

# *fs viewpoint*

[www.pwc.com/fsi](http://www.pwc.com/fsi)

September 2012

02

Point of view

17

Competitive  
intelligence

20

A framework  
for response

30

How PwC can help

35

Appendix



***Too important to fail:***  
Insurance company enterprise risk  
and capital management capabilities

**pwc**

## *Point of view*



## Regulatory and market forces have generated incentives for insurance companies to fundamentally reexamine how they govern and manage risk.

Rapid changes in the global property and casualty (P&C) and life insurance industries have significant implications for the effectiveness of insurance companies' existing risk management functions. The industry has both a need and an opportunity to reexamine and enhance its strategies, processes, and infrastructures for measuring performance and analyzing risk.

# 68%

A strong majority of insurance industry CEOs cite “changes in regulation” as a strategic change driver.<sup>1</sup>

**Heightened regulatory expectations for risk management coverage and oversight**—Regulators are developing frameworks and expectations for insurance companies to significantly improve their enterprise-wide risk management and oversight. Specifically, regulators are calling for insurers to increase their focus on specific risk and capital topics, including economic capital, risk appetite, and scenarios and stress testing. Global solvency regime regulations are introducing new levels of risk and capital scrutiny and analysis to such an extent that the level of change and the impact on insurers is expected to remain at significant levels.<sup>2</sup>

**Structural change to the industry requiring enhanced analysis of risk factors**—While the intention of much regulation is aimed at simplifying and making risk more transparent, the rate and extent of structural changes will continue to accelerate. During this time of change, insurers will seek new ways to do business and will look for growth in new markets, using new channels and business models. For many insurers, these changes will introduce new complexity, making it more challenging to fully understand risk and potentially leading to an inadvertently higher risk profile.

**Market convergence driven by regulatory change may alter risk profiles**—As the insurance industry moves toward solvency standards with common objectives, insurers continue to converge towards a more common set of products, asset allocations, risk factors, or counterparties. When combined, these can lead to higher capital charges and loss exposures.

**Demands for greater transparency require more sophisticated risk information and reporting**—Financial reporting is becoming more dependent on risk-based models and modeled inputs. As finance and risk information continue to converge, insurers should establish ways to more quickly, accurately, and completely aggregate, analyze and report risk information.

**Opportunity to make risk a more explicit contributor to strategic decision making**—Insurance CEOs have been putting more emphasis on risk management. Despite this increased effort, many insurance CEOs are not comfortable that they have yet struck the right balance on the amount of risk information made available to the board. Further, CEOs are unsure they are using the full suite of risk information available for strategic decision-making. Such insurers are reengineering their risk strategies, systems, and processes to take advantage of the analytical information available to, and across, the organization.

1 PricewaterhouseCoopers, Delivering results, Growth and value in a volatile world, 15th Annual Global CEO Survey 2012, [www.pwc.com](http://www.pwc.com), accessed June 18, 2012.

2 For further information, please see *The Enormity of Uniformity*, PwC FS Viewpoint, June 2012. Available from [pwc.com/fsi](http://pwc.com/fsi). Additional information on Solvency II in Europe is available from <http://www.pwc.co.uk/financial-services/issues/solvency-ii.jhtml>.

## Leading insurers evaluate risk management by reviewing governance and strategy, risk-related processes, measurement analytics and infrastructure, and values and incentives.

### A comprehensive approach to assess risk management should address the following:

Governance and strategy	Insurance companies should align risk management to the business model.	This will require a shift from focusing primarily on risk type (such as insurance, credit, or operational risk) to aligning the risk management model to the business model and focusing on aggregate exposures and products (such as property, casualty, life, accident and health). This realignment will allow insurers to more effectively understand aggregate exposures across the business model and to mitigate those exposures as economically or efficiently as possible.
	Risk should be managed in the context of risk appetite and strategy.	Risk managers should ask: Do we agree with the strategic risk/reward trade-offs that come with this business? What is the inherent risk in our fundamental business model and product mix? Have we adequately deployed people, processes, and technology to manage that risk profile?
Risk management processes	Insurance companies should shift to an integrated reporting framework.	Insurers should shift from siloed reporting of financial, actuarial, risk, and compliance information to an integrated reporting framework based on segment- and product-data elements, with explicit linkages to the business planning process. This framework will help assess whether risk concentrations are properly identified, evaluated enterprise-wide across business units, and effectively reported to senior management and the board of directors.
	An understanding of the aggregate exposure across customers and products is essential.	A tactical, aggregated reporting program should be applied to the two major data elements across an insurance company: customer and product. These elements form the anchors of key inputs into actuarial, risk, finance, and compliance reporting requirements. A core process, such as record-to-report, can and should be leveraged to drive process standardization and to facilitate the rollout of an executable program.
Measurement analytics and infrastructure	A sufficiently risk sensitive capital assessment process is required.	Quantification tools to assess the amount of capital, on a risk-adjusted basis, should be developed and embedded in risk management and business planning processes. These tools should be sufficiently risk sensitive and reactive to quantify the impact of different management strategies and actions so that metrics respond to business decisions. <sup>1</sup>
	Performance should be measured on a risk-adjusted basis.	To drive accountability, performance should be measured on a risk-adjusted basis both at the business-unit level through profit and loss (P&L) and the balance sheet, ultimately to the individual underwriter level via business planning and performance management processes.
	Insurers should expand their scenario and stress-testing capabilities and processes.	Scenario and stress testing should become a business-as-usual management tool. In addition to being a key component of overall risk management, scenario and stress testing should be aligned specifically with asset-liability management and liquidity risk management.
Values and incentives	Incentive plans should become more closely linked to risk-adjusted performance.	To drive a culture of responsible risk taking, accountability, and ownership, compensation and incentive plans should be linked to long-term performance across the full P&L and the balance sheet.

<sup>1</sup> There could be differences globally as to how life and P&C insurers can manage their investment portfolios. Interested parties should reach out to their local PwC contacts for further discussion.



## *There are three practical ways to think about and manage the overall risk profile of an insurance company.*

In our view, insurance companies should fundamentally enhance the way they govern and manage risk. Rather than primarily analyzing risk by type, the risk management model should be aligned to the business model, and the focus should be on aggregate exposures (gross and net) and product. Doing so will allow risk managers to more effectively understand their firm's accumulations across the business model and to mitigate those exposures as economically or efficiently as possible.

Insurance CEOs see excessive regulation as a significant threat to growth and with the advent of Solvency II and the NAIC ORSA requirement, the industry continues to experience major regulatory changes. However, insurance CEOs also recognize the risk of standing still: 70 percent of them plan to change their strategies over the next 12 months, some quite significantly.<sup>1</sup>

The traditional organizational model for risk management has focused on risk by type, such as insurance, credit, interest rate, and operational risk. When risk types are correlated in a limited way, this approach has merits. However, because the recent financial crisis has shown that there is greater correlation across risk types than most people estimate, the need to challenge the traditional model has never been greater.

There are three practical ways to think about and manage the overall risk portfolio for an insurance company:

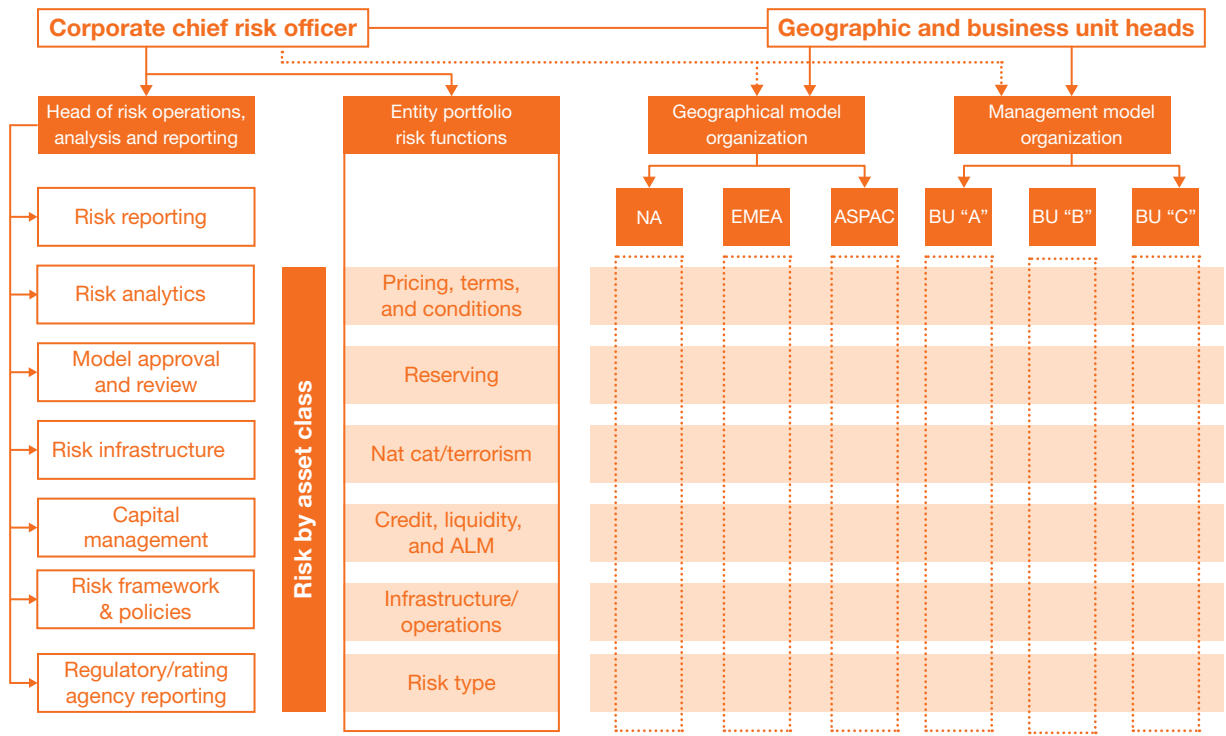
- **Management and group structural model**—Because business performance is measured and resources are deployed using a management model, the accountability and ownership for taking and managing risk should follow the management model.
- **Geographical model**—Because risks of all types are directly influenced by the environment in which the business activities are being conducted, there should be an alignment of the organization's risk with the geographical footprint of the business model. This also helps to establish accountability and assign ownership for managing risk within the legal entity structure.
- **Product and asset class model**—Because exposure to the same product, peril, insured, or counterparty often exists across the management and geographic models, risk management plays an important role in providing the lens into these exposures. Further, it should have the authority to mitigate exposures to a particular product, peril, insured, or counterparty.

