Survey

### Enforcement of limits and controls

- Only around 30% of respondents believe that the enforcement of limits and thresholds set by management is operating effectively;
- Only around a half of respondents have procedures for limits monitoring and exception approval and less than 40% report that their defined risk limits for each risk category are monitored regularly; and
- Only around a third of respondents routinely model or monitor high-risk transactions against expected maximum loss.

### Risk assessment

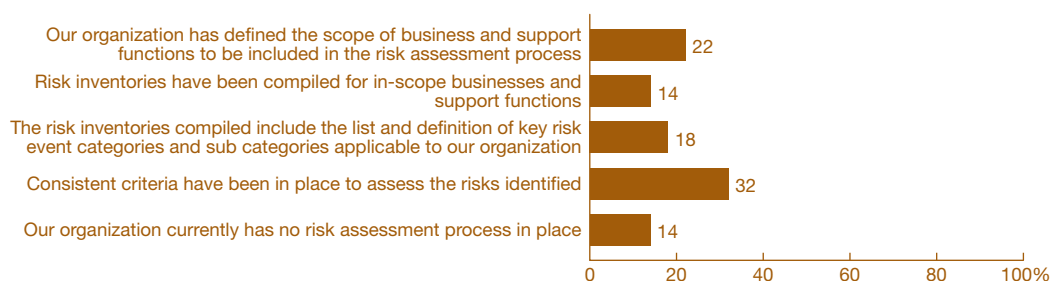
- Less than a third of respondents report that consistent criteria are in place to assess identified risks. More than 10% have no risk assessment process at all. The development of a coherent and consistent portfolio view of risk is likely to be difficult without such assessment (see Figure 4);
- The lack of consistency in risk assessment reflects the limited organizational integration within many participants. Less than a quarter of respondents have defined the scope of business and support functions to be included in the risk assessment process;
- The limitations of the assessment process would appear to run counter to respondents' generally confident view about the embedding of ERM into decision-making. For example, only around 30% of



participants consider their risk assessment to a 'great extent' in setting their underwriting policies; and

- Around two-thirds of respondents believe that their assessment of risks supports their organization's ability to identify and realize opportunities. However, only 10% have a process to align their assessment of emerging opportunities with their risk appetite. Barely a quarter of respondents strongly agree that they have an efficient basis to link risk with financial information.

Figure 4 Level of risk assessment



Source: PricewaterhouseCoopers Global ERM Survey

As market demands continue to increase, the depth and quality of risk disclosure is likely to become a critical competitive differentiator.

### Risk indication and escalation

- Participants use a range of risk indicators to monitor risks across categories (more than 30 in all). More than half chart the number of customer complaints (57%), number of internal audit findings (53%) and VaR exposures and limit utilization (53%);
- Risk dashboards are being used by nearly half of respondents, covering a range of components and a reasonable spread of measures to sum up each component;
- Less than 10% of respondents believe that the communication and escalation of risk information are very effective; and
- Less than 40% of respondents have an early warning system when volume approaches its maximum acceptable limit, and less than 50% have processes in place to remediate limit breaches (see Figure 5).

### Risk disclosure

Respondents report in most depth and most regularly to rating agencies (53%) and regulators (47%). In contrast, regular disclosure to shareholders is less common (27% of respondents) and tends to be less detailed. This is surprising given the growing investor interest in risk management. However, qualitative and quantitative market disclosure is increasing, particularly among larger companies. Key drivers include the development of Economic Value Added and European Embedded Value frameworks, along with the enhanced risk disclosure under IFRS 7 and the move to

Solvency II. As market demands continue to increase, the depth and quality of risk disclosure is likely to become a critical competitive differentiator. Key challenges include the development of credible and comparable formats for reporting.

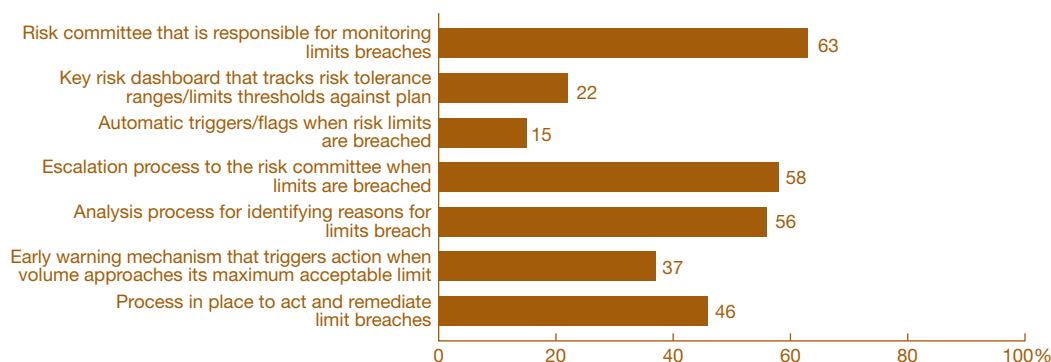
### Effectiveness of ERM

Most participants have developed their ERM capabilities since 2004, although their 'self-assessment' would confirm that many recognize that further work is required (see Appendix A Figures 2 and 3 pages 90-91).

The 'work in progress' includes key aspects of risk governance and the broader embedding of risk considerations into the decision-making and operations of the business:

- The CRO can help to drive greater efficiency and business value from the ERM program by developing standardized criteria for risk and control assessment, monitoring and response. A lack of standardization can mean that comparable data leads to different conclusions in different units, which can undermine the consistency of the application of risk tolerances and inhibit the ability to take a portfolio view of risk. However, less than 40% of participants report that the ERM unit is responsible for setting firm-wide standards for risk management and that the practice is operating effectively. Only around a third of participants report a high level of interaction between business and risk functional units;

Figure 5 Processes in place to deal with breaches of limits



Source: PricewaterhouseCoopers Global ERM Survey

- Respondents generally believe that the correlations between their KRIs and potential losses are not understood and that these indicators are not properly utilized for predictive analytics;
- KRIs should ideally be produced on a regular and systematic basis to enable risk committees and management to assess these indicators against their established risk appetite and risk tolerances and hence determine whether their risk thresholds are being enforced. However, only 10% of respondents report that regular production of KRIs is in place and operating effectively;
- To achieve effective risk governance and ERM, companies should ideally seek to raise awareness about the intended benefits of the program. Yet, less than 20% of respondents believe that their organization supports and operates an effective risk management training program;
- The survey suggests that the business team may not have the interaction and exchange of information that would enable it to fully leverage the various risk monitoring and

management capabilities within the organization at an enterprise-wide level. For example, around 70% of participants accept that risk management considerations are not integrated into their strategic planning. Less than 20% of participants have fully developed and implemented ways to base process improvements on analysis of risk events. Only around 30% consider their risk assessment to a 'great extent' in setting their underwriting policy; and

- Effective governance requires a formal process of escalation to enable risk committees, management or the Board to respond to limit breaches or threatening exposures. Yet only 20% of respondents indicated that a formal escalation process with risk triggers is in place and that it is operating effectively.

As Figures 6a and 6b highlight, the tools and standards for financial risks such as insurance, market and credit tend to be more firmly established than the generally more recently developed strategic, operational and compliance disciplines.

Figure 6a Development and implementation of quantitative risk management tools and methodologies

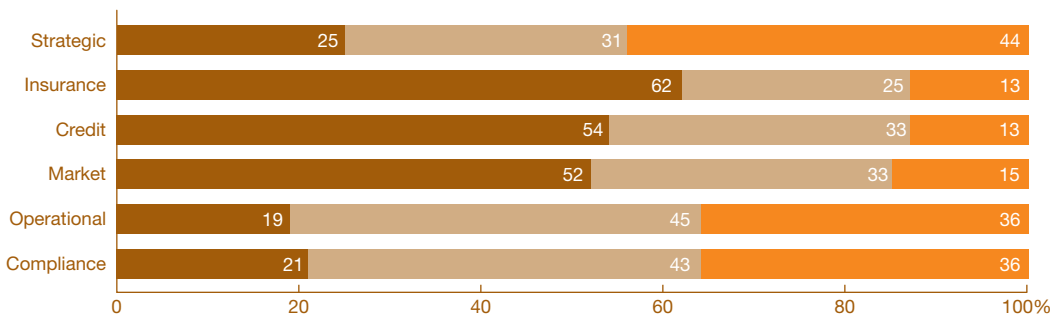
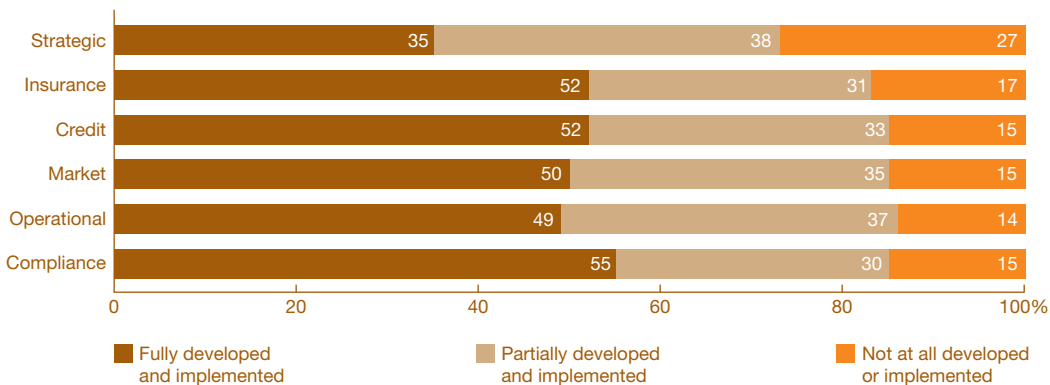


Figure 6b Development and implementation of qualitative risk management tools and methodologies



Source: PricewaterhouseCoopers Global ERM Survey

Confidence tends to be less marked in areas such as risk pricing and the mix of business, which are likely to prove especially critical in the softening market.

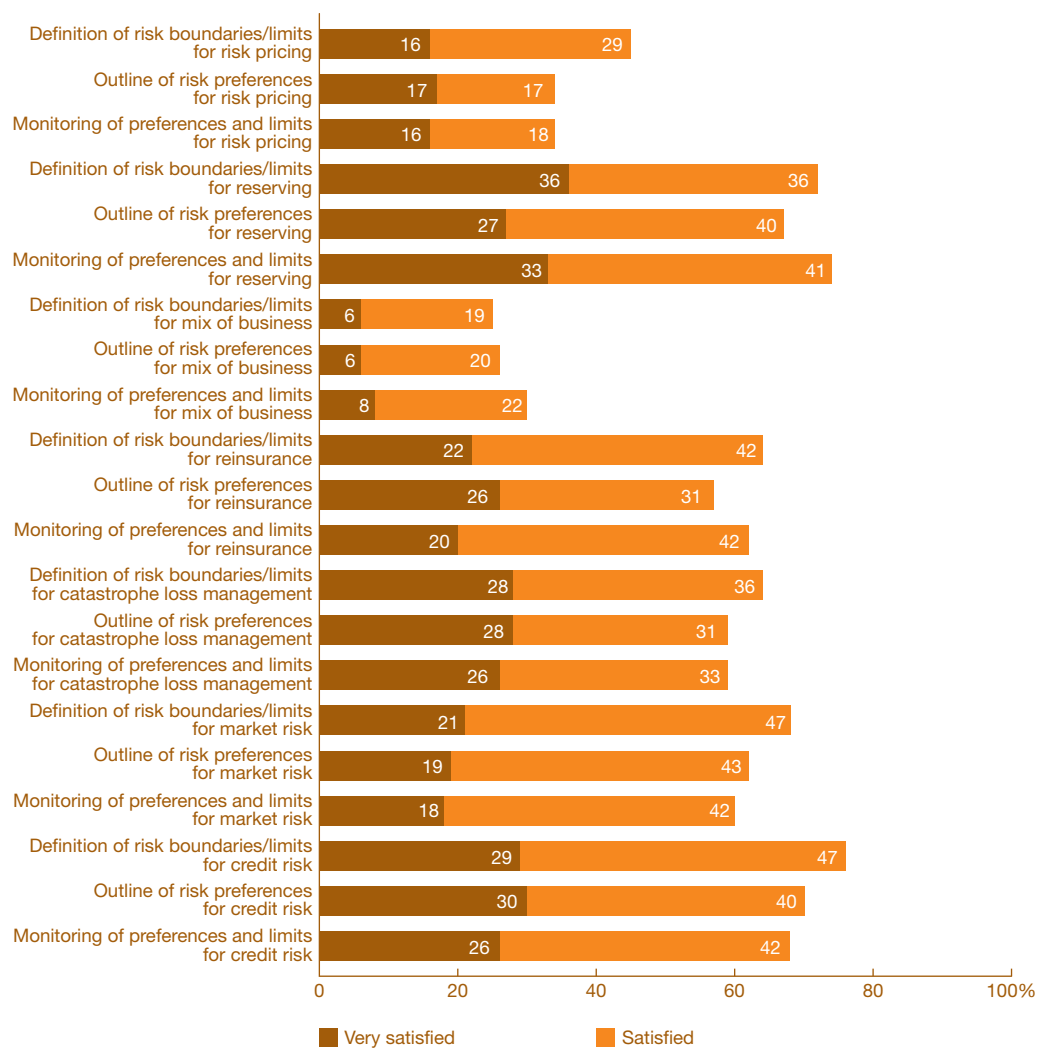
Satisfaction with ERM practices tends to be highest in areas where measurement and quantification are most established, such as reinsurance, reserving, credit risk and catastrophe loss management (see Figure 7). Confidence tends to be less marked in areas such as risk pricing and the mix of business, which are likely to prove especially critical in the softening market.

There is no one-size-fits-all answer as to how best to align the management of risk, strategy, capital and performance, as our survey confirms. As would be expected, larger companies tend to have dedicated ERM staff and a more formalized ERM structure of monitoring, reporting and documentation than their smaller counterparts.

However, smaller participants still tend to maintain some operational segregation between compliance, risk management and internal audit and the monitoring and decision-making operations within the business.

ERM has become more institutionalized over the past five years and most companies have increased their investment in the risk management function. Around three-quarters of respondents feel their budget for ERM is sufficient. However, this would appear to conflict with the limited satisfaction with other, more specific, elements of spending. For example, only 11% of respondents are very satisfied and 25% broadly satisfied with their risk IT budget.

Figure 7 Satisfaction with ERM practices



Source: PricewaterhouseCoopers Global ERM Survey

## Integrating governance, risk management and compliance

More exacting regulatory and rating agency demands are heightening the pressure on management and risk oversight, while increasing the cost of compliance and diverting management attention from revenue-generating activities.

While the required expectations for governance, risk management and compliance (GRC) are generally met, this is often through a series of isolated silos, leading to costly and potentially confusing duplication. This fragmentation can also allow critical requirements to fall between the cracks or, in the absence of a coherent enterprise-wide perspective, allow controls to become over-zealous and hence too little risk to be taken. Ultimately, it can be difficult to sustain this piecemeal approach to GRC when the goalposts for regulation are constantly moving.

An integrated approach to GRC with ERM at its heart could help to provide a more robust and sustainable approach to compliance management, while meeting related risk and governance requirements. This requires clear allocation of responsibilities and firm-wide understanding of ERM objectives. As they seek to break down silos and develop a more integrated approach to GRC, ERM functions also need to look at how to leverage the risk management capabilities that already exist within the business rather than creating a new and potentially redundant tier of ERM 'bureaucracy'. Finally, it is essential to have clear articulation and application of risk appetite and risk tolerances. These parameters provide a common yardstick from which business and risk management functions can evaluate opportunities, assess risks, allocate resources, identify issues and agree on remedial action.



## Defining and articulating risk appetite

Most companies have an innate sense of how much risk they are prepared to accept. However, they often find that this largely intuitive or high-level 'risk appetite' is difficult to articulate into tangible and actionable guidance for business decisions. They may also find it difficult to build in the desirability of risk as an intrinsic element of value creation ('risk optimization'), along with the potential impact of particular risk factors on the delivery of strategic objectives and the extent of the company's capacity to influence these risks. In turn, companies need to accommodate different perspectives on risk appetite, such as those of shareholders, regulators and debt holders.

A more versatile, strategically-focussed risk appetite could incorporate these qualitative elements, while making it easier to align risk appetite with evolving business objectives and different stakeholder demands. One possible approach is to gauge the probability distribution of earnings over a defined period against a risk assessment that ranks the associated risks in order of their potential impact on these returns. It is then possible to rate how far these risks can be controlled – some are more amenable to influence than others – to ensure that the risk profile matches the particular capabilities of the business and that risk management resources are targeted where they can add most value.

As part of the business planning process, it would then be possible to move from a deterministic projection to a much more useful three-dimensional evaluation that sets out the downside and upside parameters and the underlying risks and related assumptions driving these outcomes. For example, in assessing a possible move into a new emerging market, companies could go beyond analysis of the projected growth and openings in the market to rate the potential impact of such risk factors as licensing delays or distribution difficulties against the experience, relationships and other capabilities that could help to mitigate these risks.

In seeking to translate and communicate risk appetite into guidance and tolerances on the ground it is vital to ensure that business and risk management functions have a common yardstick from which to evaluate business opportunities, assess risks, allocate resources, identify issues and agree on remediation. Doing so can help to cultivate a risk culture and mindset anchored in risk/return principles. It aligns the nature and extent of risk governance activities with risk tolerance and enables risk functions and business units to focus on the priority risks and related infrastructure/issues.



## Investment risk

This section explores investment portfolio strategies and related risk management practices including the latest developments in asset liability management (ALM).

The focus on market liquidity, concentration, counterparty and other key areas of investment risk has been heightened by the recent volatility in equity markets, and write-downs of certain structured credit products. The diverse holdings of many insurers' investment portfolios underlines the need for rigorous, responsive and proactive limits and controls, underpinned by sound governance and quality management information.

Increasing capital constraints and the move to risk-based capital management are heightening the focus on capital-intensive investments. Many are responding through the development of more forward-looking 'economic' metrics and more active and innovative approaches to risk transfer and capital release.

### Key trends

- Board-level responsibility for setting investment strategy is consistent with the findings in 2004, though more product complexity tends to be the remit of dedicated investment committees;
- More formalized governance standards and methodologies have evolved. Around 60% of companies have now adopted top-down corporate-level oversight of the risk management of the investments portfolio (28% in 2004);
- Hedging strategies, involving interest rate and foreign exchange (FX) derivatives, are now more common as companies seek to transfer more risk off the balance sheet. Regulatory and market pressures could accelerate this trend;
- Use of VaR in aggregation has grown since 2004, though its use in risk management is still far from common. Greater use of risk-adjusted performance metrics could

help to enhance capital efficiency and provide a closer link between investment risk management and both ERM and economic capital; and

- Around three-quarters of respondents are at least reasonably satisfied with the accuracy of their metrics for ALM. However, more development and refinement may be required as less than a third are 'very confident'. As a result, nearly half of respondents are planning improvements in the coming year.

### Investment portfolio

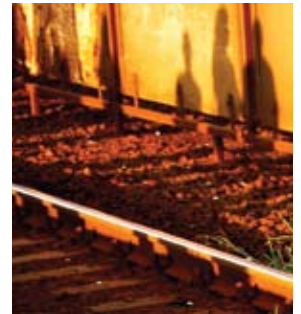
**High-risk areas:** As Figure 1 highlights (overleaf), a significant proportion of respondents hold mortgage, hedge fund and venture capital investments. More robust and sophisticated governance structures, risk measurement and management techniques may be needed to effectively address the more complex investment portfolios and the idiosyncrasies of newer investment types.

### Governance

**Responsibility:** Board-level responsibility for setting investment strategy is consistent with the findings in 2004. The Board sets the direction and parameters for asset allocation within 41% of respondents and the investment committee determines asset allocation within 37% (see Figure 2 overleaf).

**Non-life:** Within non-life companies, the Board is more likely to hold responsibility for investment strategy, reflecting less product complexity.

