

The background of the entire page is a close-up, angled view of a financial market ticker. It features multiple rows of glowing orange LED characters on a dark blue background. Visible text includes "MIL", "PARADE", "SF1", "41.94", and "NT".

Risk appetite: A multifaceted approach to risk management

Based on an IBM survey of financial institutions

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Introduction

The financial crisis that started in the summer of 2007 with a sharp devaluation of U.S. sub-prime mortgage assets has raised concerns about the effectiveness of financial firms' risk management. Several issues certainly deserve specific attention, including the effectiveness of exposure control processes, the objectivity of credit derivatives valuation and the ability of institutions to respond to rapid changes in market liquidity.

Risk management is difficult to define precisely, but may be adequately summarized as the analysis, control and mitigation of risk exposure in relation to specific business objectives. This paper looks at risk management from a financial perspective, focusing on the question of sustainability of profits. The authors have adopted the classical premise that any business activity should deliver a return on investment (both financial and non-financial) that at least balances the entire portfolio of risks it is associated with. This concept of balance is essential. Businesses need to focus on managing financial risk intelligently so that they can realize a profit commensurate with the level of risk. The goal, then, is to identify improvements that can be made to current management practices that can strengthen the risk-return relationship.

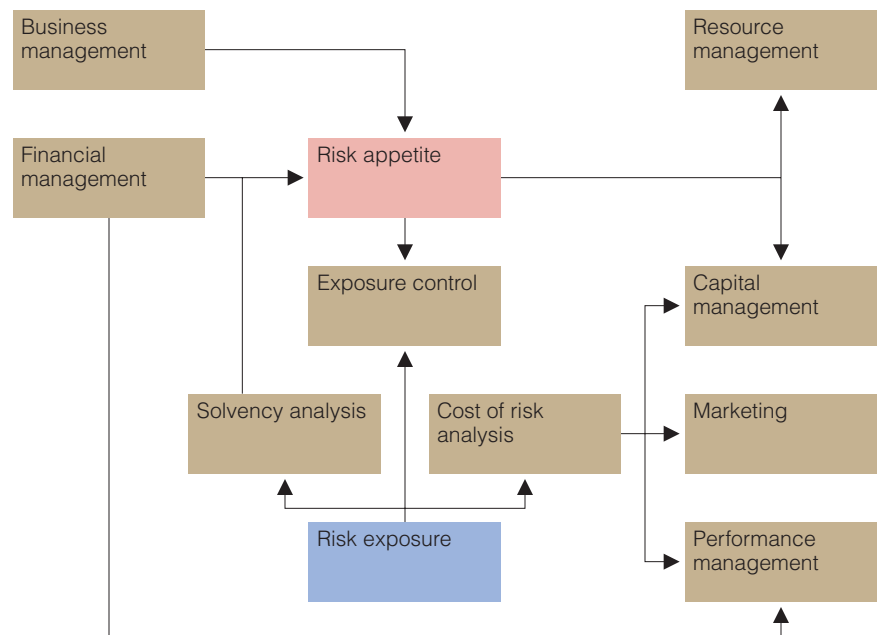
To help frame the discussion, the authors are using the familiar concept of risk appetite, but expanding the idea beyond its commonly used definition. Typically, risk appetite is thought of as equivalent to risk tolerance. A more useful view of risk appetite, however, balances risk hunger against risk aversion and is multifaceted, taking into account several fundamental considerations.

As defined for this paper, risk appetite reflects:

- The business strategy
- The expectations of stakeholders at different time horizons
- The characteristics of the risk-bearing entities
- The nature and characteristics of the risks undertaken
- The possible contagion of risk situations across organizational units, assets-at-risk, and future time horizons.

Risk appetite can (and in the opinion of the authors, should) be a key part of business architecture. The chart below depicts the main connections between risk appetite, the finance and compliance functions and the business. Of particular note:

- Risk exposure *results* from the business activity. It has to be controlled from a solvency standpoint, and it impacts the pricing of financial products.
- Risk appetite *drives* business activity. It combines anticipations in risk and profitability with management preferences to control capital and resource allocation, as well as the distribution of exposure across activities and portfolios.



Business performance can be increased if capital and resources are allocated more effectively, reflecting the balance of risks and rewards in a more integrated and dynamic fashion. In that respect, risk appetite can be considered the cornerstone of modern approaches to bank management, such as value-based management (VBM) and its various implementations.

This line of thinking was tested by surveying a pool of representative financial institutions.¹ In particular, the survey explored the connections between risk appetite and major risk-related business management processes, suggesting some directions for improvement.

The feedback received from chief risk officers (CROs), chief financial officers (CFOs) and other senior practitioners leads to the following conclusions:

- Enhancing the management of risk appetite is highly desirable.
- Doing so calls for a stronger partnership among risk, finance and the business.
- Good foundations exist, notably those resulting from the implementation of international banking standards that comply with the Basel II Accord.

Future development of management practices

Over the past two decades, both the financial management and risk management disciplines have matured greatly. Jointly, they have contributed to a more effective allocation of resources, a greater stability of earnings and have helped to achieve higher investment returns.