---

<sup>1</sup> PricewaterhouseCoopers, Delivering results, Growth and value in a volatile world, 15th Annual Global CEO Survey 2012, [www.pwc.com](http://www.pwc.com), accessed June 18, 2012.

*The organizational structures of leading insurers are steadily moving toward a balance of management, geographic, and product models and away from the more traditional silo-based risk type models.*

This organizational structure deviates from traditional models that focus on risk type. In this model, the risk measurement techniques include those used to measure risk by type, and also embed core risk management methods and analytics in a way that leverages the management, geographic, and product models.



## Increasingly we see industry leaders managing their business in the context of risk appetite and strategy.

Risk continues to be tailored to address the unique attributes of each leading insurance company's business model.

Risk events have the potential to create deviations from planned strategies and outcomes, yet the risk managers of laggard insurers too often have limited, or belated, input into the strategy-setting process of their institutions. There is often a function of risk analytics and risk reporting, not risk management.

Risk managers can and should play a greater role in the strategic management of risk, which can be accomplished by:

- Having senior management and the board facilitate the articulation of a risk management framework and risk appetite.
- Using a combination of qualitative, quantitative, and behavioral approaches to facilitate risk-based decision making and business planning.
- Creating an explicit link between these expressions of risk appetite on one side, and enterprise-wide policies and limit structures that govern day-to-day risk taking in the insurer on the other side

**There is no one-size-fits-all approach to governance and risk management.**

The specifics of any one business model directly affect the governance and control operating model. Furthermore, the choices made about the business model and the corresponding

governance and control operating model directly affect the quality of governance and risk management. Each insurer should explicitly align its governance and risk management operating model with its business model. Risk managers can play a crucial role in challenging their institution's business model by highlighting areas where the business model or the governance and risk management models need to change. This includes, but goes beyond, the consideration of risk in the new product-approval process.

**Risk managers should ask:**

- Do we agree with the trade-offs in strategic risks and rewards that come with this business (particularly broad competitive risks)?
- What is the inherent risk in our fundamental business architecture, including the business mix; the deployment of people, process, and technology; the risk profile; and the environment?
- What do I need to do to help ensure we remain within our overall risk appetite and achieve our business objectives?

**Answering these questions can be a critical step in identifying and assessing strategic and emerging risks that may cross traditional insurance, credit, operational, or liquidity risk silos.**



Source: The Committee on Sponsoring Organizations, *Thought Leadership in ERM: Understanding and Communicating Risk Appetite*, January 2012.

## ***We have also observed leading insurance companies shifting to integrated reporting frameworks.***

**To assess whether risk concentrations are properly identified, evaluated, and reported to senior management and the board, leading insurers are shifting from siloed reporting of financial, actuarial, risk, and compliance information to an integrated reporting framework. This framework is based on customer-data and product-data elements. Furthermore, the framework is leveraging the financial reporting record-to-report process and platform to drive complete, timely, accurate, and standardized actuarial and risk reporting.**

Insurance companies that are woven into the core fabric of the global banking and capital markets system face an increased need to provide frequent, timely, and accurate views into key financial, actuarial, risk management, and compliance reporting information across business functions. Today, most insurers face numerous challenges related to the aggregation of risk, compliance, and finance information to support external reporting requirements. The design and deployment of appropriate aggregation and accurate reporting are complicated when the underlying sources of data are not synchronized, reliable, or, at times, accurate.

To target and remediate short-term issues that impact the aggregation requirements across finance, actuarial, risk, and compliance functions, we believe a tactical remediation program should be applied to the two major data elements across financial institutions: customers and products. Customer and product master data is the linchpin in aggregating actuarial, risk, compliance, and finance information to support external reporting requirements. In the long run, this master data also forms a foundation for gaining insights into customer performance and experience. These data elements are typically

collected independently and often gathered multiple times, which drives inefficiencies, inconsistencies, and therefore increased risk to the enterprise. For example, it can be common for marketing and underwriting, finance, actuarial, and management reporting to use different data categorizations and definitions. Also, policies sold to a customer in different entities within the same group may not reconcile with each other. As a result, the initial stages of the remediation program should be geared toward creating a common customer and product data model, establishing a unique global ID for customers, and assets (e.g., consistent treatment of asset classes and sub-classes, issuers) and establishing an operational data governance model at both the strategic and functional levels.

Once an enterprise-wide customer-data and product-data model is developed, insurers can reconcile finance, actuarial, risk, and compliance data. Once reconciled, the standard record-to-report process used for traditional financial reporting can be extended to integrate insured data. This will facilitate aggregation, scenario analysis, and the monthly reconciliation of actuarial, risk, finance, and compliance reporting.

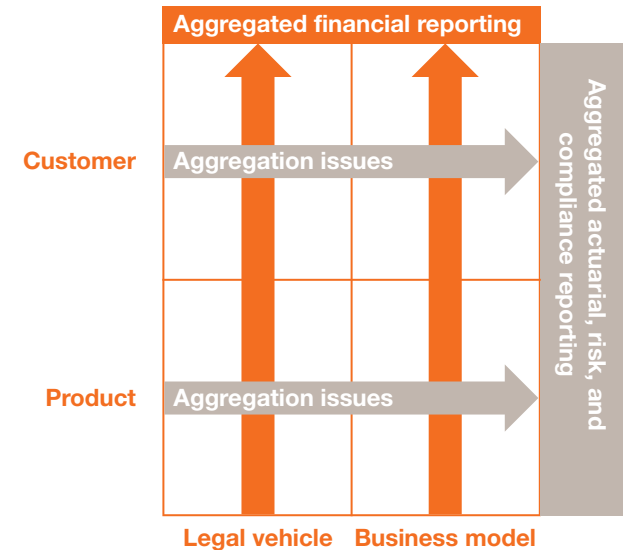


**Leading insurers are employing tactical, aggregated reporting programs applied to customer and product data elements across their companies. Others continue to wrestle with reporting-related aggregation issues.**

A key challenge inhibiting the ability of insurance companies to aggregate risk and compliance information is that customer and product data are not structured as uniformly as finance data.

Additionally, the hierarchy structures are not common across the functional domains, and aggregation activities are frequently not anchored to a proven core process. These factors impede the ability to aggregate within each function, and hinder the convergence of finance, actuarial, risk, and compliance data across a common entity.

*We believe that an aggregated reporting program should be applied to the two major data elements across an insurance company: customer and product data. As depicted in the above figure, these elements form the anchors of key inputs into actuarial, risk, finance, and compliance reporting requirements. Further, we believe that a core process, such as record-to-report, can and should be leveraged to drive process standardization and facilitate the rollout of an executable program.*



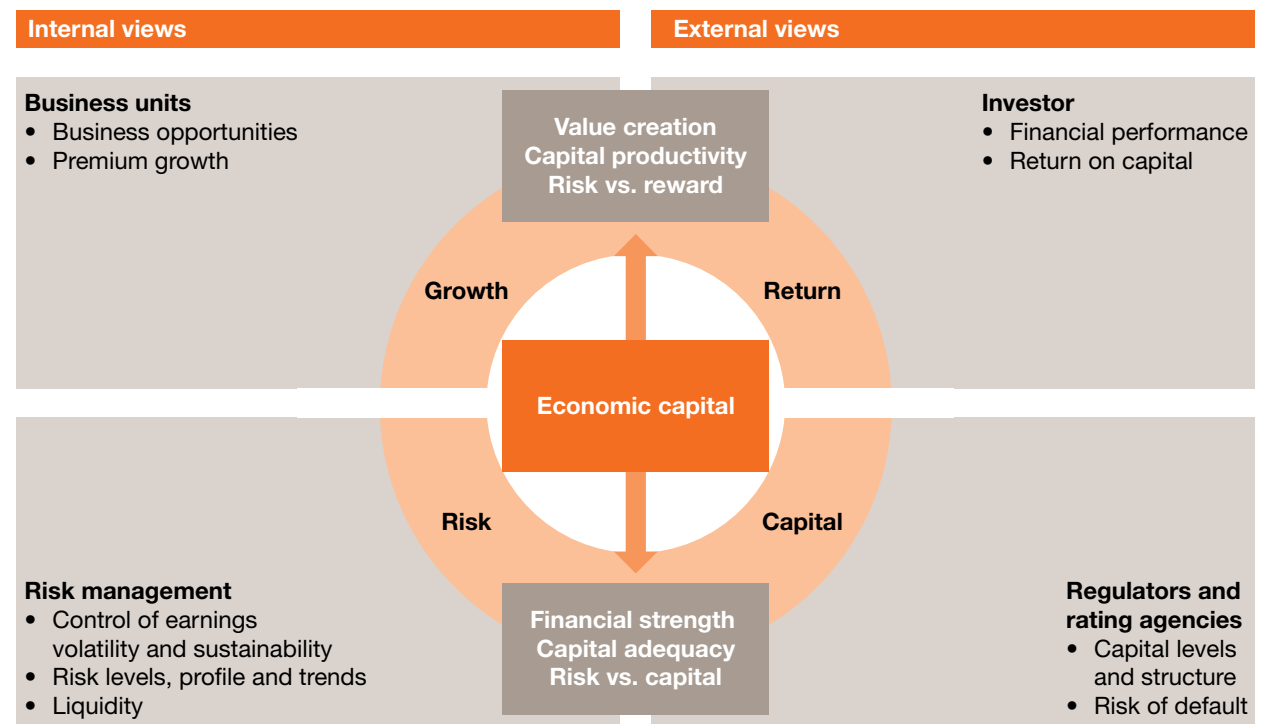
**Industry leaders employ risk-sensitive economic capital measures across their organizations to create aggregate metrics designed to provide insights to key stakeholders.**

Quantification tools should be developed to assess the amount of capital at risk, and these tools should be embedded in the risk management and business planning processes.

