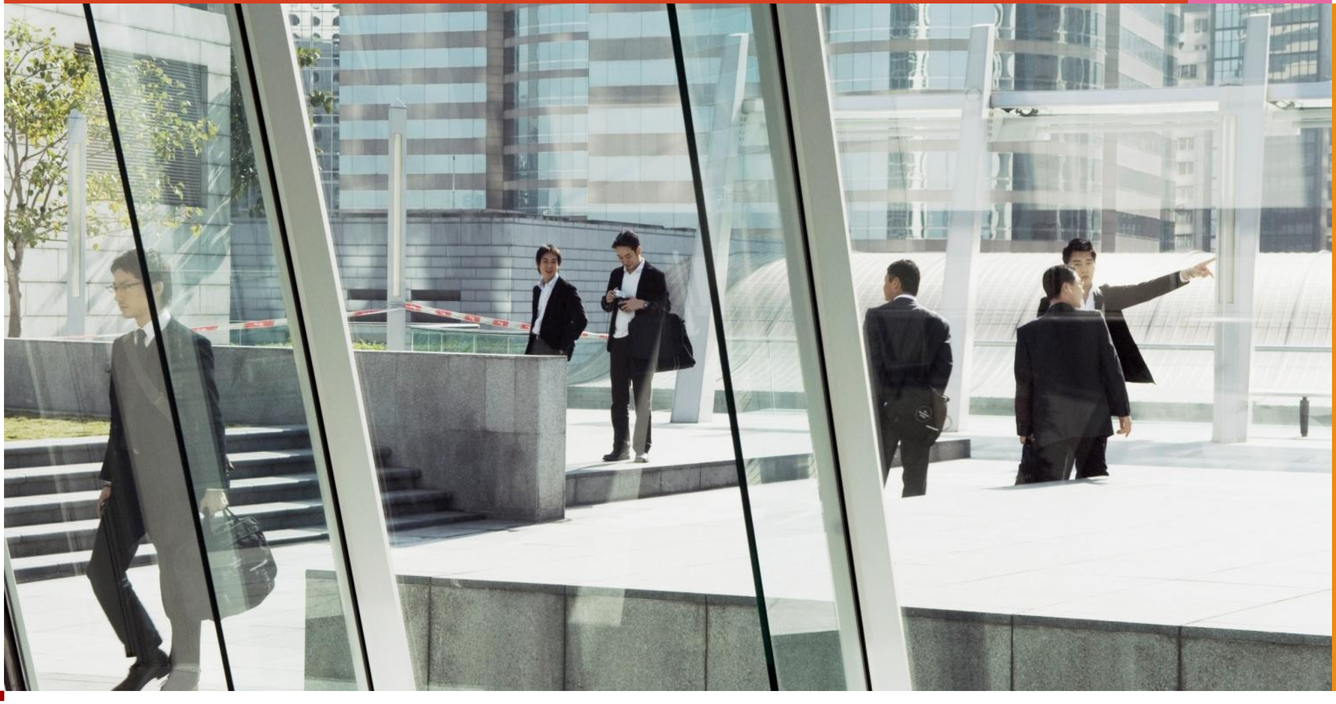
A publication of PwC's Financial Services Institute (FSI)

Risky Business: Why Managing the Risks of Evolving Business Models Is the Key to Avoiding the Next Financial Crisis

January 2011



Background and acknowledgment

- As we developed our views on risk-related lessons learned from the financial crisis, we decided to focus on ways to potentially enhance current approaches to risk management in the financial services sector, rather than to engage in a lengthy critique or propose a one-size-fits-all solution.

- We believe the views contained in this publication are a reflection of PwC's experience in advising clients, many of whom were drastically affected by the financial crisis, throughout this difficult time. This paper draws heavily upon postmortem analyses that PwC performed on a number of leading global financial institutions. To develop our point of view, we not only leveraged these experiences, but we also interviewed numerous clients and participants in the financial markets; current and former government officials; and PwC partners in the Americas, Europe, and Asia. We would like to thank each of these groups for sharing their ideas, insights, and experiences with us over the last several months. Developing this point of view would not have been possible without their collective wisdom.

- In order to develop our framework, we worked with many client management teams, their boards, and regulatory agencies over the last several years to conduct postmortem reviews. These reviews examined what went wrong at many financial institutions during the recent crisis. Through these reviews, we sought to identify the main determinants of performance during the crisis.

- We recognize that readers may have additional ideas and insights to share, either now or in the future, which could further enhance this document. We encourage you to share those ideas with us by submitting comments and feedback to us at fsviewpoints@us.pwc.com.

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Point of view

Post-financial crisis, CEOs and boards at financial institutions have come to recognize the need to focus more on risk management. Will this last?

The leaders of financial institutions have been sensitized to the importance of focusing on risk management. The level of board and senior management involvement is far higher than it was prior to the crisis.

We have seen the following trends emerging, and we expect these trends to continue:

- More CEOs and executive management teams are being required to demonstrate a deep understanding of the business.
- For complex global institutions, the CEO role and key management positions have become even more challenging roles to fill, and this is likely to be the case for the foreseeable future.
- More CEOs and their management teams are viewing risk management as an integral part of their own roles and the job of everyone in the organization, not just the risk management function.
- Increasingly, the well-known model of risk governance known as the three lines of defense (the business, the independent risk management function, and internal audit) is embedded in the organizational culture and structure as well as in management processes.

Will attention to risk management wane as the crisis recedes into the past?

- Despite the current attention placed on risk management, it is unclear whether CEOs and their management teams will continue this level of emphasis going forward. In our view, a commitment to sound risk governance and an understanding of how evolving business models impact organizational risk will be critical.
- During the crisis and in its immediate aftermath, regulators have been more involved in evaluating current management and senior executive candidates, including CEOs, and providing their views to boards. We expect that regulators will continue to consult with financial institutions regarding senior management appointments long after the crisis has passed. In their evaluations, regulators will focus not only on business knowledge and competence, but also on the attitudes and views of candidates toward risk management.

Point of view

Postmortem reviews revealed two key contributing factors to the crisis: the lack of sound governance and the impact of changing business models on the organizational risk profile.

Classic risk management tools and frameworks failed to prevent the recent financial crisis. Postmortem examinations have helped uncover key contributing factors to the crisis.

Today, the financial markets in general and the field of risk management in particular are at a crossroads. To prepare for a more successful future, it is vital for financial institutions to understand the past—specifically, the financial crisis and its aftermath—and to explore how to address the recent failures of risk management.

Leading institutions are implementing specific improvements in their risk management practices and applying the lessons of the past to prepare for the future.

Over the past several years, PwC has worked with many client management teams, their boards, and regulatory agencies to conduct postmortem reviews of what went wrong in many institutions in the banking, capital markets, asset management, and insurance sectors. Much has been written about the most obvious causes of the crisis and institutions' failures. In analyzing the results of postmortem reviews of numerous financial institutions, we identified what we believe are the two key contributing factors to the crisis. One is widely recognized; the other is largely ignored:

- Ineffective governance structures
- Unrecognized risks related to changing business models

Global in nature, our postmortem reviews covered credit; market; and, broadly defined, operational risks and how those risks were managed. They also included factors such as key business decisions, rationale for those decisions, governance structures, decision makers, compensation systems, and information provided to management. Inevitably, consideration of these areas also led to an examination of the organization's business model, its range of products, its funding structure, and liquidity management practices. These factors had a significant impact on the safety and soundness of individual institutions and the financial markets overall, and help explain why some organizations fared better than others during the crisis.

Point of view

The first key contributing factor to the crisis, in our view, was ineffective governance structures. In retrospect, some organizations were arguably set up to fail.

Certain organizational structures and practices are essential for effective risk governance. Had these structures and practices been in place more widely, more financial institutions might have weathered the storm.