Room for further development, however, is significant. While the economic value of assets is progressively better translated in accounting terms, the industry is still a long way from capturing the totality

of what constitutes the value of a firm, notably including intangibles such as know-how, relationships, brand and work culture. Furthermore, measuring value creation also requires estimating the cost of risk, which in itself is a serious conundrum. While the industry has managed to provide satisfactory descriptions of risk for certain asset classes (especially the financial ones), the characterization of numerous other types (such as operating capabilities, franchise and reputation) still remains at an embryonic stage. Finally, certain technical problems appear to be

difficult to surmount, notably the aggregation of heterogeneous risks categories, the optimization of exposure across multiple time horizons and the modeling of behaviors and preferences attached to human decision processes.

It will certainly be some time before practical solutions to these questions become available. But it is highly likely that most of the solutions will be consistent with a framework that can be designed and implemented in the near term.

Exploring the definition of risk appetite

The participants in the survey were asked if they approved of the definition of risk appetite and how much their organization's practices are aligned to it. The survey questions were designed to test the five aspects of risk appetite. Specifically, that risk appetite should reflect and take into account:

- The business strategy
- The expectations of stakeholders at different time horizons
- The characteristics of the risk-bearing entities
- The nature and characteristics of the risks undertaken
- The possible contagion of risk situations across organizational units, assets-at-risk, and future time horizons.

Premise: Risk appetite should reflect the business strategy.

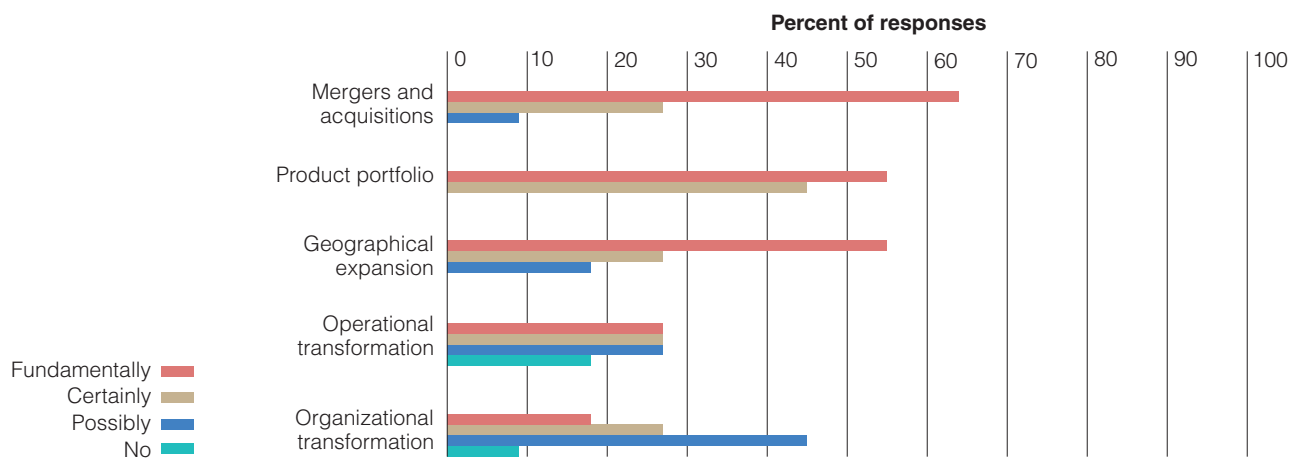
Any viable business strategy involves a series of tradeoffs that combine the assessment of uncertain business outcomes with the organization's objectives and preferences. The parties involved in the formation of the strategy usually have different goals.

For instance, while a regulator endeavors to maximize the long-term survival of financial institutions, the directors of a particular hedge fund might prefer superior short-term performance to a higher life expectancy. These diverging directions may be fundamentally incompatible – the regulators' focus on safety and soundness can, at times, be at odds with shareholder goals. Thus, compromises must be made. Any choice is acceptable provided it is unambiguous, consistent with the organization's statutory goals and compatible with applicable rules and regulations.

The survey participants unanimously agree with this statement. One important consequence is the recognition that any risk measure is not fully relevant if dissociated from its strategic context (just as a temperature of 16 degrees is neither “hot” nor “cold” unless put in context).

More specifically, the respondents believe that risk appetite is a critical consideration when evaluating strategic decisions, especially those concerning mergers and acquisitions, product portfolio and geographical expansion. By contrast, using risk appetite as an input to drive transformational projects was given a relatively lower priority. While organizational and operational design are part of the strategy, survey participants indicate that their relationship with risk and profitability profiles is less direct than for the other components.

Question: Do you think risk appetite should be tightly connected to these strategic objectives?