A risk-sensitive economic capital measure should balance internal and external views, and the differing perspectives of its users.

A risk-sensitive economic capital model should be an accurate representation of the structure of the business, the way that it is managed, the risks arising in each structural area, and should include all material risks.

The use of an economic capital model can help to make risk quantification relevant day-to-day, and can help organizations embed risk management decisions in the business using a consistent framework.



**PwC has observed that leading insurers' risk management frameworks extend the governance, processes, and analytics of managing risk into how the insurers' businesses are executed along multiple dimensions of their business models.**



***In our view, risk-adjusted performance is a critical input to business planning and decision-making processes.***

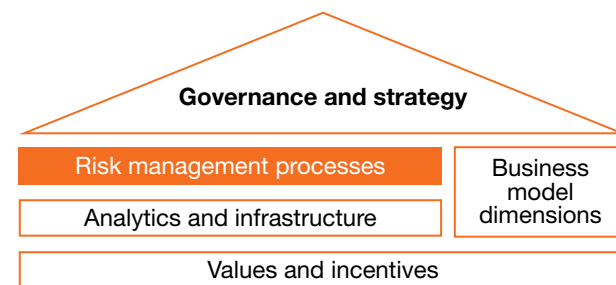
To drive accountability, performance should be measured on a risk-adjusted basis at the business-unit level through P&Ls and balance sheets, and ultimately down to individual functional levels.

Risk-adjusted performance is critical to evaluate risk relative to risk appetite and business planning. While risk-adjusted performance measures exist, they are frequently unavailable or unreliable at more granular levels. This results in:

1. An unbalanced focus on top-line growth.
2. Hindrances to the effective deployment of capital.
3. The creation of detrimental incentive effects from a risk management perspective, as evidenced by the recent financial crisis.

**Risk-adjusted performance measures alone do not guarantee that the right management decisions will be made.**

As part of a general overhaul of management practices, a number of insurers are deploying significant resources to develop and/or improve capabilities in this area. The development of effective risk-adjusted performance measures requires close collaboration among actuarial, risk, finance, and business units.



The use of full balance sheets and P&Ls is an effective way to drive a culture of accountability and ownership for performance and risk at multiple levels in an insurance company. This includes business heads as well as geographic heads. Furthermore, having oversight functions monitoring full risk-adjusted performance for a business or geographic location offers those in the oversight role a full and complete view of business activities and a firsthand sense of the rhythm of the business.

Globally, many insurance companies are adopting some kind of value-based management metric such as cash flow return on investment, economic profit, or risk adjusted return on capital, etc.

**Insurers that mobilize early to establish a credible scenario and stress testing capabilities will be better positioned to underwrite in post-extreme event environments.**

**71%**

More than 70 percent of financial services companies, including insurers, had an enterprise risk management (ERM) strategy in place that is being implemented or will be shortly.<sup>1</sup>

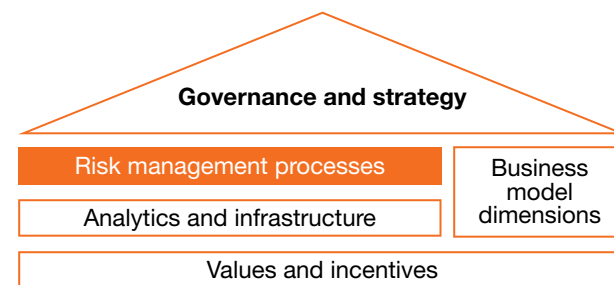
New regulatory requirements such as the Own Risk and Solvency Assessment (ORSA) are forcing insurers to adopt ERM in order to stay competitive.

**Scenarios and stress testing should become business-as-usual management tools.**

PwC expects thorough, rigorous, and forward-looking scenario and stress tests to become integral parts of business-as-usual activities, including business planning and forecasting, asset-liability management, liquidity planning, capital allocation, and performance evaluation processes. In our view, they are even likely to gain prevalence relative to other internal risk management techniques. As a result, insurance companies generally should expand their capabilities and processes in this area. New scenarios will need to be generated and calibrated over time to capture changing macroeconomic conditions and emerging risks. Alignment of scenarios and stress testing with liquidity management also will be necessary. In addition, risk mitigation activities will continue to be center stage.

**Insurers that mobilize early to establish a credible scenario and stress testing program will be well positioned competitively:**

The National Association of Insurance Commissioners (NAIC) is in the process of finalizing the Own Risk & Solvency Assessment (ORSA) Guidance Manual, which will apply to all insurers with direct written premiums greater than \$1 billion at a group level and greater than \$0.5 billion at an individual legal



entity level. Implementation of this regulatory requirement is expected in January 2015, based on 2014 information.

Certain state regulators are not waiting for NAIC's ORSA to be finalized, and have already begun developing enterprise risk management (ERM) program expectations with stress testing components for insurers within their jurisdiction. For example, the New York Department of Financial Services has already issued Circular #14, which gives regulatory expectations for insurers covered in the state.

Rating agencies consider a credible ERM program with scenario and stress testing to be an important component of their review of such programs for rated insurers.

State insurance commissioners and their staff of examiners have already migrated to a risk-based examination format, which includes a review of scenario and stress testing efforts made by insurers. Moving forward, regulatory expectations will include a scenario and stress testing program that is integrated into business-as-usual processes.

<sup>1</sup> Economist Intelligence Unit, The bigger picture: Enterprise risk management in financial services organizations, September 2008.



**Incentive plans are increasingly becoming more closely linked to risk-adjusted performance and mademore transparent.**



Nearly 60 percent of insurance CEOs see shortages of skills as a significant threat to growth—a much higher percentage than in other financial sectors.<sup>2</sup>



More than 80 percent of insurance CEOs anticipate at least some modification in their talent strategy, with nearly 20 percent planning major changes.<sup>2</sup>

1 Mary L. Schapiro, chairman, US Securities and Exchange Commission, Remarks at the Transatlantic Corporate Governance Dialogue, December 15, 2011, [www.sec.gov](http://www.sec.gov), accessed June 18, 2012.

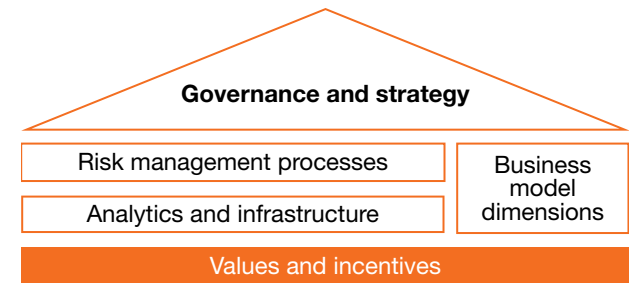
2 PricewaterhouseCoopers, Delivering results, Growth and value in a volatile world, 15th Annual Global CEO Survey 2012, [www.pwc.com](http://www.pwc.com), accessed June 18, 2012.

Recently, the issue of incentives has been heavily debated, especially in the court of public opinion. Shareholders, regulators, and now taxpayers are demanding changes to prevailing practices.

Much of the recent debate has focused on the level of compensation and a perceived missing link to risk-adjusted performance and true profitability. Clearly, bonuses should recognize long-term value rather than short-term gain. To this end, there are increasing calls that effective compensation systems should include vesting periods for options and mechanisms under which bonuses could be forfeited if risk taking is reckless or if performance lags.

Evidence that these issues are gaining attention was heard in a December 2011 speech by Mary Schapiro, SEC chairman. She described the issuance of new rules that “require companies to provide shareholders with an advisory vote on executive compensation at least once every three years. The rules also require an advisory vote on the frequency of say-on-pay votes at least once every six years.”

She further noted that “companies must provide a separate advisory vote regarding certain ‘golden parachute’ arrangements in connection with a merger, acquisition, or other disposition of all or substantially all, assets.” While these advisory votes are non-binding, Ms. Schapiro noted that they “let boards know what shareholders think of compensation arrangements.”<sup>1</sup>



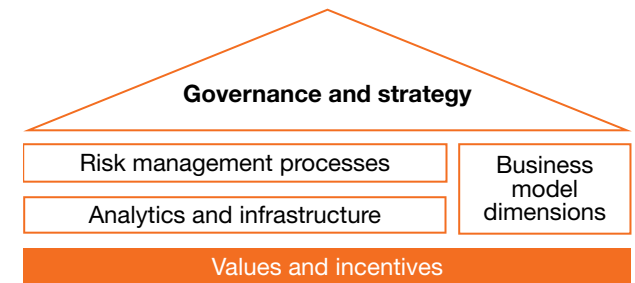
**Until recently, the following options were not seriously considered because long-standing institutional practices prevented them from being proposed.**

The funding of incentive plans for independent control functions, including the corporate risk management function, should be carefully designed not to impede the objectivity of these functions. When business results fund the incentives for a business-line risk manager, this creates an obvious conflict of interest—if not in fact, then certainly in appearance. The same is true for finance and compliance functions. Funding incentives from a well-funded corporate plan are far more suitable.