Based on our observations, organizations that weathered the financial crisis relatively well tended to have the following management structures and practices in place:

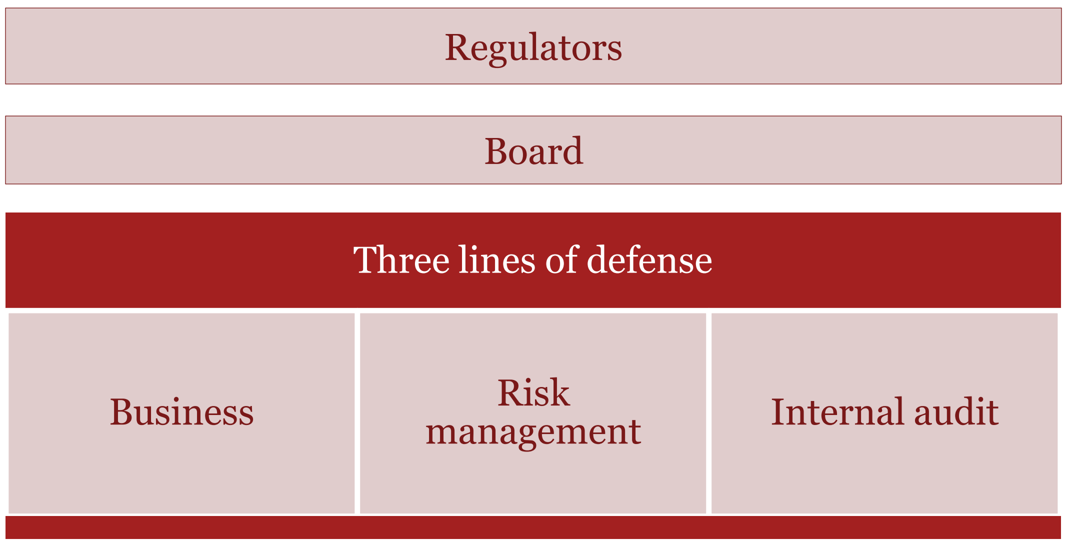
- A management structure with appropriate checks and balances, including an independent risk management group and a sound internal audit function. Together, these functions ensured proper oversight of risk management efforts across the organization as well as compliance with risk policies.
- Risk management and finance functions that reported directly to the CEO, chairperson, and/or heads of the business units. In this organizational structure, these functions were viewed as valued members of the executive management team and contributed to key business decisions.
- Properly staffed board committees with sufficient risk management, finance, and business expertise, which may have included an independent risk management committee.

While these are not the only contributing factors to effective risk management, in our view, they are the factors that should have been satisfactorily addressed by all organizations before the financial crisis. These organizational structures and practices are key components of the three lines of defense.

Point of view—Sound governance

In our view, one of the main determinants of performance during the crisis was how well an organization executed the three lines of defense.

An organization's risk management posture consists of three lines of defense: the business, an independent risk management function, and internal audit. Reviews by the board and regulators provide independent assessments of the institution's risk management processes and controls. In combination, these functions help to ensure that all of an organization's risks are accurately identified and effectively managed.



Point of view—Sound governance

Differing risk management practices help to explain the relative performance of financial institutions during the crisis.

	Financial institution examples	
	Organizations with effective cultures, leadership, and senior management focus on risk outperformed their peers during the crisis	**Organizations without effective cultures, leadership, and senior management focus on risk underperformed relative to their peers during the crisis**
Culture, leadership, and focus of senior management on risk	Among our financial institution clients, we have seen the importance of having senior management view risk as an integral component of nearly every key business decision. The aftermath of the crisis makes this clear. In some client organizations, we saw: ▪ CEOs reviewing with their management teams significant risks—in detail—across the institution and engaging in active dialogue as a normal course of business. ▪ The avoidance of certain products and/or transactions, or the elimination of risks from portfolios earlier than their competitors. As a result, these organizations achieved better relative performance than their peers.	In other cases, we saw the opposite: ▪ Risk management responsibility was almost totally delegated to individual business heads, with minimal dialogue or focus on the impact of risk on the organization as a whole. ▪ In certain areas of the business, senior management did not have visibility into, or an understanding of, the nature of activities being undertaken and the risks involved. ▪ Risk management was often "outsourced" to the risk management team and not viewed as key to business decisions. ▪ Management teams often developed tunnel vision, focusing on meeting the financial goals of the group at all costs. In some cases, business-line risk managers were marginalized or terminated as a result of disagreements with the business heads. Not surprisingly, these organizations tended to perform poorly during the crisis compared to their peers who embedded risk management in the everyday operations of the business.

Point of view—Sound governance

Differing risk management practices help to explain the relative performance of financial institutions during the crisis.

<table>
<tr><th></th><th colspan="2">Financial institution examples</th></tr>
<tr><th></th><th>Some institutions had in place the organizational structures and practices required to manage risk effectively</th><th>By virtue of their organizational structures and practices, some institutions were set up to fail the test of risk management</th></tr>
<tr><td>Governance and organization</td><td>A number of clients had effective structures and practices in place. In these financial institutions:
▪ The CRO reported directly to the CEO and/or chairperson, and participated actively in the process of making business decisions.
▪ Within key business units, the right people representing the full spectrum of views and the required checks and balances (the three lines of defense) were in place.
▪ Differing points of view were respected and key decisions were made after a full and frank debate, with the risk, finance, and audit functions having a seat at the table.
Not surprisingly, these organizations were more agile; tended to make better, more timely business decisions; and were more effective at managing risk, even if doing so required a reduction in short-term profits. These organizations had strong lines of defense and tended to weather the financial crisis well, relative to their peers.</td><td>Some financial institutions had structures and processes in place that led to predictable problems during the financial crisis. Examples of these issues include:
▪ In one client organization, the CRO and CFO did not report directly to the CEO or the chairman, were viewed as support functions, and were not included in key business decisions. As a result, they could not provide guidance on risk issues to the business or escalate risk management concerns to senior management and, if needed, the board.
▪ While internal audit reviewed key business areas each year, the function was widely considered to be ineffective at identifying material risks and suggesting practical solutions to address them.
▪ The CEO and executive management were focused on delivering the quarterly results that investors expected and spent little time managing the firm's risk profile for the long term.
In short, in these organizations, the three lines of defense were weak.</td></tr>
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Point of view—Sound governance

Effective oversight by the board will require better information and appropriate staffing of risk committees.

During the crisis, the information requested by and provided to the board varied significantly from one organization to the next and was not always sufficient for the board to carry out its oversight responsibilities.

In some cases, the board did not have the detailed data required to identify risks buried in high-level reports. In other instances, detailed information was provided, but the board lacked the expertise to aggregate the data into a comprehensive risk view that encompassed the entire organization, or the board did not understand the impact of a given risk on the organizational risk profile. Even quality boards have room for improvement in the scope and nature of information that they request and review.

The structure and mindset of boards are key predictors of relative performance during a crisis. Quality management drives the selection of quality boards.

Financial markets are complex and, depending on the institution, the level of knowledge and experience required for a board member to understand the business varies. As a result, the quality and background of board members are key determinants of the long-term stability and risk-adjusted profitability of an institution. However, the board is not a substitute for quality management. Rather, quality management drives the selection and the operation of quality boards.

Staffing risk committees with qualified board members is a challenge and is driving many firms to rethink their overall governance structures.

While all publicly listed financial institutions have audit committees, not all of them have risk committees. Some institutions that have risk committees struggle with how to properly staff them with qualified board members, particularly if the committees meet at the same time. Prior to the crisis, institutions without a separate risk committee may have focused on audit responsibilities at the expense of risk issues. This may be in part because audit responsibilities are more well defined and, in many cases, fixed in law. As a result, many financial institutions are rethinking the composition of their boards and risk committees.

Point of view—Sound governance

The three lines of defense should be embedded in the institution's culture, its organizational structure, and its management processes.

The three lines of defense outline the institution's internal risk management posture. Each line—the business, the independent risk management function, and the internal audit function—has specific responsibilities with respect to risk identification, assessment, management, oversight, compliance, and control.