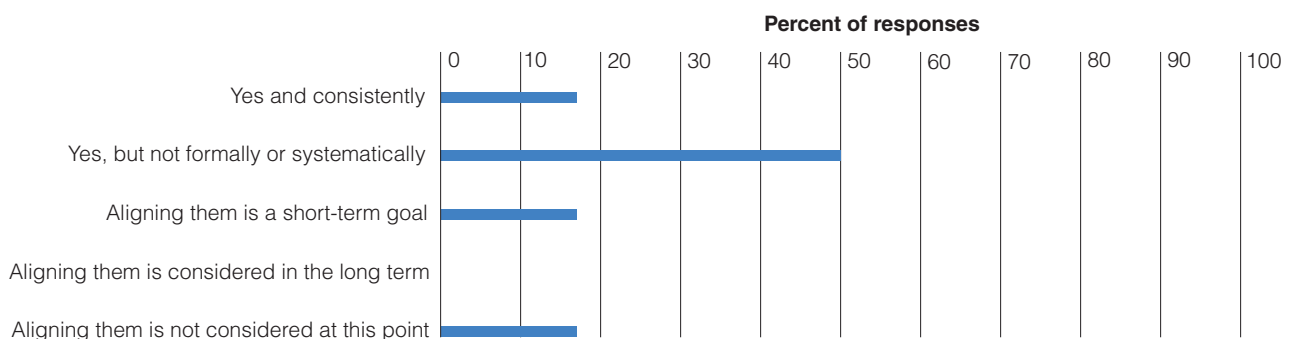
Premise: Risk appetite should reflect the expectations of stakeholders at different time horizons.

The recent credit crisis highlights a particular issue that has long been the subject of debate in business and academic circles: *How can both short and long-term performance be coherently managed?* Often, decisions made to address one are not compatible with the optimization of the other. Decisions are typically made in isolation, either for short-term or long-term horizons. Seldom are these time horizons being considered as a whole, which can lead to sudden and unexpected risk exposure.

Although there may be no solution to that problem, most interviewees agree that time preferences should be made explicit when making business decisions. A typical situation would be when a particular unit is allowed to take incremental risk for a given period of time as a prerequisite to achieve superior performance over the long term.

Risk measures, however, are by definition related to a single horizon, such as the expected holding period, the financial year, etc. Extrapolating them is generally difficult, making the implementation of multi-horizon management a particularly ambitious goal. Not surprisingly, few of the survey respondents are applying such practices consistently.

Question: Are your organization's management practices aligned to the principle that risk appetite should reflect the expectations of stakeholders at different time horizons?



Premise: Risk appetite should reflect the characteristics of risk-bearing entities.

The international financial industry regulatory framework, under the Basel II Accord mandates in particular, recognizes that an organization's level of risk management capabilities should be reflected in the degree of tolerance to risk undertaking. These capabilities include skills, processes and systems.

This concept is partly driven by the regulators to the lowest level in the organization (for example, through the Basel II "Use Test"), and needs to be applied to units and business lines. The risk management excellence of a particular entity would then be reflected in the limits and delegation levels to which it is submitted.

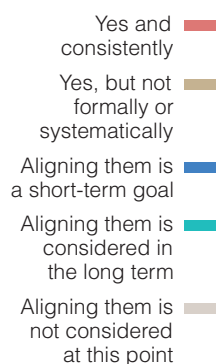
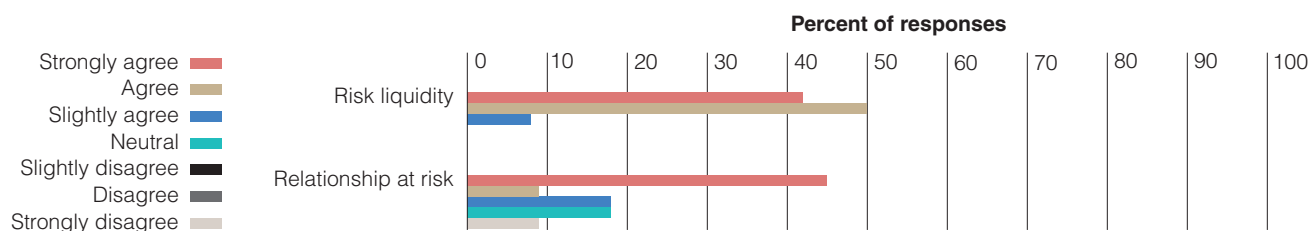
All survey participants approve of this approach, with nearly half of them stating that they already put it in practice in a systematic fashion.

Premise: Risk appetite should reflect the nature and characteristics of the risks undertaken.

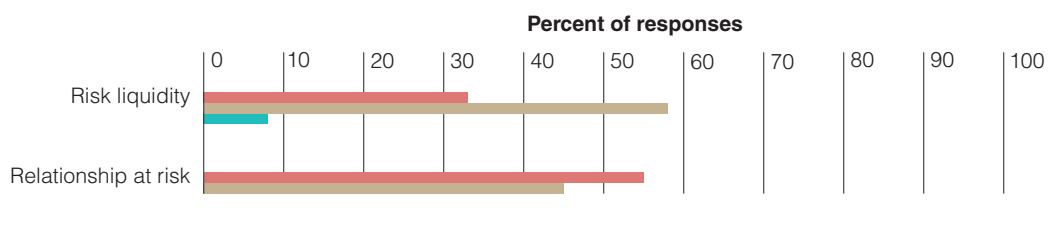
Consensus exists among those surveyed that information about the magnitude of a risk alone is not sufficient to make decisions about risk exposure. Put it differently, two exposures with identical risk levels should be treated differently depending on the nature and characteristics of the risk involved. The statement may at first sound irrational, but it simply recognizes the fact that practical mathematical models do not capture all the complexity of event dynamics, nor do they leave room for human judgment and preferences.