Periodically, the overall number, complexity, and funding of incentive plans for employees should be evaluated carefully to help ensure that these factors neither result in an undue reduction in management discretion nor a weakened link between individual performance and incentives.

*Changes to risk governance and management will enable cultural shifts that are overdue in many insurance companies.*

By spearheading change in the areas of strategy formulation, risk-adjusted performance measurement, and incentives, risk functions will be positioned to assume a far more proactive posture than in the past.



These changes will require fundamental cultural shifts in the way risk functions operate and interact with the business, and in the risk cultures of insurers as a whole.

The risk cultures of insurers that weathered the recent financial crisis relatively well had the following characteristics:

- **Clear accountability**—Clearly defined roles and responsibilities at all management levels.
- **Full transparency**—Willingness to admit and address mistakes quickly to allow the rapid escalation of issues.
- **Continual improvement**—Implementation of changes based on lessons learned, both positive and negative.
- **Effective change management**—Ability to recognize the need for change combined with the ability to execute change.
- **Collegial tension**—Culture in which challenging colleagues within the organization is an expected behavior.
- **Equal stature**—Neither risk and control functions nor the business has override authority.

***Insurers that regularly evaluate, emphasize, and update their risk management capabilities will be better positioned to meet the expectations of policyholders, shareholders, and regulators, and to leverage their strengths competitively.***

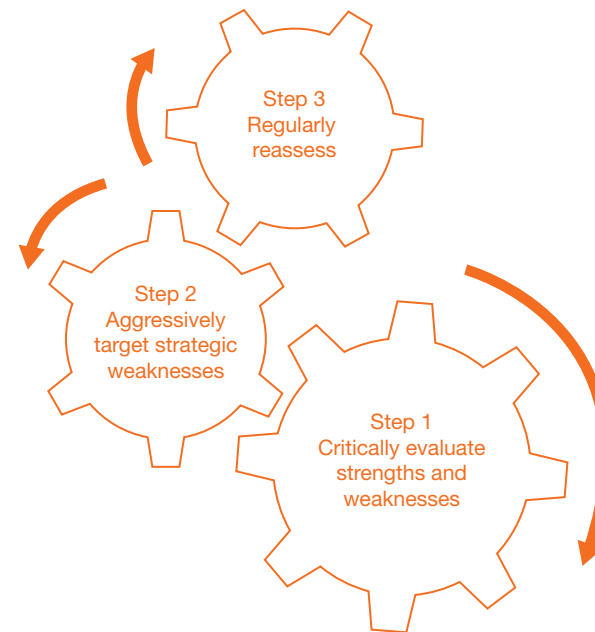
**Insurance companies should evaluate and adapt their risk management capabilities to serve as part of an overall competitive strategy.**

Regulatory expectations across the globe are that risk management effectiveness should be certified by the executive management team and ultimately the board. Regulators expect that, as part of the capital planning process, insurers will need to help ensure that the leadership has sufficient expertise and the ability to manage the risks presented by: (1) the current economic environment, and (2) the insurer's business architecture. Policyholders and shareholders clearly have similar demands.

To meet this expectation, and to continually improve the effectiveness of risk management, the board and executive management will need to periodically assess risk governance and oversight structures, culture, incentives, risk management and measurement processes, as well as resources and the supporting actuarial, risk, financial, and IT infrastructure.

To be effective, this assessment should be:

- Conducted regularly and independently of line management.
- Focused on identifying actionable improvement opportunities.
- Shared with the board.












## ***Competitive intelligence***




*Our observations of  
industry practices.*

*The following table sets out a sample of five areas of current insurance enterprise risk management practices that are broadly representative of what we observe.\**










Insurance group 1	Insurance group 2	Insurance group 3	Insurance group 4	Insurance group 5
<p> <b>Risk appetite:</b> A high-level risk appetite statement was written and approved by the board. It encompasses all risks, but focuses on financial risks.</p> <p> <b>Organization:</b> A chief risk officer (CRO) has been appointed, but the role is viewed as more of an analytical function with decision-making falling to the CEO, chief financial officer and chief investment officer.</p>	<p> <b>Risk appetite:</b> A risk appetite statement is documented and approved at the board level. The statement contains qualitative and quantitative operating corridors, and considers both insurance and non-insurance risks.</p> <p> <b>Organization:</b> The CRO function is carried out by the chief operating officer. Culturally, risk management is respected, but is sometimes seen as internal compliance, in particular by underwriting.</p>	<p> <b>Risk appetite:</b> A risk appetite statement is approved at the board level. The company targets an overall return on capital, and has guidelines on the types of business it will write.</p> <p> <b>Organization:</b> A dedicated CRO heads the risk management function, reporting directly to the CEO. Risk management works closely with the business units, and failure to manage risk is not acceptable.</p>	<p> <b>Risk appetite:</b> Management aims for a conservative risk profile with low volatility, and uses facultative reinsurance and hedging to mitigate large individual exposures when necessary, and catastrophe reinsurance for aggregate exposures. The primary focus for risk management is insurance risk. Operational risk is not considered material.</p>	<p> <b>Risk appetite:</b> Formal risk appetite statements have been prepared, and are very thorough, but they are used more for external disclosure purposes than for business management.</p> <p> <b>Organization:</b> A dedicated CRO reports to the board and uses a formal risk management framework to guide the work of the enterprise risk function and dialogue with the board.</p>

\* We are happy to share further leading practice-based insights with you at your request.

 Leading
  On Par
  Lagging



*The following table sets out a sample of five areas of current insurance enterprise risk management practices that are broadly representative of what we observe.\**

Insurance group 1	Insurance group 2	Insurance group 3	Insurance group 4	Insurance group 5
 <b>Risk mitigation:</b> The firm has taken innovative and highly effective steps to manage its financial risk.   <b>Risk mitigation:</b> However, it tends to lag with respect to managing other risks.	 <b>Risk mitigation:</b> Detailed underwriting limits consider gross and net risk exposures, and underwriters operate within a pricing range that includes a technical element. Clear procedures are in place to consider limit exceptions.	 <b>Risk mitigation:</b> Insurance risk is the principal focus for the risk management function, and the potential for material risk is not usually expected in other areas.   <b>Risk mitigation:</b> Underwriting is subject to limits with clear procedures for exceptions. However, no defined capital allocation is performed at the business unit level.	 <b>Organization:</b> Responsibility for risk management is shared. There is no dedicated CRO—the role is shared between the compliance officer and the head of underwriting.   <b>Risk mitigation:</b> Underwriting guidelines are in place and revised by the board as necessary. However, pricing is predominantly market driven, and quarterly reports of underwriting statistics are submitted to the board.	 <b>Organization:</b> The role of risk management is to advise and recommend. There is little-to-no authority to influence decision making outside formal reporting.   <b>Risk mitigation:</b> Underwriting guidelines are carefully documented and controlled by executive management across the organization.

\* We are happy to share further leading practice-based insights with you at your request.