Business (1st Line)	Risk Management (2nd Line)	Internal Audit (3rd Line)
▪ Responsible for identifying, assessing, managing, and controlling the risks it takes or is exposed to while conducting its activities ▪ This principle: – Applies across risk types – Places ultimate accountability for the management of risk with the CEO/chairman and the business heads – Implies that the business must absorb losses resulting from risk events – May prompt line of business leaders to appoint staff within the business units to assist them in discharging their responsibilities with respect to risk management	▪ Responsible for providing risk oversight to the business (but not for management of risk) ▪ Key responsibilities: – Risk management policies, standards, tools, methodologies, and programs – Clear understanding of strategy, business architecture, and risk profile of the business – Independent guidance and advice to the business in implementing risk policies and programs – Oversight of all risks across all businesses – Independent risk monitoring and reporting – Independent escalation of risk management gaps, issues, and concerns – Risk aggregation and a portfolio view of risks	▪ Responsible for providing an independent, periodic assessment of the risk management and internal control systems to the board ▪ Scope includes: – Compliance with policies and standards – Effectiveness of the independent risk management function – Completeness and accuracy of information

Point of view

The second key contributing factor to the financial crisis, in our view, was unrecognized risks related to changing business models.

Risks related to evolving business models, and how to manage those risks, may be the most significant challenge for management teams and independent risk management functions to address in order to prevent the next crisis. The financial crisis exposed deep flaws in the business models of a number of financial institutions and, to some extent, the system as a whole. In our view, the underlying problem relates to two key aspects of business models that impact risk: how an organization makes money and how the organization funds itself.

Point of view—Changing business models

Senior management and boards often did not fully understand how revenues were generated. Changes to business models should have—but did not—set off alarm bells.

Senior management and boards did not always have a clear understanding of how their organizations generated revenue and profits—and how this insufficient understanding impacted the institution's risk profile.

In analyzing the fallout from the crisis, it is our view that senior management, the boards, investors, and regulators often did not sufficiently understand how the organization made money. This inadequate understanding did not relate solely to issues such as financial reporting disclosure, valuation, or mark-to-market accounting, but rather to whether senior management and the board understood the types of clients, products, and business decisions (such as pricing) that drove revenues and the various risks associated with those transactions.

Leading up to the crisis, many financial institutions made changes to their business models to meet short-term performance targets. Some of these changes should have triggered risk-warning indicators.

Many of the issues faced by organizations resulted from incremental changes to business models that were made to sustain financial performance. Some of these changes should have set off risk-warning indicators across the three lines of defense and should have been questioned by boards and regulators.

In many cases, organizations had processes in place which were designed to identify and manage any new risks associated with shifts in the business model. However, the financial crisis exposed these processes as ineffective.

Point of view—Changing business models

We believe that the cumulative impact of incremental change is one of the most commonly overlooked factors in the failure of risk management during the crisis.

Why no alarms were set off: the case of the boiling frog.

Humans tend to recognize dramatic changes and take the actions necessary to escape danger. However, we are not as quick to identify and act on risks associated with subtle, incremental changes that occur over time. Consider, for example, a well-known analogy: If a frog is thrown into a pot of boiling water, it will jump out. However, place a frog in water that is at room temperature and raise the temperature one degree per hour until it reaches the boiling point, and the frog will likely stay in the pot, oblivious to the danger until it is too late. This analogy suggests an unaddressed human failing that contributed significantly to the financial crisis, and which represents an ongoing risk to financial institutions and regulators today.

Minor changes can add up to major impacts on business models and risk over time.

Many financial institutions spend significant time and effort on new product approval processes. The following two examples highlight the degree to which minor changes to business models impact organizational risk:

- In the prime brokerage business, new products generally went through an approval process before being introduced. However, generally, there were no processes to evaluate risks as the market and business evolved, such as the risk of introducing the practice of re-hypothecating client collateral or using different legal vehicles in multiple jurisdictions. Therefore, although the prime brokerage products did not fundamentally change over time, the structure of how services were delivered did. In many cases, this increased the overall risks to the organization and its clients. Unfortunately, a new product approval process typically did not, and does not, account for such an evolution in service delivery models, even if it includes a post-implementation component. As a result, when Lehman Brothers failed, there was a great deal of surprise at the unrecognized risks of having collateral in multiple jurisdictions, and so on.

- In the private label mortgage-backed securities business, a similar issue occurred when the fundamental nature of the business evolved. Over time, bit by bit, the level of due diligence and protections demanded by underwriters eroded to the point where, after a period of several years, the typical agreement contained significantly fewer safeguards for underwriters and investors than those which had been deemed acceptable when the product was launched. In addition, guarantee structures changed, underlying collateral protections were weakened, and fixed income businesses began acquiring mortgage originators to help ensure the supply of whole loans for their securitization business. All of these factors combined to create a very different, and significantly riskier, business model over time. The new risks should have been considered properly before business decisions were made; but, in many cases, they were not.

Point of view—Changing business models

Technology and reporting were partially to blame for the lack of early warning indicators set off by changing business models.

Risks being taken within individual lines of business may have been well understood, but how those risks were correlated, and their cumulative impact on the organizational risk profile, were not. The lack of a portfolio view of risk is due, in part, to fragmented technology and inadequate risk reporting.

In many cases, senior management lacked a portfolio view of risks across the organization. For example, a number of financial institutions had several business units that were engaged in similar strategies, trading, or selling similar products. Often, there was no organization-wide understanding of the combined effects of these product offerings. The lack of a portfolio view of risk was often hampered by fragmented technology and/or inadequate risk reporting across the organization. Some institutions did not account for risk premiums when performing balance sheet analyses; as such, risky assets were not closely monitored. This led to refinancing and other transactions that were based upon asset values that may have been either overstated or not adequately hedged against losses.

Many financial institutions are investing in technology upgrades, driven in part by pressure from regulators. However, some organizations continue to operate in a danger zone.

Technology infrastructure and risk reporting capabilities are being upgraded in many financial institutions in order to provide a portfolio view of risk. Global financial institutions, for example, have invested an estimated $8.7 billion in risk and compliance technology systems in 2010.[1] This represents an increase of 82 percent from 2008.[2]

Regulators are applying pressure on financial institutions to invest in the necessary IT infrastructure required to resolve risk-related issues, many of which were raised in previous examinations and have not yet been adequately addressed.

While many organizations are making IT investments, some are still operating in a danger zone and will need to be monitored carefully during this period of new systems and process implementation.

[1] Shahrawat, Dushyant "Forecasting Global Risk Management Regulatory Compliance IT Spending Over 2009-12," TowerGroup (November 9, 2009)
[2] Wilchins, Dan, "RPT-INSIGHT-Wall Street Risk Management: Better, but Hardly Fixed," Reuters News (July 1, 2010)

Point of view—Changing business models

Funding sources can have a significant impact on the risk profile of an organization. A prime example of this is liquidity management, which took center stage during the crisis.

The question of "how firms make money" is one aspect of the business model that influences risk. Another factor is how financial institutions fund their operations.

As set forth in PwC's recent publication "Liquidity Risk Management: Staying Afloat in Choppy Seas," liquidity management became a primary issue as the financial crisis progressed. This aspect of the business model has received significant scrutiny over the last several years, and many steps have been taken to reduce liquidity risk in the system.[1] Recently, the Basel Committee proposed a strengthened liquidity framework, which—in addition to the qualitative "Principles for Sound Liquidity Risk Management and Supervision" issued in 2008—introduces quantitative standards for funding liquidity. The two proposed measures are a 30-day liquidity coverage ratio designed to ensure short-term resilience to liquidity disruptions and a longer-term structural liquidity ratio to address liquidity mismatches and promote the use of stable funding sources. Furthermore, the Committee proposed a set of monitoring metrics to assist supervisors in the analysis of bank-specific and systemwide liquidity risk trends.[2]

Credit and capital market seizures between 2007 and 2009 revealed the true levels of risk exposure embedded in companies' balance sheets.

In the decade leading up to 2007, liquidity had not been a critical constraint on businesses. Firms could easily access relatively inexpensive sources of liquidity in the markets. With interest rates in the United States at 1 percent and at 0 percent in Japan, with China's fixed exchange rate, and with the growth of several sovereign wealth funds, some critics described the pre-2007 liquidity environment as "a dam overfilled with flooding water."[3]

The credit and capital markets seizures between 2007 and 2009 revealed the true levels of risk exposure embedded in company balance sheets. Most firms experienced higher borrowing rates and had less access to funding than before.[4] The risk associated with mismatches between the duration of loans and the uses of capital also became apparent. This was especially true for financial institutions that relied on short-term wholesale funding as the primary mechanism to fund their balance sheets. As a result, liquidity became a major concern for most companies, both financial institutions and non-financial corporations.