All participants agree that a key consideration is the organization's ability to offset, transfer or engineer the risk exposure (frequently referred to as risk liquidity). With slightly more divergent opinions, they also attribute some importance to the type of asset that is directly or indirectly put at risk. To questions focused on business relationships (as an asset type), most respondents admit that though not measurable directly, the value of the relationship put at risk should be integrated in the decision.

Question: Do you agree that risk appetite should reflect...risk liquidity?
Relationship at risk?



Question: Do your organization's management practices reflect the principle that risk tolerance levels should align with the nature and characteristics of the risks undertaken?



Premise: Risk appetite should take into account the possible contagion of a risk situation, across organizational units, assets at risk and future time horizons.

Another lesson from the sub-prime crisis is that losses often occur on assets that are far removed from those initially impacted. Multiple contagion paths can materialize, financial or otherwise.

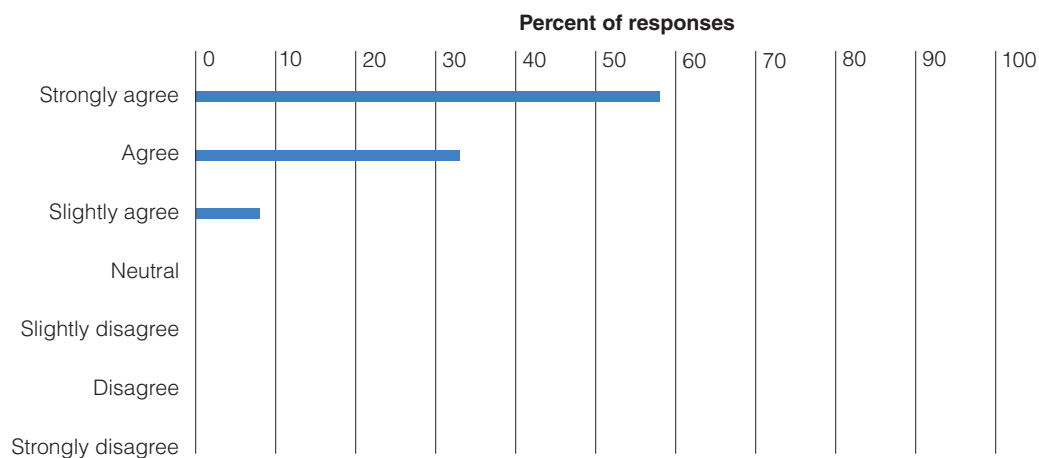
The financial linking of assets through securitization and funding have been extensively analyzed, and significant gaps have been found in the transparency of underlying assets for valuation and liquidity purposes – often the true risks are hidden. The financial linkage of assets at risk is not the only issue; problems with non-financial assets associated with the business can sometimes be just as damaging. For instance, a system failure that reduces the quality of service may deteriorate customer confidence, affect their loyalty and impede financial performance significantly in the long term.

Potential contagion is generally difficult to spot. The most catastrophic situations will always be those that defy rational anticipation, as James Reason’s “Swiss cheese model” describes very well.² (In this model, individual weaknesses – the “cheese holes” – can occasionally align and create “a trajectory of accident opportunity.”) It is indeed a duty of the risk manager to capture some archetypal scenarios, in order to account for possible amplification effects when making business management decisions.

Identifying all relevant sources of risk is critical not only for addressing potential contagion, but also for overall risk management. Value-based management implementations such as risk-adjusted return on capital (RAROC, a risk-adjusted performance metric) or expected value added (EVA) require that all risks related to the activity or asset measured are captured. This may seem a rather ambitious objective, but Pillar 2 of the recent Basel regulation is a strong impetus for financial institutions to move in this direction:

The ICAAP [Internal Capital Adequacy Assessment Process] should capture all the material risks to which the institution is exposed, albeit that there is no standard categorization of risk types and definition of materiality.... The ICAAP should form an integral part of the management process and decision making culture of the institution.³

Question: Do you believe that, despite the practical difficulty of identifying pathways, contagion is a major factor to consider?



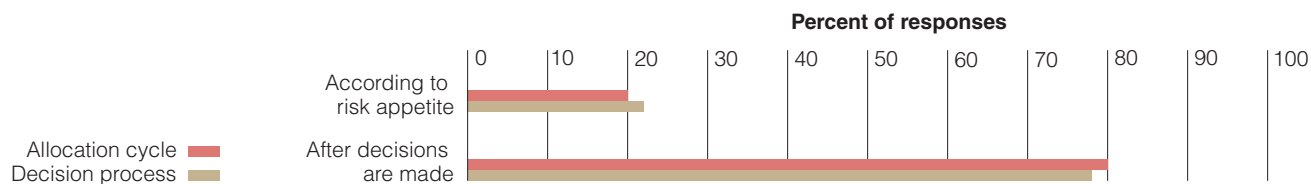
The role of risk appetite in risk management

Risk appetite management can have an important role in correctly linking risk to business decisions, but the survey results show that risk appetite is as yet an underutilized concept.

Required economic capital (defined as the higher potential loss or depreciation that a business might face over a given horizon under a given confidence level), has emerged as the preferred normalized measure of risk. Matching financial resources to economic capital has become the centerpiece of the art of financial management.