---

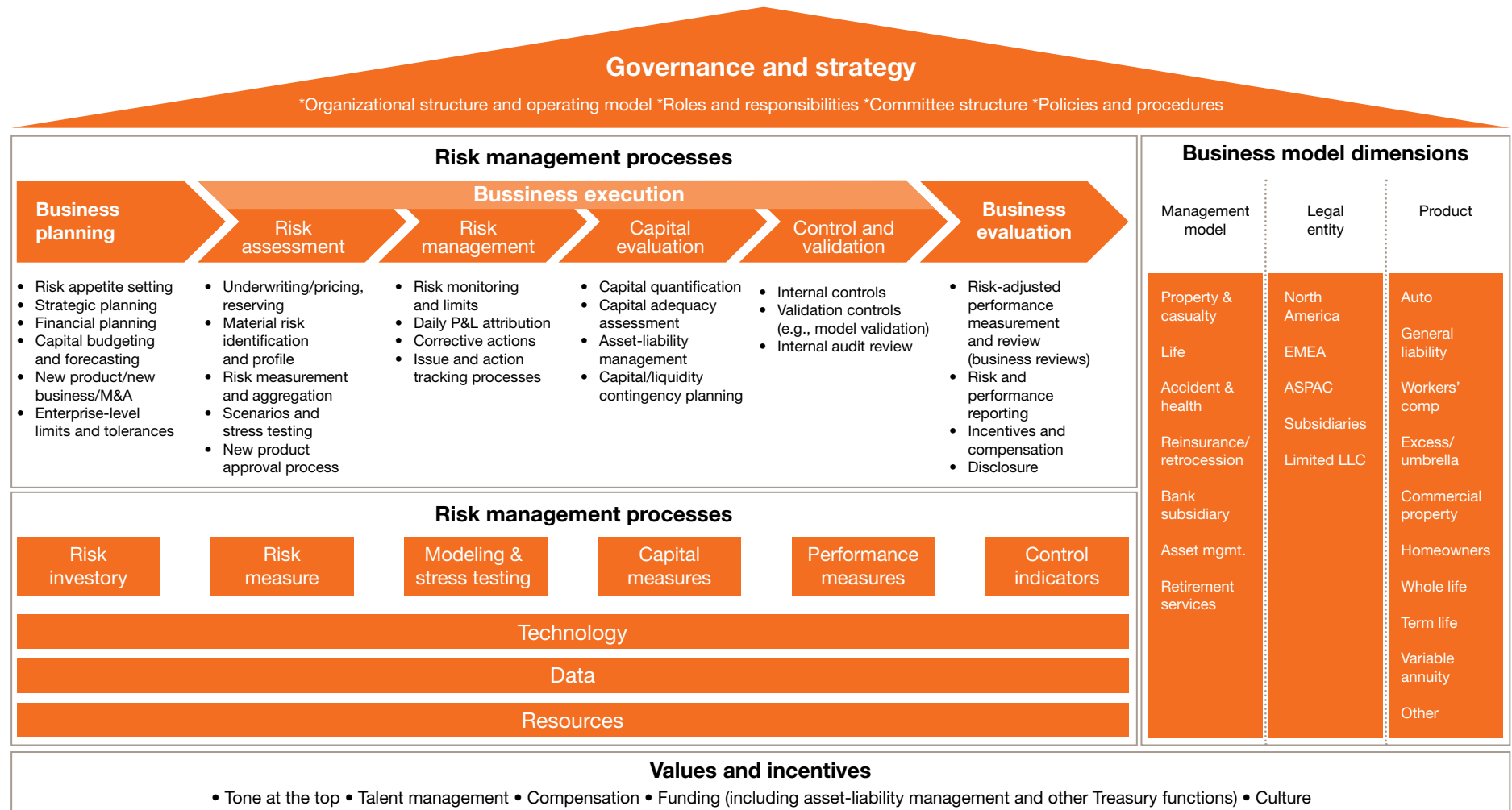
## *A framework for response*



*Our recommended approach  
to the issue.*

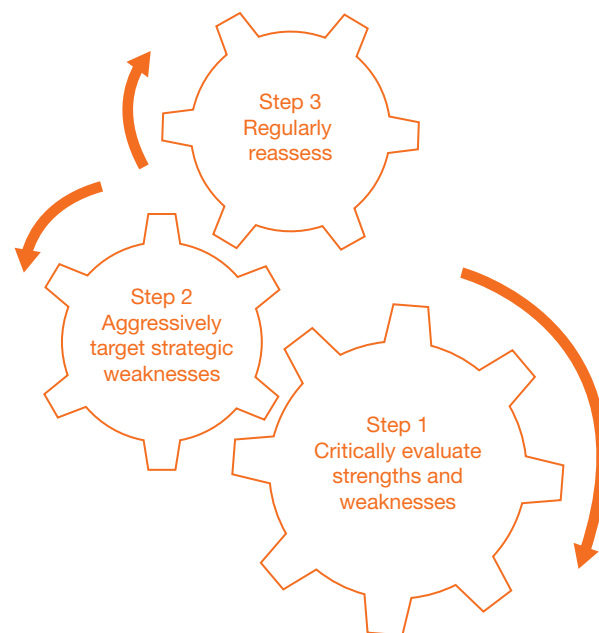
## Key components of a leading practices-based enterprise risk management framework.

The risk management framework extends the governance, processes, and analytics of managing risk into how the business is executed along the multiple dimensions of the business model.

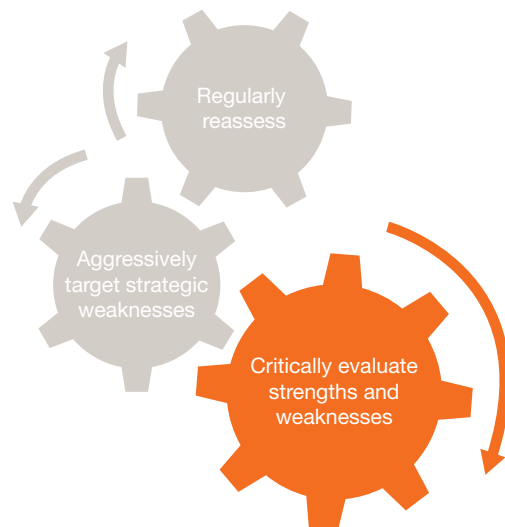


***Insurance company executives can immediately initiate three steps to begin the process of fundamentally improving risk management.***

The appetite for change expressed by regulators, investors, and rating agencies is genuine and lasting. The challenge for most insurers lies in identifying, prioritizing, implementing, and harvesting the benefits from improvements in risk management, and maintaining those benefits as the insurer's environment changes, creating new and different demands. We believe that insurers should take the following three steps to begin tackling these challenges today:



**Step 1—Critically evaluate the strengths and weaknesses in the way risk is governed and managed across the enterprise.**



**Critically evaluate strengths and weaknesses.**

To be effective, the diagnostic should be conducted independently from—but have the support of—line management.

The diagnostic should be holistic—that is, the diagnostic should consider, both individually and jointly, the risk management capabilities of the business, the risk and control functions, compliance, and internal audit.

The review should consider the adequacy of governance and organization, culture and incentives, risk management and measurement

processes, as well as resources and the supporting risk IT infrastructure. The review should not only take into account the size and complexity of the insurer, but also be based on a systematic evaluation framework.

This framework should draw upon leading practices, recent regulatory publications, industry papers, and lessons learned from analyzing other financial institutions during the financial crisis.

Such an analysis is more comprehensive than the traditional reviews conducted by compliance or internal audit.

ERM assessment dashboard

	Firm	BU. 1	BU. 2	BU. 3	BU. 4	BU. 5	LE 1
Summary views of enterprise-wide level risks	Business environment	—	▲	▲	▲		
	Catastrophe risk mgmt.	▲					
	Market risk mgmt.	—					
	Credit risk mgmt.	—					
	Operational risk mgmt.	—					
Drill-down by risk type and business line	Compliance	—					
	Financial control	—	■	■	■		▲
	Human resources	—					
	Information security control	—					
	Model control and valuation	—	▼				
Support of risk rating and trend through quantitative indicators and qualitative descriptions	Operations control	—		▼			
	Technology and data control	▼					
	Aggregate BU rating	—	—	—	—	—	—
	Regulatory capital(\$b)						
	Economic capital (\$B)						
Summary indicators	Net required capital (\$B)						
	PML/var (\$B)						
	TCE/tvar (\$M)						
	Operational risk incident count						
	Operational risk losses						
Risk stripe firm-level ratings		2Q11 rating	Risk rating driver				References
Business environment		—	Include commentary on drivers and rationale for risk rating				Low
Liquidity risk management		▲	Include commentary on drivers and rationale for risk rating				Moderate
Operational risk management		—	Include commentary on drivers and rationale for risk rating				High
Compliance		—	Include commentary on drivers and rationale for risk rating				Critical

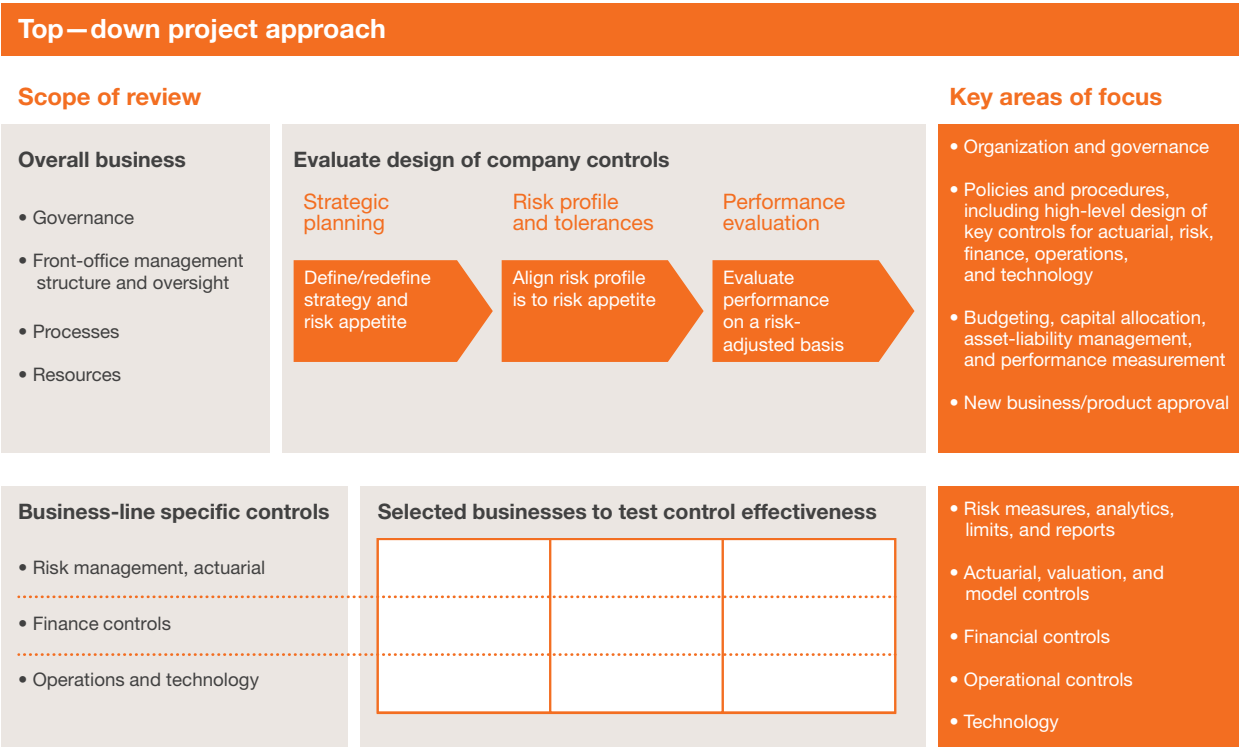


**Step 1—Critically evaluate the strengths and weaknesses in the way risk is governed and managed across the enterprise.**

The following steps can be used to structure a detailed evaluation of the strengths and weaknesses:

A high-level review of the overall framework for governance and controls over the insurer’s platform and businesses against leading practices, including assessing adequate linkages between strategy, governance, risk profile, performance evaluation, and supporting infrastructure, as well as key controls and processes for actuarial, risk management, finance, operations, and technology.

High-level reviews of business unit- and geography-based control environments, including control design, control effectiveness, and control consistency in the areas of actuarial, risk management, finance, operations, and technology.



## Step 2—Aggressively target strategic weaknesses through a coordinated program of actionable initiatives.



### Aggressively target strategic weaknesses.

Weaknesses in risk management capabilities, whether previously known or identified through the end-to-end review, should be prioritized and targeted for remediation.