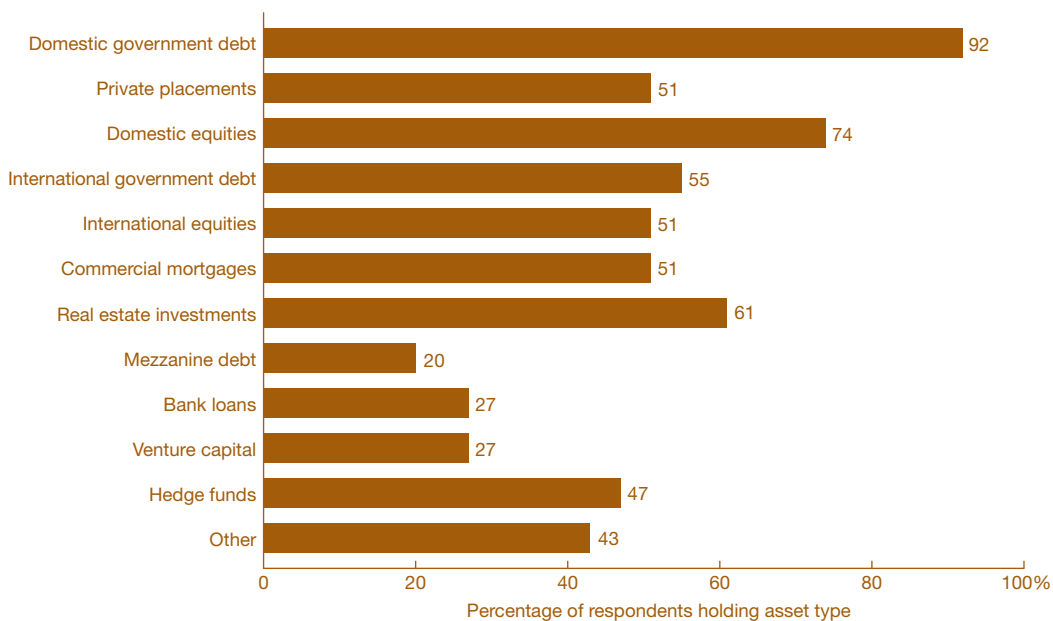
**More complex portfolios:** In larger participants and life companies, the Board typically delegates oversight of investment portfolio allocation to the investment committee, reflecting generally greater product complexity. Nonetheless, it is arguably important that the Board sets the overall strategy.



60% of companies have now adopted top-down corporate-level oversight of the risk management, of the investment portfolio



Figure 1 Make-up of investment portfolio



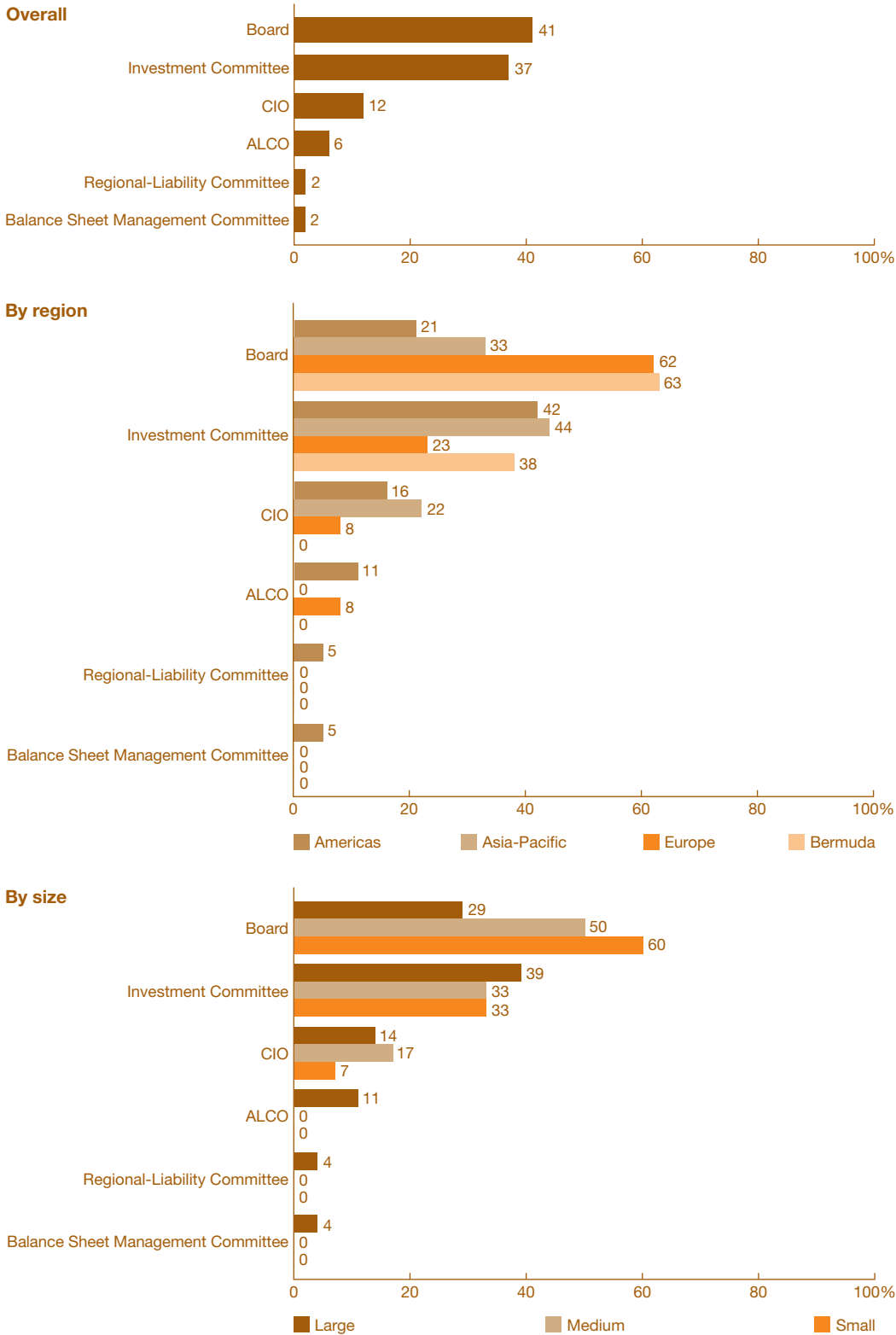
Source: PricewaterhouseCoopers Global ERM Survey

**Evolving approach:** More formalized governance standards and methodologies have evolved. Around 60% of companies have now adopted top-down corporate-level oversight of the risk management of the investments portfolio, compared to 28% in 2004. In 2004, around half of participants relied on an 'ad hoc' approach that 'depended on circumstances'.

**Strengthening limit setting and monitoring:** Companies are increasingly submitting written reports/requests to investment committees to confirm authorized limits (59% in our latest survey compared to 35% in 2004) and to confirm excess approvals (63% in our latest survey compared to 42% in 2004).

**Setting benchmarks:** The authority to assign benchmarks to portfolio managers varies between the investment committee (50%), CIO (22%), and the Board (12%).

Figure 2 Responsibility for asset allocation



Source: PricewaterhouseCoopers Global ERM Survey

Greater use of return on risk-adjusted performance metrics could help to link investment risk with both ERM and economic capital more closely and provide greater insight into the capital needed to support risk

### Investment management

#### Equity:

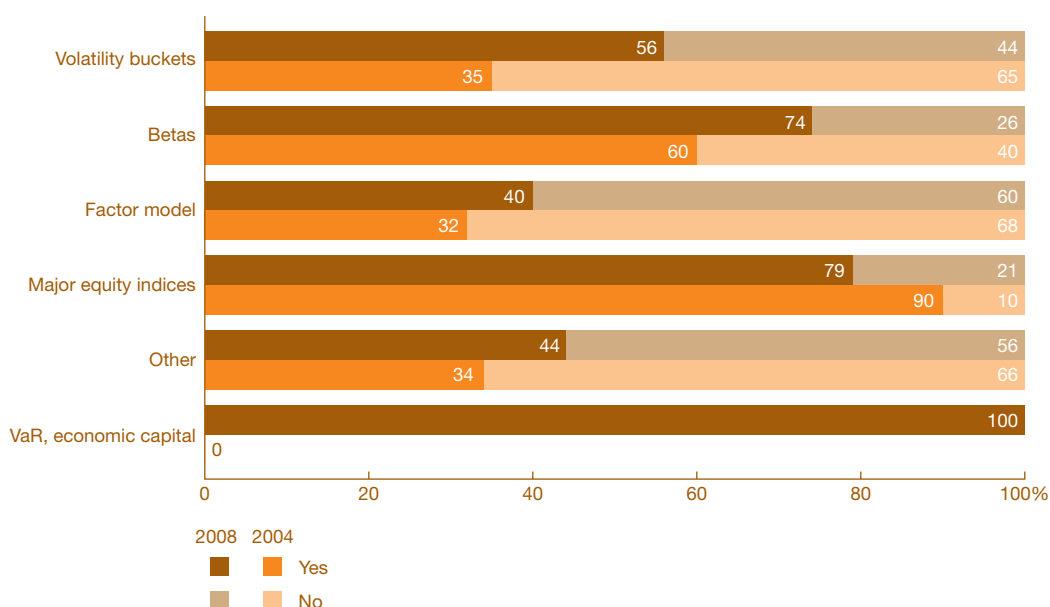
- Although market indices are still the most frequently used method of evaluation/management (79% in our latest survey compared to 90% in 2004), there is a clear trend to more sophisticated approaches (see Figure 3). The use of betas has increased from 60% in 2004 to 74% in our latest survey, the use of volatility buckets has risen from 35% to 56%, and the use of factor models has grown from 31% to 40%;
- VaR is rarely used in management, although it is deployed more commonly for risk measurement, risk aggregation and portfolio measurement purposes. Greater use of return on risk-adjusted performance metrics could help to link investment risk with both ERM and economic capital more closely and provide greater insight into the capital needed to support risk;
- A variety of approaches are used to aggregate equity investment risk. More than three-quarters of respondents add market values (80%) and/or use stress testing (77%). More than three-fifths compute equity VaR (69%) and/or benchmark relative risk (61%); and

- In line with 2004, formal concentration limits are widely prevalent and are set either by industry, sector or capitalization. Around 20% of respondents set no concentration limits.

#### Fixed income:

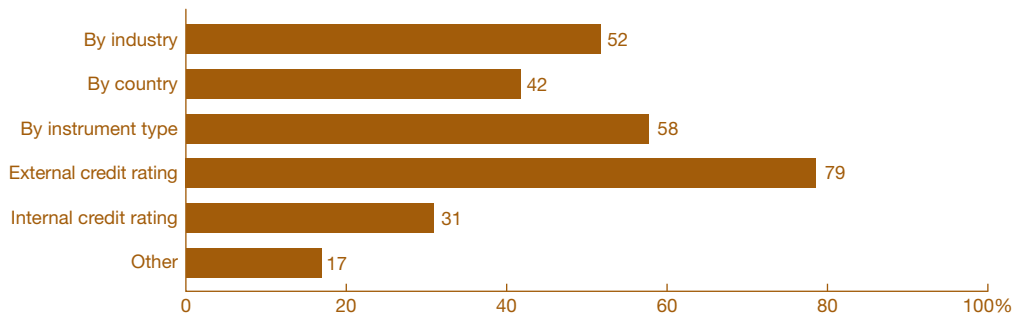
- More than 80% of respondents use duration and/or convexity for the evaluation/management of fixed income investment risk. This represents a significant rise in the use of convexity (45% in 2004), reflecting the increasing prevalence of securities with embedded options since our last survey;
- Summing market values is the most prevalent method of aggregating risk across business units or geographic regions. Notably, portfolio-weighted average duration is used some 70% of the time when aggregating across business units. Monte Carlo Simulation and stress testing are also frequently used when aggregating risk across both business units and geographic regions; and
- Concentration limits are typically set by a number of methods (see Figure 4). However, the use of external credit ratings is still most prevalent. Recent market trends have shown that significant reliance on external credit ratings could lead to unexpected losses.

Figure 3 Management of equity investment risk



Source: PricewaterhouseCoopers Global ERM Survey

Figure 4 Methodology for setting concentration limits



Source: PricewaterhouseCoopers Global ERM Survey

Use of hedging techniques is now more common than in 2004, reflecting the growing desire to take risk and volatility off the balance sheet.

### Real estate:

- Concentration limits are set by property type (57%) or geographic region (46%). Around a third set no concentration limits which, while being consistent with findings from the 2004 study, may be a cause for concern given the downturn in the US and other leading real estate markets.

### Hedging

**Increase in hedging:** Use of hedging techniques is now more common than in 2004, reflecting the growing desire to take risk and volatility off the balance sheet.

**Interest:** Interest rate derivatives are the most common form of hedging (see Figure 6 overleaf), with their use most prevalent within life and multi-line companies.

### Aggregation methodologies

**Greater sophistication:** Overall, the latest survey revealed a movement to more sophisticated approaches for aggregating risks across all asset classes; Monte Carlo Simulation is now the most common approach used (see Figure 5). However, it is notable that a quarter of respondents still do not aggregate risk across all classes.

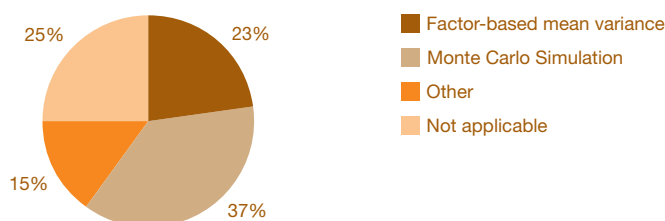
**FX:** Respondents in the Americas are more likely to hedge their FX exposures than those in the rest of the world, with a strong preference for the use of over-the-counter products.

**Equity:** Far fewer respondents (60% in our latest survey) rarely or never use equity derivatives for hedging investments than in 2004 (38%).

**Multiple methods:** Participants use multiple methods to aggregate risk across all asset classes. As recent experience indicates, no single metric (VaR, stress testing, historical and forward-looking scenario analysis, notional, greeks, etc.) is able to represent the whole risk of the portfolio.

**Approach:** Of those that use hedging in their life and health business, full dynamic hedging is the most popular method (used by some 40% of respondents). Hedging is performed in relation to economic results (by some 85% of respondents), GAAP results (50%) or statutory

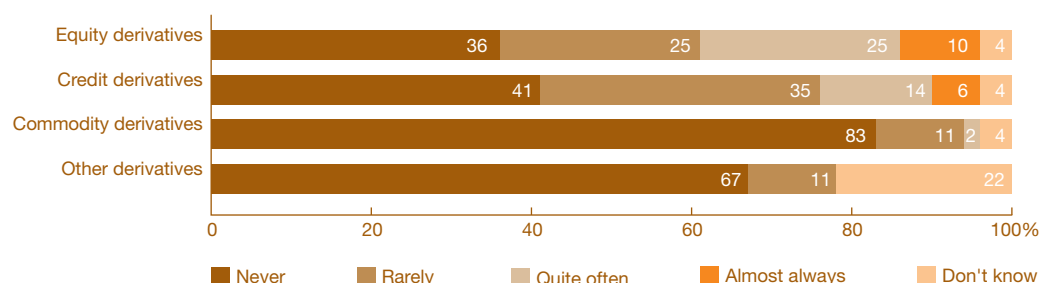
Figure 5 Methodology for risk aggregation across asset classes



Source: PricewaterhouseCoopers Global ERM Survey

15% of respondents do not consider ALM risks when introducing new products

Figure 6 Hedging of investment risk



Source: PricewaterhouseCoopers Global ERM Survey

results (30%), with around half of the participants hedging with respect to more than one basis. However, less than half believe that their hedging of annuities with guarantees is more than 90% effective.

**Oversight:** Independent risk management is responsible for overseeing the management of ALM exposures within established limits within half of participants. However, the primary functional area responsible continues to be investments (70%).

### Asset Liability Management (ALM)

**Life priority:** ALM is most important for life products, as would be expected given the long durations of the liabilities and the risks inherent within certain life products. This is consistent with the 2004 study findings.

**Metrics:** Duration (96%) and cash flow (82%) mismatch metrics are most commonly used. There is an opportunity to improve ALM by introducing convexity mismatch metrics, which are used by less than half of respondents.

**Level of aggregation:** Three-quarters of participants in our latest survey aggregate ALM measurements at the investment portfolio level, compared to less than half in 2004, which may reflect the growing ability to drill down and implement automated tools for ALM analysis.

**ALM in new products:** Around 15% of respondents do not consider ALM risks when introducing new products and around 40% only consider these risks to a limited extent.

**Satisfaction with information:** Over three-quarters of respondents are at least quite confident about the accuracy of the metrics used in relation to insurance liabilities. While the proportion of participants that are 'very confident' has increased from 17% in 2004 to 32% in our latest survey, attention may be required as satisfaction remains low.

**Improvement:** Nearly half of participants plan improvements in the coming year and a little over 30% in the next one to three years, which reflects an awareness of the need for regular updating and development in this area.

**Impact of regulation:** Around 60% of European respondents believe the introduction of risk-based capital standards under Solvency II will affect their ALM methodologies and underwriting standards to at least some extent, although only around a third feel the new regime will have a significant impact. It is notable that nearly two-thirds of respondents find the required regulatory stress tests to be relevant to their ALM risk management programs.

## Credit risk

This section examines the approaches to measurement and management of credit risk arising out of ceded reinsurance and the investment portfolio. This includes policies, governance, modeling, reporting and use of credit ratings.

Credit risk has been at the forefront of the wider development of risk management and subsequent ERM. The recent turmoil in the credit markets has highlighted the potential difficulties that many insurers still face, including possible problems created by over-reliance on external ratings. Key challenges going forward include the precision of evaluation and the aggregation of credit and market risks and different product types, along with the development of effective methodologies for the measurement and management of complex and rapidly evolving derivative exposures.

The latest findings reveal important advances since our last survey. This includes increased aggregation to a single name and a clear recognition of the need for capital-at-risk and other more sophisticated techniques. Yet, many companies may need to continue to define and refine their aggregation processes and look more closely at the comprehensiveness of their limit structures.

### Key trends

- Credit policies and guidelines are deemed to be well-documented and applicable to all businesses by most respondents, representing clear progress from our survey in 2004, when many participants appeared to be struggling with understanding, defining and documenting credit risk;
- Nearly a third of respondents do not believe their limits are in line with their risk appetite. Moreover, most do not maintain comprehensive limit structures based on key parameters such as sector, industry, country and tenor. Rating buckets were the most widely used criteria for setting limits;
- A significant proportion of respondents do not actively track rating downgrades to enable enforcement of credit limits;

- A very high degree of reliance is placed on external ratings, with 75% of the respondents using them to benchmark their internal ratings. As in 2004, most organizations do not distinguish between obligor and transaction rating;
- Fewer respondents than in 2004 are active players in the structured products market, suggesting that many may have withdrawn prior to the events in late 2007;
- A majority of respondents use capital-at-risk measures to monitor the significance of their credit exposure rather than relying on simple metrics like notional amounts;
- Most respondents are now able to aggregate credit risk to a single name across their investment portfolio, structured credit products, surety bonds and other commercial insurance lines. In 2004, only a few could do so. However, a significant proportion continue to struggle with defining a broad range of aggregation criteria; and
- Most respondents believe that their credit risk reporting is clear, sufficiently forward-looking and able to highlight areas where greatest change is occurring. However, only around half of participants believe that their credit risk reports are an effective tool in assisting management to make proactive credit market decisions, little changed from 2004.

### Governance

**CCO still rare:** Less than a quarter of respondents have a dedicated chief credit officer (CCO) position, broadly in line with 2004. US-based and larger firms were more likely to have a CCO. Almost half of CCOs reported to the CRO.

**Delineation of responsibilities:** Although most respondents maintain a clear delineation between originators, credit risk management and credit/internal audit, less than half of participants in Bermuda and the Asia-Pacific region do so.



### Policy documentation

**Documentation improved:** Around two-thirds of respondents have documented credit risk management policies for all business units, although only around 20% in the Asia-Pacific region have done so. Around a third of smaller participants have no documented credit risk policies.