[1] "Liquidity Risk Management: Staying Afloat in Choppy Seas," PwC FS Viewpoint, www.pwc.com/fsi
[2] "The New Basel III Framework: Navigating Changes in Bank Capital Management", PwC FS Viewpoint, www.pwc.com/fsi
[3] "The Current Financial Crisis: Causes and Policy Issues," Adrian Blundell-Wignall, Paul Atkinson and Se Hoon Lee, oecd.org (2008) http://www.oecd.org/dataoecd/47/26/41942872.pdf, Accessed September 30, 2010.
[4] "Observations on Risk Management Practices during the Recent Market Turbulence," Senior Supervisors Group, newyorkfed.org (March 6, 2008) http://www.newyorkfed.org/newsevents/news/banking/2008/SSG_Risk_Mgt_doc_final.pdf, Accessed October 1, 2010.

Point of view—Changing business models

Leading organizations view liquidity risk management as an integral part of the long-term enterprise strategy, not simply a short-term operational initiative.

Having survived the financial crisis, some institutions risk becoming complacent about liquidity risk management. We believe that institutions should not assume that weathering the past crisis guarantees that they are prepared to meet the next one.

Greater access to central bank discount windows, an expansion of collateral eligibility, lengthening of financing terms, bank recapitalizations, and other efforts such as bank holding company conversions in the US have significantly improved the stability and the availability of funding sources for financial institutions. While many of these efforts have since been discontinued, uncertainty remains as to how to stave off a future potential liquidity crisis. The Federal Reserve conducted forward-looking evaluations (stress tests) of the largest bank holding companies, but those tests only covered a two-year forward-looking window. The responsibility for longer-term financial health is now in the hands of the financial institutions themselves in the form of continuous risk analysis and management.

The crisis is yielding positive outcomes, as some financial institutions are taking steps to improve liquidity risk management.

Leading firms are reviewing their policies, procedures, and controls as a key step in improving liquidity risk management. We are seeing that more sophisticated analytical approaches are being developed to assess exposures. Many organizations are exerting greater control over the content and frequency of reporting. And as noted earlier, many institutions now recognize the need to invest in their information systems infrastructure to capture information that enables timely, informed decision making. These and other liquidity management practices, once optimized, should continually be adapted to meet new and emerging challenges.

The potential benefits from sound liquidity risk management practices are significant and can help assure that solvency will be maintained, even during an extreme liquidity crisis. The benefits of better management of liquidity risk can impact multiple areas of the business—bolstering the balance sheet, enhancing overall risk management, and strengthening compliance and oversight.

For more information on liquidity, please see “Liquidity Risk Management: Staying Afloat in Choppy Seas,” PwC FS Viewpoint, www.pwc.com/fsi

Point of view—Changing business models

Despite improvements in liquidity risk management and governance, financial institutions remain at risk relative to business-model change.

The bottom line is that we see progress on the governance front, but little movement in institutions' gaining better understanding and control over incremental, yet cumulatively significant, business-model changes.

We recommend a number of practical steps to address the strategic risk gap, including:

- ***Establishment of a strategic risk function***—This function would be specifically focused on identifying and understanding the business model on a product-by-product basis throughout the geographic spread of the organization. The function could be established at a business-unit level, with some geographic overlay.
- ***Periodic "deep dive" business-model reviews***—These reviews would be driven, in partnership, by management and risk, and cover risks in areas such as product structure, funding, current and target client segments, and legal structures/jurisdictions. These reviews would result in a strategic risk assessment and rating, along with timely actions to "de-risk" or increase risk in certain parts of the business.
- ***Integration of strategic risk into the entire framework and new product process***—Strategic risk should be considered when setting risk appetite and when evaluating, reporting, and reviewing risk. This will allow a more holistic view of the risk level inherent in the business and facilitate the most appropriate business decisions from a risk/reward perspective. New product approval processes should include not only an initial strategic risk analysis, but also follow the lifecycle of the product and its evolution from a risk perspective.

Section 2

Competitive intelligence

Competitive intelligence

While there are many actions being taken by institutions to improve risk management, below are four themes that are occurring in most institutions in some form today.

1. Institutions are organizing to see and govern risk through three lenses:
   – **The management model**—Facilitates accountability of business owners
   – **Geographic footprint**—Facilitates a view into legal entities
   – **Asset class across the institution**—Provides an aggregate view of risk across the management model and legal entity structure at a level that allows action to be taken
2. Institutions are integrating the reporting of risk and financial performance to support "one view."
3. Institutions are seeking to integrate the infrastructure underpinning risk and financial management.
4. Institutions have initiated actions to better align performance with risk taking and to enhance risk governance. However, these improvements will continue to evolve as the three themes above are realized.

Competitive intelligence

Institutions are moving toward seeing and governing risk through three lenses.

The following illustrates the range of practices we see in the industry:

Risk management leading industry practice	**Industry observations**	
	Financial institution 1	**Financial institution 2**
Alignment of risk management to the business model, as demonstrated by the management model, the geographic model, and the asset class model	▪ This global institution developed a three-year effort to adapt its risk governance structure as well as its risk function's structure and capabilities, in light of anticipated market changes. Key priorities included: - Strengthening firm-wide functional risk areas with oversight and standard-setting responsibilities for credit, market, and operational risk. - Aligning independent risk managers to all major businesses/products and treasury. - Creating a strategic risk management group reporting to the CRO. - Adopting a regional risk management and governance model to satisfy business needs and regulator expectations in Europe and Asia. - Implementing a risk services function to consolidate utility functions such as risk systems, risk reporting, and model review.	▪ This global institution structured its risk management organization along three leading dimensions: - Each of the major businesses has a chief risk officer with an independent reporting line to the institution's CRO. - Similarly, each global region has a risk officer who is accountable for his/her geographic area. - Finally, the firm has product specialists with market and management expertise with risk oversight responsibilities specific to a product/asset class. ▪ Risk oversight is exerted globally by risk committees at the regional and business-line levels. ▪ The risk function includes a utility team focused on risk infrastructure, processes, and management reporting.

Competitive intelligence

Institutions are integrating the reporting of risk and financial performance to support "one view."

The following table illustrates the range of practices we see in the industry:

Risk management leading industry practice	Industry observations: Financial institution 1	Industry observations: Financial institution 2
Integrated reporting	▪ This global financial institution company has instituted business reviews with participation from business leaders and representatives of the Operations, IT, Finance, and Risk functions. ▪ The monthly review focuses on business performance and risk metrics, including a discussion of risk-adjusted performance measures.	▪ This financial institution has launched a multi-year systems and data review to enable the integrated reporting of risk and performance information across businesses, products, and geographies. ▪ The revised framework is enabling the production of risk-adjusted performance measures as well as decisions at the local business level; the aim is to increase reporting granularity, where appropriate, in the coming years. ▪ The initiative is led jointly by the Risk and Finance organizations, with extensive participation from the institution's data group and IT function.

Competitive intelligence

Institutions are seeking to integrate the infrastructure underpinning risk and financial management.

The extent of integration between the risk and finance functions can be arrayed on a continuum.

