

The risk management function of the future

How regulatory mandates and expectations are
shaping risk management at U.S. banks

2017 SURVEY RESULTS



Foreword

Governments around the world responded to the financial crisis of 2007-2008 by imposing a vast array of new regulations on financial institutions to reduce the likelihood of similar future events. In the United States, actions were taken with the aim of preventing a systemic banking failure—initially through stabilization initiatives administered through the Federal Reserve, Federal Deposit Insurance Corporation and Department of the Treasury and, shortly thereafter, through enactment of the Wall Street Reform and Consumer Protection Act, commonly known as Dodd-Frank. That statute had a significant impact on the U.S. financial landscape as the regulatory pendulum swung toward a more activist government role in regulating banks and the financial system in which they operate. Tactically, bankers and regulators alike were forced to adapt to new operational, risk management and oversight frameworks.

When MIT's Golub Center for Finance and Policy and Grant Thornton LLP began to explore the prospect of conducting a survey of banks in early 2016, our shared interest was to consider how U.S. banks are responding to the promulgated—yet still under development—regulations emanating from Dodd-Frank and related frameworks. We were eager to gain insights on whether those regulations are having the intended effect of improving risk management practices at banks and of consolidating the structure of their risk functions, and the effects on the costs of compliance. We also decided to develop a complementary piece of the study to focus on the perceptions of regulatory experts—former regulators and researchers in academia and at think tanks—concerning systemic risk and the effectiveness of regulations, now and in the future.

By the time we developed and began to administer the survey, the 2016 election was fast approaching. As we now know, that election brought to power a new Administration and Congress seemingly intent on revisiting and revising the Dodd-Frank approach to financial regulation. With the bulk of survey responses collected in the 10-week period between the election and inauguration, rather than commenting on a relatively steady state of affairs, participants were presented with an opportunity to ponder regulatory compliance and potential reforms under an entirely new set of political circumstances.

By directing the survey at senior officers (e.g., risk, financial and credit officers) from U.S. banking institutions, we sought to identify trends and forward-looking aspects of risk management. The survey comprised 42 questions projecting a 3-5 year horizon along the following themes: efficiency, metrics and analytics, resilience, profitability, value and regulatory compliance management.

Our analysis of survey responses led us from those survey themes to four areas of current and future focus for banks. Those include: i) managing regulatory compliance costs; ii) institutionalizing the risk management function; iii) utilizing risk data, analytics and infrastructure; and iv) sustaining an effective risk culture.

In addition to reporting on the expectations of banking professionals, this report provides insights on how regulatory experts view current bank regulations, along with their perceptions of possible future mandates concerning systemic risk and the effectiveness of various regulations.

The risk management function of the future is an evolving and dynamic function, which is becoming adaptive and more resilient and addresses new classes of emerging risks. It is gradually transcending the basic focus on regulatory compliance and, through heightened institutionalization and advanced technology, embedding the risk dimension into decision-making processes and strategic management.

What does the future hold? Only time will tell, but this report sheds light on how banks have responded to post-financial crisis regulatory mandates and on whether certain risk management practices, which may have initially been primarily compliance-driven, may evolve into sustainable business-as-usual practices that drive the risk management function of the future even if current requirements are relaxed. We expect future analyses will build on these findings and yield additional insights on changing practices and attitudes. The pendulum continues to swing.



Contents

Executive summary	1
I. Managing regulatory compliance costs	3
Cost of regulatory compliance	4
Compliance costs: regulatory experts' perspectives	6
Who bears compliance costs, and how to reduce them?	7
How can the burden be reduced?	8
Effectiveness of new regulations	9
Comparison of banker and regulatory experts' views	10
II. Institutionalizing the risk management function	12
Risk management goes beyond compliance	13
Risk management and value creation	15
Driving efficiency into the risk function	17
Effectiveness and efficacy	19
Risk management function of tomorrow	20
III. Utilizing risk data, analytics and infrastructure	23
State of risk data, analytics and infrastructure	24
Potential for the future	27
IV. Sustaining an effective risk culture	28
Building a risk culture	29
Concluding thoughts	33
Acknowledgements	34
Glossary of key terms	36
Appendix A: Survey methodology	39
Appendix B: Additional information for figures	40



Executive summary

In this report, *The Risk Management Function of the Future: How Regulatory Mandates and Expectations Are Shaping Risk Management at U.S. Banks*, we convey the results of a survey of bank and regulatory professionals taken at a time when the financial regulatory framework is being revisited.

The risk management function (RMF) at banks has progressed substantially in recent years. Regulatory frameworks developed in response to the Basel Accords, Dodd-Frank and other mandates have driven a more disciplined, consistent and systematic approach to risk management. In that context, we present the following key findings of this survey.

Key findings

Regulatory compliance remains a driving force in risk management.

- A majority of respondents indicate that their institutions' RMFs are focused largely on regulatory compliance.
- The perceived cost of compliance varies among regulations and, to some extent, between bankers and regulators. Both bankers and regulatory experts perceive requirements for stress testing and the Consumer Financial Protection Bureau (CFPB) as having significant costs. Bankers also view capital requirements as entailing significant costs, whereas regulators rate them as much less costly. Conversely, bankers do not view living wills as significantly costly, whereas regulators do. Both groups were relatively unconcerned about the costs of the Volker Rule and the supplementary leverage ratio.
- As to the effectiveness of specific regulations, respondents from larger banks and regulatory experts concurred that stress testing is effective. Both groups rated capital requirements as either moderately effective (bankers) or very effective (experts). For most regulations, regulatory experts rated effectiveness more highly than bankers, with the largest differences pertaining to living wills and the supplementary leverage ratio. Both groups gave the CFPB low marks for effectiveness.
- Many institutions are either planning or implementing initiatives to consolidate and simplify compliance units.

Banks' RMFs are also increasingly utilized for revenue-generating purposes.

- Heightened risk management practices, such as stress testing, are improving many banks' business decision-making processes, such as facilitating capital planning and management, managing credit risk, calibrating risk appetite, and linking risk-related decisions with strategic intent.
- Some institutions, particularly larger ones, aspire to monetize RMF activities and deliver revenue-generating external risk-related services (e.g., supplementing FinTech capabilities).
- While large institutions perceive value from the information obtained through the RMF, smaller institutions regard their RMFs as primarily aimed at achieving regulatory compliance.
- Practices for allocating risk costs and internal transfer pricing have not been consistently adopted in the industry, which may impede recognition of RMF value beyond regulatory compliance.

The RMF is evolving to exploit emerging technologies and cover a broader range of risks.

- Advancing RMF efficiency is a common objective among a majority of institutions, pursued through continued right-sourcing, automating, simplifying, digitizing and standardizing. However, efficiency measurement and tracking are not consistent across the industry.
- Many institutions are investing in advanced analytics and data modeling techniques aimed at deploying digital business tools and improving risk management practices.
- Banks are seeking to adapt new technologies, such as blockchain, to potentially reduce operational risks.
- The RMF is incorporating and assimilating new risks related to nonfinancial/operational matters such as cybersecurity, digital, model and vendor risks.
- The majority of respondents are highly concerned about cyber risk but do not yet consider their cyber risk management approach robust.

Risk management is becoming more prominent in bank culture.

- Banks expect the future role of the chief risk officer (CRO) to include increased strategic involvement and greater influence.
- There is a general trend toward upstreaming risk activities to a first line of defense to improve performance and strengthen risk culture.

This report organizes the survey results into four areas expected to have significant impact on the future of the RMF at U.S. banks and provides context to assist in interpreting the findings. Those areas include: i) managing regulatory compliance costs; ii) institutionalizing the RMF; iii) utilizing risk data, analytics and infrastructure; and iv) sustaining an effective risk culture.

The invitation to participate in the survey was sent to over 1,000 senior bank officers in institutions with total assets greater than \$5 billion.¹ Invitations also went to 117 regulatory experts. While the responses provide valuable insights into the participants' views of risk management, limited sample size precludes drawing statistically significant inferences.