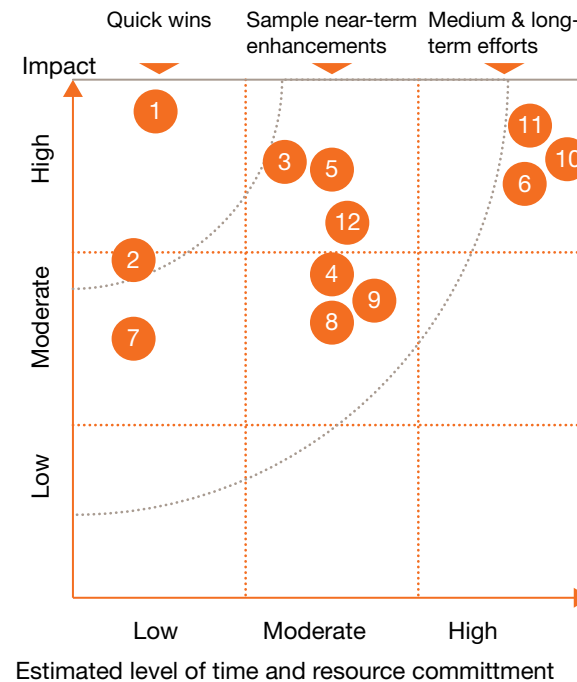
Next, executive management and the board should have a portfolio of actionable initiatives to address these weaknesses.

In many cases, these initiatives will require fundamental change in some areas, such as those outlined previously: implementation of

risk-adjusted performance measurement tools, rebalancing of the role of the enterprise risk function relative to the business, and turning scenarios and stress testing into a business-as-usual management tool.

Executing these initiatives will take time, stamina, and coordination, and bring with them a new set of risks.

Clients who have done well in this area have dedicated program management resources to this initiative and focused on long-term actions and benefits.



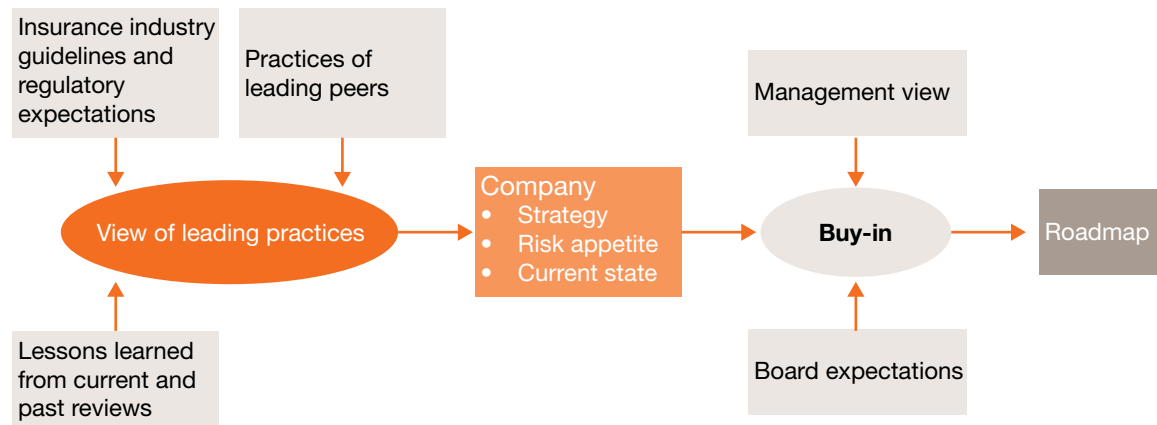
#### Proposed initiatives

1. ERM policy and charter of the ERM function
2. Committee effectiveness
3. Strategic risk
4. Credit risk
5. Risk aggregation and reporting
6. Catastrophe risk
7. Risk services
8. Rationalization of ERM activities
9. Operational risk
10. Risk appetite/economic capital
11. Risk IT infrastructure
12. Communication & program management

**Step 2—Aggressively target strategic weaknesses through a coordinated program of actionable initiatives.**

The figure below illustrates the recommendation development process:

- Develop a view of leading practices based on insurance industry guidelines, practices of leading peers, and lessons learned from past experience.
- Link this view to the company's strategy, risk appetite, and current state.
- Gather feedback and secure buy-in from external stakeholders, including management and the board.
- Develop roadmap.

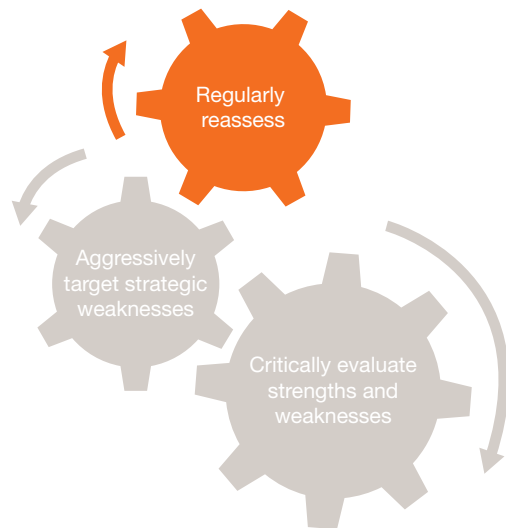


## Step 2—Aggressively target strategic weaknesses through a coordinated program of actionable initiatives.

Step	Example deliverables
Project launch and preliminary review	<ul style="list-style-type: none"> <li>Detailed project plan</li> <li>Communications and stakeholder management plan</li> <li>Interview list and outline of key questions</li> <li>Documented interviews and documented review observations</li> <li>Preliminary list of issues and gaps identified</li> </ul>
Business-line and geographic functional reviews	<ul style="list-style-type: none"> <li>Risk profiling analysis (by business unit and geography)</li> <li>Draft results of selected business unit reviews summarized by product line and by geography</li> </ul>
Findings and assessment	<ul style="list-style-type: none"> <li>Draft report of high-level findings and recommendations</li> <li>Preliminary list of open issues</li> </ul>
Roadmap and next steps	<ul style="list-style-type: none"> <li>Phase 1 final report</li> <li>Roadmap</li> <li>Next steps</li> </ul>

Proposed initiatives	Estimated timeframes									
	201X		201X				201X			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. ERM policy and charter of the ERM function										
2. Committee effectiveness										
3. Strategic risk										
4. Credit risk										
5. Risk aggregation and reporting										
6. Catastrophe risk										
7. Risk services										
8. Rationalization of ERM activities										
9. Operational risk										
10. Risk appetite/economic capital										
11. Risk IT infrastructure										
12. Communication & program management										

***Step 3—Regularly reassess the adequacy of risk management capabilities relative to the size and complexity of the enterprise.***



**Regularly reassess functional adequacy.**

Complex financial institutions like insurance companies do not stand still, nor should their risk management capabilities.

Businesses that fared better during the recent financial crisis are characterized by their ability to recognize and act upon the need for continuous improvement.

We recommend that insurers reassess their risk management capabilities at least annually and report the results to their boards' audit or risk committees.

Changes to the size and/or complexity of the insurer should also trigger the reassessment of risk management capabilities.

A well-designed, well-executed, and regular review program will be a key contributor to maintaining a clean bill of health, and it will provide the board with comfort that the insurer's risk management capabilities remain aligned with the demands of its business architecture, even as that architecture evolves over time.



## Recommendations for risk management leading practices in organization and governance.

PwC has taken into consideration findings of recent industry studies such as those published by the Seniors Supervisor Group (SSG), Institute of International Finance (IFF) and Counterparty Risk Management Policy Group (CRMPG), and applied them to insurance companies.

Areas of focus	Risk management leading practice recommendations
Board role, committees, and composition	Boards have an essential oversight role in risk management. In attending to this duty, each board should include members who have an adequate understanding of insurance risks. Each board should have the means to understand the risk profile of the enterprise and its performance against that profile.
Board role, committees, and composition	The board should consider, depending on the characteristics of the insurer, whether there should be separate audit and risk committees. It should also consider whether at least some members of the risk committee, or its equivalent, should be individuals with technical insurance sophistication in risk disciplines (for example, underwriting, actuarial).
Board role, committees, and composition	The board should review and periodically affirm the insurer's risk appetite as proposed by senior management. In doing so, the board should assure itself that management has comprehensively considered the insurer's risks and has applied appropriate processes and resources to manage those risks.
Board role, committees, and composition	Scenarios and stress testing need to have a meaningful impact on business decisions. Senior management and boards have an important role evaluating scenarios and stress testing results and their impact on the risk profile of the insurer.
Organizational structure, operating model	The CRO should have a sufficient degree of autonomy, be independent of the line of business management, and have sufficient seniority and internal voice to have a meaningful impact on decisions.
Organizational structure, operating model	Insurers should strongly consider having the CRO report directly to the CEO and assign the CRO a seat on the management committee. The CRO should be engaged directly on a regular basis with an audit or risk committee of the board.
Firm organizational structure, operating model	Thorough, enterprise-wide approaches to risk management should be implemented by all insurers. Such an approach should allow insurers to identify and manage risks across product lines and business units. Robust communication mechanisms should be established so that the board, senior management, business units, and control functions can timely and effectively exchange information about risk.
Organizational structure, operating model	Finance and treasury functions should operate in a coordinated and cohesive manner with actuarial and risk management functions to promote checks and balances.
Organizational structure, operating model	Risk management and other critical control functions should be positioned within all insurance companies in a way to help ensure that their actions and decisions are appropriately independent of the income-producing business units. This would generally mean having a CRO with a direct line of responsibility to the CEO, and having the CEO and the board take a highly active role in ensuring that the culture of the organization as a whole recognizes and embraces the independence of its critical control functions. Even without direct reporting, the CRO should have a clear line of communication to the board.