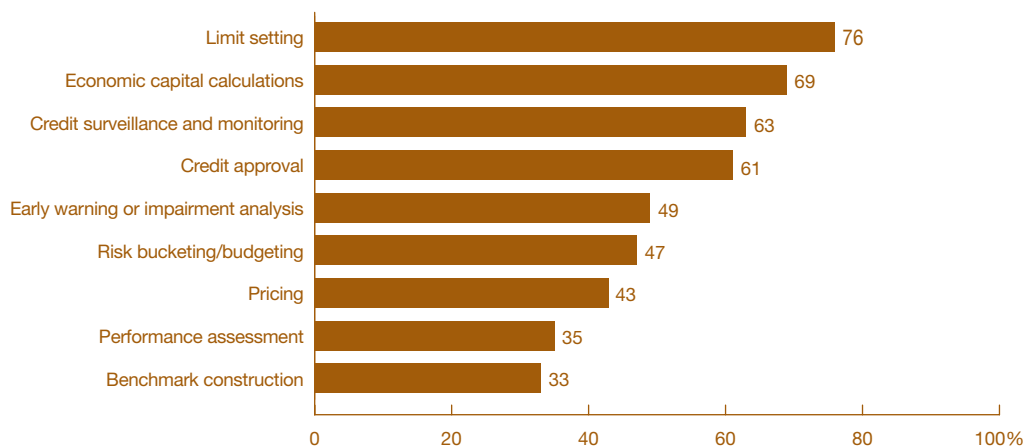
### Use of credit ratings

**Variable master rating:** The number of master rating categories varies widely, with respondents using rating scales ranging from three to five to more than 20 levels. A significant proportion of participants used more than 20 levels in their master rating scale.

**Ratings-based limits:** Most respondents use credit ratings to help set limits (see Figure 1). However, significant differences were observed in the use of ratings for other key risk measurement processes such as performance assessment, credit surveillance and monitoring. Respondents from the Americas use a much wider range of ratings compared to other regions.

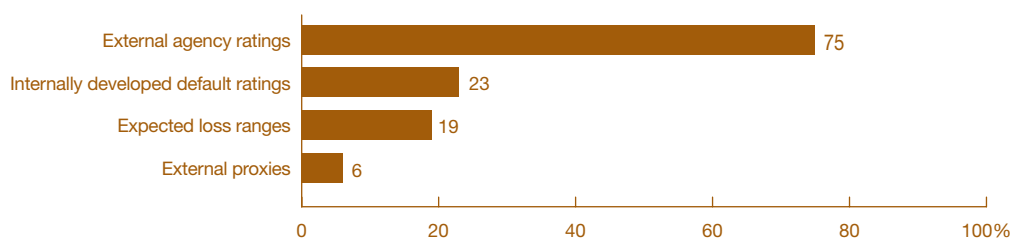
**Reliance on external ratings:** Respondents place a high degree of reliance on external ratings, with three-quarters using them to benchmark their internal ratings (see Figure 2). As in 2004, most organizations do not distinguish between obligor and transaction rating.

Figure 1 Use of ratings in risk management processes



Source: PricewaterhouseCoopers Global ERM Survey

Figure 2 Benchmarking internal ratings



Source: PricewaterhouseCoopers Global ERM Survey



## Credit modeling tools

**Multiple tools:** Around two-thirds of respondents use one or more credit modeling tools, though more than half of Bermudian and more than two-fifths of Asia-Pacific participants do not.

**Approaches vary:** Nearly 30% use expert judgment at one end of the spectrum and a similar proportion use statistical models at the other.

**Models vary:** As in 2004, no single proprietary model predominates. Around 15% use one or more of Moody's MFA/Risk Calc and KMV public firms' models. Other models such as S&P Credit Model, Fitch CRS, Dun and Bradstreet and Fair Isaac were used by less than 10% of respondents.



## Risk measures

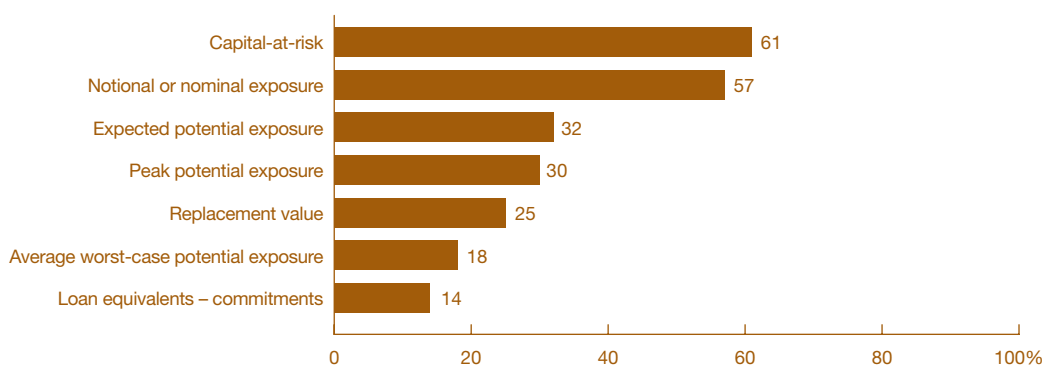
**Greater sophistication:** More than 60% of respondents use capital-at-risk measurement methodologies (see Figure 3), compared to only around 20% in 2004. While clearly significant, this increase in sophistication is tempered by the question marks over data, model governance and the understanding of risk-based capital measures highlighted in the report as a whole.

## Credit risk aggregation

**More effective aggregation:** Most respondents are aggregating their credit risk to a single name across their investment portfolio, structured credit products, surety bonds and other commercial insurance lines, compared to only a few in 2004. The exception is Asia-Pacific, where less than half of participants aggregate to a single name.

**Accuracy concerns:** Three-quarters of European and all the Asia-Pacific respondents feel that the netting used in their aggregation processes is not completely accurate. More than three-quarters of respondents from Europe and the Asia-Pacific region also feel that the netting collateral in their aggregation processes is not completely accurate.

Figure 3 Credit risk measurement methodologies



Source: PricewaterhouseCoopers Global ERM Survey

**Consistency with risk appetite:** More than 80% of respondents believe that their credit risk limits are consistent with senior management's risk appetite

### Limit management

**Consistency with risk appetite:** More than 80% of respondents believe that their credit risk limits are consistent with senior management's risk appetite, a significant increase since 2004. This is encouraging given the difficulties in translating risk appetite into tangible limits identified in relation to other risks.

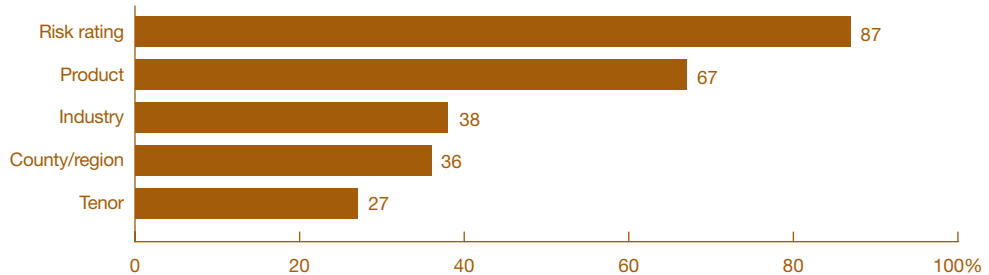
**Passive violations:** Most respondents allow for passive violations of credit limits. The most common form of accepted passive

violation is rating downgrade followed by fallen angels and violations due to mark-to-market changes.

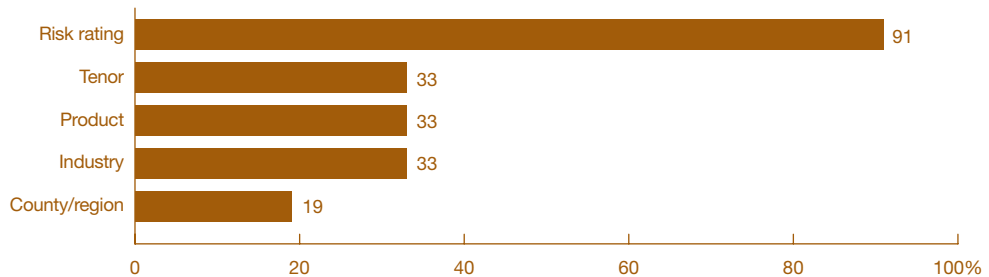
**Reinsurers set more limits:** Reinsurance respondents use a much broader range of limits in their investment policy statements and terms of delegation than the survey population as a whole. This includes more than 80% using tenor-based limits, a significant contrast to the overall trend (see Figure 4a). Risk rating is the predominant basis for concentration limits among the survey population as a whole (see Figures 4a, b and c).

Figure 4 Limits

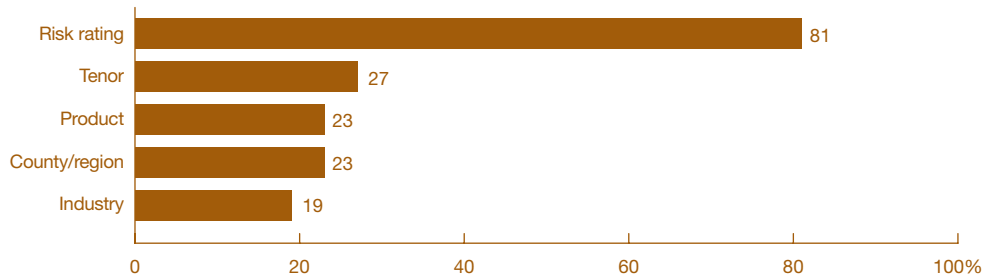
#### A Investment policy statement limits



#### B Portfolio-level limits



#### C Enterprise-level limits



Source: PricewaterhouseCoopers Global ERM Survey

## Reinsurance risk monitoring

**Credit quality:** Nearly 80% of respondents reinsure more than three-quarters of their business on A paper and more than 80% maintain strict underwriting rules (see Figure 5).

**Increased scrutiny:** Around 60% of respondents have increased the level of scrutiny placed on their reinsurers over the past year, with more than 70% in Europe and the Asia-Pacific region reporting this.

**Satisfied with scrutiny:** Most respondents believe the level of scrutiny placed on unauthorized versus authorized reinsurers is adequate or significant. In line with this trend, a majority of participants expect more than 80% collateralization in relation to business with unauthorized reinsurers.

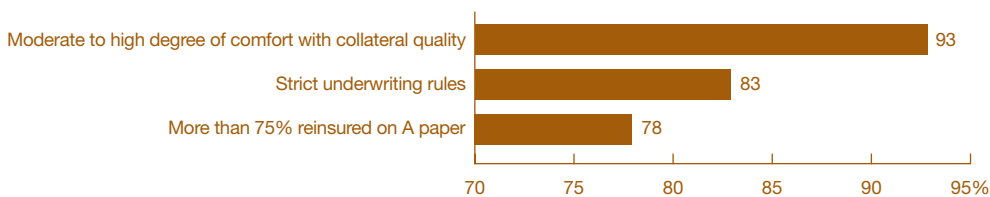
**Strengthening internal analysis:** Nearly 70% of respondents from the Americas performed their own financial analysis to monitor reinsurance risk compared to an average of 25% from other regions.

## Structured credit products

**Significant withdrawal:** Around 30% of respondents report being active players in the structured credit market, a considerable decrease since 2004. However, a majority of participants in the Americas are still active.

**Tighter control:** Around two-thirds have established specific credit limits for this asset class and more than 70% can aggregate to a single name, compared to less than half in 2004.

Figure 5 Reinsurance due diligence



Source: PricewaterhouseCoopers Global ERM Survey



Only around half of participants believe their credit risk reports are an effective tool in assisting management to make proactive credit market decisions

## Reporting

**Missing the mark:** Only around half of participants believe their credit risk reports are an effective tool in assisting management to make proactive credit market decisions, little changed from 2004. More focus and granularity may be necessary.

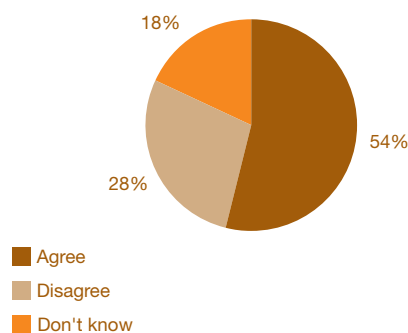
**Looking ahead:** Just over half of respondents believe that their credit risk reporting framework is dynamic and forward-looking, with a consistent look and feel from executive-level reporting down to specific line of business reporting (see Figure 6).

**Flexible response:** Just over half of participants believe their data and reporting environment is flexible enough to accommodate changing views of risk and customer relationships.

**Insecure foundations:** Less than 40% of respondents believe their credit risk reporting is supported by a flexible and robust platform so that sufficient time can be devoted to analysis and not simply report preparation.

Figure 6 Credit risk reporting effectiveness

My organization's credit risk reporting framework is dynamic and forward-looking with a consistent look and feel from executive-level reporting through line-of-business-specific reporting.



Source: PricewaterhouseCoopers Global ERM Survey

**Wide input:** Around two-thirds of respondents believe their credit risk reporting is effectively balanced with market-based information (e.g. credit spreads, default probabilities, agency ratings, economic indicators/forecasts etc) as opposed to having an inward-looking view only.

**Clear indicator of change:** Nearly 60% of respondents believe their credit risk reporting clearly highlights the areas where the greatest change is occurring, either due to asset growth, new product innovation or changes in portfolio credit quality. However, this would appear to contradict the lack of confidence in the ability of the reporting outputs to assist management.

**Well-presented:** Around two-thirds of respondents believe their management reporting is clear and concise, striking an appropriate balance between graphical and tabular representation. Again, however, this would appear to contradict the questions over whether current reporting is an effective tool.

## Hierarchy maintenance

**Active maintenance:** Nearly two-thirds of respondents in Europe and the Americas maintain their credit risk aggregation hierarchies on a regular basis. The percentage was significantly low for the Asia-Pacific region and Bermuda, as well as non-life firms.

**Limited areas of exposure aggregation:** Surprisingly few respondents aggregate their credit exposures to counterparty parent, legal entity, business units and various sub-portfolios like asset class and trading desk (all less than half).

## Life and health underwriting

This section examines the approaches to underwriting and mortality/morbidity management within the life and health sector, including the extent to which these elements of the business are integrated into the overall ERM framework.

Life and health insurance risks are often perceived as less volatile than other exposures such as credit and market risks and have therefore tended to attract less active focus than other aspects of the risk profile in recent years.

However, factors such as heightened epidemic risk, continued increases in policy issue ages and the related growth of investor-owned life insurance, along with the increasing complexity of new product design (e.g. products with secondary guarantees) are likely to attract a renewed focus in this area. Innovations such as mortality bonds and the new JP Morgan mortality index are also opening up fresh opportunities for risk transfer and enhanced risk mitigation through the capital markets. In this evolving environment, it is certainly important that the management of life and health insurance risk keeps pace with and is fully integrated into the ongoing developments in ERM.

Our survey identified some progress in areas such as stress testing and economic measurement, although the scope of aggregation across geographies remains limited. The findings also raise broader questions about the extent to which life and health insurance is integrated into the wider ERM framework in key areas such as the enforcement of underwriting guidelines and the alignment of product design with overall risk appetite.

### Key themes

- The alignment of underwriting policies with participants' overall risk management objectives is limited (only some 30% are aligned to a 'great extent');
- The survey revealed a considerable increase in stress testing and capital/Value At Risk measurement since our 2004 study;

- Less than half of respondents currently report that they measure or monitor insurance risk on a single life across products, although reinsurance programs generally require such aggregation; and
- More than 90% supplement required regulatory stress tests with their own scenario testing, with over 80% including mortality and interest rates in this analysis and around two thirds incorporating morbidity and policyholder behavior.

Life and health insurance risks are often perceived as less volatile than other exposures such as credit and market risks and have therefore tended to attract less active focus than other aspects of the risk profile in recent years.

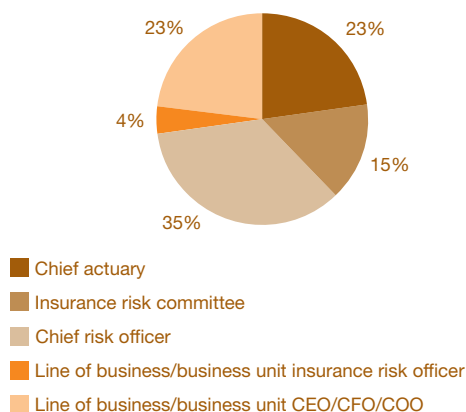
### Underwriting policies

**Alignment with overall risk management objectives:** Around two-thirds of respondents only take account of their overall risk management objectives to 'some extent' when establishing underwriting policies.

**Monitoring against guidelines:** Around a third of participants (including nearly half of the European respondents) report that compliance with established underwriting policies is only monitored to 'some extent'.

**Risk governance:** For companies without a separate corporate-level underwriting risk function, responsibility for insurance risk management is fairly evenly split between the CRO, chief actuary, insurance risk committee and business unit CEO/CFO/COO (see Figure 1).

**Figure 1 Responsibility for insurance risk management (for companies without corporate underwriting risk function)**



The deployment of capital/value-at-risk (63%) has increased considerably since our 2004 study (when it was used by only 27% of respondents)

### Risk metrics

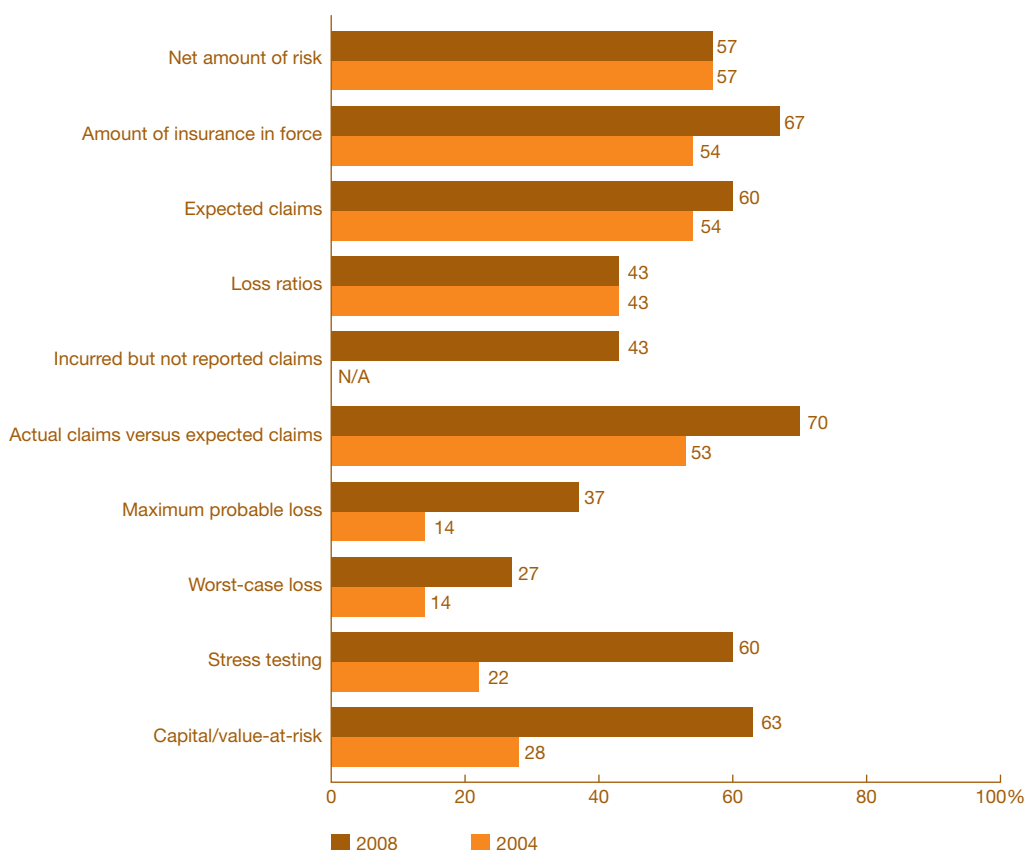
**Diverse metrics:** A wide selection of insurance risk measures are used across all products with the most popular being actual versus expected claims and amount of insurance in force (see Figure 2).