Appendices to the report explain the survey methodology and provide additional information about the data, including response rates to each survey question highlighted in this report.

¹ Two institutions with assets less than \$5 billion were included in this survey.

I. Managing regulatory compliance costs

The cost of bank regulatory compliance is of concern to the directly impacted financial institutions as well as a range of other participants in the economy. Regulations can increase the cost of credit to companies and households, consume managerial attention and potentially decrease competition because larger institutions are better able to bear the fixed costs of compliance.² A great deal of uncertainty persists regarding costs to banks in complying with regulations emanating from Dodd-Frank mandates,³ particularly given that the legislation's full impact has not yet been felt as implementation of regulations continues.⁴

There is no straightforward way of isolating Dodd-Frank-related expenses from other compliance and voluntary risk management activities within a bank. While banks often cite increased compliance and regulatory costs, it is difficult to disentangle the human resource, process and technological improvements that would have occurred at such institutions if Dodd-Frank had not been enacted. Moreover, the data available through Call Reports and other regulatory filings do not break down regulatory versus other types of noninterest expenses; therefore, it would likely be arduous to collect more detailed information about regulatory costs.⁵

Given those challenges, the survey instrument was designed to solicit input from bankers and regulatory experts on their perceptions of Dodd-Frank and other compliance costs, now and in the future. We sought information on the general magnitude

of costs of specific regulations, incurred directly and indirectly, the extent to which such costs are passed on to customers, and whether the regulatory burden could be lightened without substantially increasing risk.

While costly, regulations are intended to convey benefits in the form of greater institutional and systemic stability. Ideally, regulation would be designed to achieve its goals at a minimal cost. To develop a better understanding of the cost-benefit tradeoffs, we also sought the views of participants—at banks and in the regulatory community—on the effectiveness of regulations in strengthening bank risk management.

² Robin Greenwood, Samuel G. Hanson, Jeremy C. Stein, and Adi Sunderam, *The Financial Regulatory Reform Agenda in 2017*, February 2017.

³ Llewellyn Hinkes-Jones, *How Much Did Dodd-Frank Cost? Don't Ask Banks*, Bloomberg Law: Banking, February 2, 2017.

⁴ U.S. Government Accountability Office, *Dodd-Frank Regulations: Agencies' Efforts to Analyze and Coordinate Their Recent Final Rules*, GAO-17-188, Dec 29, 2016.

⁵ Federal Deposit Insurance Corporation, *FDIC Community Banking Study*, December 2012.

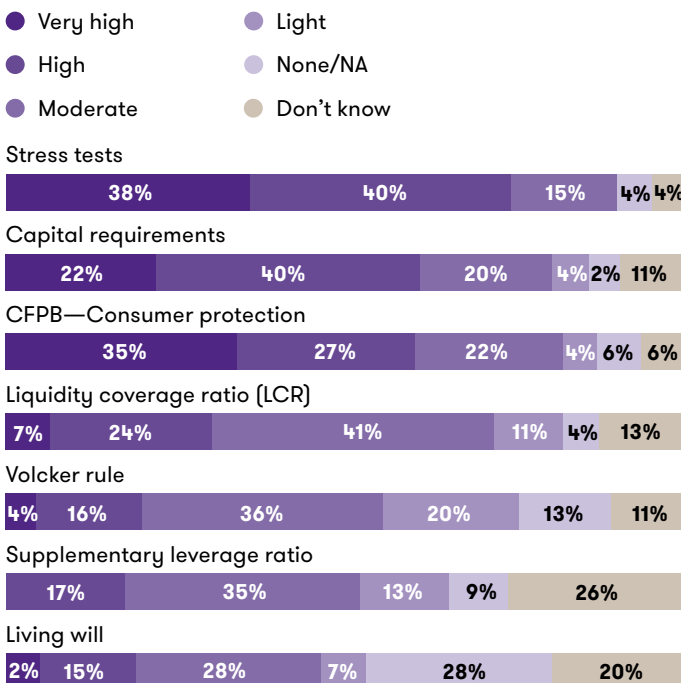
Cost of regulatory compliance

Survey participants were asked to rate the overall burden in terms of the cost of compliance associated with seven types of regulation for their institutions: capital requirements, liquidity coverage ratio (LCR), Volcker rule, stress tests, living will, CFPB-consumer protection and supplementary leverage ratio (see Glossary for definitions).

Participants most frequently rated the costs of compliance associated with stress tests, CFPB-consumer protection and capital requirements as carrying a high or very high burden (Figure 1).

Those results are generally consistent across asset size groups, although those with assets under \$10 billion were somewhat less concerned about capital requirements.

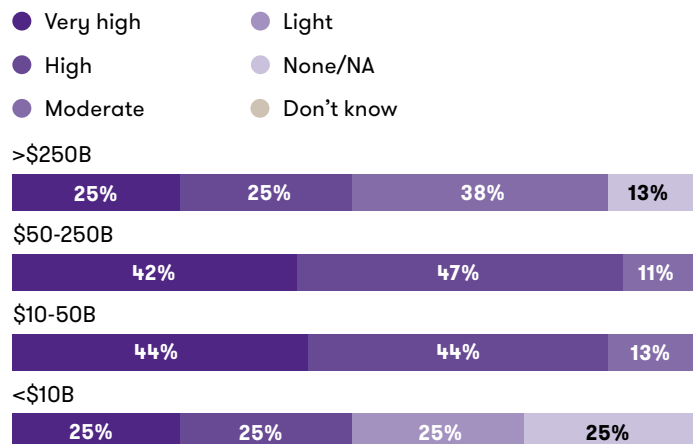
Figure 1: Burden in terms of cost compliance



The cost of complying with stress testing regulations varies with asset size and is cited as particularly high by banks in the \$10 billion to \$250 billion size range (Figure 2).

While the sample size is very limited, half of responding banks with less than \$10 billion in assets rated the cost as either high or very high. Although bank holding companies with less than \$10 billion in assets are not statutorily required to perform stress tests, supervisory expectations can be pushed down to smaller institutions. So while not formally subject to Dodd-Frank Act Stress Testing (DFAST) and despite the apparently significant costs, smaller banks may perform stress tests to demonstrate best practices to an examiner.

Figure 2: Cost of compliance (by asset size)—Stress tests



Which direct and indirect costs are significant?

Compliance costs can be direct, such as additional personnel and systems, or indirect, such as taking time away from other activities. They may also result in a reduction of services and products offered.

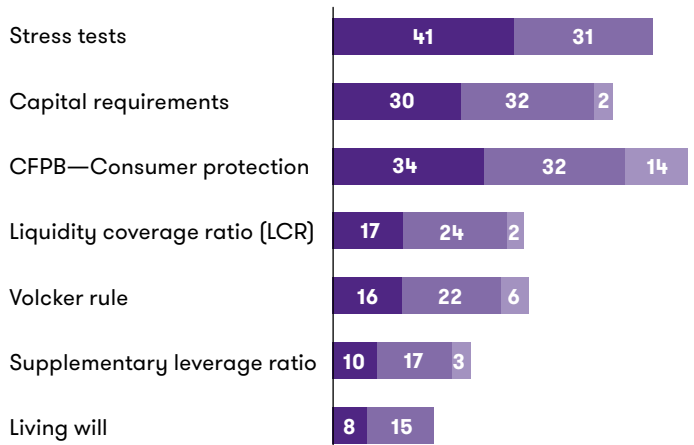
Which types of costs are more important and what forms do they take? To explore this issue, we asked about these effects for each regulation type. Interestingly, indirect costs were at least as significant as direct costs for five of the seven types of regulations considered (Figure 3).

However, respondents reported that their total annual costs of regulatory compliance, as a percentage of net income, was similar for direct and indirect costs.

“Indirect costs were at least as significant as direct costs for five of seven regulations.”