---

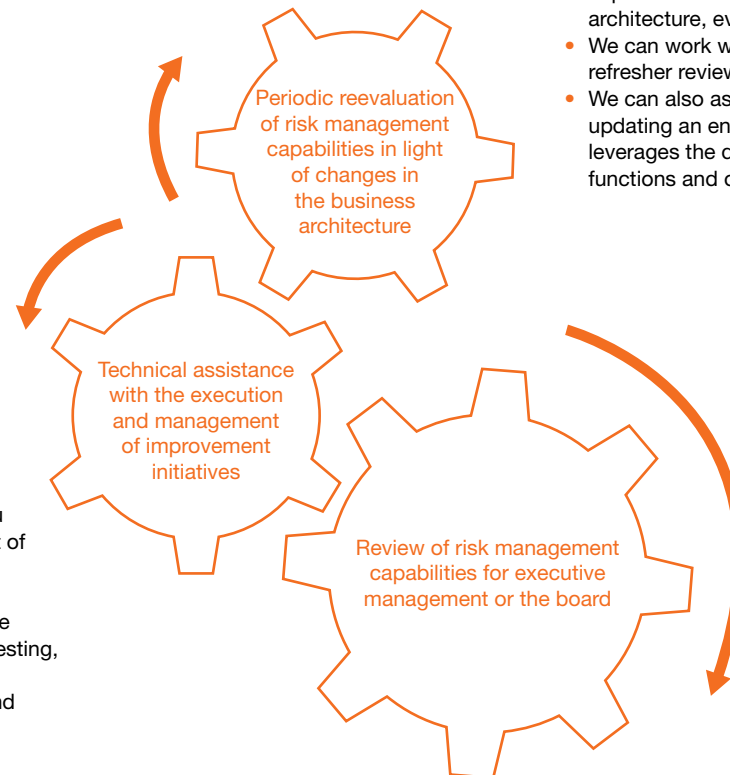
## *How PwC can help*



*Our capabilities and  
tailored approach.*

## PwC's core competencies related to risk management

- We draw upon a deep pool of resources to assist you in the detailed planning, execution, and management of implementation initiatives.
- We have assisted clients in areas such as corporate governance, reporting to executive leadership and the board, risk-adjusted performance measures, stress testing, and actuarial/risk systems.
- We have extensive experience in the management and communication challenges of large-scale or strategic transformation projects executed at all levels of an insurance company.
- We typically work directly with initiative owners in risk areas, actuarial and control functions, infrastructure and support groups, and business lines.



- A well-designed, well-executed, and regular review program will be a key contributor to maintaining a clean bill of health, and it will provide the board with comfort that the insurer's risk management capabilities remain aligned with the demands of its business architecture, even as that architecture evolves over time.
- We can work with your corporate risk function to conduct regular refresher reviews of all or parts of the risk management framework.
- We can also assist your internal audit function with setting up and updating an enterprise risk management (ERM) audit program that leverages the detailed organizational knowledge of internal audit functions and our understanding of leading practices.

- At the diagnostic stage, PwC can work for your senior leadership team or board to conduct an independent review of your insurance company's risk management capabilities, drawing upon our experienced core team and using our proprietary diagnostic tool. Ideally, such a review should consider governance and organization, culture and incentives, risk management processes, as well as resources and infrastructure; however, the scope can be tailored to meet more targeted needs.
- In practical terms, our engagement is often managed through the corporate risk, corporate actuarial or internal audit functions, or performed under the direction of counsel.
- We provide executive management and the board with an independent assessment of the insurer's capabilities and an actionable roadmap of recommended improvement opportunities.

## PwC's market-tested approach

### Determine strategic impact:

- Property and casualty
- Life
- Variable annuity
- Accident and health
- Reinsurance/retrocession
- Asset management
- Banking subsidiaries
- Retirement services

### Determine impact on:

- Finance organization
- ROI/ROE
- Capital, asset-liability mgmt., liquidity
- Efficiency ratios
- Compensation structures
- Investor relations

### Key areas of focus:

- HR organization
- Workforce management
- Compensation
- Mobility
- Training

### Define and implement key components:

- Business portfolio analysis
- Program governance
- Project tracking, business planning, and actuarial/reporting
- Staffing and HR management
- Vendor management

### Key areas of focus:

- Target operating models
- Core platform modernization
- Efficient sourcing models
- In-house vs. vendor vs. outsourced platforms
- Infrastructure rationalization

### Manage the impact on:

- Risk profile
- Risk organization
- Regulatory, rating agency, accounting, and economic capital
- Compliance activities
- Regulatory reporting



## PwC Advisory



We look across the entire organization—focusing on strategy, structure, people, process, and technology—to help our clients improve business processes, transform organizations, and implement technologies needed to run the business.

Client needs	Issues PwC helps clients address
Manage risk and regulation	<ul style="list-style-type: none"> <li>• Building a risk resilient organization</li> <li>• Managing enterprise resource planning, investment, and project execution risk</li> <li>• Safeguarding the currency of business; keeping sensitive data out of the wrong hands</li> <li>• Promoting capital governance and accountability</li> <li>• Assessing and mitigating corruption risk in (global) business operations</li> </ul>
Build effective organizations	<ul style="list-style-type: none"> <li>• Establishing effective strategic sourcing and procurement</li> <li>• Realizing competitive efficiencies through effective business planning</li> <li>• Transforming the close and consolidation process to work for you rather than against you</li> </ul>
Reduce costs	<ul style="list-style-type: none"> <li>• Driving efficiency through shared services</li> <li>• Redesigning finance to realize operational efficiencies</li> <li>• Taking control of cost through effective spend management and cash forecasting practices</li> </ul>
Leverage talent	<ul style="list-style-type: none"> <li>• Defining and implementing an effective HR organization</li> <li>• Rethinking pivotal talent</li> </ul>
Innovate and grow profitably	<ul style="list-style-type: none"> <li>• Reshaping the IT function into a source of innovation</li> <li>• Transforming business information to drive insight and fact-based decision making</li> <li>• Evaluating acquisition and divestiture strategies to position for the future</li> <li>• Realizing deal synergy and value</li> <li>• Developing sustainability programs that add value</li> </ul>

## ***What makes PwC's Financial Services practice distinctive.***

<b>Integrated global network</b>	With 34,000 industry-dedicated professionals worldwide, PwC has a network that enables the assembly of both cross-border and regional teams. PwC's large, integrated global network of industry-dedicated resources means that PwC deploys the right personnel with the right background on our clients' behalf whenever and wherever they need it.
<b>Extensive industry experience</b>	PwC serves multi-national financial institutions across banking and capital markets, insurance, the asset management/hedge fund/private equity industry, payments, and financial technology. As a result, PwC has the extensive experience needed to advise on the portfolio of business issues that affect the industry, and we apply that knowledge to our clients' individual circumstances.
<b>Multi-disciplinary problem solving</b>	The critical issues that financial services companies face today affect their entire business. Addressing these complexities requires both breadth and depth, and PwC service teams include specialists in strategy, risk management, finance, regulation, and technology. This allows us to provide support to corporate executives as well as key line and staff management. We help address business issues from client impact to product design and from go-to-market strategy to operating practice across all dimensions of the organization. We feel equally comfortable helping the heads of business and the heads of risk, finance, operations, and technology; we have helped clients solve problems that cross all of these areas.
<b>Practical insight into critical issues</b>	In addition to working directly with clients, our practice professionals and Financial Services Institute (FSI) regularly produce client surveys, white papers, and points of view on the critical issues that face the industry. These publications—as well as the events we stage—provide clients with new intelligence, perspective, and analysis on the trends that affect them.
<b>Focus on relationships</b>	PwC US helps organizations and individuals create the value they are looking for. We are a member of the PwC network of firms with 169,000 people in more than 158 countries. We are committed to delivering quality through assurance, tax, and advisory services.



## ***Appendix***



*Select qualifications.*

*Enterprise risk  
management—Leading  
international insurer*

Issues	<p>PwC was engaged to conduct an independent review of the client’s enterprise risk management (ERM) function relative to leading practices, with the overall objective of enhancing the client’s target ERM operating model relative to its planned progression. Objectives of the review included: (1) assessment of the quality of the ERM function, (2) determination of a clear target state by integrating the client’s strategic priorities with leading industry practices, and (3) development of actionable, pragmatic recommendations to migrate the ERM framework from the current state to the target state.</p>
Approach	<p>PwC used a five-step approach in its review:</p> <ul style="list-style-type: none"><li>• Reviewed documents related to the ERM program.</li><li>• Conducted interviews with the project team and select members of executive management.</li><li>• Compared existing ERM practices to the COSO Enterprise Risk Management Framework, ERM leading practices, and PwC’s experience with companies operating ERM programs.</li><li>• Facilitated working sessions with the client’s management team to discuss preliminary findings and considerations.</li><li>• Issued a final report that included considerations for management to enhance the ERM operating model.</li></ul>
Benefits	<p>PwC’s work involved closely partnering with the client over an extended period of time to:</p> <ul style="list-style-type: none"><li>• Help redefine the client’s ERM operating model relative to its stated strategic objectives and the practices among leading industry peers.</li><li>• Help develop a clear roadmap towards a target state ERM framework and operating model.</li></ul>

## Enterprise risk management—Global insurance group

---

### Issues

The client's ERM program, while developed, largely focused on the group as a whole, not on the risk practices of the business units. The client focused considerable resources toward complying with Solvency II in the UK, but had not yet begun to focus on the evolving regulatory requirements within other jurisdictions. Our client sought our assistance with: (1) developing a process for embedding ERM within their business units globally, leveraging the work of the group ERM team and the Solvency II program team; (2) working with business units to enhance business processes to embed ERM and the use of the group enterprise content management; (3) reviewing the existing business units' governance to assess its effectiveness for supporting ERM, Solvency II, and evolving regulatory requirements; and (4) developing a system for documenting compliance with ORSA by solo entities that would be sustainable over time.