**Greater sophistication:** The deployment of capital/value-at-risk (63%) has increased considerably since our 2004 study (when it was used by only 28% of respondents). This reflects the greater use of economic measures, often as part of embedded value analysis or possibly as a result of regulatory requirements such as the UK's Individual Capital Adequacy Standards.

**Stress testing:** The use of stress testing (60%) has also broadened since 2004, as has the consideration of the maximum probable loss (37%) and worst-case loss (27%) measures (see comparison in Figure 2).

**Frequency of reporting:** The reporting of the amount of insurance in force tends to be monthly or quarterly, while communication of actual versus expected claims is broadly split between monthly, quarterly and annually. In contrast, the measures of capital/value at risk, maximum probable loss, worst-case loss and stress testing are more likely to be used as part of an initial assessment and reviewed no more than annually. Current market events would indicate the need for more frequent

Figure 2 Insurance risk measures used



Source: PricewaterhouseCoopers Global ERM Survey

stress testing to help validate and update assumptions. Rating agency assessment may also look at the depth and frequency of stress testing as part of its evaluation of the effectiveness of emerging risk identification and evaluation.

**Plans for improvement:** Nearly all respondents have plans to improve the metrics they use to measure exposure to insurance risk for at least some products, with over half considering this in the short term (less than one year). Areas of focus include further stress testing, and development of capital/value-at-risk metrics. This is a notable advance since our previous study in 2004, when most companies were not considering improving the metrics they use at all.

### Risk aggregation

**Single life across products:** Some 40% of respondents currently report measuring or monitoring insurance risk on a single life across products. This is in fact a lower percentage than 2004. The high proportion of those that do not is surprising given the increasing complexity and multiplicity of exposures and the requirements of automatic reinsurance programs (at least in the US), though half have plans to improve their ability in this area. US respondents tended to be more active in monitoring exposure on a single life across products (with some 50% doing so).

**Geographic concentration:** Almost half of the respondents currently measure or monitor the geographic concentration of insurance risk across products, an increase since 2004. However, of those who do not, 60% have no current plans to improve their ability in this area.

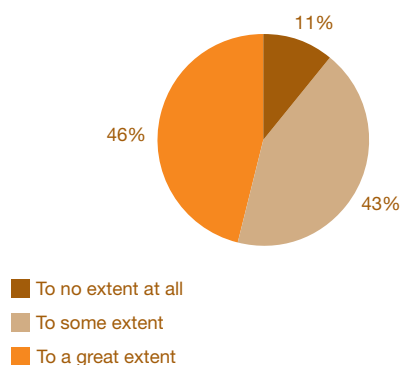
### Product design and pricing

**Oversight and participation of risk management:** More than 90% of participants have a risk committee in place to review product specification, product pricing,

valuation assumptions and ALM strategy. However, the corporate risk management unit has limited input into decisions to offer a new product within many participants (see Figure 3). As products become more sophisticated, we might expect to see greater participation, for example in assessing the risk of mis-selling or relative capital efficiency of the product.

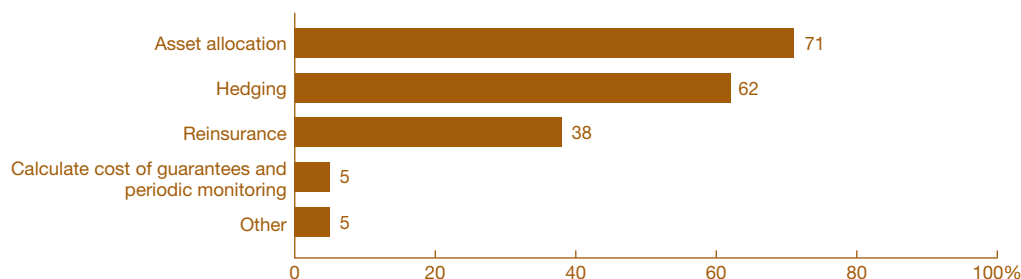
**Tail risk:** Around half of participants have a risk committee in place to review tail risk analysis, with the percentage being highest for US respondents (83%), followed by Asian respondents (43%) and then Europeans (31%). Regulatory regimes in the UK, Netherlands and Scandinavia already require review in this area and it is likely to be required EU-wide following the introduction of Solvency II.

Figure 3 Risk input into new product decisions



Source: PricewaterhouseCoopers Global ERM Survey

**Figure 4 Practices used to mitigate the risks associated with variable annuities and annuities with guarantees**



Source: PricewaterhouseCoopers Global ERM Survey

### Options and guarantees

**Stress testing:** The vast majority of respondents supplement the required regulatory stress tests with their own scenario evaluation, with over 80% including mortality and interest rates in this analysis and around two thirds incorporating morbidity and policyholder behavior. Interestingly, only 40% stress test correlation factors, which might help to enhance understanding of risk diversification, for example.

**Variable annuities:** Of those respondents offering variable annuities, most use more than one approach to mitigate the risks associated with these products. As Figure 4 highlights, the most popular method is product asset allocation, followed by hedging and reinsurance.

### Longevity risk

**Monitoring:** Around a third of respondents do not regularly monitor their exposure to longevity risk. In the Asia-Pacific region, more than three-quarters do not carry out regular monitoring (compared with 30% in the US and less than 10% in Europe). A similarly high proportion of Asia-Pacific respondents do not have a process in place to analyze shifts in the competitiveness of longevity products and make pricing adjustments accordingly.

**Limits:** More than half of respondents in all territories (including all Asia-Pacific participants) do not have regularly updated and monitored limits in place to reflect the level of longevity exposure they are willing to underwrite. For some, this may be explained by the fact that they not underwrite much longevity risk. For those that do, however, this lack of control is surprising given the uncertainty around longevity, including the long-term possibility of potential medical advances that could extend life expectancy.



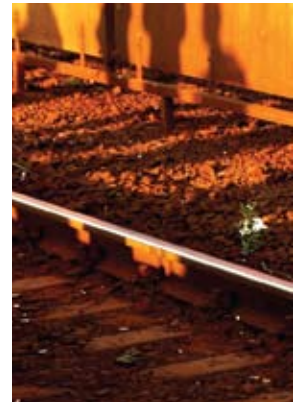
## Non-life insurance

This section considers the effectiveness with which non-life insurers can identify, monitor and aggregate their risks and how well this information is embedded into pricing, underwriting guidelines and capital evaluations. Based on this analysis, it also looks at whether ERM can make the difference in helping non-life companies to steer through what look set to be turbulent times ahead.

Non-life insurers face the challenge of sustaining their recently strong performance in the face of capital constraints and a continuing softening in rates across all main lines of business. The sector will look to leverage its newly strengthened risk management practices and tools in determining how best to manage risk, optimize its return and whether to deploy or restrict capital to its businesses. Key requirements include timely, reliable and incisive information, as well as stronger risk correlation practices across the enterprise. Companies will also be drawing upon their ERM capabilities to gauge the 'walk-away' price at which they need to scale back writing, while seeking to ensure that they have the firm-wide understanding and control to maintain rigorous underwriting discipline.

### Key trends

- Governance and oversight over the underwriting function have tightened since our 2004 study. Centralized control has increased. More than 70% of the respondents indicate that their organization now has a non-life risk management function in place compared with 56% in 2004;
- Most respondents believe that underwriting risk policies and guidelines are well-documented;
- Most respondents are confident that risk limits and expected ranges are in place for their major business lines. They tend to be less satisfied with their risk aggregation methodologies (only a quarter are confident that they can identify all instances where risks can be aggregated and nearly half rate the completeness of the data input for exposure aggregation as less than adequate);
- Respondents are generally confident about the effectiveness of their processes for risk identification, inventorying, assessment and limits setting, but only 15% are satisfied with their enforcement and escalation practices;
- Nearly 90% of respondents believe their organization has at least some form of mechanism for price monitoring. However, only 25% are confident they have a clear strategy for a softening market and few are satisfied that they have effective enough tracking, aggregation management and rigor of underwriting control to analyze and respond to market movements in a proactive, decisive and disciplined way;
- There is a greater degree of confidence in the quality of the data than in 2004, but many still feel their data is not as useful and comprehensive as they would expect; and
- Combined ratio is still the primary basis for establishing the pricing in a particular line of business. Less than half of respondents use risk-adjusted return on capital measures in pricing.



Over 40% of the personal and commercial lines respondents believe that they maintain strong control over their business units through a centralized underwriting approach.

### Governance

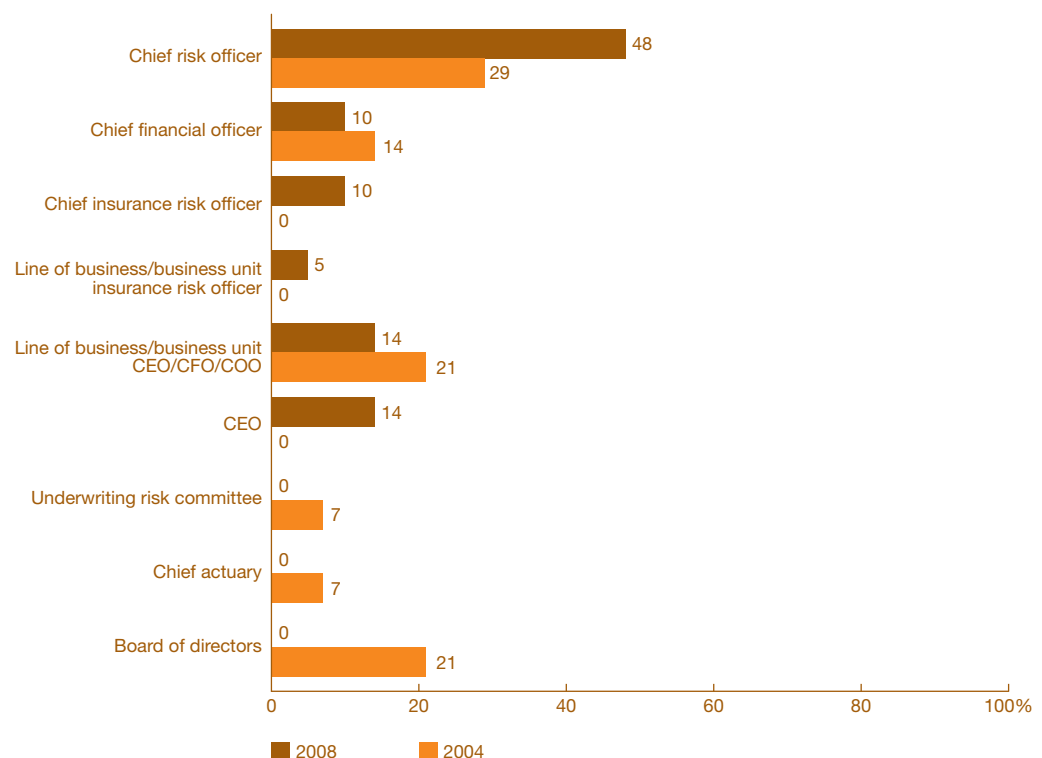
Effective risk governance requires a viable risk framework that ensures that risk management decisions are made by the most appropriate person, that the organizational structure is designed to support the desired level of oversight and control and that risk management tools are in place to monitor compliance with the organization's risk tolerance, risk limits and risk preferences:

- **Reporting to the CRO:** Nearly half of participants' corporate non-life risk management functions report to a CRO, compared to less than 30% in 2004 (see Figure 1);
- **Control and oversight:** There appears to be greater oversight and monitoring of the business units since our last survey, as Figure 2 highlights. Almost 40% of the personal and commercial lines respondents

believe that they maintain strong control over their business units through a centralized underwriting approach. This approach is most common among reinsurance participants;

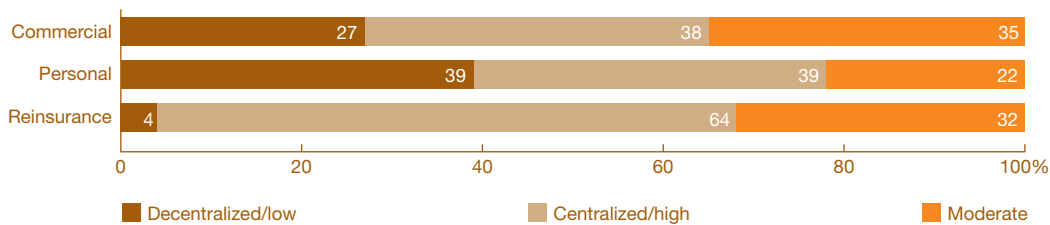
- **Compliance testing:** Most insurers have a disciplined approach to testing underwriting practices against their underwriting policies and guidelines. Over 70% of the personal and commercial insurers indicated that they perform underwriting audits on at least an annual basis, with some performing them at least semi-annually; and
- **Pricing:** Some 70% of personal lines participants and 60% of reinsurers and commercial lines respondents include pricing requirements in their risk preferences. Ensuring that pricing guidelines are aligned to risk tolerances is among the most important insurance risk considerations.

Figure 1 Overall responsibility for corporate non-life risk management



Source: PricewaterhouseCoopers Global ERM Survey

Figure 2 Level of corporate oversight



Source: PricewaterhouseCoopers Global ERM Survey

## Risk management practices

While the survey revealed significant progress towards developing effective ERM capabilities, many respondents still believe they have some way to go before achieving their own target objectives. Participants tend to be more satisfied with their processes for setting risk limits and risk standards than they are with their ability to monitor and, in particular, enforce these limits and respond to breaches, although most areas are likely to require additional work:

- **Risk identification:** More than 80% of respondents are at least reasonably satisfied (52% fully satisfied) with their processes for identifying all risks associated with each line of business, although smaller organizations tended to be less confident in their abilities in this area. Only a quarter are confident that they can identify all instances where risks can be aggregated, which indicates that further work may be required in developing fully effective aggregation methodologies across lines of business and business units;
- **Risk monitoring:** Moreover, more than half report that their underwriting risks are not correlated with the other risk categories, and only a quarter are confident that they can aggregate their exposures across the enterprise;
- **Risk limit setting:** Around 30% strongly agree and some 40% slightly agree that risk limits are in place for all their major business lines and individual coverages. However, less than 10% align the setting and monitoring of their aggregate limits to the earnings volatility measures in the overall risk appetite;

- **Risk limit enforcement:** Less than 20% are confident in their ability to identify limit breaches and avoid future occurrences. Only 15% strongly agree they have formal enforcement procedures for deliberate limits breaches, while less than 40% strongly agree that their catastrophe limits are very tight and are backed up by escalation triggers; and
- **Reinsurance:** More than 80% at least slightly agree (54% strongly agree) that their reinsurance program is consistently applied and tied to the overall risk tolerances of the organization.

## Risk aggregation

Respondents actively monitor risk aggregations, and generally agree that the use of sophisticated models to measure risk aggregation is vital. Virtually all participants rely on catastrophe models for evaluating property catastrophe exposures, and most rely upon multiple models:

- **Focus:** The majority of respondents actively monitor aggregations of risk, with aggregations by territory, industry and values most consistently monitored (see Figure 3 overleaf);
- **Cat modeling:** 83% of respondents use the outputs of catastrophe models for risk aggregation, up from 71% in 2004. More than 50% strongly agree that their catastrophe risk modeling is augmented by robust risk models;

- **Improved capabilities:** The responses suggest that there is now greater confidence than in 2004 in property catastrophe modeling and the quality of the data being used. They also suggest that there is room for improvement in the modeling and data for other lines of insurance. As Figure 3 indicates, for example, better exposure data by territory, values, class and other key categories for Directors & Officers, Liability and Workers Compensation could strengthen the modeling capabilities in the non-property lines of insurance and the aggregation of exposures across lines of business;
- **Monitoring:** More than 40% of respondents set and monitor policy limits through the reinsurance process; while approximately 40% monitor policy aggregates using internal models;
- **Integration into guidelines:** More than 85% of respondents have underwriting guidelines that address risk aggregation, and more than 60% of respondents discuss risk aggregations during risk committee meetings; and
- Insurers in the US are less confident about their organization's ability to aggregate and correlate their underwriting risks/exposures across the enterprise than their counterparts in other parts of the world. The higher scores in Europe may be driven by regulatory demands including the UK's Individual Capital Adequacy Standards and the move to Solvency II.

### Data management

As part of the assessment of ERM and risk management practices, rating agencies assess how an organization manages the quality of data in its risk models and whether the data is truly representative of its portfolio. Despite the increased use of risk models and the requirement that the modeled data be comprehensive, accurate and credible, only 18% of respondents rate the completeness of their data as excellent, 39% see it as adequate and 36% report that their data management is evolving.

Figure 3 Which risk aggregations are monitored?

	Territory	Industry	Values (e.g. lives, policy limits and payrolls)	Class	Across subsidiaries	Cedant	Correlations to the investment portfolio	Other correlations (please specify)	No monitoring
Property 2008	85%	25%	63%	26%	26%	22%	7%	4%	4%
Property 2004	82%	45%	59%	50%	23%	23%	14%	5%	-
Directors & Officers liability 2008	25%	62%	56%	19%	19%	12%	12%		19%
Directors & Officers liability 2004	70%	75%	35%	40%	20%	20%	10%		35%
Professional liability 2008	29%	71%	65%	23%	29%	6%	12%	6%	6%
Professional liability 2004	35%	60%	40%	35%	10%	15%	5%	-	25%
General liability 2008	37%	50%	37%	37%	25%	6%		6%	12%
General liability 2004	32%	37%	42%	37%	16%	21%	5%	-	26%
Auto 2008	62%	12%	44%	37%	25%	6%			19%
Auto 2004	50%	27%	36%	41%	18%	18%	5%		23%
Workers Compensation 2008	50%	50%	56%	31%	19%	19%		6%	12%
Workers Compensation 2004	50%	50%	39%	39%	17%	17%		6%	22%

Source: PricewaterhouseCoopers Global ERM Survey

## Risk pricing

**Statistical basis:** Some 40% of all respondents consider return on risk-adjusted capital when pricing their products; the remainder continue to rely on estimates of combined ratios to price their business.

**Economic capital consistency:** Only around half of respondents actively ensure that their product pricing and economic capital assumptions are consistent.

**Softening market:** Only 25% of participants are confident they have a clear strategy to respond to a softening market. It is also notable that few are confident they have the necessary tracking, aggregation management and rigor of underwriting control to analyze and respond to market movements in a proactive, decisive and disciplined way.

## Risk preferences

**Key considerations:** The areas where risk preferences are most established and underwriting tactics are in place are exposure management and pricing requirements. Other important areas include reinsurance guidelines and catastrophe management.

**Risk limits:** The most important measure for risk limits continues to be underwriting profitability, rating as the first or second priority for most participants. This indicates that short-term profit considerations rather than risk-adjusted measures are the primary performance objective (see Figure 4).

**Figure 4 Most important insurance risk preference in setting risk limits**

### Commercial – Descriptive statistics

Commercial ratings for...	
Underwriting profitability	Most important
Risk-adjusted rate of return	2nd most important
Exposure management	3rd most important
Risk diversification	4th most important
Territorial risk concentration limits	5th most important

### Personal – Descriptive statistics

Personal ratings for...	
Underwriting profitability	Most important
Risk-adjusted rate of return	2nd most important
Market share	3rd most important
Size of risk/Premium amount	4th most important
Exposure management	5th most important

### Reinsurance – Descriptive statistics

Reinsurance ratings for...	
Cost effectiveness reinsurance	Most important
Risk adjusted rate of return	2nd most important
Exposure management	3rd most important
Risk diversification	4th most important
Underwriting profitability	5th most important

Source: PricewaterhouseCoopers Global ERM Survey

Operational risk remains a relatively new and challenging frontier

## Operational risk

**This section explores the developments and key objectives relating to operational risk management, along with an assessment of the underlying tools, governance and evaluation criteria.**

In our 2004 study, we noted that operational risk was becoming increasingly important for insurers as they broadened their focus beyond financial and actuarial risks. Operational risk was then at an early stage of development, primarily located within business units, which were commonly using risk and control self-assessments as their main tool.