Figure 3: Significant types of costs for each regulation type
(Number of responses)

- Direct compliance costs like additional personnel and systems
- Indirect costs and managerial resources
- Reduction in services and products offered

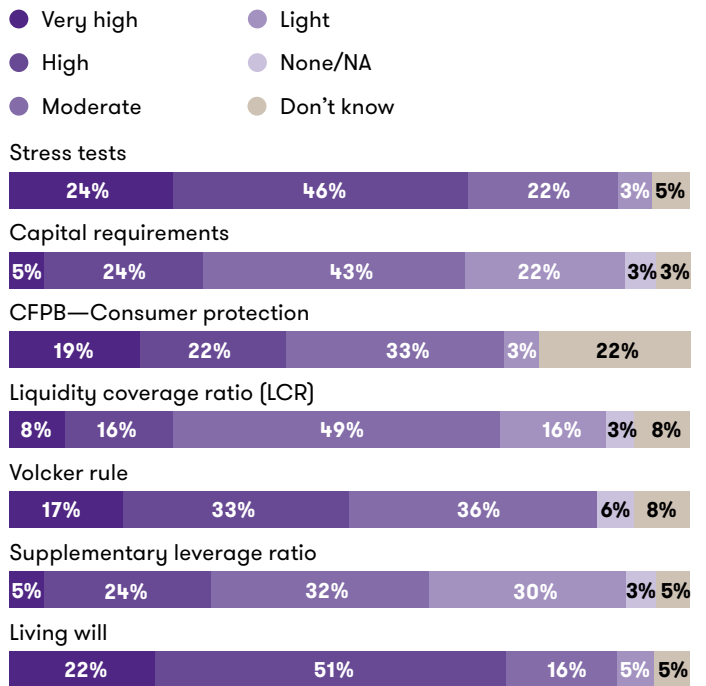


Compliance costs: regulatory experts' perspectives

A novel feature of this study is the inclusion of regulatory experts' opinions on questions similar to those posed to the bankers. Here, regulatory experts were asked to rate the compliance cost burden of each regulation (Figure 4). The responses of bankers and regulatory experts were similar on the costs of compliance associated with stress tests, consumer protection and liquidity coverage ratios, with both perceiving high costs for stress tests and consumer protection.

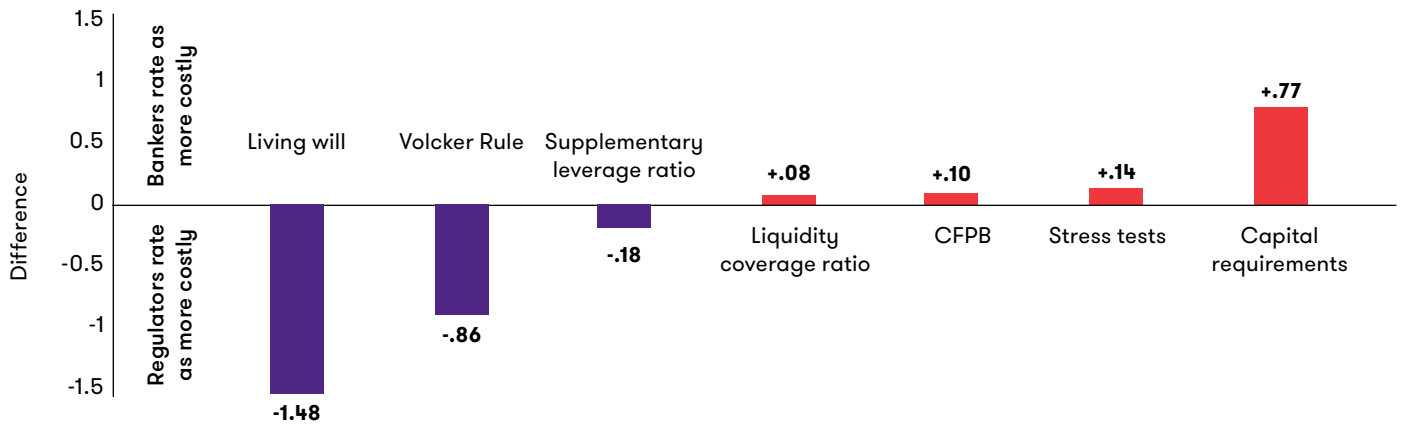
For other types of regulation, perceptions of the cost burden are notably different between the two groups (Figure 5).⁶ While regulatory experts rate capital requirements as being much less burdensome than bankers do, they rate the Volcker rule and living wills as being more costly than bankers.

Figure 4: Regulatory experts—cost burden of compliance



⁶ See Appendix B for the procedure used to calculate the disparity.

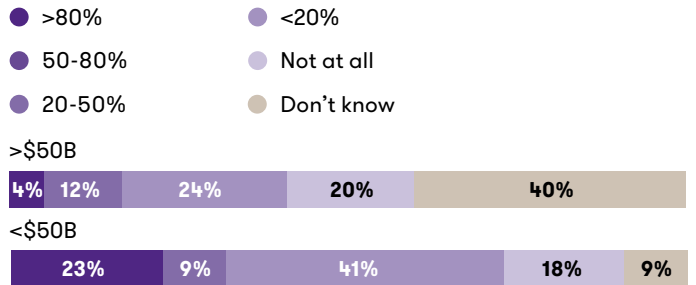
Figure 5: Disparity in banker/regulator views—cost of compliance



Who bears compliance costs, and how to reduce them?

Increased compliance costs in the face of new post-financial-crisis regulations may come as little surprise, but who ultimately bears those costs is less obvious. We asked bankers to what extent regulatory costs are directly or indirectly passed on to customers, and they indicated that less than half of regulatory costs are passed on to customers (Figure 6).

Figure 6: To what extent are regulatory costs passed through to customers?



How can the burden be reduced?

Bankers were asked to suggest one way their regulatory burden could be reduced without increasing risk. Common responses included consolidating redundant regulations, reducing the number of regulators they interact with, and tailoring regulatory requirements regarding size/risk profiles on a bank-by-bank basis (Figure 7).

Figure 7: Potential to reduce regulatory burden without increasing risk



Effectiveness of new regulations

Bankers were asked to assess the effectiveness of seven specific regulations in making their institutions safer. They most frequently rated stress tests and capital requirements as highly effective (Figure 8), which were both also frequently rated as highly costly. They viewed living wills as the least effective, with the CFPB, the Volker rule, and the supplementary leverage ratio also seen as contributing little to safety.

While respondents from banks of all sizes rate the effectiveness of capital requirements fairly high, opinions on stress testing vary with asset size. Respondents from smaller banks rate the effectiveness of stress testing as low compared with those from larger institutions (Figure 9).

Figure 8: Effectiveness of regulations

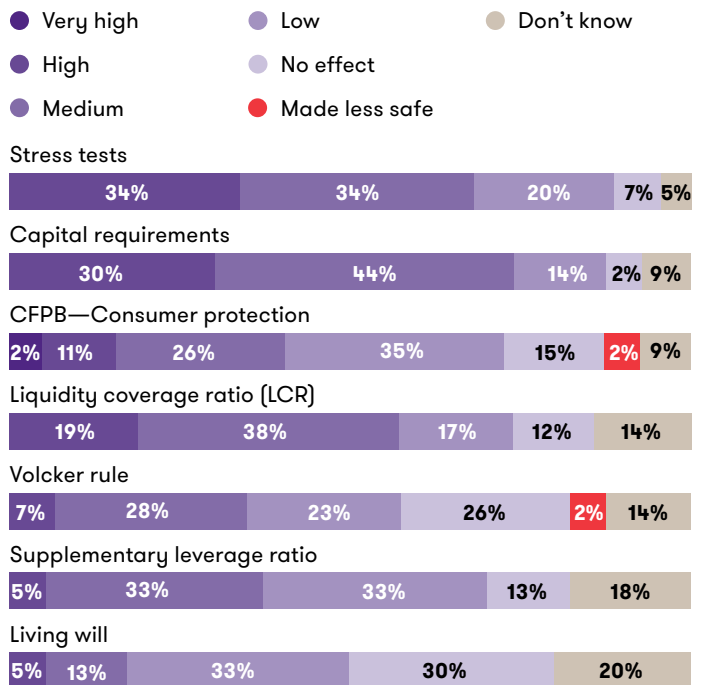
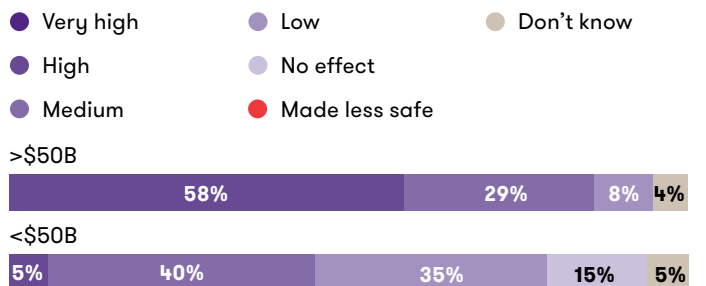