---

### Approach

Leveraging the ERM and Solvency II work already performed and underway, PwC helped enhance the client's ERM program by developing a project plan for embedding ERM into business processes. This involved working with business unit leaders to develop programs for enhancing and ultimately providing evidence of strong ERM practices and achieving local buy-in for all enhancements. In addition, we helped perform a governance assessment for each business unit (and the solo entities to which they were aligned), recommended enhancements, and provided support during implementation.

We also worked with solo entities to determine any unique needs or requirements of local regulators that might not be addressed by the group ERM and Solvency II program and recommended a process for demonstrating compliance with ORSA by solo entity and for the group.

---

### Benefits

As a result of our work, the client was able to:

- Obtain solo entity buy-in for each recommended enhancement, focusing on the longer-term benefits to be realized by the business units.
  - Develop a sustainable, group-wide ORSA process that would avoid long-term duplication of effort.
-

## Enterprise risk management—Global insurance company

---

### Issues

After a review of its ERM function, the client sought advice and detailed support to design and deliver a program to implement a wide range of business-driven change to meet enhanced regulatory expectations. The client's primary objectives were to: (1) redesign and implement revised risk management and business practices to improve performance and meet Solvency II requirements; (2) develop its ERM function consistent with industry leading practices; (3) align these developments with the CEO's vision for risk; and (4) communicate effectively to the regulator to help ensure compliance with Solvency II.

---

### Approach

The PwC team worked to help design and implement the overall Solvency II program for the client, providing program management assistance throughout. The new program involved defining an ERM target operating model. To help define the new operating model, PwC undertook several key activities:

- Assessed the wider business impact of Solvency II.
- Helped define Pillar 1 reporting requirements and internal model enhancement needs.
- Helped revise a risk appetite statement, identified risk management information requirements, a risk governance and organization structure, and an updated risk inventory.
- Helped revise the risk management policy.
- Helped define key steps to embed a stronger risk management culture.
- Helped define an approach to integrate the enhanced risk management framework with an internal capital model.

---

### Benefits

PwC's flexible resource model was able to provide targeted services to meet the client's critical requirements, such as identifying regulatory requirements between lead and local regulators, and providing distinct views on Solvency II.

---

## ***Risk modeling—Global insurance group***

---

### **Issues**

The client, a large global insurer domiciled in the US, developed a robust internal economic capital model (ECM), which was used to establish business and product level return targets and to monitor and manage ongoing risk and performance. The client also envisioned additional, potential uses of its ECM.

Given the extraordinary strategic significance of the model, the client elected to have their ECM externally validated, thereby providing additional comfort to senior management and the board that the model functioned as intended. In addition, the client needed advice on leading practices for compliance with Solvency II as well as validation of the ECM for its Internal Model Approval Process (IMAP) within the UK.

---

### **Approach**

PwC assembled a team of ECM experts to perform a thorough validation of the client's ECM over an aggressive time period. The approach was designed to answer two key questions: (1) Does the model work as intended?, and (2) Is the model used properly? Our detailed validation consisted of a combination of extensive quantitative testing and qualitative reviews.

The delivered results reflected information gathered during interviews, documentation reviews, hands-on use of the model, and explicitly designed validation tests tailored to the client's ECM structure. In addition, we conducted two "future use" workshops, engaging the client in discussions about ways in which the ECM could be used to further inform strategic decisions. We prepared a Solvency II gap analysis for the UK subsidiary and performed the independent validation of the UK model.

PwC also conducted a senior management workshop to provide the client's management with an overview of Solvency II so that it could be compared to the US regulatory environment. The overview also served as a forum for discussing the most significant Solvency II unknowns and the potential impact of those unknowns on the client, as well as a forum for discussing the most significant challenges of meeting Solvency II compliance.

---

### **Benefits**

PwC worked closely with the client team to deliver the project efficiently and effectively, helping business leaders understand the implications of Solvency II to enable implementation decisions. We completed our work in a manner that could be highly leveraged by the client, using global resources to tailor the solution to the client's specific needs.

---

***Risk modeling—  
Top-three global  
reinsurance group***

<b>Issues</b>	PwC assisted a global life reinsurance group with the design and implementation of a sophisticated economic capital framework that meets industry standards and evolving regulatory expectations. The client, a large global reinsurer domiciled in the US, recognized that the existing, simplified economic capital methodology and processes did not align with its risk profile. Given the complex nature of the business and its unique risk profile, the objective was to develop a customized solution that included robust risk quantification and practical approaches that would provide usable results to support decision making. The client expressed a need to work with industry practitioners and specialists that had already built leading practice economic capital frameworks for industry peers.
<b>Approach</b>	PwC assembled a team of risk management and economic capital specialists with both industry-practitioner and consulting expertise. An end-to-end economic capital framework was designed and implemented over a nine-month period. This framework included customized methodology refinements, and robust processes focused on calibration, calculations and reporting for each risk type, in addition to addressing risk aggregation, diversification, and allocation.
<b>Benefits</b>	PwC and the client team partnered to enable an effortless transition to a new economic capital platform to support decision-making. Subsequently, the client requested additional subject matter advisors to support further refinements to their economic capital framework to compete with industry leading practices.



## Internal and external reporting—European insurance group

---

### Issues

A European group wanted to use economic capital more efficiently in its insurance risk reporting, and in particular wanted to find a way to improve risk-based decision-making. The client wanted to put in place a process for using economic capital to better manage its insurance risk portfolio in a way that insurance risk results could be monitored against expected levels to enable strategic decision making.

---

### Approach

PwC identified an appropriate limit framework for each of the client's insurance risks, setting absolute limits that would help ensure the insurance risks remained within risk appetite and tolerance levels, which would be used to measure performance through green, yellow, and red zones. Our team prepared a revised insurance risk management information report that showed economic capital, risk exposures, trends, and other key risk indicators in relation to appetite thresholds over time and against business plan levels. We helped develop potential risk management actions supported by metrics that could be tracked by management and the risk committee. We also helped create a process for linking risk management and the business planning cycle that facilitated more effective capital allocation over time.

---

### Benefits

PwC helped the client develop an efficient insurance risk management process that is overseen by its risk committee. The identification of insurance risk appetites and thresholds enabled monitoring of performance in a way that allowed management to take timely action to remain within its risk appetite. A plan was also developed to improve the longer-term linkage of the limit framework to the business planning process. As an added benefit, the limit framework enabled enhanced linkage of risk management with the business planning cycle across businesses, risk management and actuarial functions, and treasury and finance functions.

---

## ***Stress testing framework and planning—UK life insurance subsidiary of a European group***

---

### **Issues**

A UK life insurance subsidiary needed to formalize its approach to stress testing in the preparation of economic and regulatory capital. Although stress testing was already used, the process was not formalized, and there was no consistency in the assumptions and approach on appropriate metrics to be used over time. Governance of stress testing, and the use of results generated by stress testing, lacked clarity and consistency.

---

### **Approach**

PwC helped develop a roadmap from the current position to the desired end state. In conducting this work, PwC completed a review of the existing approach to setting stress testing assumptions including:

- Individual stress testing levels for different risk variables.
- Scenario-based stresses combining multiple risk events.
- Reverse stress scenarios under which business model breakdowns are identified.

PwC also reviewed the frequency, timing, and methods employed in performing the stress tests, and discussed with management a governance approach for using stress testing results. The approach was benchmarked against approaches used by other companies.

The PwC team also investigated how stress-testing results were used in decision making and how much information about stress testing was presented to the client's executive management.

Finally, PwC helped prepare a roadmap to improve the stress-testing framework and a draft response to the regulator.

---

### **Benefits**

PwC provided the client with a clear roadmap and resource estimates to create a more robust process for stress testing economic and regulatory capital.

The PwC team also helped identify ways to improve the use of the stress testing results and to embed the results in managements decision-making processes.

Finally, the client received a draft communication to its regulator that outlined planned improvements, and provided the regulator with assurance that any concerns it may have would be timely addressed.

---

---

*To have a deeper conversation, please contact:*

---

<i>United States</i>	<i>Joe Calandro</i> <i>New York</i>	joseph.calandro@us.pwc.com +1 646 471 3572
	<i>Paul Delbridge</i> <i>New York</i>	paul.p.x.delbridge@us.pwc.com +1 646 471 6345
<i>Asia</i>	<i>James Chang</i> <i>Beijing</i>	james.chang@cn.pwc.com +86 10 6533 2755
	<i>Immy Pandor</i> <i>London</i>	immy.pandor@uk.pwc.com +44 0 20 7804 0812
<i>Europe</i>	<i>Achim Bauer</i> <i>London</i>	achim.r.bauer@uk.pwc.com +44 0 20 7212 1405

We would like to thank the following for their contributions towards this publication:

Fernando de la Mora	Alistair Macpherson	David Scheinerman
Miles Everson	Zubin Mogul	Tom Sullivan
John Garvey	Brian Paton	Jamie Yoder
Paul Horgan	Mark Purowitz	
Henry Jupe	Anand Rao, Ph.D.	

"Too important to fail: Insurance company enterprise risk and capital management capabilities," PwC FS Viewpoint, September 2012.  
[www.pwc.com/fsi](http://www.pwc.com/fsi)

© 2012 PricewaterhouseCoopers LLP, a Delaware limited liability partnership. All rights reserved. PwC refers to the US member firm, and may sometimes refer to the PwC network. Each member firm is a separate legal entity. Please see [www.pwc.com/structure](http://www.pwc.com/structure) for further details. This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.

PM-13-0053 SL