Our latest survey highlights the increasing focus on operational risk management. Many respondents are seeking to integrate their operational risk more closely into their overall ERM program, while leveraging capabilities developed as part of ICAS, Sarbanes-Oxley and other compliance requirements. In turn, participants in Europe are looking ahead to Solvency II and the need to implement a dynamic risk measurement capability.

Progress is evident and it is notable that the main driver for developing operational risk management is a request from senior management, indicating their commitment to taking action in this area. As yet, however, most respondents have yet to reach a stage where operational risk management presents an opportunity to gain competitive advantage. This is far from surprising. Operational risk remains a relatively new and challenging frontier and it is notable that many banks continue to struggle with this area despite several years of preparing for Basel II.

While supervisors are now placing more demands on the quantification of operational risk, too much focus on the regulatory requirements of risk and capital measurement may deflect from the qualitative aspects of risk management and reduction. The difficulties of measuring operational risk may also make it harder for companies to discern the precise

benefits. This may change as quantification methods become more widely applied and companies can see over time how their operational risk exposure changes. Eventually, the development of a more integrated and embedded approach to operational risk management could provide a valuable foundation for improving the efficiency of systems, processes and controls.

### Key trends

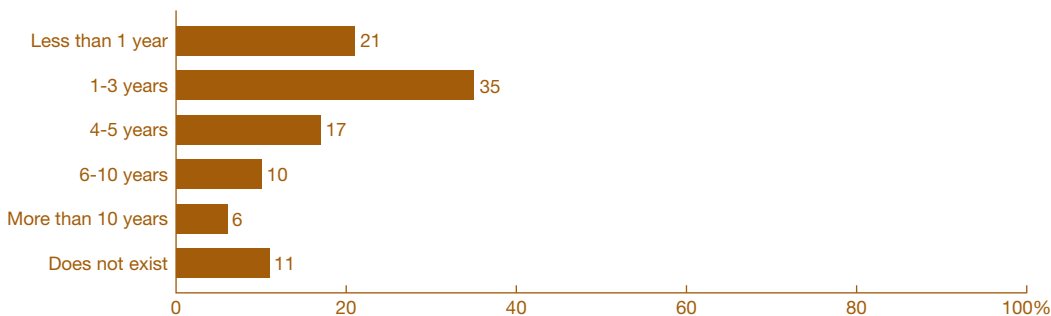
- Less than a third of respondents are at the stage of embedding the measurement, monitoring and management of operational risk into day-to-day processes, which is the point where companies typically start to realize the full value in improved efficiency and control;
- Few respondents appear to be focussing on the 'upside' of operational risk management, with less than 10% seeing it as an opportunity to develop competitive advantage;
- As yet, only 15% of respondents believe that their operational risk data gathering is very capable;
- The corporate operational risk function is playing a greater role, with more than half of respondents reporting that they had established a corporate function within the past three years;
- Many respondents have set ambitious targets for the next year. More than 40% of the participants plan to enhance operational risk management through the development of risk indicators (36% already have them in place) and loss event databases (36% already have them in place) in the next year; and
- Integration into and co-ordination with the broader ERM program in key areas such as policies, assessment, monitoring and reporting are still at a limited stage of development within most participants, although further steps are being planned.

## Governance and implementation

**Corporate function:** The proportion of respondents with a centralized corporate operational risk management function has increased from around two-thirds in our 2004 study to nearly 90% in our latest survey. Most have been established in the past three years (see Figure 1).

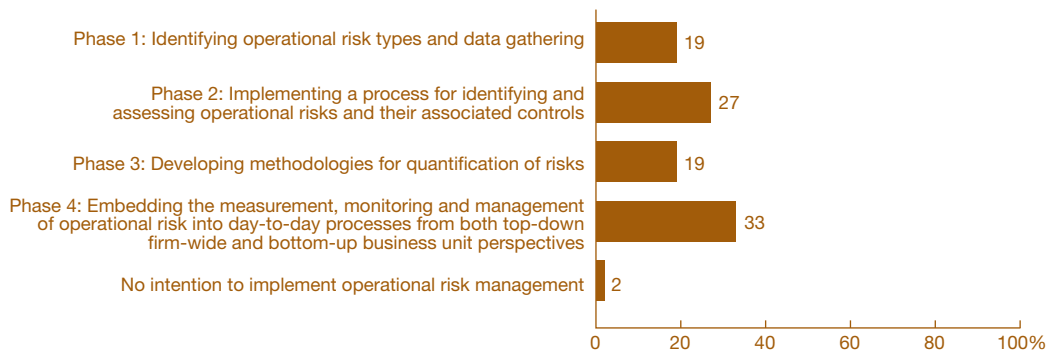
**Development:** Most respondents have moved on from the initial phases of development (see Figure 2), although only around a third would consider themselves to be at the stage of embedding the measurement, monitoring and management of operational risk, which is arguably the point where firms truly begin to realize the value of their investments.

**Figure 1 How long has the corporate operational risk management function been in place?**



Source: PricewaterhouseCoopers Global ERM Survey

**Figure 2 Stages of implementation**



Source: PricewaterhouseCoopers Global ERM Survey

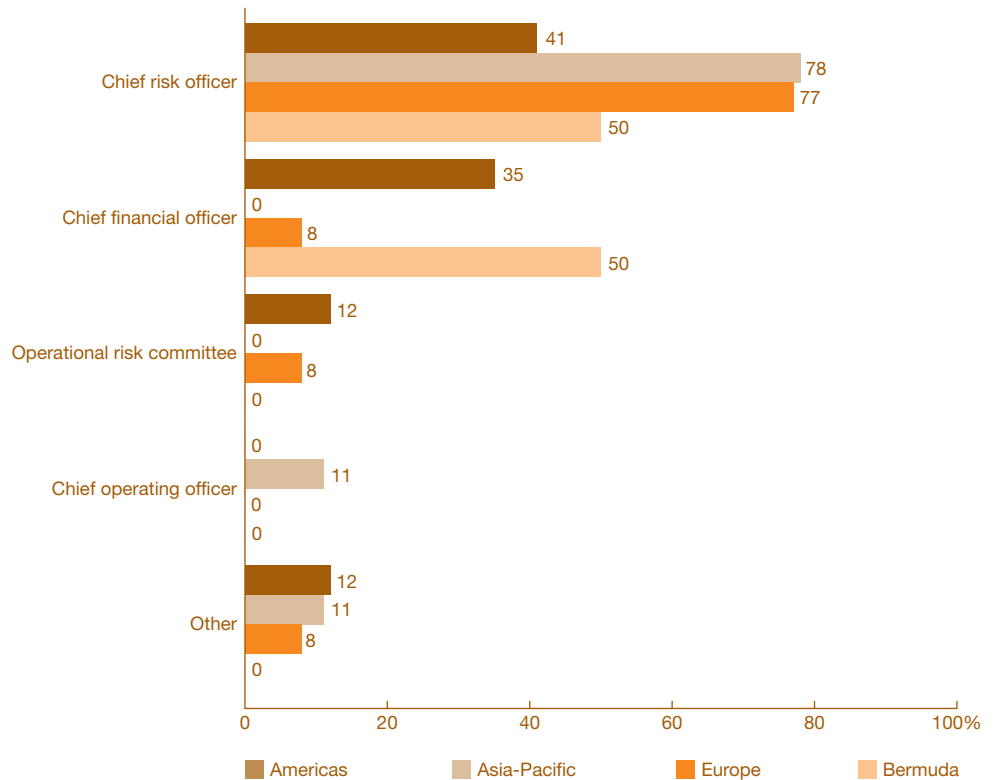
Few respondents are as yet satisfied with the embedding of their operational risk management into the business

**Regional focus:** In Europe and the Asia-Pacific region, ultimate responsibility for firm-wide operational risk management lies predominantly with the CRO (see Figure 3). In the Americas and Bermuda, CFOs often include operational risk within their remit. This reflects the impact of Sarbanes-Oxley and provides firms with the opportunity to embed operational risk management across business functions.

**Satisfaction:** As Figure 4 highlights, few respondents are as yet satisfied with the embedding of their operational risk management into the business.

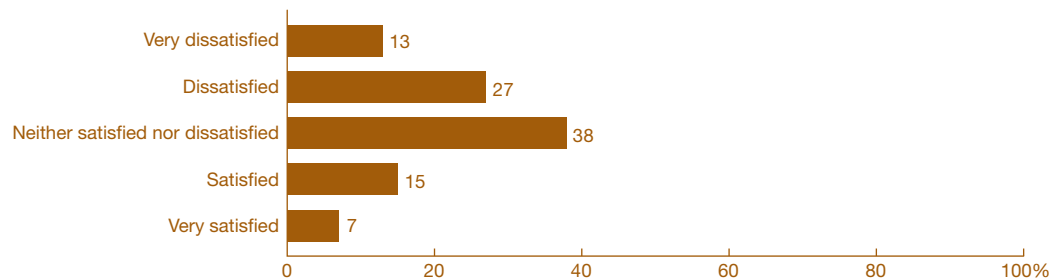
**Pressure for development:** Interestingly, some 40% of respondents are less than satisfied with their identification of risk types and data gathering even though around 80% report

Figure 3 To whom does the operational risk management function report?



Source: PricewaterhouseCoopers Global ERM Survey

Figure 4 Satisfaction with embedding of measurement, monitoring and management of operational risk management into day-to-day processes



Source: PricewaterhouseCoopers Global ERM Survey

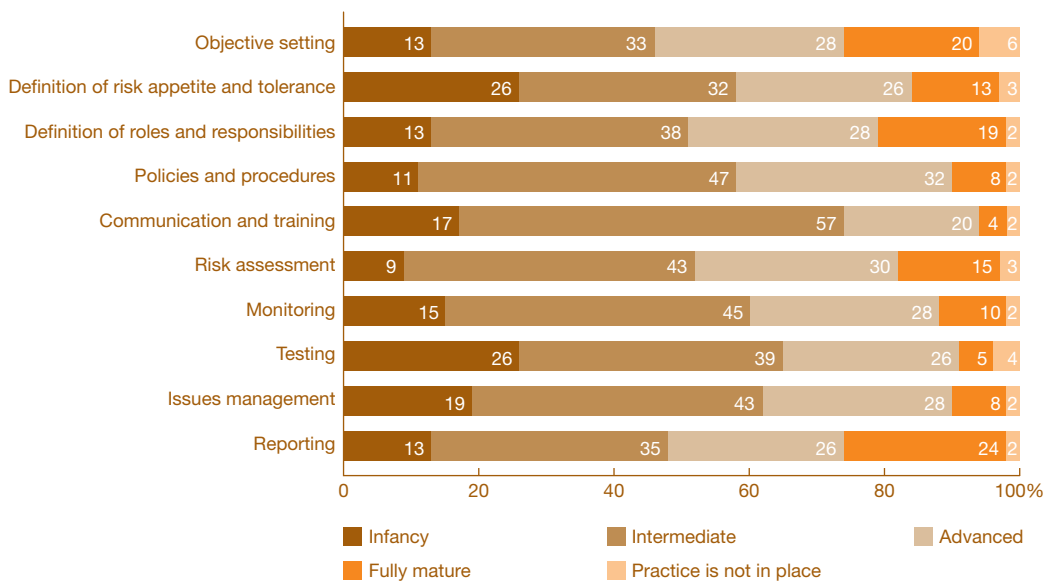


having moved beyond this stage of the development. Similarly, less than 25% are satisfied with the development of methodologies for the quantification of their operational risks, although 33% have progressed to the final embedding stage. This suggests that companies are feeling the pressure to push forward with development and implementation of their operational risk frameworks, possibly without taking the time to get the basics right.

demands from different regulators and stakeholders for strengthened controls lead to risk and control activities developing in numerous functions across the organization. Many participants are responding by seeking to integrate their operational risk more closely into their overall ERM program, while leveraging capabilities developed as part of ICAS, Sarbanes-Oxley and other compliance requirements. Greater integration could not only help to improve efficiency and manage costs, but also facilitate a more consistent and comprehensive view of operational risk.

**Functional integration:** Respondents report that cross-functional integration is limited (see Figure 5). This is likely to change as growing

Figure 5 Cross-functional integration of risk management



Source: PricewaterhouseCoopers Global ERM Survey



## Technology

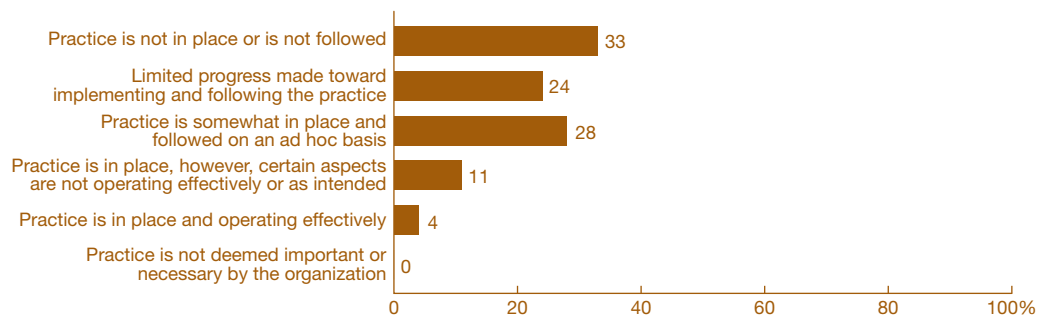
**Self-assessment aid:** The difficulties of embedding could in part be explained by the limited use of technology to standardize or integrate participants' risk and control self-assessment processes (see Figure 6). Moreover, more than 50% of respondents state that their reporting capability is either in its infancy or at an intermediate stage (see Figure 7). This may further inhibit the embedding process, and may also limit the benefits realized from the investment in risk identification and measurement.

**Systems development:** Use of technology has generally developed since our last survey. For example, nearly 80% of respondents

now have a scenario- and model-building capability, compared to only around a half in our previous survey.

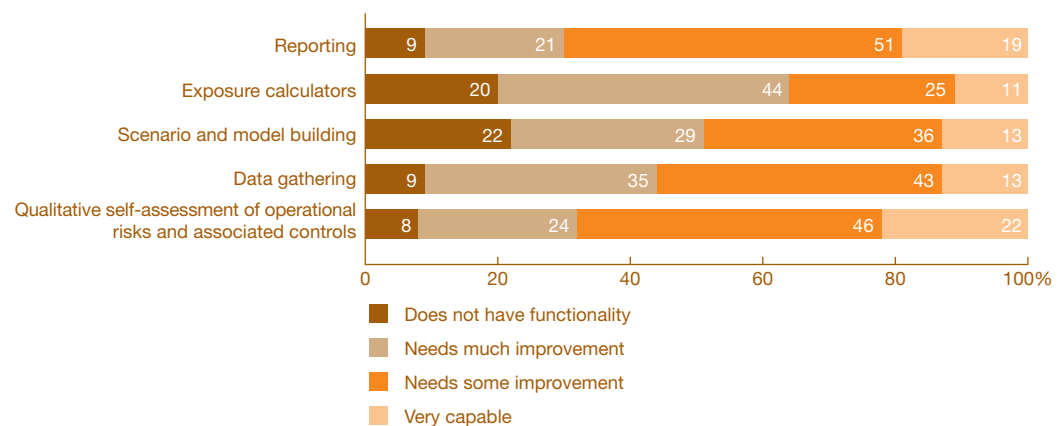
**Room for improvement:** However, there is understandably still some way to go. Where technology has been deployed, only around 20% were satisfied with the reporting functionality and some 10% satisfied with their exposure calculator and scenario- and model-building capability. This is not surprising when so many doubt the capabilities of their data gathering (see Figure 7). In the case of the calculation systems, it is also a reflection of the relative infancy of the theory underlying the quantification of operational risk exposures.

Figure 6 Integration of risks and controls across the organization through technology



Source: PricewaterhouseCoopers Global ERM Survey

Figure 7 Satisfaction with systems and inputs



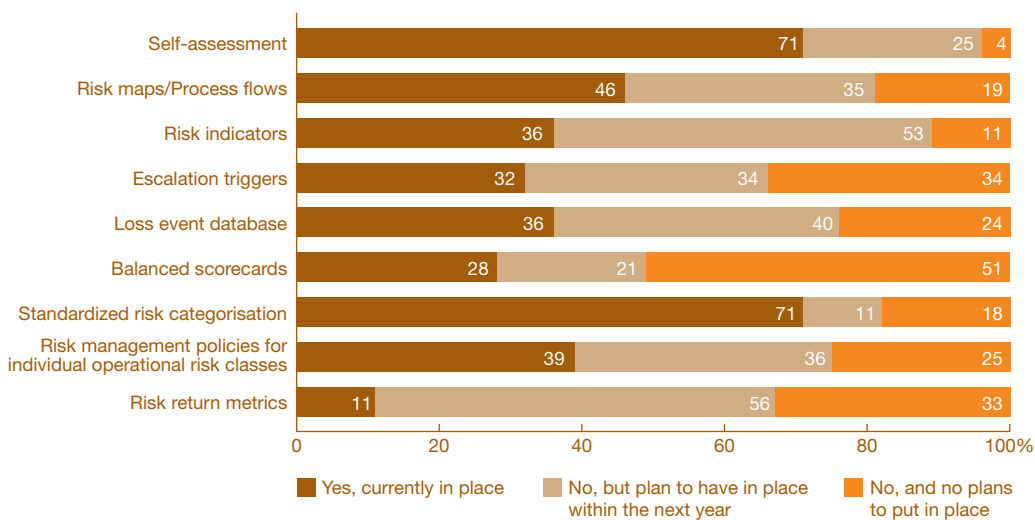
Source: PricewaterhouseCoopers Global ERM Survey

## Future plans

**Next steps:** More than half of respondents plan to introduce risk indicators or risk-return metrics, and 40% plan to implement a loss event database in the coming year (see Figure 8). This reflects the steadily growing maturity of operational risk within insurance firms as they move from a relatively rudimentary approach based around risk and control self-assessment to more sophisticated risk quantification and management. Take-up is lower for escalation triggers, with these perhaps being seen as the next step, once risk indicators are in place.

**Rolling out:** Given the development that we have seen and the ambitious plans for the future, organizations should consider the impact of this on their people. Operational risk functions and business managers with responsibilities in this area are being asked to take on far more complex roles and responsibilities. We have seen that many organizations have reported dissatisfaction with the current position, so before companies move towards ever more complex operational risk methodologies they should consider whether the next step is actually to consolidate their existing capability.

Figure 8 Use of operational risk management tools



Source: PricewaterhouseCoopers Global ERM Survey



## Realizing value from operational risk management

Regulatory developments have heightened the focus on operational risk management, in particular risk quantification as part of the evaluation of capital needs. Quantification is a technical challenge in itself, especially as many insurers have yet to build up sufficient databases of historic loss events upon which to base loss distribution evaluations. Even if comprehensive and longstanding historical loss data is available, it is unlikely to capture the emerging and escalating risks of a constantly evolving risk environment. More broadly, the focus on quantification can be seen by some frontline teams as a distraction from 'real' risk management.

An approach that combines bottom-up scorecard evaluations based on business team self-assessments with top-down emerging risk scenario analysis can not only provide a more informed and forward-looking approach to risk quantification, but can also help to engage frontline risk-takers and integrate capital evaluations with day-to-day risk management.

Ideally these evaluations should be underpinned by process maps that detail how procedures are enacted, the associated risks and how they are controlled for the main operations of the business. From a compliance perspective, the development of these maps can provide a valuable foundation for governance, documentation and involving the business in the process. From a competitive perspective, such ongoing assessments can prove invaluable in testing the efficiency and cost-effectiveness of particular processes and identifying opportunities for rationalization and improvement. In particular, business teams can help to identify control weaknesses (or areas of excessive control) through the mapping process and then work with operational risk teams to develop guidelines and find ways to address any areas of concern. Once enacted, the corrective action will reduce expected losses, providing an offset to the investment in operational improvement. This action may also lead to a reduction in capital charges, providing a further incentive.