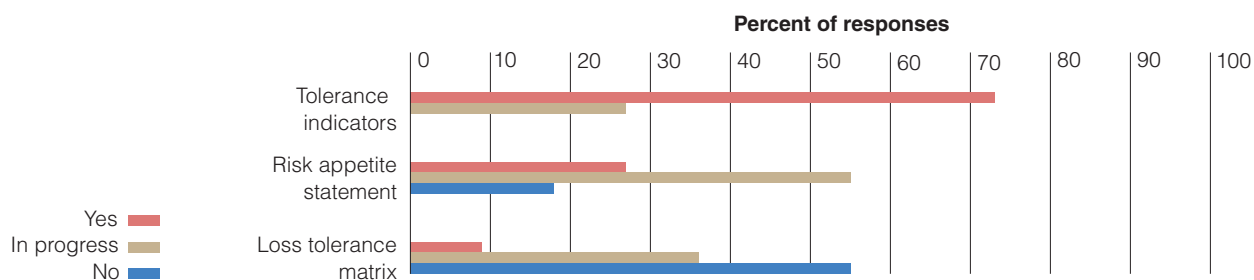
Indeed, most organizations already have economic capital allocation processes in place. Most of the survey respondents stated that they are presently allocating capital across units, with sophisticated methods based on profit-and-loss correlation as well as marginal cost of risk. However, they generally admit that the linkage between capital allocation and business decisions is not as effective as it could be. As some put it, capital is frequently attributed “after the fact,” and/or on a rather judgmental basis. Efforts are being devoted to expanding the granularity of economic capital allocation post-event and leveraging Basel II infrastructures. There is also evidence that efforts to allocate capital pre-event are being reenergized.

Question: Does your organization allocate capital, and how is risk appetite incorporated into decision-making: according to risk appetite, or after decisions are made?



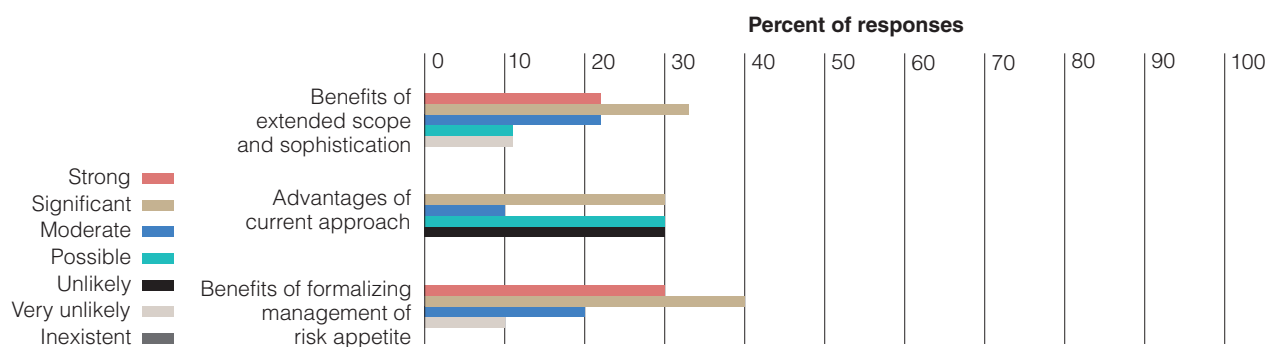
While a majority of respondents declare that risk appetite management is a formal part of their economic capital management process, a large proportion actually limit the management of risk appetite to the setting of indicators at the beginning of the capital planning cycle (only 27 percent say they have implemented risk appetite management at the enterprise level).

Question: Have you implemented risk tolerance indicators, and if so are they associated with risk appetite? Have you refined these indicators by adopting a tolerance matrix (i.e., breaking them down by various dimensions of analysis)?



Even though respondents currently limit their use of risk appetite in their risk management practices, they see its potential. While existing practices have their advantages, the majority of respondents see a significant benefit in enhancing the management of risk appetite.

Question: How would you assess the potential benefit of enhanced risk appetite management compared to your current risk management approach?



They acknowledge four main difficulties to making rapid progress in that direction, with relatively even priorities:

- Strategic alignment
- Organizational change
- Skills and culture
- Operational issues.

Most interviewees have projects currently under way, especially in the areas of policy development, education, model development and organizational change.

In the short term, institutions should implement appropriate policies and change programs to address:

- The responsibility of business units to estimate and disclose the comprehensive list of risks they are exposed to, as well as the connections between those risks and expected returns
- The inclusion of comprehensive risk indicators (short- and long-term) into financial plans and reports
- The deployment of a cross-enterprise enterprise risk management (ERM) framework that drives and facilitates adoption of risk-based management practices.