Figure 9: Effectiveness of regulations (by asset size)—stress tests



Comparison of banker and regulatory experts' views

Regulatory experts were asked to rate the effectiveness of the regulations in making the banking system safer. Most viewed capital requirements and stress tests as highly effective and gave the CFPB and Volcker rule the lowest marks, with several respondents even suggesting that they make the system less safe (Figure 10).

 **80%**

Regulators most often cited capital requirements (80 percent) and stress tests (70 percent) as highly effective regulations for the financial system.

Figure 10: Regulatory experts' views on effectiveness

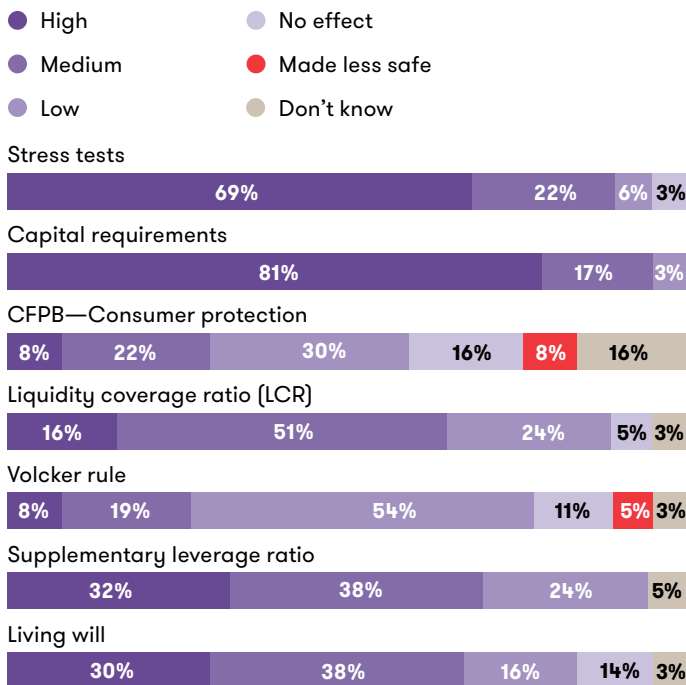
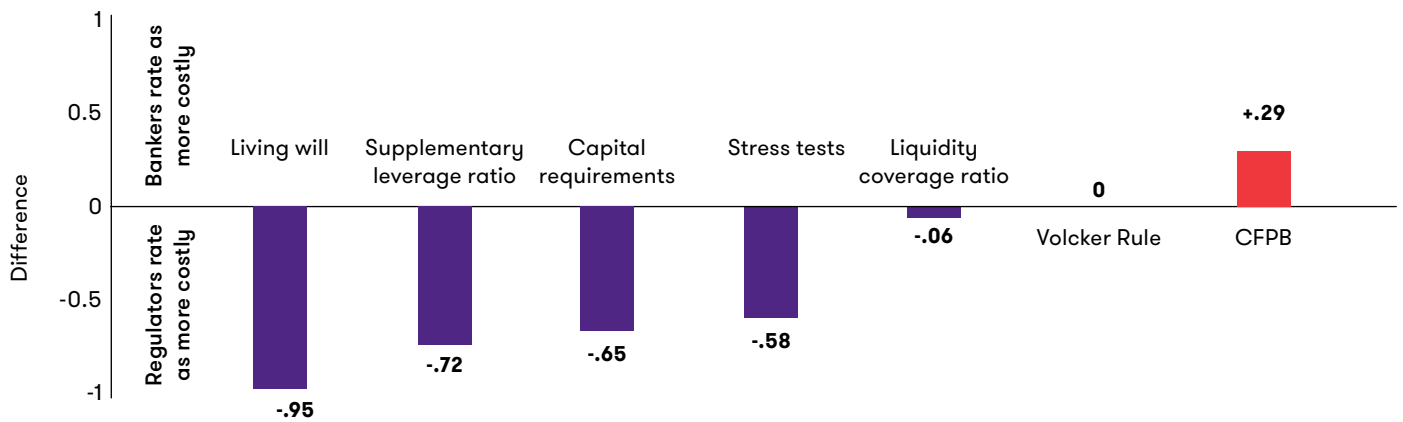


Figure 11: Disparity in banker/regulator views—effectiveness of regulations



On average, regulatory experts rated six of the seven types of regulations as more highly effective than bankers did (Figure 11). That gap might be partially explained by differences in the questions posed: regulatory experts were asked to focus on systemic risk whereas bankers were asked about the effects on their individual institutions.

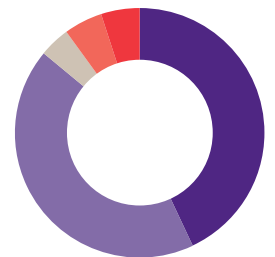
The greatest disparity involves living will requirements: on average, regulatory experts rated them as roughly one step higher on the effectiveness scale than bankers. Interestingly, the regulatory experts also rated living will requirements as more costly than bankers. Those results suggest a gap in perceptions about living wills that could be further explored.

How has the probability of a large systemic event been affected by regulatory changes since the financial crisis?

We posed this question only to the regulatory experts. While a resounding majority (86 percent) indicated a large systemic event is less likely now due to regulatory changes, the opinion was not universal. Over 10 percent of respondents reported that regulatory changes have made such an event more likely (Figure 12).

Figure 12: Likelihood of large systemic event since financial crisis

- Significantly reduced **43%**
- Slightly reduced **43%**
- No effect **3%**
- Slightly increased **5%**
- Significantly increased **5%**



II. Institutionalizing the risk management function

The banking industry's management of risk has evolved significantly in the past decade, from a framework that recognized credit, market and operational risks as three separate components of risk to be managed independently to one that includes multiple types of risks to be managed in a more integrated manner. New banking business models require coverage of more specialized operational risks, such as model risks, digital/cybersecurity risks and third-party risks, among others. The introduction of more rigorous regulatory frameworks (Basel, Dodd-Frank, etc.) has spurred other advances in risk management practices.

A distinctive industry RMF has emerged and developed into a cohesively structured set of capabilities, typically organized around the three lines of defense operating model. That model envisions a first line of defense for risk-taking activities in the business units, a second line comprising one or more monitoring units, and a third line as an independent assurance unit, usually the internal audit function.

A number of questions in this survey were intended to tease out how organizations think about emerging risks and the application of advanced risk management techniques. We also explore how cost and profitability pressures coupled with technological challenges have been driving forces in the emergence of risk management practices and further development of the RMF.

“A distinctive financial services industry risk management function has emerged and has developed into a cohesively structured set of capabilities.”



Risk management goes beyond compliance

As results from the first section of this report may imply, regulation has accelerated the evolution of risk management practices. Yet as risk functions continue to evolve, it appears that regulations are being supplemented by market forces as drivers of risk management practices. A majority of respondents indicated that most of their risk management activities are primarily compliance driven (Figure 13).

Furthermore, the significant role of regulatory compliance appears consistent across asset size groups, as more than 40 percent of respondents in each group reported that at least half of their risk management activities are primarily compliance driven (Figure 14).

Figure 13: How much of your risk management activities are primarily compliance-driven?