## Talent management

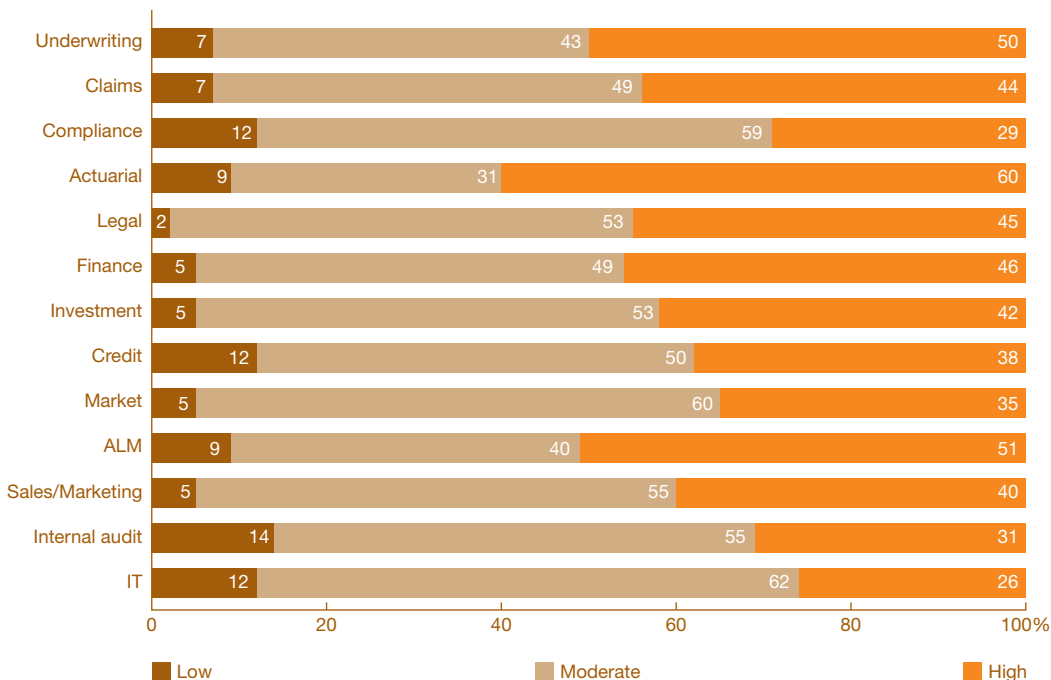
Financial services organizations now rank HR and people risk (e.g. talent recruitment and retention) among the top ten potential threats to their earnings.<sup>13</sup> Our survey examined talent issues affecting the development of ERM specifically and the broader objectives of enterprises as a whole.

From an ERM perspective, our survey highlighted a potential lack of focus on the HR dimensions of risk management. Few participants expressed a view on the industry's ability to attract, hire and train competent risk managers. It is also notable that less than 20% have established risk management training for the business and believe it is working effectively. Greater attention to recruitment and career development will be critical in ensuring that organizations have the people they need to

develop and deliver value from ERM. In turn, more effective training could help to improve awareness of risk and enhance understanding of how ERM works and can contribute to the business, and so help to embed the program within the organization.

From a strategic perspective, access to talent and skills is clearly critical in meeting business objectives and driving commercial success. From an operational risk management perspective, competence is a key factor in the enterprise's ability to avoid errors and misjudgments, meet regulatory compliance requirements and manage more complex products and systems. It is therefore encouraging that at least 50% of respondents believe that the industry is well-placed to attract, hire and retain quality actuarial and underwriting talent (see Figure 9 below).

Figure 9 Industry's ability to attract talent



Source: PricewaterhouseCoopers Global ERM Survey

<sup>13</sup> 'Creating value: Effective risk management in financial services', published by PricewaterhouseCoopers in February 2007.



## Capital measurement and management

This section explores the progress made by insurers in the development of economic capital models and the use of economic capital allocation as a key business driver. It also assesses the continuing challenges faced by insurers in embedding economic capital into day-to-day decision-making.

Economic capital expresses management's view of risk and reflects an organization's ability to actively mitigate and diversify its exposures. Once allocated to business units, classes or products, it can also support disciplined, strategic risk-taking. In turn, communication of economic capital analysis can also help to meet the demands of regulators, rating agencies, analysts and investors for broader and more comparable information about risk.

Although interest in economic capital modeling has increased in the wake of risk-based prudential regulation and rating agency assessments, our survey found that the primary drivers for development are the business benefits obtained through enhanced capital allocation and improved strategic decision-making.

While the measurement and management of economic capital continue to be evolving disciplines in the insurance industry, stakeholder demands are spurring greater standardization of approach, allowing for more comparison between companies. As our survey highlighted, key challenges continue to include ensuring the quality of data, creating a robust control environment and securing the business confidence and buy-in needed to embed risk-based capital methodologies into the decision-making toolkit.

### Key themes

- Use of economic capital models is growing, but respondents recognize that they have some way to go in realizing the full benefits of implementing economic capital models;
- Key areas identified for further improvement include greater support for the formulation of risk appetite, improved capital allocation and alignment with business planning and execution;

- Most respondents have yet to secure business acceptance and buy-in for economic capital methodologies; and
- Most respondents are not fully confident about the control environment needed to underpin effective capital models.

### Approach to capital management

Most respondents have successfully added 'economic' capital to regulatory, rating agency and accounting-based capital methodologies. Three-quarters of participants have implemented an economic capital model, a considerable increase since our 2004 study. Around two-thirds of these companies completed their model implementation in less than two years, suggesting that development and application have speeded up since 2004.

Most respondents cite improved capital allocation, competitive advantage and the integration of risk and capital measurement into their ERM framework as the primary motivators for model development. Regulation is seen as a relatively minor consideration; even within Europe, only 25% of participants cite Solvency II as the main driver.

The use of economic capital appears more widespread in Europe (85%) than the Americas (71%) and the Asia-Pacific region (62%). Unsurprisingly, a greater proportion of large insurers are using economic capital measures compared with medium and smaller companies (86% versus 75% and 46% respectively).

### Potential benefits

Many respondents indicate that they still have some way to go before achieving the full benefits from implementing economic capital models. Across each of the following areas, over half of the respondents believe they will achieve a better position as a result of implementing their economic capital model, but feel they are not there yet:

- Better allocation of capital than under a regulatory capital model;

- Greater support for the formulation of risk appetite and risk limits;
- Freeing up of capital for use in the business;
- Changes in the pricing of products to better reflect risk; and
- Changes in strategic direction after assessing risk-adjusted performance (including business discontinuation).

### Application in the business

As would be expected, a high proportion of respondents report that their Board, CEO, CFO, CRO and Chief Actuary are the key users of the results from their economic capital models (see Figure 1). More surprising, however, is the 30% of respondents who indicate that their Board relies on the results produced by their economic capital models, but nonetheless cannot clearly articulate the purpose or use of the models.

Over 40% of respondents do not allocate capital to business units for performance measurement purposes, including a number of respondents who consider it 'very important' to implement risk-based capital management. As insurers seek to develop a portfolio view of risk, it is also notable that only 14% report that convergence of economic capital models across their business has been completed. While a further 40% report that a plan is in

place or is being implemented, the remainder state that they have no plan to converge their models.

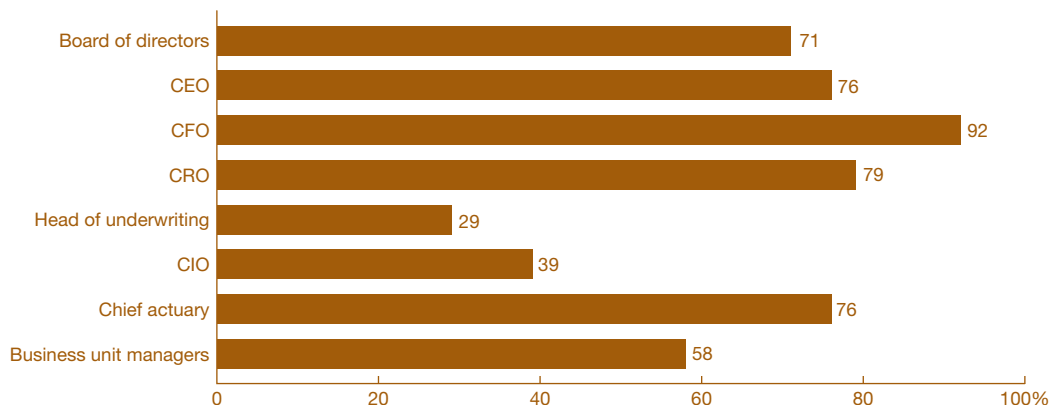
Only just over a quarter of respondents report that their economic capital allocation program has been very effective in gaining business buy-in, raising risk awareness, influencing day-to-day decision-making or supporting the achievement of overall ERM objectives. This is only some 5% more than 2004, reflecting limited advancement in an area identified in our last survey as a key benchmark for progress. Around two-thirds of participants do not ensure consistency between pricing and their economic capital model. These findings indicate that some respondents who calculate economic capital do not then know how to embed it into the day-to-day management of their business. Such embedding is a key part of the 'use tests' being developed by rating agencies and Solvency II regulators.

Further work may clearly be required both in realizing the value of what has in many cases been substantial investment in modeling capabilities, and to ensure that companies meet regulatory and rating agency expectations about how effectively modeling is governed and outputs are applied within the business. The findings of our survey also indicate the need for more training, explanation and closer interaction between technical modeling teams and frontline risk-takers.

The findings of our survey also indicate the need for more training, explanation and closer interaction between technical modeling teams and frontline risk-takers.

Figure 1 Users of models

#### Personnel relying on risk measures produced by economic capital models



Source: PricewaterhouseCoopers Global ERM Survey

Convergence in the approach to measuring economic capital in the insurance industry is clearly evident from the survey results

### Realizing the value

Nearly 60% of respondents report that it took them between one and two years to develop their model (up from around 30% in our 2004 study) and around a third between three and five years. While the implementation may have speeded up since 2004, embedding the model into decision-making, and the business buy-in this requires, can be a long and arduous process.

### External communication

Around three-quarters of respondents discuss their economic capital program with rating agencies (up from some 50% in our 2004 study), with around 35% and 50% disclosing them to analysts and investors respectively. The percentage of respondents disclosing their results to rating agencies is significantly higher in the US (over 90%), whereas

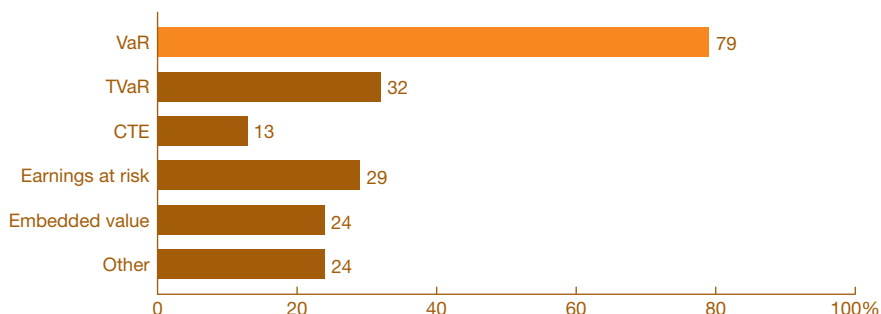
disclosure to analysts and investors is more common in Europe (50% and 67% respectively). It is notable that in a 2007 PricewaterhouseCoopers survey of analysts' opinions on insurance disclosure, satisfaction with risk disclosure was far more pronounced in Europe than the US.<sup>14</sup> Overall, the survey highlighted strong calls for more information about insurers' capital positions.

### Methodologies

Convergence in the approach to measuring economic capital in the insurance industry is clearly evident from the survey results:

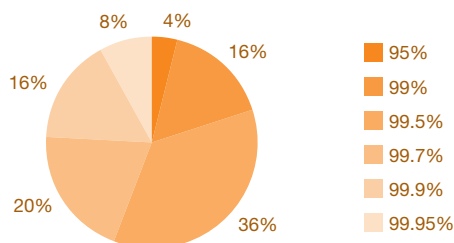
- 80% of all models are stochastic or combination models;
- 90% or more of all models explicitly capture insurance, market and credit risk, with over 70% of models reflecting operational risk;

Figure 2a Risk measures within economic capital models



Source: PricewaterhouseCoopers Global ERM Survey

Figure 2b Confidence level applied when managing VaR



Source: PricewaterhouseCoopers Global ERM Survey

14 'Insurance reporting at the crossroads: What do analysts think', published by PricewaterhouseCoopers in November 2007.



- VaR is the economic capital measure most commonly used by respondents (79%), with TVaR being the next most common measure (32%); and
- 80% of respondents measure economic capital over a one year or a one year plus run-off time horizon.

The move toward greater standardization is, in part, a reflection of the common criteria for review and comparison being applied by rating agencies, along with the benchmarks for best practice being developed by various industry groups. However, economic capital modeling is still far from a 'one size fits all' exercise, as different insurers adopt varying confidence levels and time horizons to manage their business and define their risk tolerances and appetites (see Figures 2a and 2b).

While our 2004 study highlighted the challenges of integrating operational risk within their measurement of economic capital, around 70% of respondents currently do so (see Figure 3). However, underlying quantification

and aggregation of operational risk still represents work in progress for many insurers. The explicit integration of strategic risk remains limited.

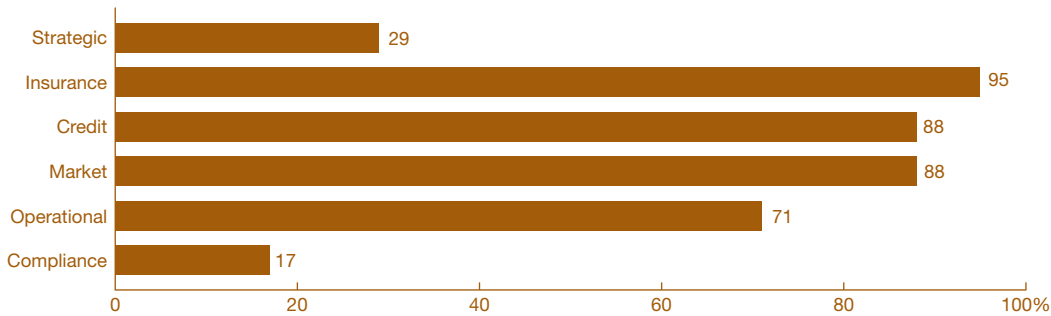
Around three-quarters of respondents make an explicit allowance for correlation within their economic capital model, with a further 15% making an implicit allowance. However, less than 35% of these companies attempt to reflect differences in tail correlations within their models.

More than half of respondents only re-calibrate their models once a year. For both Solvency II and IFRS Phase II, models will need to be updated at every reporting period, most commonly on a quarterly basis.

Effective risk aggregation is a pre-requisite for economic capital allocation across businesses. To be accurate and credible, an economic capital model should incorporate reasonably accurate estimates of the correlation of financial results across risk

Figure 3 Capturing risk

Which risk categories are explicitly captured in your company economic capital models?



Source: PricewaterhouseCoopers Global ERM Survey

types. It is therefore surprising how few respondents report that their aggregation methodologies for particular risk types are any more than 'basic' (see Figure 4).

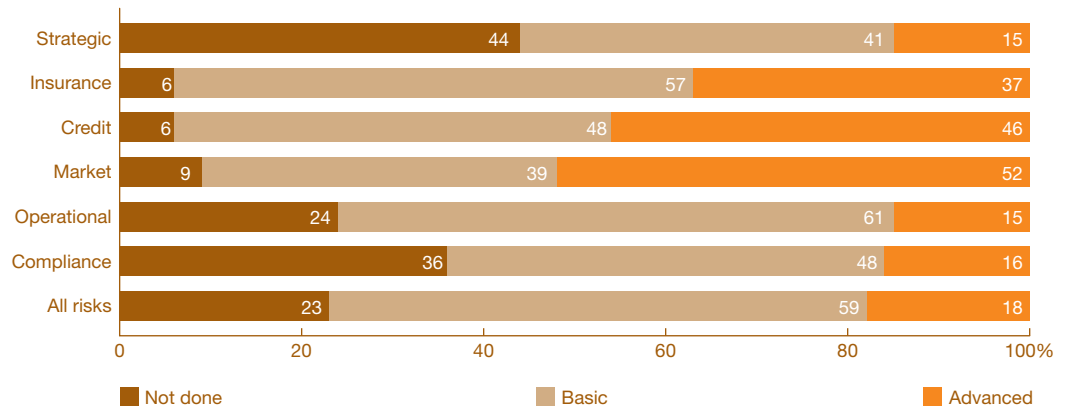
However, more than half of participants indicate that the overall control environment around their economic capital model is 'weak' or 'average' (see Figure 5).

### Control environment

The rigor of the control environment around economic capital models is clearly critical in enhancing business confidence, while serving also as a specific criterion for evaluation by regulators and rating agencies.

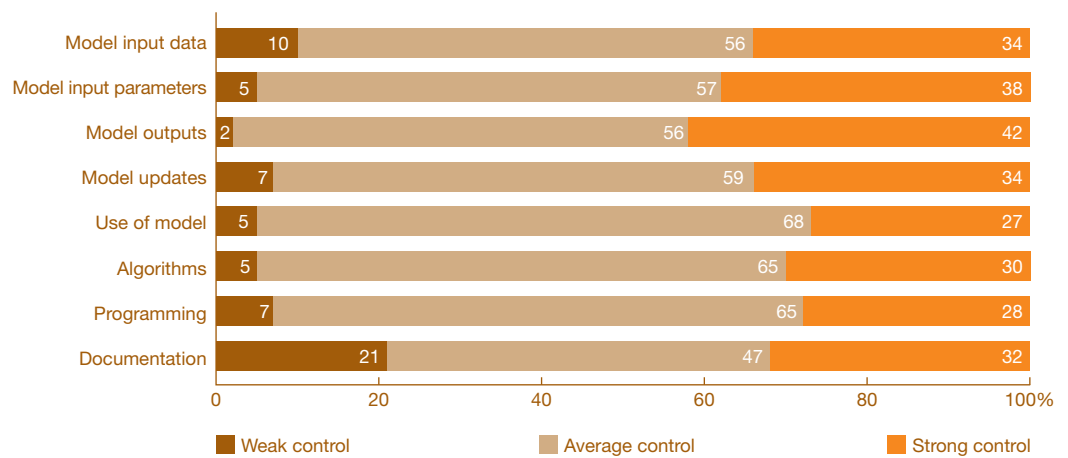
In particular, only 15% of respondents feel that their controls around the quality of data used to set assumptions are strong. This may be particularly problematic when trying to determine parameters for unique individual risk models or tail correlations.

Figure 4 Assessment of aggregation methodologies by risk type



Source: PricewaterhouseCoopers Global ERM Survey

Figure 5 Model control environment



Source: PricewaterhouseCoopers Global ERM Survey

## Alignment of risk and finance

The development of common risk and finance metrics (a common 'language') can help management to integrate risk, performance and financial management. Risk and finance can often also work closely together in the development of common reporting, control frameworks, modeling, transactional and data elements. There may also be further opportunities to leverage predictive analytics, such as stress testing risk and reward scenarios, as part of the budgeting and planning process. However, while greater alignment of the two functions can be helpful, full integration may be a mistake, in our opinion, as it may blur the fundamental differences and complementary roles that are essential to the effective operation of the business.

Better alignment rests on standardization and simplification of the reporting, control, modeling, transactional and data elements of risk and finance, alongside enhanced efficiency through shared services and data warehousing. The potential benefits include:

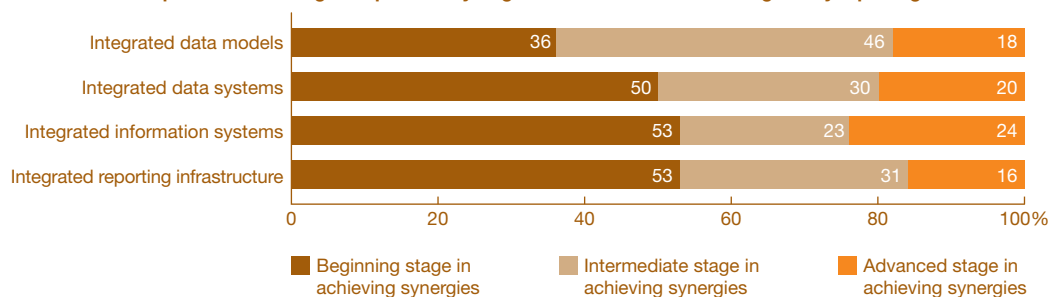
- Greater application of risk disciplines in key business processes such as strategy, planning and valuation;
- More robust financial plans and projections: through challenging management to consider ranges of upside and downside outcomes it requires management to define its appetite for earnings volatility;
- A more coherent and consistent view of the business from risk and finance
- Reduced costs – both direct and indirect. Alignment of risk and finance reduces avoidable inefficiency and duplication; and
- Better, faster and more robust decisions based on common data.