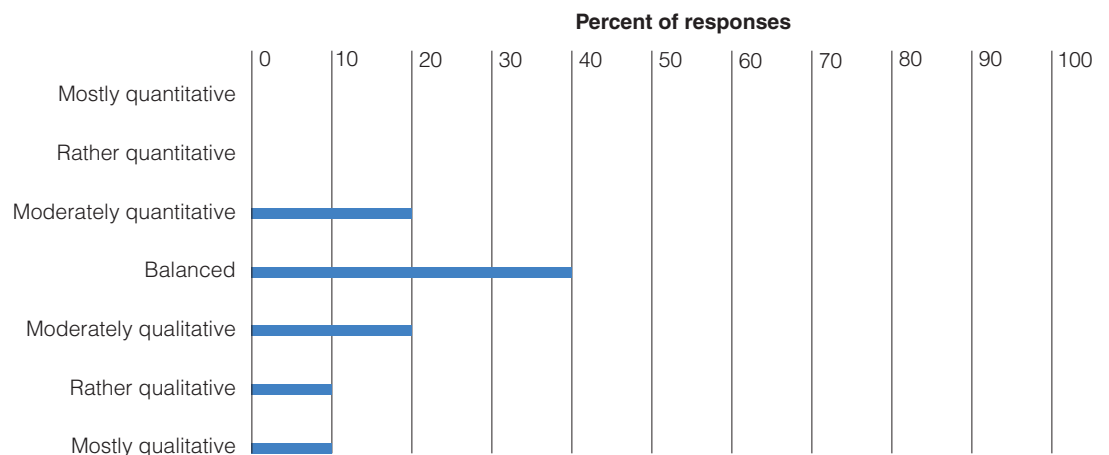
Risk appetite management today

The survey revealed that the management of risk appetite is practiced inconsistently, but that it is being more widely adopted across organizations and its nature is evolving over time.

An important point concerns the granularity of risk management on an enterprisewide level. As far as allocation of economic capital management is concerned, the survey responses revealed a moderate granularity of management for the three major dimensions of the business structure: organizational, portfolio and geographical.

Risk appetite is sometimes established top-down, but in most cases a mixture of top-down and bottom-up is used. The unit of analysis can be a business or product line, a department or a portfolio. Risk appetite has yet to be established at a lower granularity level. No common practice emerges when it comes to the frequency of analysis. Some organizations review capital on an ad-hoc basis, where others do it annually or even quarterly.

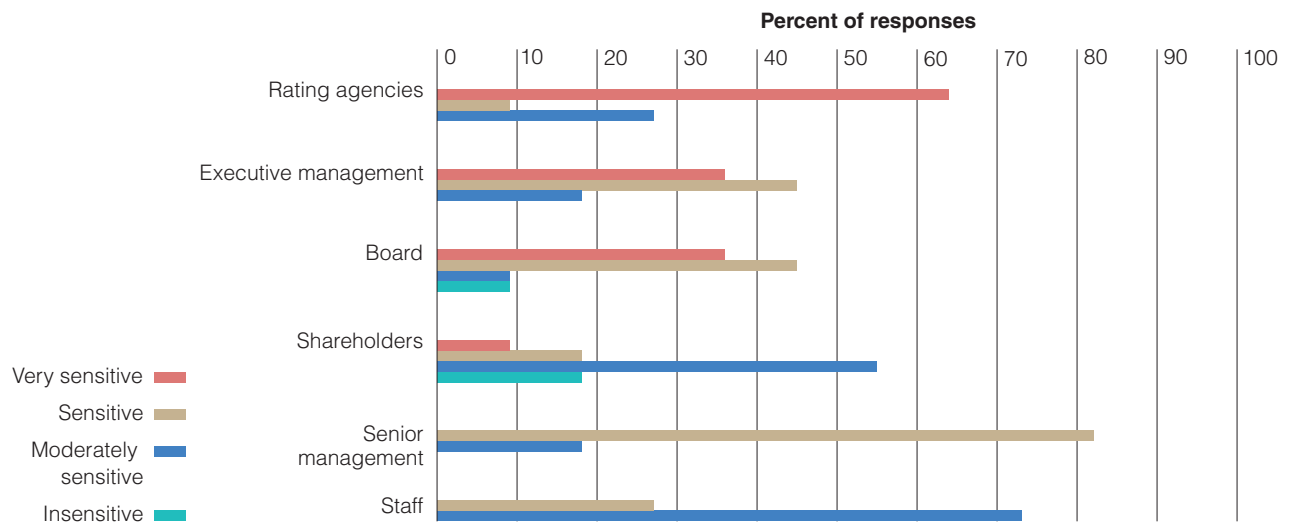
Question: Where risk appetite is used “through the cycle” (that is, reassessed within the financial year), is it done on a qualitative or quantitative basis?



All participants to the survey anticipate a shift towards more quantitative approaches in the coming years. They declare already using risk appetite in their key management processes, admitting this application is still basic and early stage.

Interviewees recognize that a wide range of parties are sensitive to risk appetite, to varying degrees. As one could expect, rating agencies come first in the list of most sensitive parties, followed by the directors and executive managers:

Question: How would you rate the sensitivity of these stakeholder groups to risk appetite?