Governance and organization	Independent	Aligned	Integrated
Leadership	▪ CFO and CRO roles and responsibilities segregated with limited interaction.	▪ CFO and CRO roles and responsibilities aligned, with joint control over certain functions that have aligned objectives.	▪ Single CRFO role created with full ownership/responsibility of risk and finance.
Committees	▪ Siloed committee structure.	▪ Coordinated membership in committee structure.	▪ Integrated committee structure (mandate and members).
Organization	▪ Separate organizational models with limited overlap.	▪ Organizational models aligned with joint responsibility around strategic, capital, financial planning, and other functions. ▪ Potential physical co-location.	▪ Single organizational model with joint risk and finance disciplines across functions as appropriate.
Interaction with business	▪ Finance and risk have separate touch points with the business. ▪ Finance has active business partners in all business units. ▪ Risk managers exist for key business lines.	▪ Coordinated approach to business interaction between risk and finance. ▪ Risk and finance respected by the business and play an active role in decision making at all levels.	▪ Integrated risk and finance business partner role with single touch point into the business to ensure that risk and finance are considered hand in hand in decision making.
Talent, skill sets, and incentives	▪ Risk and finance staff have separate talent management, career development paths, and training and development. ▪ Limited movement of staff across areas. ▪ Inconsistent incentives.	▪ Active talent management between the two areas to rotate staff through a cycle of risk and finance (and business) experience. ▪ Combine development and training activities.	▪ Risk and finance people development integrated as part of joint function. ▪ People develop both risk and finance competencies along with business placements.

Competitive intelligence

Institutions are seeking to integrate the infrastructure underpinning risk and financial management.

The extent of integration between the risk and finance functions can be arrayed on a continuum.

		Independent	**Aligned**	**Integrated**
Processes	Strategic, capital and financial planning	▪ Different teams with limited overlaps perform the strategic, capital, and financial planning process.	▪ High interaction between risk and finance in all planning areas to give a balanced view between risk, capital allocation and return including risk appetite definition and allocation.	▪ Single team dedicated to producing strategic plans with supporting integrated capital and financial planning teams. ▪ Finance and risk budgets integrated as part of one process.
Processes	Ongoing monitoring and controls	▪ Risk and finance both run separate control activities with multiple areas of duplication between risk control, financial control, operational risk, SOX, and internal audit.	▪ Clear responsibilities and boundaries for control between risk and finance. ▪ Joint centers of excellence for areas such as IPV, model validation, analytics, and modeling.	▪ Single risk and finance control function with clear boundaries and responsibilities agreed with the business, internal audit, and operations.
Processes	Performance management	▪ Performance management is performed purely on a financial basis with limited weighting given to risk metrics.	▪ Performance management considers both risk and reward metrics supported by combined risk and finance input in business review process.	▪ Integrated performance management team, framework, and metrics ensures risk and reward considered on a dynamic basis.
Infrastructure	Data and systems	▪ Separate finance and risk data and supporting system architecture. ▪ Reconciliations are conducted only at the highest level and for regulatory reporting purposes.	▪ Common data dictionary between risk and finance. ▪ Aligned strategy for the supporting system architecture. ▪ Data reconciled at lower level and used for management purposes.	▪ Common finance and data dictionary and warehouse running on single financial platform. ▪ No requirement to reconcile data as drawn from single “golden source.”
Infrastructure	Sourcing and delivery	▪ Separate functions dedicated to production of periodic reports. Separate sourcing strategies.	▪ Coordination of production of risk and finance reports. ▪ Shared sourcing strategy.	▪ Integrated sourcing and shared functions to produce integrated risk and finance reports.

Competitive intelligence

Institutions have initiated actions to better align performance with risk taking, and to enhance risk governance.

The following tables illustrate the range of practices we see in the industry:

Risk management leading industry practice	**Industry observations**	
	Financial institution 1	**Financial institution 2**
Incentive plans for line management and oversight functions	▪ A US bank reviewed incentive plans as a first step to rationalization. This effort identified opportunities to: - Significantly reduce the number of plans and the associated administrative costs and operational risk. - Re-align the funding of plans for control functions such as Risk and Finance, to ensure greater independence vis-à-vis the business, as well as appropriate funding levels. - Simplify plan governance and oversight structures.	▪ A major US financial services company developed strategies to better link risk taking, performance management and variable compensation in response to TARP and Federal Reserve regulatory mandates. As part of that effort, the institution: - Designed a repeatable process to assess the inherent business unit risk, evaluate the influence levels of relevant job positions, assess time horizon risk, identify appropriate risk adjusted metrics for measuring performance, and assess the plan design risk. - Refined and documented the processes and governance framework associated with the annual review, redesign, and approval of variable compensation plans.

Competitive intelligence

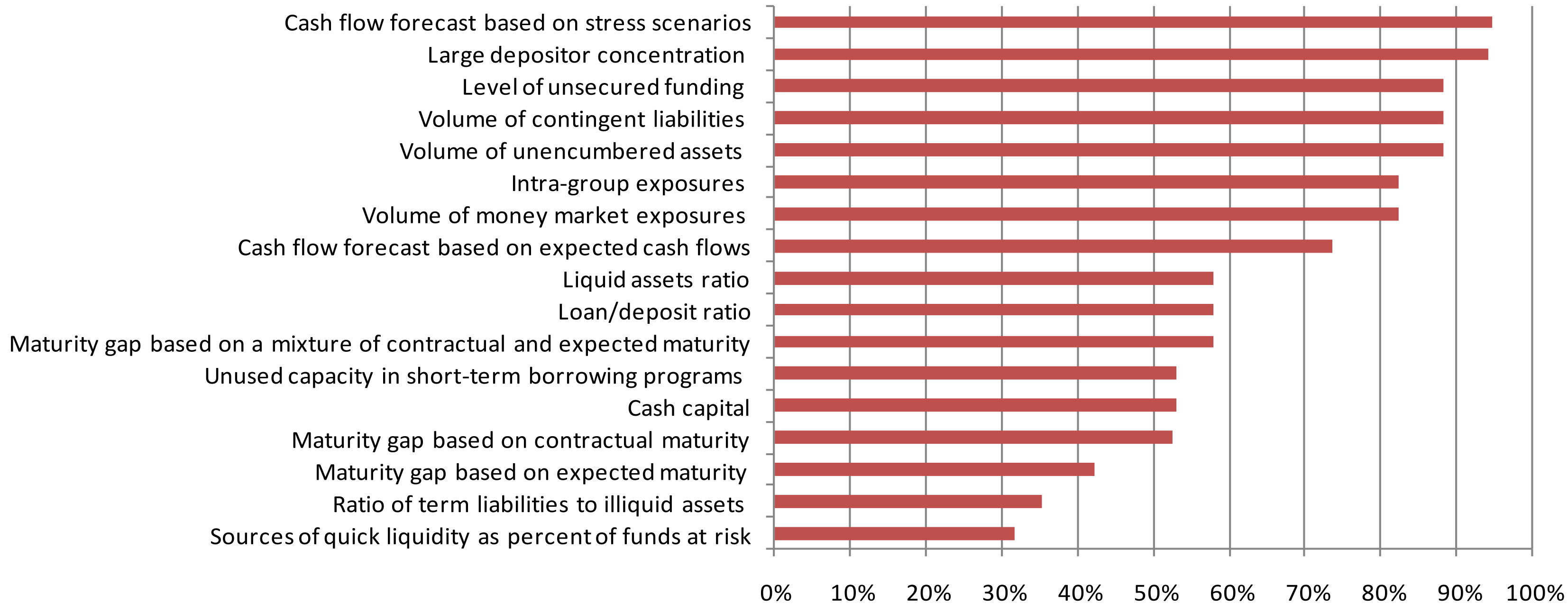
A recent PwC liquidity management benchmarking survey revealed that there is no "one size fits all" approach to managing liquidity risk.