Alignment can be demonstrated in a number of ways, but one of the key barometers is the consistency of the metrics between the two departments. However, our survey revealed that only around a quarter of respondents strongly agree that they have an efficient basis to link risk with other financial information.

Nonetheless, greater alignment does appear to be moving up the agenda. In particular, most respondents expect to realize synergies between financial and regulatory reporting. Opportunities for synergy include the move to Solvency II and IFRS Phase II in areas such as data models and reporting infrastructure. However, most participants are only just beginning to achieve these anticipated synergies (see Figure 6).

**Figure 6 Realizing synergies**

### Areas where companies are looking to exploit the synergies between financial and regulatory reporting



Source: PricewaterhouseCoopers Global ERM Survey

## Aligning model development with business needs

To realize the full value of model development, Boards, senior management and frontline risk-taking teams, along with regulators and rating agencies, need to be confident that the evaluation processes are generating information that is usable within the business and genuinely reflects the risk profile and priorities of the organization.

Winning this confidence can be a challenge. Economic capital evaluation is only as good as the reliability of the data, validity of the assumptions and quality of application that underpins it. Data may be incomplete or inconsistent. Even if the desired data is available, it could be dangerous to give too much credence to model outputs without the sense check of experience and intuition. In short, economic capital models cannot exist in a vacuum; they require expert implementation, development and embedding to be credible and relevant to the business.

It is therefore essential that model teams work closely with frontline users to learn what they want from the model and gain their input and support in its development. They can also engage users by rationalizing and presenting risk and capital information in an intelligible and actionable form, for example through heat maps or executive dashboards.

In turn, securing business buy-in can help to ensure a more consistent and sustainable supply of the necessary data. The broadest possible organizational input can also help to ensure that the underlying risk assumptions and subsequent sense-checking draw on the experience and expert perspectives of those actually taking and managing the risks. Ultimately, their ongoing feedback can help to develop and hone modeling capabilities that reflect business needs and are therefore more likely to be valued and used.

Organizationally, it is important to forge close cooperation between underwriting, actuarial, finance and risk management teams. Greater cooperation can help to enhance efficiency and realize cost-saving synergies in data sourcing and modeling. It can also help to cross-check the quality and consistency of inputs and outputs.

Figure 7 sets out the UK Financial Services Authority's (FSA) perspectives on the likely timing and resource implications for the various elements of typical internal model development, based on its experience of implementing ICAS. It underlines the importance of organizational collaboration.

**Figure 7 Guide timing for model development**

	Activity	Dedicated resource	Other resources
Year 1	<ul style="list-style-type: none"> <li>Build first-take model.</li> </ul>	1 x part-qualified actuary	Limited.
Year 2	<ul style="list-style-type: none"> <li>License a dedicated model platform.</li> <li>Build model and use for ICAS.</li> </ul>	1 x qualified and experienced actuary	Support provided by finance/actuarial/reinsurance function.
Year 3	<ul style="list-style-type: none"> <li>Improve model calibration.</li> <li>Apply more widely within the business.</li> </ul>	1 x qualified and experienced actuary + 1 x part-qualified actuary	Involvement of Chief Risk Officer (CRO)/finance/underwriting/pricing/claims/actuarial/reinsurance/treasury/risk and compliance.
Year 4	<ul style="list-style-type: none"> <li>Ensure wide usage in planning, pricing, reserving, capital allocation, internal and external risk reporting.</li> <li>Improve model calibration.</li> </ul>	1 x qualified and experienced actuary + 1 x part-qualified actuary	Embedded in all key business functions under CRO control, with resource implications throughout.
Year 5	<ul style="list-style-type: none"> <li>Objective is for it to be embedded to an acceptable level.</li> <li>Further development and calibration will continue as required.</li> </ul>	1 x qualified and experienced actuary + 1 x part-qualified actuary	Embedded in all key business functions under CRO control, with resource implications throughout.

Source: UK FSA 'Insurance Sector Briefing: ICAS lessons learned and looking ahead to Solvency II', October 2007.

## Systems and data

**This section examines the relative quality of the systems and data needed to underpin effective risk modeling, capital allocation and ERM as a whole.**

Effective systems and quality data are clearly critical in sustaining the supply of timely, reliable and consistent management information, which is the lifeblood of a well-functioning ERM program.

It is often said that the necessary data is somewhere in the organization, the challenge is how to extract, clean and consolidate it. Investment in centralized data warehouses has greatly enhanced firm-wide access to data within many insurers in recent years. Centralized databases have also helped to integrate risk and financial information and hence create the foundations for a common language of risk, performance and reward.

The findings of our latest survey highlight some advances since our last study in 2004. However, confidence in the risk data used in a number of key areas of management information including economic capital modeling remains limited. The credibility of these model outputs and the data upon which this relies are clearly critical, not least

in winning buy-in from Boards and business teams, along with regulators, rating agencies and other external stakeholders.

The effectiveness of risk IT varies markedly within the insurance industry, as our survey confirms. Many insurers still rely on ageing legacy systems, while many newly merged groups face interface problems as a result of many different and potentially incompatible IT platforms being brought together. Our survey highlights particular challenges including the relative priority attached to and hence investments in particular aspects of risk IT.

### Key themes

- Less than half of respondents regard their data and systems strategy for risk management as either good or excellent;
- Most respondents are dissatisfied with the ability of their risk IT to meet reporting frequency requirements;
- Nearly half of participants do not believe that their risk information supports their risk objectives; and
- Confidence in key areas such as inputs for catastrophe, economic capital and operational risk modeling is relatively weak.



## Data quality

There appears to have been some progress, in that nearly 40% of participants now rate their data strategy as excellent (4%) or good (35%), compared to 32% as good and none excellent in 2004 (see Figure 1). However, the fact that most respondents still regard the quality of their risk data as fair at best indicates a less than confident basis upon which to make decisions and gain assurance that controls are appropriate and operating effectively. Timeliness was seen as the most significant data management problem, in line with 2004 (see Figure 2).

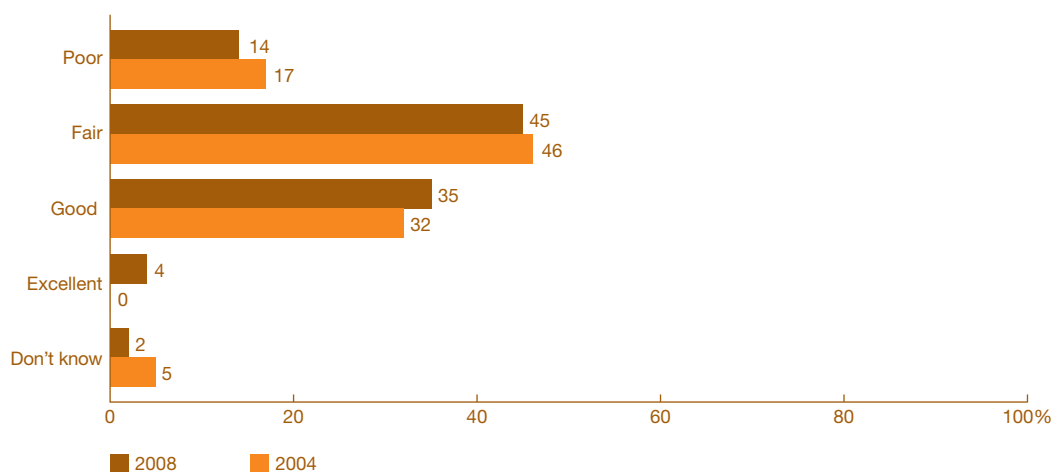
Even among respondents who rate their data quality as high, this often appears to be based on the perception that the business has good information rather than looking further into such areas as the alignment of risk and financial data and the quality and reliability of the model inputs and outputs. It is notable that barely a quarter of respondents strongly agree that they have an efficient basis to link risk with other financial information. Moreover,

only 16% of respondents are very confident about the data used in their economic capital models and only around 40% of participants believe that the control environment surrounding their model input data, outputs and updates is strong.

Respondents are most satisfied with the quality of the data used in their market, credit and catastrophe risk models. However, confidence in the quality of data used in their economic capital and operational risk models is less marked (see Figure 3). Where information systems are considered to be in good shape, participants recognize the competitive advantages. For non-life insurers, for example, this includes more effective pricing.

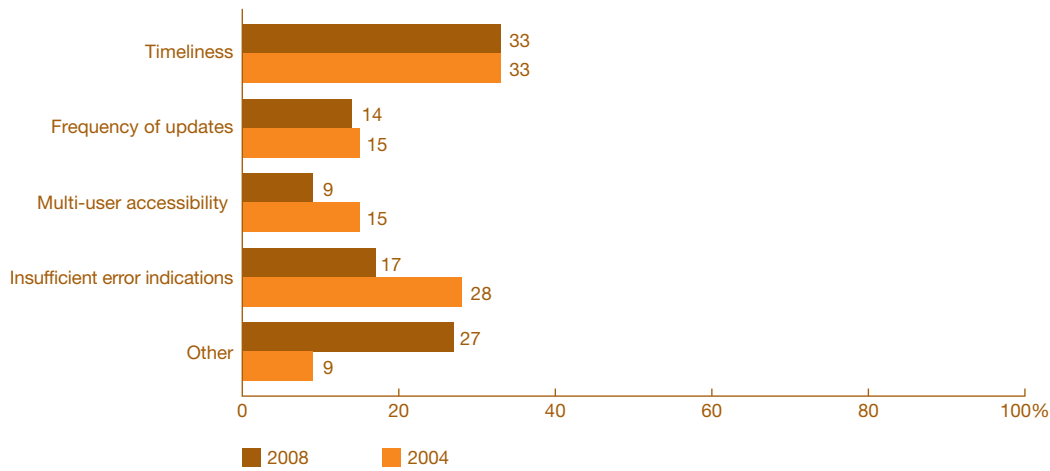
As Figure 4 highlights, the proportion of respondents who believe that their organization spends too little on risk data management has increased from 30% in 2004 to 42% in our latest survey. However, more now believe they spend the right amount than too little, which would appear surprising given the generally low level of satisfaction with the results.

Figure 1 Data strategy rating



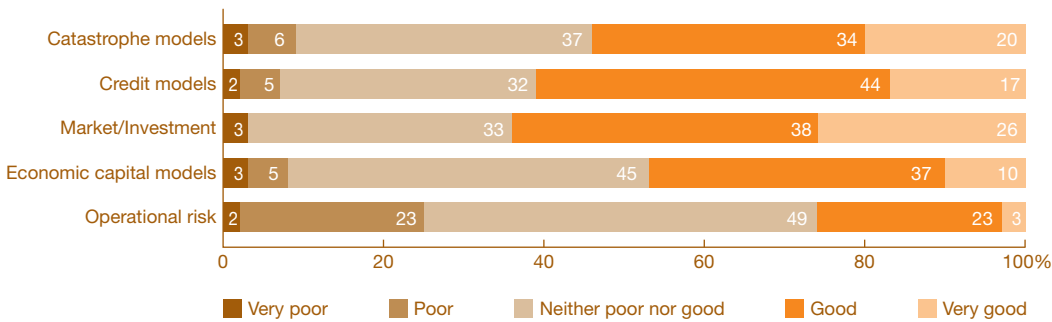
Source: PricewaterhouseCoopers Global ERM Survey

Figure 2 Data management problems



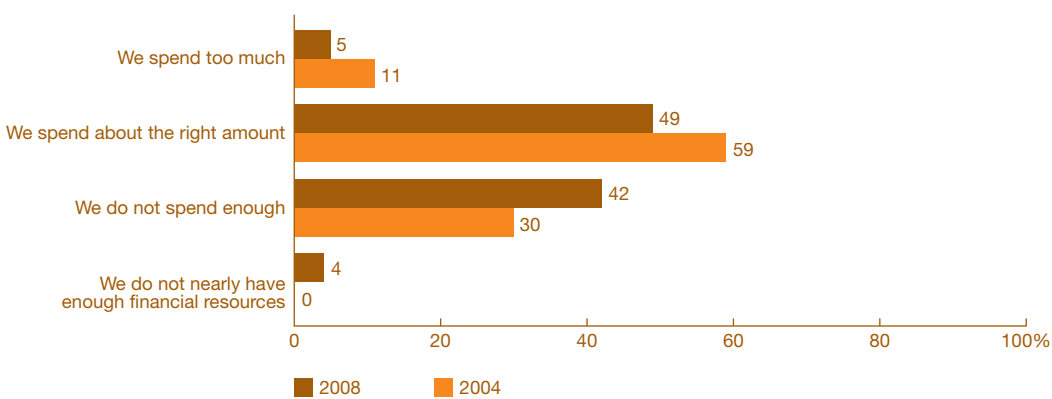
Source: PricewaterhouseCoopers Global ERM Survey

Figure 3 Level of confidence in the quality of data supplying specific areas



Source: PricewaterhouseCoopers Global ERM Survey

Figure 4 Rating data management expenditure



Source: PricewaterhouseCoopers Global ERM Survey

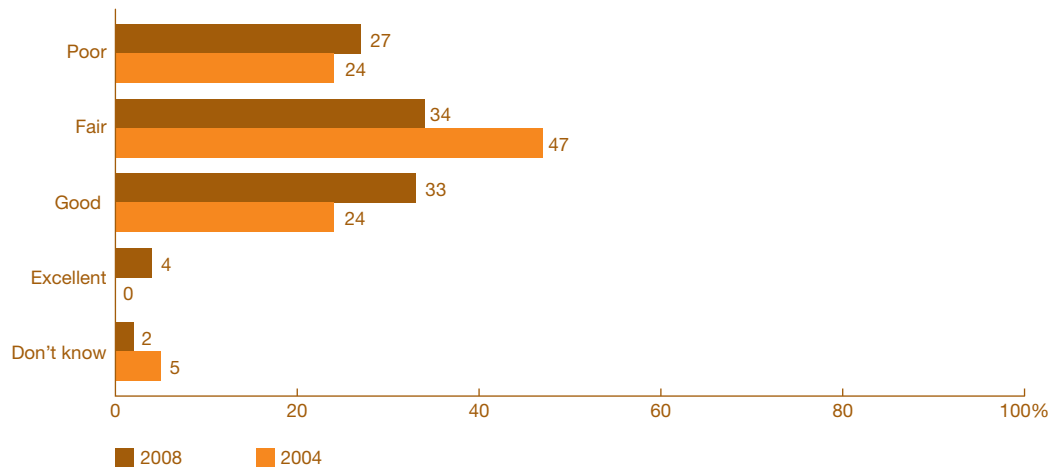
### Systems quality

Over a third of respondents now rate their systems strategy as either excellent (4%) or good (33%), which represents some improvement on 2004, albeit marginal (see Figure 5). It is notable in particular that only 20% of respondents are quite or very satisfied with the ability of their risk IT to meet reporting frequency requirements, while only around a quarter are satisfied with their risk IT implementation and a third their risk IT infrastructure.

### Priorities for improvement

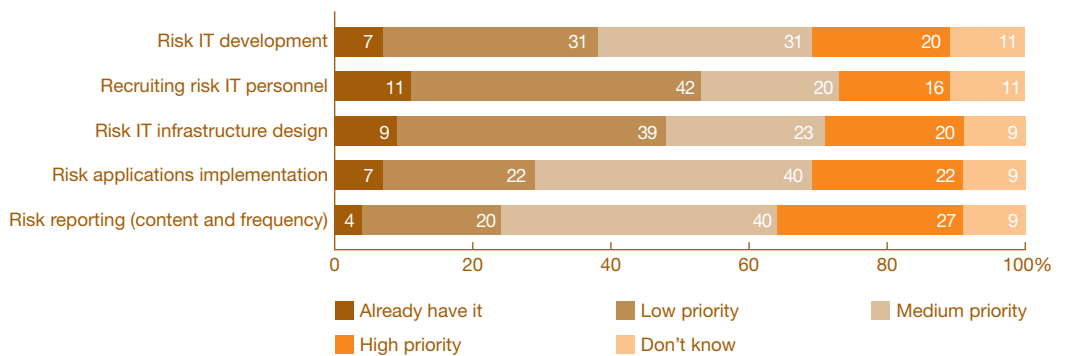
As Figure 6 highlights, risk reporting (content and frequency) is given the highest priority by most organizations. Interestingly, however, most executives remain dissatisfied with the current ability of their risk infrastructure to meet their reporting requirements, and we have seen that in practice risk data does not always support reporting and analysis. It is also notable that implementation of risk applications is a much higher priority than risk IT development, personnel and infrastructure. While implementation of risk applications is key, our experience suggests that 'people' and 'design' are critical in ensuring that these applications function to best effect.