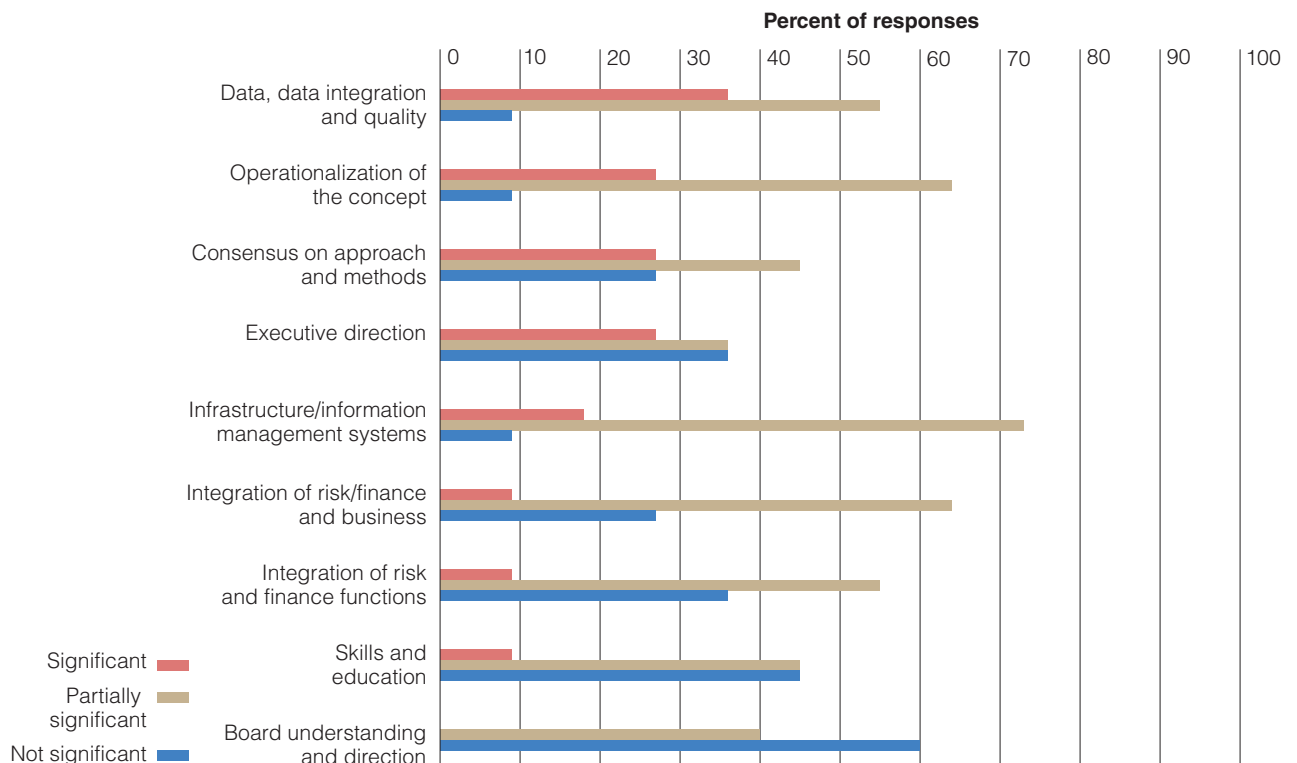
Some of these groups should indeed be responsible for managing risk appetite and/or reviewing risk appetite methodology and policies. Some 33 percent of respondents believe that capital management and risk appetite management should be performed by the same organization, while 56 percent consider that resources should be shared between the two functions.

As risk appetite clearly crosses finance and risk functions, it could possibly sit in either of these organizations. Based on customer feedback to IBM independent of the survey, a good practice seems to be to leave it outside both, undertaken by a specific committee, until more convergence and integration has occurred between them.

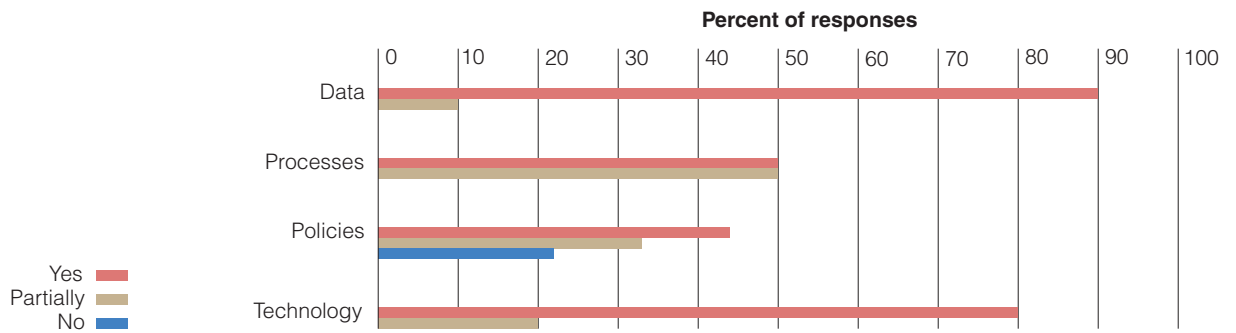
More effective management of risk appetite

Better management of risk appetite may require significant changes at the organizational, business process and infrastructure levels. Survey participants identified a number of challenges, and expressed concern over where resources devoted to it would best be used. However, they believe that existing investments can be leveraged to facilitate the process.