Insight	United States	Canada	Europe
US institutions tend to manage to a relatively longer survival horizon	Firms tend to manage to time periods between 6 and 12 months	Firms tend to manage to time periods between 1 and 3 months	Horizons are fairly evenly distributed between 1 and 12 months (with a slight majority in the 3 - to 6-month time frame)
European institutions more broadly believe their boards have a complete understanding of liquidity risk	Institutions generally did not feel that their boards have a very high understanding of liquidity risk management with a full grasp of all technical details	Institutions generally did not feel that their boards have a very high understanding of liquidity risk management with a full grasp of all technical details	At least a quarter of the institutions believe their boards have a very high understanding of liquidity risk management with a full grasp of all technical details
US and Canadian firms tend to favor regional alignment for supplemental supporting units	A majority of firms have regional alignment for the decentralized units that support liquidity risk management	A majority of firms have legal entity alignment for the decentralized units that support liquidity risk management	There is a relatively even distribution between regional, legal entity, and business unit alignment for the decentralized units that support liquidity risk management
US and Canadian institutions are more prepared to make larger investments in liquidity management infrastructure	A majority of firms are prepared to make substantial investments	A majority of firms are prepared to make moderate investments, but some will be implementing a complete overhaul	Firms are planning to make only a moderate investment
Canadian firms are lagging their international peers in managing liquidity in real time	A majority of firms indicate they have the ability to monitor liquidity in real time	No firms have the capability to monitor liquidity in real time	Even distribution exists between those firms with and without the ability to monitor liquidity in real time
European and Canadian firms are more likely to have a dedicated liquidity crisis team	Firms are evenly distributed between those that have liquidity crisis teams and those that do not	An overwhelming majority of firms acknowledged existence of a liquidity crisis team	All European firms acknowledged existence of a liquidity crisis team
US firms tend to simulate their contingency funding plans on a more regimented basis	The majority of firms simulate their contingency funding plans either monthly or quarterly	All firms simulate their contingency funding plans on an annual basis	The vast majority of firms indicated they simulate their contingency funding plans as needed
Approval of the liquidity risk appetite is a priority for all Canadian firms	Only half of the firms formally have the board approve the liquidity risk appetite	All firms have their liquidity risk appetite approved by the board	There is roughly an even distribution as to whether or not the liquidity risk appetite is approved by the board

Source: "Liquidity Risk Management: Staying Afloat in Choppy Seas," PwC FS Viewpoint, www.pwc.com/fsi

Competitive intelligence
The use of liquidity risk metrics to measure risk and manage institutional risk appetite varies across institutions.

Survey results clearly support the view that no single metric captures the complexity of liquidity risk. Institutions must leverage a combination of liquidity measures to capture and understand the multidimensionality of liquidity risk.



Source: Liquidity management benchmarking survey, PwC, Oct–Nov 2009

Primary and secondary measures:
While institutions may incorporate a wide variety of measurements, some are primary to the liquidity management decision-making process, while others provide secondary contextual information on liquidity risk.

Limit monitoring:
It is important to consider which incorporated measures have limits or guidelines to express the liquidity risk appetite and which are monitored primarily for information purposes.

Section 3

A framework for response

A framework for response

Managing risk effectively requires having a risk management framework in place and ensuring that it adequately supports the risk management process.

Governance and strategy

Organizational structure and operating model ▪ Roles and responsibilities ▪ Committee structure ▪ Policies and procedures

Risk management processes

Business planning
- Risk appetite setting
- Strategic planning
- Financial planning
- Capital budgeting and forecasting
- New product/new business/M&A
- Enterprise-level limits

Business execution

Risk assessment
- Underwriting and pricing
- Material risk identification and profile
- Risk measurement and aggregation
- Stress testing
- New product approval process

Risk management
- Risk monitoring and limits
- Daily P&L attribution
- Corrective actions
- Issue and action tracking processes

Capital evaluation
- Capital quantification
- Capital adequacy assessment
- Capital/liquidity contingency planning

Control and validation
- Internal controls
- Validation controls (e.g., model validation)
- Internal audit review

Business evaluation
- Risk-adjusted performance measurement and review (business reviews)
- Risk and performance reporting
- Incentives and compensation
- Disclosure

Business model dimensions

Manage-ment model	Legal entity	Product
Retail Banking	North America	Mortgages
Commercial Banking	EMEA	Consumer Loans
Wholesale Banking	ASPAC	Commercial Loans
Sales and Trading	Subsidiaries	Cards
Asset Mgmt.	Limited LLC	Wealth
Private Banking		Trust Products
Other		Derivatives

Analytics and infrastructure

Risk inventory ▪ Risk measures ▪ Stress testing ▪ Capital measures ▪ Performance measures ▪ Control indicators

Technology

Data

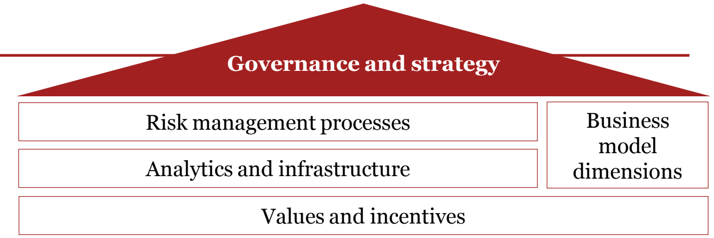
Resources

Values and incentives

Tone at the top ▪ Talent management ▪ Compensation ▪ Funding (including liquidity) ▪ Culture

A framework for response

Governance and strategy—Key principles drive high performance.



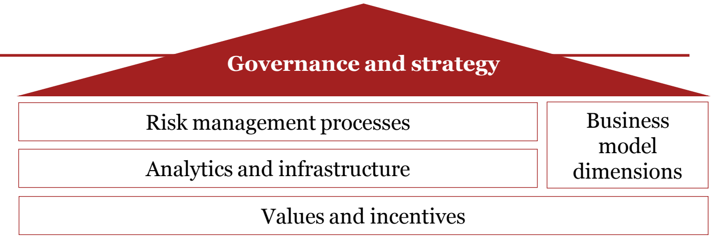
In our view, there is no one governance and organizational model that is superior to all others. We have seen many different models succeed. Some are more centrally driven, while others rely on business-level decision making.

A few trends are emerging across high-performing organizations. In our view, these trends are destined to become more prominent in the near future, as organizations prepare for unexpected events and strive to minimize the damage of future crises:

- **Risk management at the table**—Increasingly, risk management, finance, and internal audit have a say in business decisions, which is equal to that of business unit heads. The CRO and CFO will report directly to the CEO or the chairman and interact extensively with the board, keeping them informed about organizational risks and helping to ensure that risks are properly managed. The same structure and practices apply at the business unit level.
- **Greater board expertise**—There is likely to be increased demand for risk management, finance, and detailed business expertise at the board level. Boards will spend more time overseeing management's risk management activities; this will become a key component of the board's role.
- **More independent support for the board**—We expect to see the board interacting more closely with the independent risk management function and securing expert help from third parties to assist in carrying out their oversight responsibilities.
- **Independent risk committees**—Internal audit will remain an important line of defense. However, independent risk committees that are separate from audit committees are likely to be a fixture of corporate governance for the foreseeable future. These committees will demand more information, and will spend more time assessing the risk management culture and processes of the firm's management team.

A framework for response

Governance and strategy—Culture and management focus



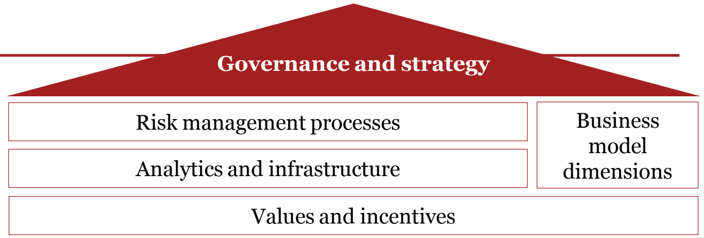
Business decisions and the tone at the top of the organization are driven by the CEO. How well an organization manages risk depends in large part on the attitudes and practices of the CEO and senior management team.

Here are a few of the characteristics and practices of organizations whose culture and leadership support effective risk management:

- The CEO and senior management team understand the nature of the business, the diversity of products, and the fundamental risks the products entail.
- The senior management team understands the details of the firm's changing risk profile. Responsibility for risk management is not delegated to individual business, country, and/or product heads.
- The CEO and management team foster an environment of frank discussion and collaboration regarding business and risk decisions. Employees are neither ignored nor punished for raising risk-related issues.
- When the organization is under pressure to improve its performance, management does a good job of balancing the pressure to "make the numbers" with the longer-term need to manage the organization's risk profile in a prudent manner.