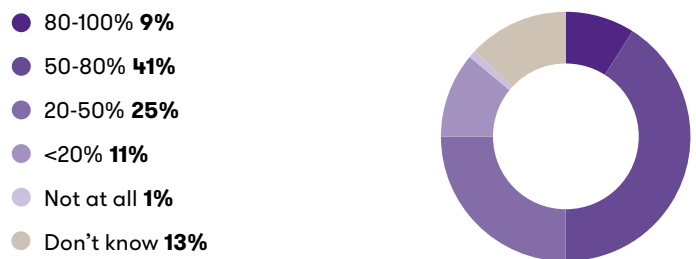
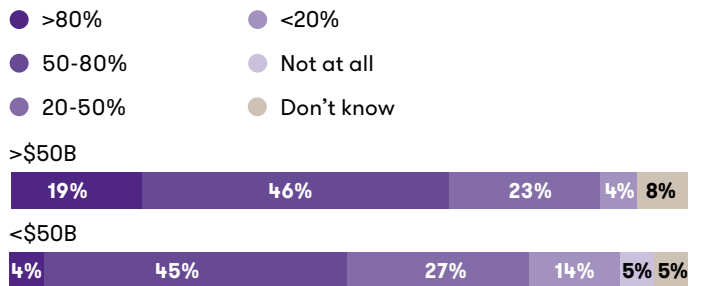


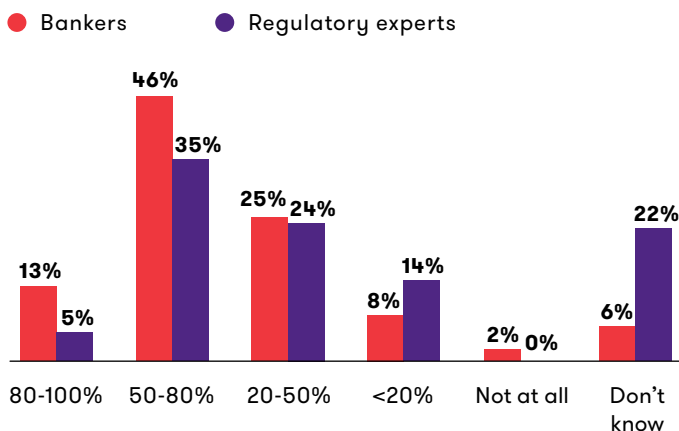
Figure 14: How much of your risk management activities are primarily compliance-driven (by asset size)?



The survey also queried our sample of regulatory experts on how much of banks' risk management activities they believe are primarily compliance driven. The distribution of their responses generally resembles those of the bankers (Figure 15).

It appears that the compliance-driven evolution of risk management has to some extent morphed into risk-related activities that align with business-as-usual processes. Regulatory stress testing is one example, illustrated in the accompanying "focal point" sidebar. While stress testing originally aimed to protect the safety and soundness of the financial system, many institutions have expanded its use beyond capital planning. For instance, some banks have increased the number of macroeconomic variables from the 28 provided by the Office of the Controller of the Currency [OCC]⁷ to over 1,000 to facilitate more sophisticated planning and analysis, enhance evaluation of credit portfolio performance and dynamically determine risk appetite.

Figure 15: RM activities driven by compliance: regulator and banker views



Focal point

Using stress testing for more than regulatory compliance

Survey respondents view stress testing as among the most burdensome regulatory requirements. The initial facilitation costs can exceed \$100 million for the largest banks. While the investment may not be elective, banks can and do use the resulting capabilities for more than regulatory compliance purposes.

Figure 16: Beyond regulatory compliance, does your organization currently use stress testing for any of the following purposes?
(Number of respondents)



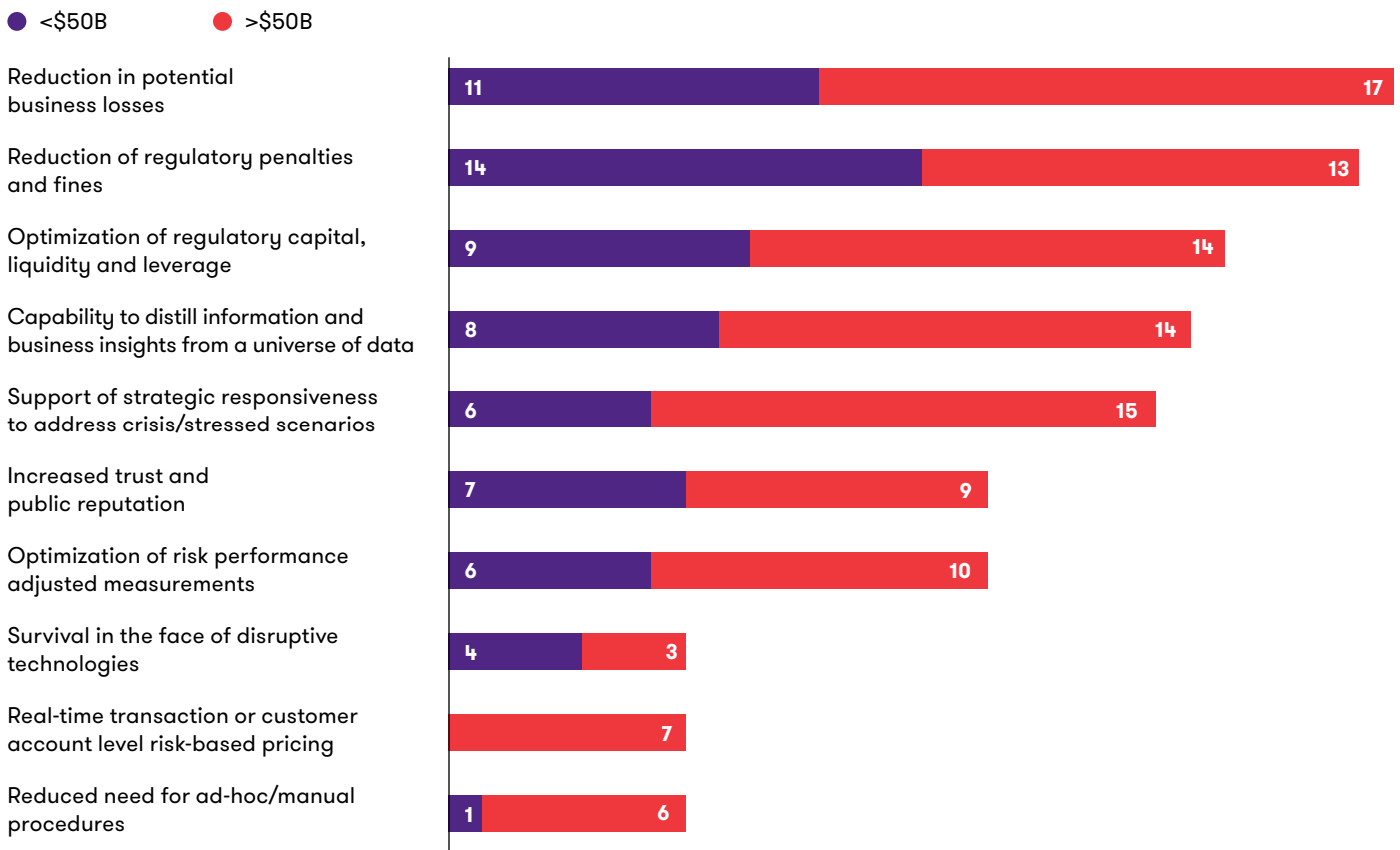
⁷ OCC Macroeconomic data—<https://www.occ.treas.gov/news-issuances/news-releases/2017/nr-occ-2017-19.html>

Risk management and value creation

Historically, the RMF has been associated with activities that protect value. We asked participants how their institutions articulate the value of the RMF, offering a list of areas from which they could select all that apply (Figure 17).