Figure 5 Systems strategy rating



Source: PricewaterhouseCoopers Global ERM Survey

Figure 6 Priority IT capabilities



Source: PricewaterhouseCoopers Global ERM Survey



# Appendix

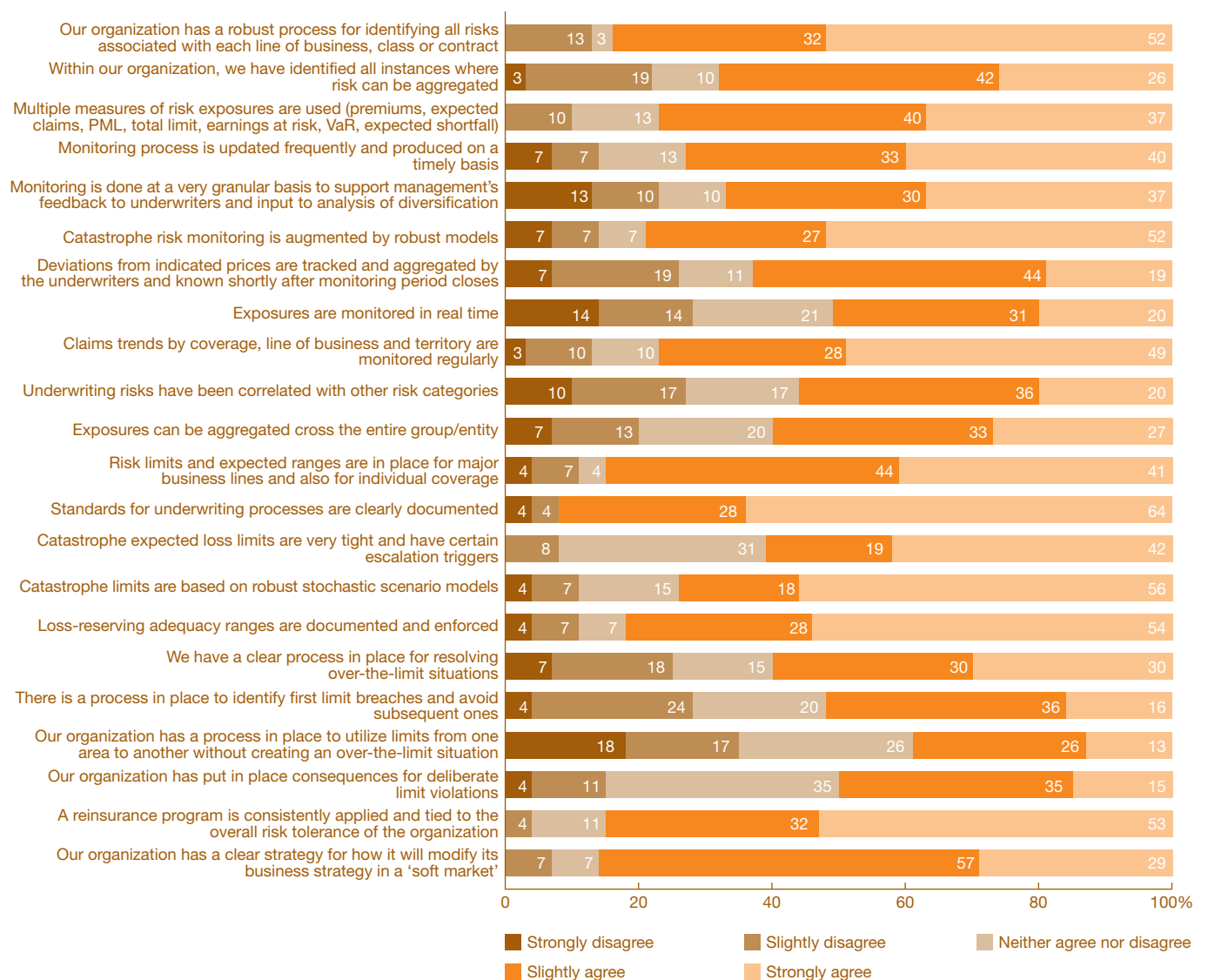
## Appendix



## Appendix A

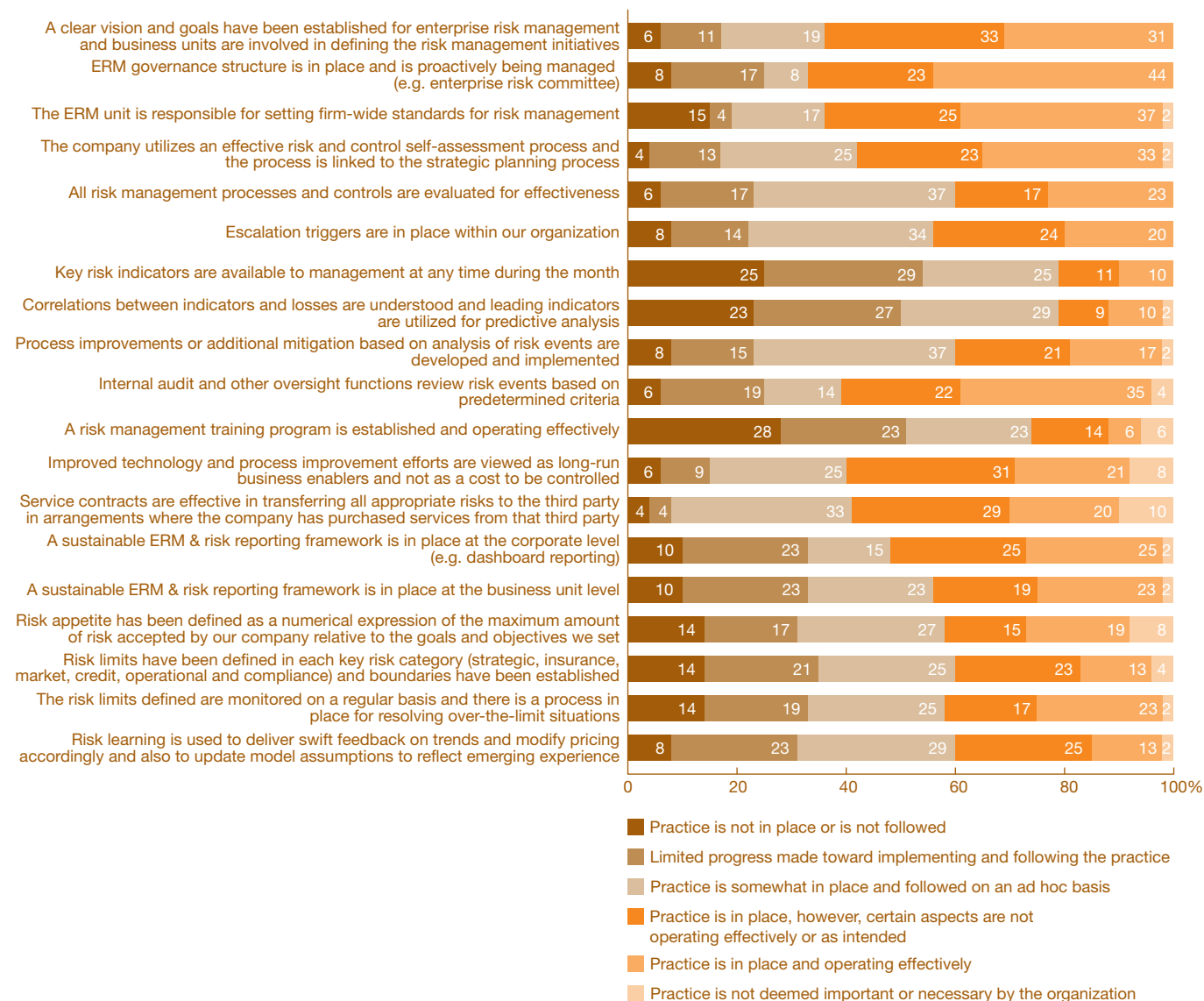
### Self-assessment of ERM development and ability to manage market movements

Figure 1 Managing market movements



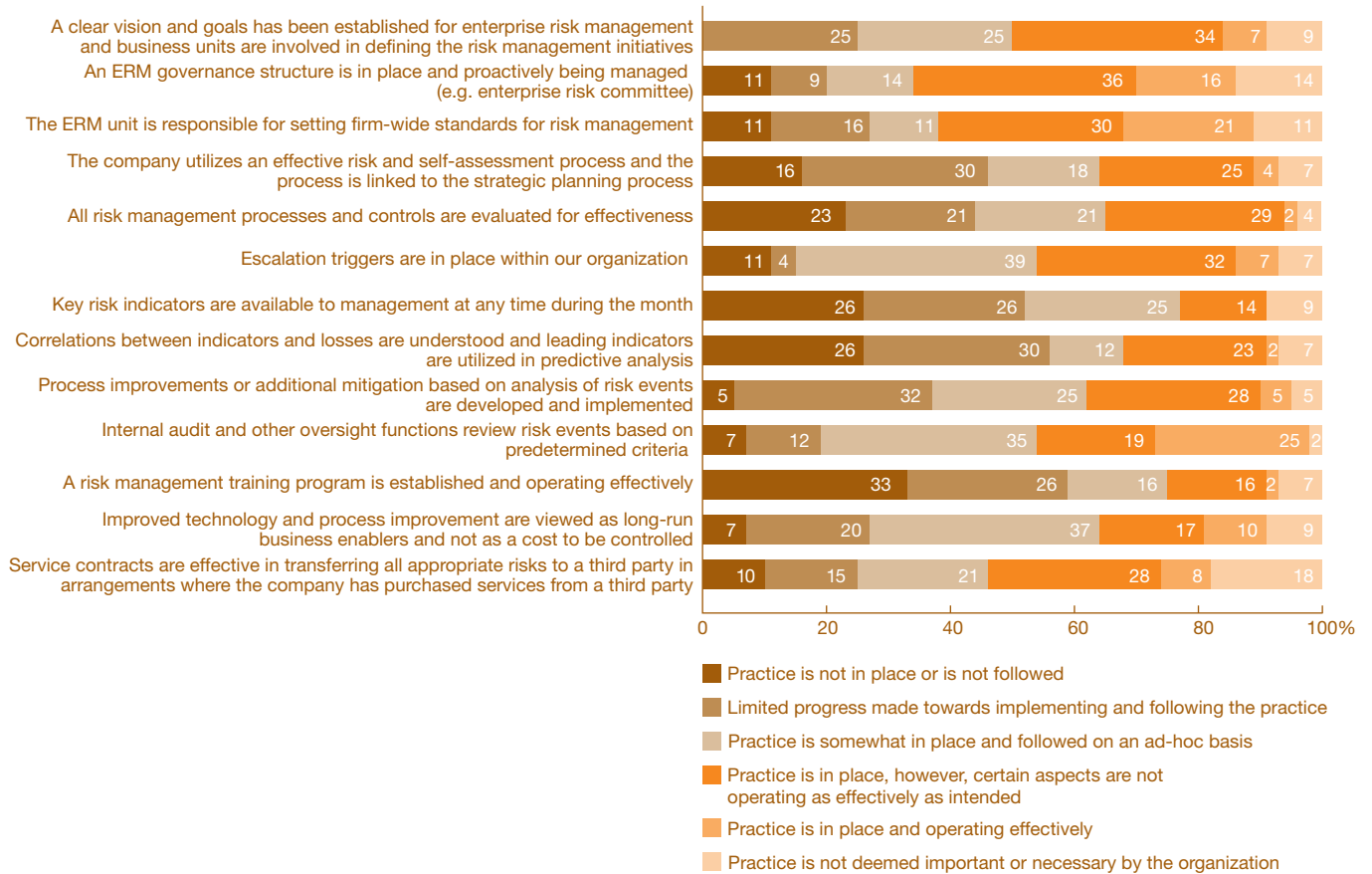
Source: PricewaterhouseCoopers Global ERM Survey

Figure 2 Self-assessment of ERM development – 2008



Source: PricewaterhouseCoopers Global ERM Survey

Figure 3 Self-assessment of ERM development – 2004



Source: PricewaterhouseCoopers Global ERM Survey



## Appendix B

### Rating agency and regulatory expectations for ERM

#### Standard and Poor's evaluation criteria include:<sup>15</sup>

- **Risk management culture:** S&P is seeking to determine whether risk has an everyday impact on decision-making. Evaluation criteria include the incorporation of risk into governance; the effectiveness of the communication of risk information and the ability of the risk function to influence and challenge decisions, while ensuring that risk limits and tolerances are developed from the overall risk appetite;
- **Risk controls:** Evaluation criteria include the effectiveness of risk identification, monitoring and measurement; the embedding of risk management into everyday practices and the ability to maintain risk exposures and limits within agreed tolerances;
- **Emerging risk management:** S&P is keen to test insurers' ability to detect, assess and respond to unrecognized and emerging risks beyond the normal risk identification radar. Control procedures are likely to include trend analysis, stress testing, contingency planning, risk transfer and post-mortem analysis. Key evaluation criteria include the effectiveness with which the firm anticipated and responded to past problem events (risk learning);
- **Risk and economic capital models:** S&P believes that effective risk management requires a smooth flow of information about risk positions and their possible impact. Key evaluation criteria include whether the information is timely, reliable and accurate enough to drive decision-making. The evaluation also tests whether the analysis is understood and actionable by management; whether it enables the firm to maintain risk within agreed control limits and whether it is underpinned by frequent validation, updating and sense-checking of underlying assumptions;

- **Strategic risk management:** S&P tests the extent to which risk considerations influence strategic choices, capital allocation, financial targets, performance measurement and the basis for dividends and incentives.

The S&P evaluation is being updated in 2008. Key areas of focus are likely to include how ERM is influencing decisions over new ventures and how risk assessments are reflecting emerging risks. For companies that have previously been rated as strong or excellent, the evaluation will look in particular at strategic risk, operational risk and how risk models are used within the business (please see [www.erm.standardandpoors.com](http://www.erm.standardandpoors.com) for more information).

#### Fitch evaluation criteria:<sup>16</sup>

ERM is evaluated as part of Prism, Fitch's economic capital model for the insurance industry. Prism is a stochastic platform that allows all risks within an insurance organization to be modeled simultaneously and interactively, including how they interrelate with each other, unlike factor models that look at each risk in isolation. As such, Prism strongly aligns with the goals of ERM, with prospective analysis focussing on correlation and diversification among various risk exposures.

Fitch believes that 'many of the ideals of ERM are nothing more than good common sense'. The evaluation criteria are broadly in line with S&P, including the emphasis on governance, culture, embedding and the application of model analytics. There are a number of important additions, including stressing the importance of risk optimization as an integral element of an effective program. Fitch also believes that the role of the CRO should usually be removed from direct day-to-day operating decisions (please see [www.fitchratings.com](http://www.fitchratings.com) for more information).

<sup>15</sup> 'Enterprise risk management: ERM development and the insurance sector could gain strength in 2008', published by Standard and Poor's, March 24, 2008.

<sup>16</sup> Fitch Ratings: '2006 Capital scores for European insurers' and 'Enterprise risk management for insurers and Prism's role: September 2006'.

### AM Best evaluation criteria:<sup>17</sup>

AM Best believes that 'risk management is the common thread that links balance sheet strength, operating performance and business profile'. While AM Best does not require a formal ERM program, it sees it as an increasingly important element of effective risk management, especially within larger and more complex organizations. Its evaluation criteria are broadly in line with S&P and Fitch. It specifically identifies what it describes as strong and weak characteristics of ERM. Strengths include appropriate segregation of duties and the ability to articulate and communicate risk tolerances. Weaknesses include any fragmentation or silo approach that may inhibit this integration.

Our survey found that nearly half of respondents have received ratings on their ERM programs. Around three-quarters of participants in the Americas have received an external rating on their ERM program, compared to 42% in Europe, 33% in Bermuda and 10% in the Asia-Pacific region. Nearly 50% have set target ratings, with 52% of these aiming for very strong, 35% strong and 13% adequate. More than 50% of these want to achieve this goal by the end of 2008.

## Solvency II

### Solvency II evaluation criteria<sup>18</sup>

Solvency II aims to map the regulatory capital requirements of each company against its individual risk profile:

- Alignment with ERM includes the need for a comprehensive assessment of risk (from which the company calculates its solvency capital requirement). The assessment can be based on a standard formula or on outputs from an accredited internal model;
- In common with the rating agency criteria, insurers would need to ensure that risk considerations are embedded into the governance, operations and decision-making of the business and that risk management and the analysis that supports it are underpinned by effective data, governance and control ('use test');

- Companies will need to publicly disclose solvency and financial condition reports, opening their approach to risk and the effectiveness of its management to market scrutiny and comparison.

Our survey assessed participants' views on the impact of Solvency II and their readiness for the regime, which is due to come into force in 2012:

- **Capital impact:** A third of participants believe that Solvency II will result in lower capital requirements, 37% the same and 30% higher. This is more than the 16% of insurers that would be expected to raise additional capital, according to the qualitative impact study (QIS 3) carried out in 2007.<sup>19</sup> Use of an internal model could result in a capital reduction of up to 25% according to QIS 3;
- **Embedding:** Based on experience of Basel II, an economic capital program would need to be very effective in gaining acceptance and buy-in by the business units if it is to meet the use test. However, only 27% of respondents believe they have reached this stage;
- **Control environment:** Nearly 60% of respondents believe that the control environment surrounding model data input, model outputs and model updates is moderate or weak. Any shortcomings will need to be addressed to pass the use, validation, calibration and statistical quality tests;
- **Data management:** Only 15% of respondents are very confident about the data used in their economic capital models. Further work is likely to be required to meet the statistical quality test; and
- **Operational risk:** Solvency II will apply a capital charge to operational risk as an explicit part of the Solvency Capital Requirement. Nearly 40% of respondents report that the measurement or aggregation of operational risk has not been developed and implemented within their organization. Less than 15% of respondents have fully developed and implemented quantitative risk monitoring tools within their organizations.

<sup>17</sup> AM Best: 'Risk management and the rating process for insurance companies', published on March 5, 2007.

<sup>18</sup> Solvency II amended draft framework directive, published by the EC on February 26, 2008.

<sup>19</sup> 'Solvency II – QIS 3 Report,' published by the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) on November 21, 2007.

## Appendix C

### View from the outside/view from the inside

#### Comparison of S&P 2007 ERM review<sup>20</sup> and latest PricewaterhouseCoopers ERM study.

##### Risk management culture

**S&P:** 'Risk management culture continues to get a higher rating than overall [ERM] company practice.'

PwC ERM 2008:

- 67% strongly agree that ERM is a Board/CEO priority, 43% have a Board-level ERM committee and 24% are planning to set one up;
- 68% have a corporate-level ERM committee and 60% have a CRO who is responsible for designing and overseeing the ERM program; and
- Despite having the risk management teams and committees in place, only 18% are fully satisfied that their ERM strategy is fully understood within their organization and only 26% are confident that the roles and responsibilities are fully understood.

**S&P:** 'Many insurers are unable to give a meaningful characterization of their risk profile...It often remains a standalone statement not yet related to risk limits.'

PwC ERM 2008:

- Only 13% report that risk limits have been fully defined for each risk category and boundaries have been established.

##### Risk controls

**S&P:** 'Risk controls continue to be highly uneven. For most insurers, limits are completely independent of each other, with no specific tie to an overall risk tolerance.'

PwC ERM 2008:

- Business units within more than three-quarters of respondents do not base their risk tolerances on the broad risk appetite and tolerance levels set by senior management; and
- More than 70% accept that their procedures for enforcement of limit thresholds are not operating effectively.

##### Emerging risks management

**S&P:** 'Only a handful of insurers diligently manage emerging risks.'

PwC ERM 2008:

- 69% have a process to identify emerging risks but barely half are even quite confident that it is operating effectively;
- Only 14% make full use of risk learning to deliver swift feedback on emerging risks and trends and incorporate this into pricing and model assumptions; and
- 60% stress test all their life and health products and businesses, but only 20% quarterly or more.

<sup>20</sup> 'Enterprise risk management: ERM development and the insurance sector could gain strength in 2008', published by Standard and Poor's, March 24, 2008.



### Risk and economic capital models

**S&P:** ‘...what appears to be lacking is any consistent approach or best practice surrounding economic capital model development, implementation and execution.’

PwC ERM 2008:

- Our survey reveals strong convergence in the approach to measuring economic capital in the insurance industry.
- However, nearly 60% of respondents believe that the control environment surrounding model data input, model outputs and model updates is moderate or weak.

### Strategic risk management

**S&P:** ‘Strategic risk management generally follows the development of economic capital models...it takes time for management to fully understand and accept the output of these models.’

PwC ERM 2008:

- Only 27% report that their economic capital model has been very effective in gaining acceptance from business units or influencing day-to-day decision-making.
- Barely a quarter report that their economic capital modeling provides substantial value in defining their risk appetite, setting risk limits or improving strategic planning.



Risk teams should advise on product development at an early stage rather than simply being consulted once the main preparations are already in place.

## Appendix D

### Product management: A test case of how well ERM is embedded into the business

Product development, pricing and review are key aspects of risk and capital management and therefore provide a revealing test case of how well ERM is integrated within decision-making and risk-taking operations.

Key product-related risks range from mispricing and financial market volatility to the broader strategic, compliance and reputational risks of new market entry and possible mis-selling. These risks have been heightened by increasing product complexity. Risk-based capital regimes are also highlighting potentially risk and capital-intensive products ranging from catastrophe cover to policies containing options and guarantees.

Participants' overall assessment of their understanding and control of product risks is positive. Half strongly agree and 32% slightly agree that new products and businesses undergo thorough review prior to launch. More than 40% say that improved processes for bringing new products to market are a key criterion for evaluating the contribution of risk management to their overall success.

However, practical application may be less assured. Less than 40% of respondents report that procedures for new product vetting have been fully implemented or developed in relation to strategic, market or compliance risks. Only 52% have a formal process to align new products with their risk appetite, 45% with product enhancements and 38% with product mix changes. Only around a half align product pricing with economic capital allocation. At a time of heightened financial market instability it is perhaps surprising that only 23% of participants have credit risk

concentration limits for products. While 60% stress test their life products, few do this any more than annually.

Even where risk information is readily available, it may not always be credible, usable or leveraged within the business. Only 16% believe that their economic capital model provides substantial value in improving product pricing and 32% in gauging risk-adjusted product profitability. Only 37% report that they have changed their product pricing to reflect insurance risk as a result of implementing their economic capital model, although a further 55% expect to do so in time.

The softening of non-life premium rates is set to provide a key test of risk pricing and companies' ability to anticipate and respond to market movements. However, only 18% of participants strongly agree that their underwriters track and aggregate deviations from indicated prices and only 22% strongly agree that their process for identifying the stage in the cycle is credible enough to drive business decisions.

In our view, product pricing and development should be aligned with risk appetite and be integrated into firm-wide aggregation management. Risk teams should advise on product development at an early stage rather than simply being consulted once the main preparations are already in place. Business teams should also make full use of the available risk information and analysis to inform their decisions, while risk teams should ensure that the data is credible and usable.

## Further information and contacts

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