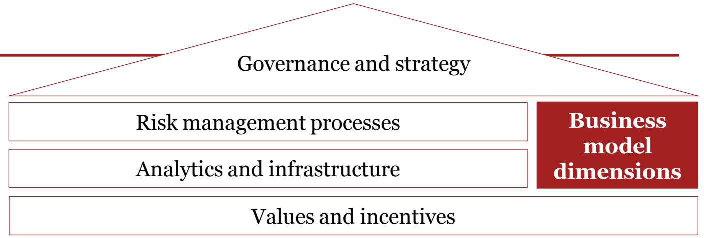
While these attributes are difficult to judge, in our view, they are critical to assessing the safety and soundness of a financial institution. Based on our observations, organizations with an effective culture, leadership, and senior management focus on risk outperformed their peers during the crisis.

A framework for response
Governance and strategy—Considerations



Challenge	Considerations
Risk management capabilities Organizations are not sure that they have appropriate risk management capabilities in place across the organization	Is the management structure set up with the right checks and balances to support the three lines of defense?
Management structure Risk and finance considerations do not always enter into key business decisions	Do the risk and finance functions report to the CEO/chairperson/business heads, or are they treated as support functions? Are the risk and finance functions part of the executive management decision making forums with a "seat at the table" relative to key decisions?
Board expertise and independence Boards do not always have the requisite expertise and independence to carry out their oversight responsibilities	Do board members have sufficient risk management, finance, and business expertise to properly staff the board committees? Does the board have an independent risk committee?
Understanding risk drivers Senior management may not fully understand the risks related to revenue and profit generation	Do the CEO and senior management team have a deep understanding of the nature of the business, the diversity of products, and associated risks? Does the senior management team understand the details of the firm's changing risk profile, or do they skim the surface and/or delegate to the individual business, country and/or product heads?
Creating a culture of openness Risks should be considered in business decisions at all levels of the organization	Do the CEO and the management team foster an environment of frank discussion and collaboration regarding business and risk decisions?
Managing the risk profile Risks must be factored into the revenue and profit equation	How does the organization balance the pressure to "make the numbers" with its longer-term need to manage the risk profile in a prudent manner?

Business models—Identification of organizational risks



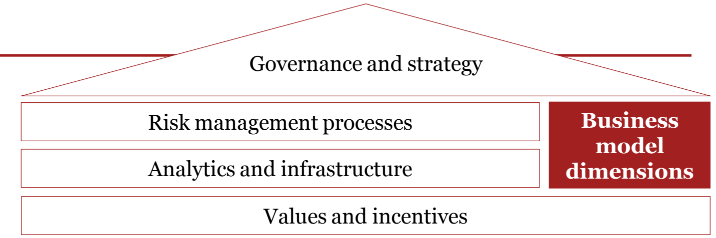
As they grapple with the fallout from the financial crisis, financial institutions are looking for ways to better address the risks related to changing business models. We expect two emerging trends to continue for the foreseeable future: (1) an emphasis on better use of technology, and (2) more frequent reviews of business model risks.

In our view, the industry has a long way to go in developing the processes and tools that are required to identify and monitor risks related to business models in a structured, systematic fashion. That said, to gain a deeper understanding of possible risks, many organizations have begun to review their technology needs and take a closer look at their business models.

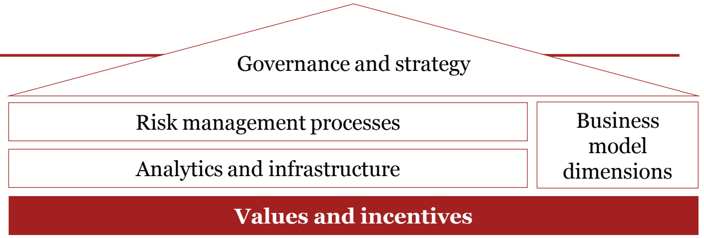
We predict that the following emerging trends will gain strength in the coming years:

- Investments in improving technology infrastructure and risk reporting will continue over the next several years as financial institutions try to gain a more comprehensive, portfolio view of risk across the organization.
- There will be more emphasis on leveraging these technology investments to view information on a real-time basis and to test various “what if” scenarios.
- Some organizations have created strategic risk functions and/or incorporated periodic reviews of their business models into the risk management process. We expect this to become a common practice over the next several years.
- Business-model risk management will be an area of focus for improvement, driven in large part by the encouragement of regulators.

A framework for response
Business models—Considerations



Challenge	Considerations
Business-model risk Management does not always understand in detail how the activities that generate profits also create risk	Do the organization's senior management, the board, and regulators understand both how the organization makes money and the risks inherent in its operation? Are the key revenue sources of the business well understood from a detailed transaction and risk level?
Identifying changing risks Organizations struggle to create mechanisms for identifying risks related to business-model changes	How do the three lines of defense identify subtle, yet important, shifts in the organization's business model and assess their implications on the risk profile? Are the people, processes, and technology in place capable of assessing the current and likely future risk profile, and are they capable of making the changes required to properly manage that profile?



A framework for response

Values and incentives: Liquidity risk management

Implementation of a sound liquidity risk management framework begins with appropriate governance.

We have observed that our leading clients are focusing their governance of liquidity risk management in the following areas:

- ***Centralization of oversight:*** Responsibility for managing liquidity risk should be distributed between a central group of management and subsidiaries. Large financial organizations typically have centralized oversight at the group level, supplemented by decentralized units that oversee liquidity risk management at a regional or legal entity level.
- ***Liquidity risk appetite:*** In recent years, many financial institutions have made substantial progress in developing and formalizing their liquidity risk appetites. As this process evolves and becomes more formalized, institutions should consider articulating their liquidity risk appetites through qualitative and quantitative means.

We see more organizations developing qualitative and quantitative elements of liquidity risk management in a coordinated fashion, understanding that these elements are interrelated. Increasingly, the qualitative elements will be based on sound management judgment, embedded within the corporate culture of the institution, and aligned with the firm's overall risk appetite. The quantitative elements will be based on metrics, thresholds, or limits set around liquidity risk factors and diversification of funding sources. These elements should be coordinated with other risk management activities:

- ***Board oversight:*** The financial crisis highlighted the fact that in many cases, board members lacked critical information about the liquidity profiles of their institutions. Firms should consider expanding board oversight of liquidity management. They also should ensure that the board has a broad understanding of liquidity risk management concepts and sufficient knowledge of the underlying technical details. Management should also provide more in-depth liquidity management information and do so frequently. Finally, management should consult with the board on areas such as approval of liquidity risk appetite and contingency funding planning.
- ***Delineation between tactical and structural liquidity risk:*** As liquidity risk management practices have become more sophisticated, institutions have found a greater need to assess liquidity risks from multiple vantage points. As such, financial institutions have increased their focus on managing liquidity risk from a short-term tactical perspective as well as from a long-term, structural point of view. Organizations should consider tailoring their risk monitoring, measuring, and reporting practices to meet the demands of these two distinct liquidity risk horizons.
- ***Integrating liquidity risk integration into strategic planning:*** Integration of liquidity risk management into the strategic planning process should be implemented at the corporate level and in business units. Financial institutions also should strive to improve their ability to assess the interaction of liquidity risk with other risk types, such as market and credit risk.[1]

[1] "Liquidity Risk Management: Staying Afloat in Choppy Seas," PwC FS Viewpoint, www.pwc.com/fsi

Section 4

How PwC can help

How PwC can help
Risk management function transformation

PwC is an advisor to 44 of the world's top 50 banks and 46 of the world's top 50 insurance companies, and is the leading service provider to investment managers, pension funds, and hedge funds around the world. This diverse client base provides us with unique access to develop peer insights and to understand from experience what works in specific client circumstances. In the United States alone, we are able to call upon our 800-person Financial Services Advisory practice and over 3,000 financial services professionals.

Expertise

Over the last several years, we have worked with many of our client management teams, their boards, and regulatory agencies to conduct postmortem examinations of what went wrong in many individual firms in the banking, capital markets, asset management, and insurance sectors. We did postmortem reviews that were global and comprehensive in terms of credit; market; and, broadly defined, operational risks and how they were managed. The reviews covered key business decisions and the underlying rationales, the governance structures in place, the quality of the people making the decisions, the compensation systems, the management information they received, and so on. Review of these areas also led us to examine the organization's business model, range of products, funding structure, and liquidity management practices.