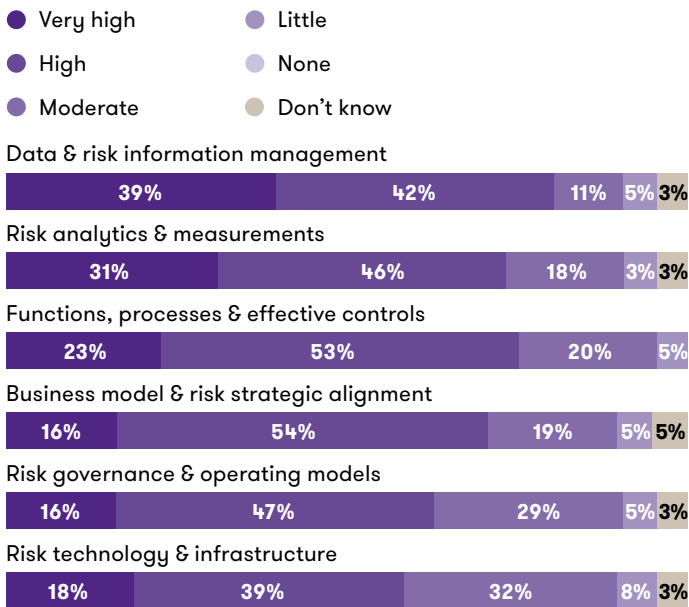
The significance of regulation is reflected in responses to this question as well, as two of the top three most common answers relate to regulation in some way. Nevertheless, many respondents also indicated that the RMF is valuable, to varying degrees, for various business purposes such as providing useful data and helping organizations to understand their risk exposures and address concerns regarding trust and reputation.

Figure 17: Institution articulation of value
(Number of responses)



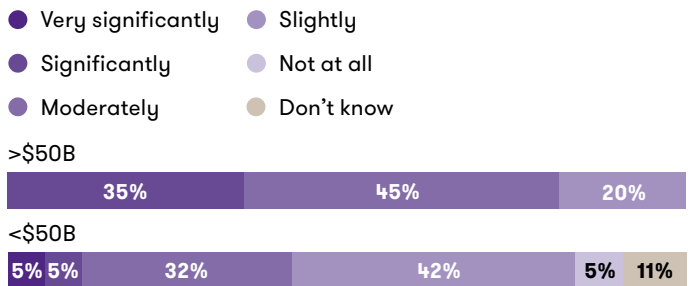
For a better understanding of which aspects of the RMF are most valuable for business, participants were presented with six capabilities and asked to rate them in terms of value added (Figure 18). While all of the capabilities surveyed are rated highly—over half of responses are high or very high for each item—data and risk information management is the highest rated option in terms of value-added for business.

Figure 18: Value-added for business



We followed up by asking about the degree to which banks will be able to leverage their risk management infrastructure for profit-making in the next three to five years. Nearly all respondents indicate that their institutions will be able to do so, at least to some extent (Figure 19).

Figure 19: How much will your institution be able to leverage risk management infrastructure for profit-making purposes (by asset size)?

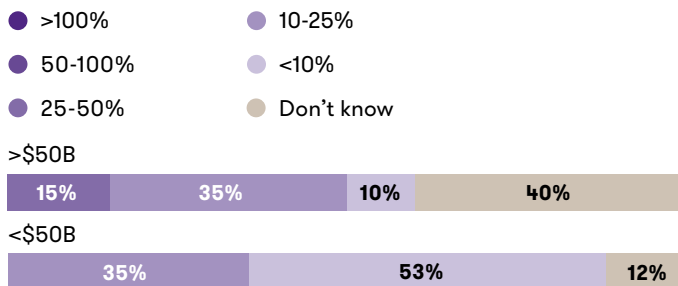


Driving efficiency into the risk function

Banks face the continuing challenge of improving control, management and accounting for the total cost of risk management (TCRM).⁸ We asked banks about their current practices and plans for the future.

To gauge the magnitude of the costs, we asked participants to express TCRM as a percentage of their institution's net income (Figure 20).

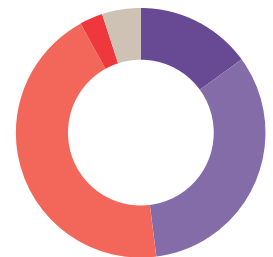
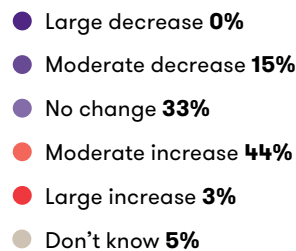
Figure 20: Total cost of RM as percentage of net income



Respondents with less than \$50 billion in total consolidated assets report lower costs of risk management as a fraction of net income than do larger banks, perhaps due to overall higher regulatory compliance demands for large institutions.

Pivoting from the present to the future, we queried participants about their expectations about cost changes for the next three to five years. Most respondents indicated they expect either a moderate increase or no change, although some indicated risk management costs might decrease moderately (Figure 21).

Figure 21: Do you expect TCRM will increase/decrease over the next three to five years?



⁸ On the survey questionnaire, those costs were defined to include the risk management function and risk management activities within the line of business and internal audit; they do not include opportunity cost, the cost of adverse events, or losses.

Bankers were also asked about the organization of their RMFs and to what extent risk management was conducted with in-house resources. The most frequently observed models are neither fully centralized nor decentralized but rather a combination that distributes responsibility among both the corporate level and business unit level (Figure 22).

A number of surveyed institutions are outsourcing risk-related activities not considered vital or strategic. Given the expected benefits of outsourcing, such as containing costs and increasing efficiency and performance, it appears that such activities will most likely remain the same or, in about a fifth of institutions, increase in the next three to five years (Figure 23).

“The majority of banks balance centralized and decentralized capabilities, and expect no change in their risk-related outsourcing.”

Figure 22: Dominant operating model in institution’s risk function (by asset size)

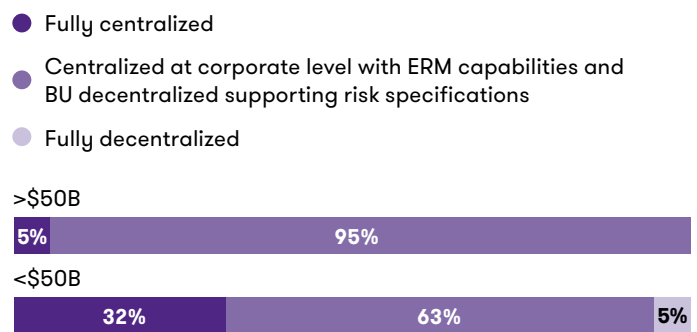
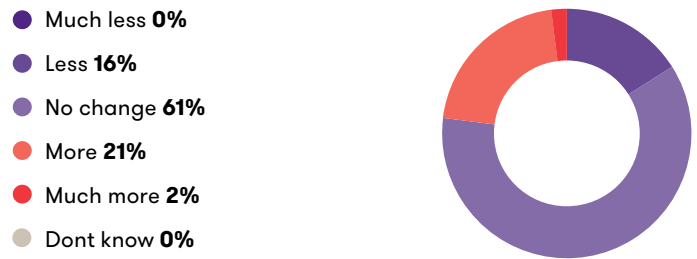


Figure 23: Risk management activities outsourced in the future



Effectiveness and efficiency

As risk management continues to evolve, the issue of RMF effectiveness and efficiency must be continually addressed.⁹

Measurement of effectiveness is challenging given the lack of a consistent industry definition or widely accepted metrics, although there are leading practices. We asked participants how their organizations determine the effectiveness of risk management, providing a list of options from which they could select all that apply (Figure 24).

Figure 24: How does your organization determine RM effectiveness?
(Number of respondents)



Similarly, respondents were asked about how their institutions assess RMF efficiency. Respondents more often indicated regulatory observations and fines over other suggested considerations when assessing RMF efficiency (Figure 25).

One approach institutions are taking to pursue greater RMF effectiveness is to standardize the Risk Control Self-Assessment (RCSA) program so as to integrate risk management across lines of business. Nearly three-quarters of respondents indicate that RCSA will become more coherently standardized across business lines in their institutions over the next three to five years (Figure 26).