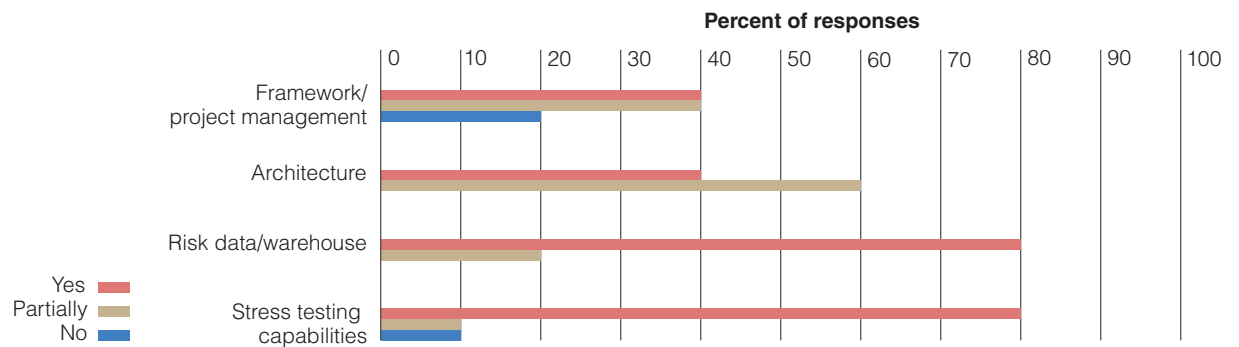
Question: Which of these areas do you see as significant challenges to implementing the processes required for effective risk appetite management?



Question: Can you leverage investments already made in Basel II compliance to manage risk appetite?

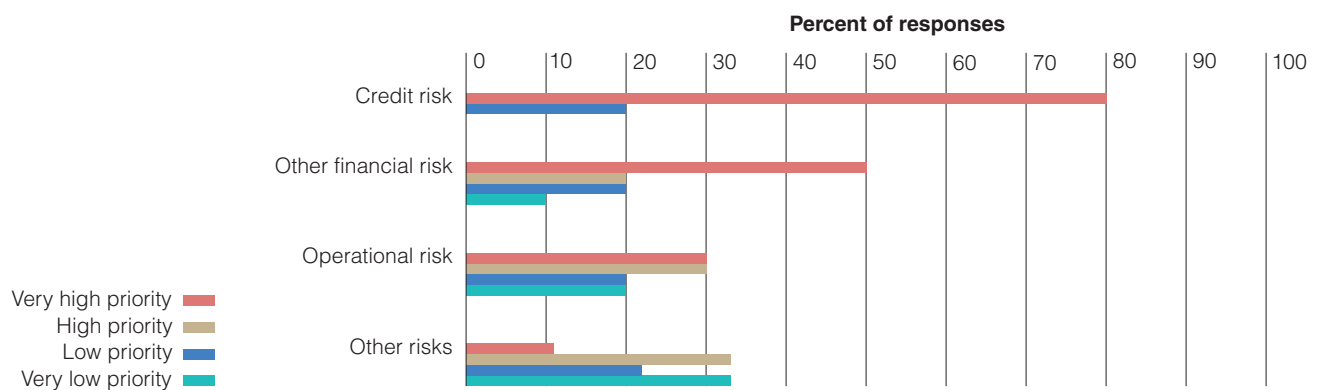


Question: What Basel II capabilities can you re-use to manage risk appetite?



Regarding where efforts for management of risk appetite should be concentrated, capital management initiatives appear much more focused on financial risks than on operational and other risks. Some believe that developments should be concentrated on credit risk, where most of the exposure resides and practical tools (e.g., credit portfolio engines) are available.

Question: How would you rank the risk appetite management investment priority in the following areas?



Recommendations for managing risk appetite

For those organizations seeking to better integrate risk and finance management, risk appetite should, in our view, be given a heightened emphasis. Risk appetite involves all of the “Three P’s” of total risk management: price, preferences, and probabilities.⁴ It cannot rely purely on conventional risk exposure metrics. Rather, it incorporates those into the broader context of bank management.

For capital and resource allocation to be effective, risk appetite should progressively be integrated alongside income, investment and expenditure in day-to-day management systems.

For more information

To learn more about risk management and risk appetite, visit ibm.com/financialmarkets or contact the authors directly.

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In such a model, the degree of cooperation between risk, finance and the business would be increased. It would in particular be:

- Continuous, rather than cyclical
- More adaptive, less normative
- Relying on an increased number of shared processes and databases.

Multiple benefits could be derived from this approach. Capital and resource allocation would be better optimized (enhancing profitability as a result), alignment between risk and finance would be improved, and difficult-to-quantify elements, as well as longer-term business assumptions, would be better captured through an enhanced dialogue between the parties involved.

Of course, managing value creation on a continuous basis is an idealistic vision. Rather, we recommend that financial institutions progressively transform themselves into “value creation-centric” organizations. Some of the first steps in that direction could be:

- Refine the definition, vision and objectives of the risk appetite management function.
- Define a development roadmap, and assign roles and accountabilities.
- Design a plan to integrate the data and systems supporting risk-based decisioning.





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¹ The 2007 survey was performed through qualitative interviews, mostly face-to-face. A range of medium- to large-size banks representative of the three main geographical zones was selected: five in North America, three in Europe and four in Asia-Pacific. The management style of these organizations varies from very centralized to very decentralized.

² James Reason, "Human Error," Cambridge University Press, October 26, 1990.

³ CEBS (Committee of European Banking Supervisors), "Guidelines on the Application of the Supervisory Review Process under Pillar 2," (CP03 revised).

⁴ Andrew W. Lo, "The Three P's of Total Risk Management," *Financial Analysts Journal*, January/February 1999, p. 13-26