After conducting detailed reviews, we have been assisting many of our clients in implementing specific improvements in their risk management practices.

Thought leadership

PwC has a significant body of thought leadership. Our Advisory team has published many white papers on the topics of risk management and integrated risk governance and compliance. PwC continues to present at major industry and vendor conferences. Our timely, thought-provoking, and informative publications provide new intelligence, perspective, and analysis on trends affecting the financial services industry.

How PwC can help

For further information, please contact:

Americas	John Garvey *New York*	john.garvey@us.pwc.com +1 646 471 2422
	Miles Everson *New York*	miles.everson@us.pwc.com +1 646 471 8620
EMEA	Miles Kennedy *London*	miles.x.kennedy@uk.pwc.com + 44 (0)20 7212 4440
	Richard Barfield *London*	richard.barfield@uk.pwc.com +44 (0)20 7804 6658
Asia-Pacific	Rick Heathcote *Hong Kong*	rick.heathcote@hk.pwc.com + (852) 2289 1155
	Tim Pagett *Hong Kong*	tim.pagett@hk.pw.com + (852) 2298 2566
	James Chang *Beijing*	james.chang@cn.pwc.com + 86 (10) 6533-2755

Appendix

Select qualifications

Select qualifications

Assessment of risk management practices—global investment bank

Issues	Amid credit market-related setbacks, the board audit committee of a global investment bank engaged PwC to assess the firms' risk management practices and provide recommendations for improvement. The review was a constructive, forward-looking effort to assist the firm in enhancing its competitive positioning, operating performance, and risk management capabilities.
Approach	PwC deployed a team of industry and risk management specialists in the United States and the United Kingdom to assess the firm's end-to-end risk management model against leading industry practices globally. Areas of focus included the risk organizational model, governance structure, measures, limits, analytics, reporting flows, and infrastructure. These areas were analyzed at both the corporate and major business-line level. PwC then provided the board with recommendations for improving these capabilities, and made suggestions to management regarding how to develop prioritized implementation initiatives.
Benefits	As a result of this work, the board of directors audit committee, working on behalf of shareholders, gained an independent perspective on the risk management capabilities of the firm, enabling the committee to formulate a view on required improvement priorities. Management gained a prioritized roadmap to initiatives that were (1) deemed critical to improve capabilities in key areas, and (2) designed to help mitigate the risk of further setbacks.

Select qualifications

Risk management remediation project—major global bank

Issues	A major global bank engaged PwC to assist with a multi-year risk management remediation project. In a related project, we were engaged to help establish a remediation program to address concerns of the UK FSA regarding the effectiveness of the client's key financial and market risk controls as well as its governance model.
Approach	To date, PwC has assisted in the following areas: ▪ Provided support to the recently formed dedicated board of directors risk committee, advising on the potential role and activities of the committee. ▪ Advised on the broader relevant aspects of risk governance, such as risk appetite and the end-to-end risk management framework for which the committee will be responsible. ▪ Provided advice on redesigning the bank's risk reporting structure to improve its clarity and effectiveness. ▪ Provided execution support to the recently initiated group-wide project to remediate risk control and the company's risk management framework. ▪ Worked with the bank's project team to help the client develop a credible remediation action plan for presentation to its lead regulator. ▪ Prepared a report detailing our understanding of the FSA's view of the principles of good regional governance and qualitative comments of the ways in which other similar market participants address these requirements. The report included guidance and recommendations on gaps between market/leading practices and those of the organization.
Benefits	Management gained independent advice on the broader risk management and control remediation agenda, looking beyond the development of the remediation action plan to its execution.

Select qualifications

Review of risk management practices, governance, compliance and controls—Canadian bank

Issues	For the capital markets division of a major Canadian bank, PwC conducted an end–to-end review of risk management practices, governance, compliance, and controls.
Approach	We organized workstreams to focus on overall governance and compliance, front office, middle office, back office, finance, market risk management, credit risk management, internal audit and technology. We also conducted structured interviews and focused reviews of documentation covering areas such as policies, operating procedures, process, and control documentation, exception reporting, risk reporting, P&L reporting, and risk dashboards. PwC completed a comprehensive review of each area across three major locations and three additional mid-size trading locations. The resulting report incorporated a comprehensive summary of operations and a detailed analysis of each workstream area.
Benefits	Management received a final report that encompassed more than 200 recommendations, based on leading practices. Each finding was fully supported by substantiating evidence, gap impact analysis, and specific recommendations for improvement. The report and recommendations are now being utilized by management as the foundation for a significant transformation program.

Select qualifications

Organizational governance improvement program—large financial institution

Issues	A large financial institution engaged PwC to provide recommendations to the board on improving organizational governance. Several business lines within this institution operated within a sector of the capital markets that was facing a market crisis.
Approach	PwC's work included a review of governance and monitoring functions including risk management, compliance, legal, internal audit, and management committees. The goal was to gain an understanding of how those groups provided oversight to the relevant business areas under review. We assisted in the following areas: ▪ Interviewed senior management across market-facing lines of business. ▪ Reviewed relevant transactions and records. ▪ Compared actual practices to established policies and procedures and benchmarked to practices at other institutions.
Benefits	The board received recommendations related to: ▪ Mitigating reputational, litigation, and regulatory risk. ▪ Improving control structures, risk assessment, policies and procedures, and board oversight.

Select qualifications

Top five US-based financial holding company: recovery and resolution planning assistance

Issues	As one of the five largest financial holding companies in the US, the client was required by its federal banking regulators to develop a "recovery plan" in a compressed timeframe of 12 weeks. The plan had to demonstrate how the client would accomplish the following during a hypothetical period of severe financial stress: ▪ Sustain core business activities. ▪ Ensure the continuity of the client's critical financial services to consumers. ▪ Ensure the continuity of systemically important functions to markets. When developing the plan, the client had to consider certain risk management issues that arose from experiences associated with the bankruptcy of Lehman Brothers.
Approach	PwC worked with management to develop a comprehensive recovery plan. PwC assembled a global team specialized in the areas of governance, risk management, capital and liquidity contingency planning, recovery and resolution planning, business continuity planning, and the client's key business areas, including retail/consumer banking, wholesale banking, and payments services. PwC: ▪ Assisted the company in developing a project management structure and project plan to guide the development of the recovery plan. ▪ Assisted in the analysis of the client's global business activities and significant legal entities. ▪ Advised the client on how to enhance its governance process to facilitate recovery plan decision-making. ▪ Advised on the establishment of a process to maintain the recovery plan on an ongoing basis.
Benefits	PwC helped the company develop a comprehensive recovery plan that met the regulators' initial expectations. The process enabled the client to identify enhancements in many core risk management processes and risk-related documentation. In addition, the project helped the client identify other areas for improvement and facilitated knowledge sharing within the company.

Select qualifications
Large global banking institution—asset guarantee transaction

Issues	A large global banking institution entered into an asset guarantee transaction to limit the amount of potential losses relating to those assets. In order to meet the terms of the guarantee agreement, the institution needed to demonstrate adequate governance and risk management over assets covered by the guarantee.
Approach	PwC helped design and execute a program to assess the banking institution's management of risks relating to assets covered by the guarantee transaction: ▪ Reviewed the institution's governance and infrastructure plans for the guarantee agreement and provided recommendations that incorporated leading practices observed at other major financial institutions. ▪ Identified and documented key processes and controls for management and valuation of multiple asset classes covered under the agreement. Control gaps were identified and communicated to management. Provided recommendations incorporating leading practices observed at other major financial institutions. ▪ Performed testing of the institution's asset identification process and executed procedures to help validate accuracy of underlying systems. ▪ Helped assess procedures for ensuring compliance with asset eligibility criteria and performed detailed testing across multiple asset classes to validate the financial institution's confirmation process and results. Provided control recommendations to help ensure ongoing compliance with asset eligibility requirements.
Benefits	The banking institution was able to demonstrate that adequate governance and risk management controls were in place to comply with the terms of the asset guarantee transaction. The asset guarantee transaction enabled the banking institution to limit exposure to potential losses in asset valuations.

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