Figure 25: How is your institution currently assessing RM efficiency?
(Number of respondents)

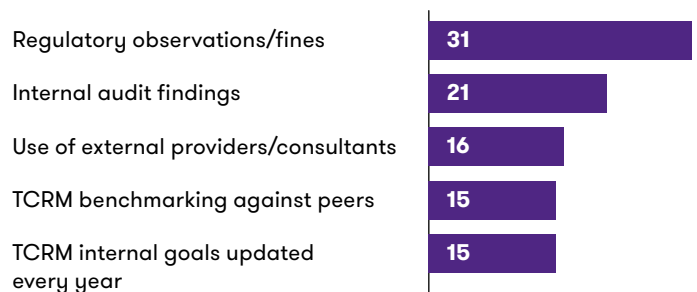
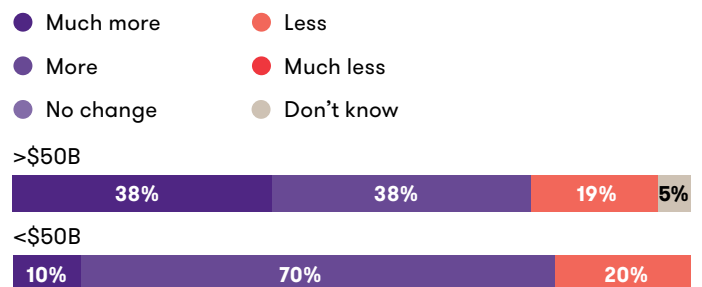


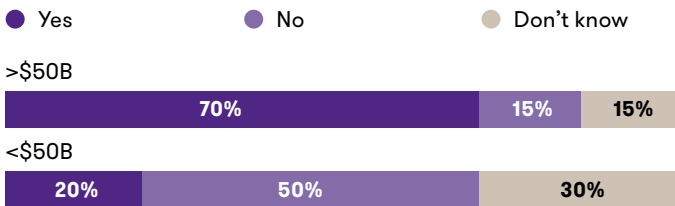
Figure 26: In your organization, to what extent will risk control self-assessment become more or less coherently standardized across business lines (by asset size)?



⁹ See Glossary for definitions of risk management effectiveness and efficiency.

Charging business units for their contributions to risk can help to align behavior with risk appetite. Bank participants were asked about their intentions to charge business units for their relative contribution to overall risk (Figure 27). A majority of larger responding institutions are planning to use this approach, whereas fewer smaller institutions intend to do so.

Figure 27: Will business units be charged explicitly for contribution to overall risk (by asset size)?



Risk management function of tomorrow

Turning to ways in which the RMF and its methods might evolve over the next several years, respondents indicate interest in using data, analysis and technology. Survey participants were presented with a list of activities and asked to select all those that they anticipate being implemented at their institutions. By a wide margin, the most frequently selected choice involved quantitative methodologies (Figure 28).

Figure 28: Which of the following do you foresee implemented in your institution's risk management function?
(Number of respondents)



Applying blockchain to risk management activities

Beyond its origins as the supporting technology of cryptocurrency solutions such as Bitcoin, potential applications of distributed ledger technologies and processes are far-reaching. Many institutions are currently exploring blockchain as an underlying enabler to expand business, disrupt markets and enhance risk management activities.

Applications range from streamlining middle-office and back-office activities to improving efficiency in anti-money laundering monitoring of transactions. Among surveyed institutions, some of the large banks expect that applying blockchain technologies might contribute to reducing operational risks and mitigating cybersecurity risk exposures.

Building on the earlier question about assessing RMF efficiency, participants were asked about their priorities for improving efficiency going forward. Investing in risk data management and aggregation solutions was the top choice among respondents from institutions of all sizes, consistent with the themes of improving data and utilizing more quantitative tools (Figure 29).

Overall, these results suggest that executives have an array of potential initiatives for improving their RMFs. However, budget constraints, risk culture and the imprecise value of risk management can pose impediments to these initiatives.

Figure 29: Top three priorities for improving RM efficiency
(Number of responses)

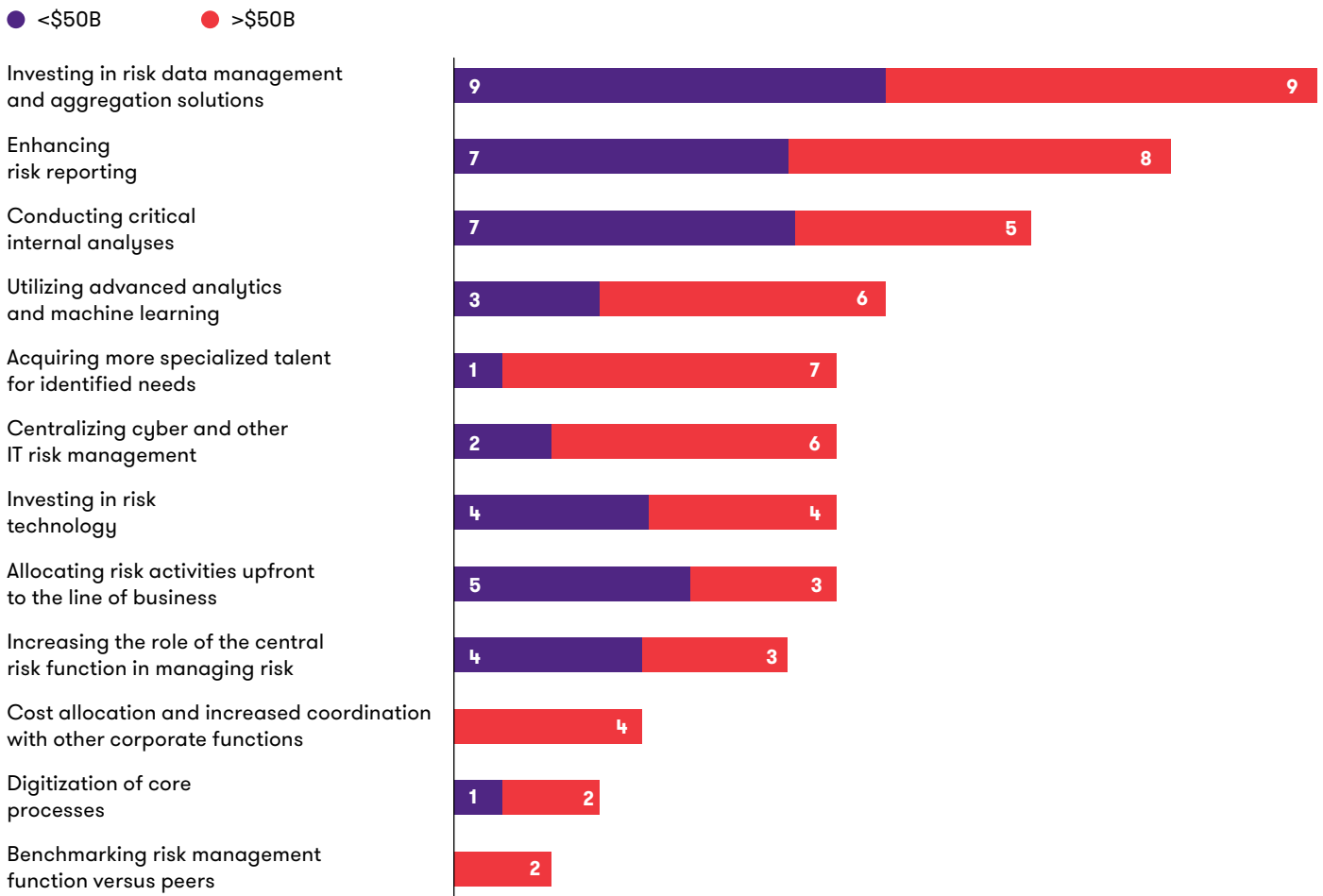
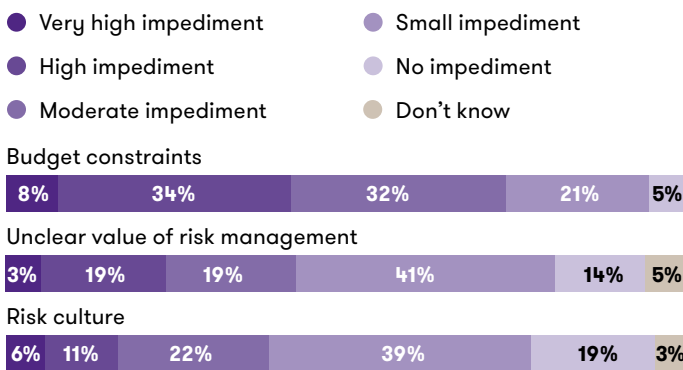


Figure 30: Rate each of these impediments to continuing improvement to the risk management function within your institution



Indeed, budget constraints are most frequently rated as a significant obstacle, as nearly three-quarters of respondents indicate they pose a moderate, high or very high impediment to continuing improvement to the RMF (Figure 30). The issue appears to be as relevant to respondents from large banks as to those from smaller banks. Risk culture and the unclear value of risk management were evaluated similarly, with about 40 percent of respondents rating each as at least a moderate impediment to improving the risk management function. Interestingly, when analyzing responses by organizational roles, we found respondents in non-RMF roles more willing to point out impediments than those in risk roles.

Participants also had the opportunity to write in and rate other impediments. These open-ended responses are displayed below, with larger phrases reflecting a higher rating. Included among these are two elements that surface in responses from throughout the survey: a complex regulatory environment and the lack of actionable data.

Figure 31: Other impediments to improving the RMF within the organization



III. Utilizing risk data, analytics and infrastructure

As the banking industry continues investing in information technology, including data management and analytics, practices and priorities in risk analytics continue to evolve. This section starts with insights gained from the survey on the current state and then shifts the focus to respondents' plans for the future regarding these issues.

“Investments in evolving information technologies and continually updated priorities and practices are shaping the future of risk management in financial services.”



State of risk data, analytics and infrastructure

Survey results provide insights on the kinds of risks posed to institutions and their relative priority. Cybersecurity and operational risks were those that participants most often cited from the list we provided, followed by IT, regulatory/compliance and credit risk (Figure 32).

Risk analytics requires a foundation of reliable data and systems. When asked about the comprehensiveness of their institution’s risk data management framework, a majority of respondents reported it to be moderately comprehensive (Figure 33).

Figure 33: How comprehensive is your institution’s risk data management framework?

- Completely **0%**
- Very **26%**
- Moderately **60%**
- Minimally **14%**
- Not at all **0%**
- Don’t know **0%**

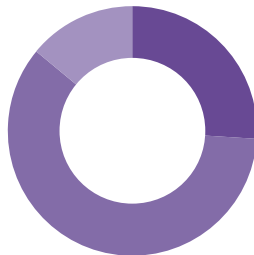
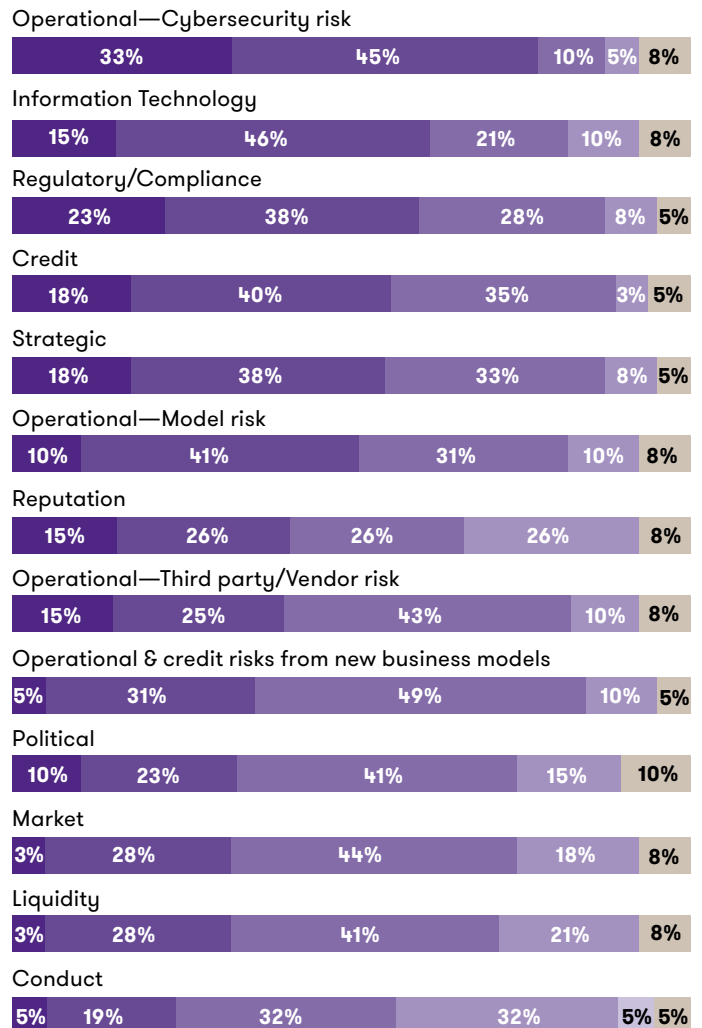


Figure 32: How much do you expect each of the following types of risks to affect your institution?

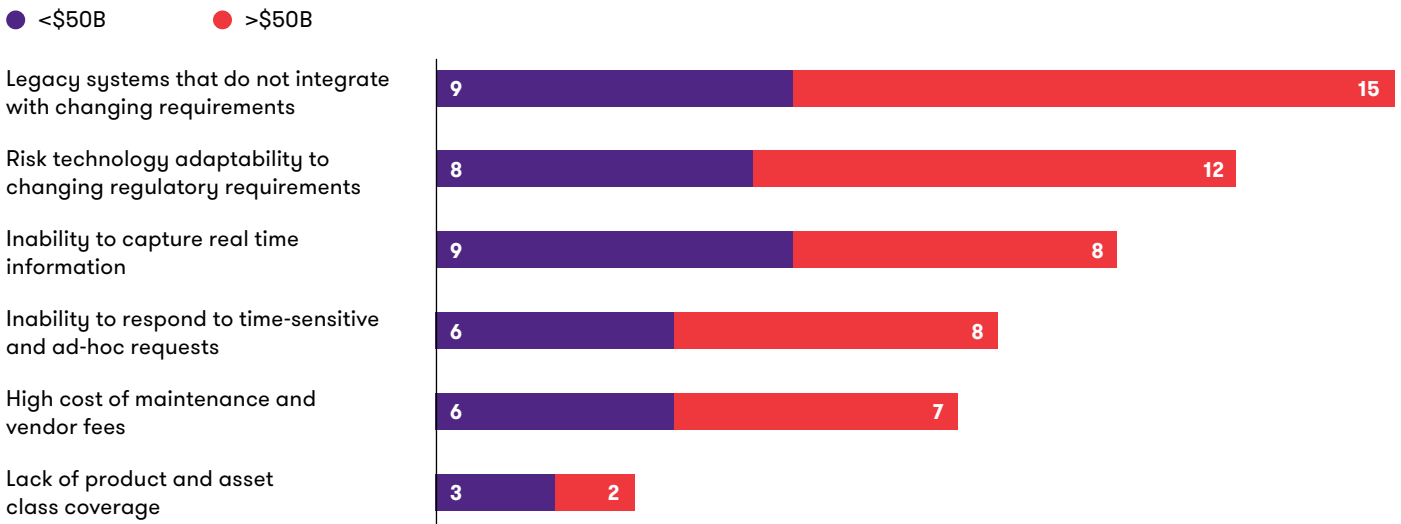
- Very significantly
- Significantly
- Moderately
- Slightly
- Not at all
- Don’t know



Delving a bit deeper, we asked participants about their banks' potential concerns regarding risk management information technology systems. Participants were presented with a list of potential concerns from which they could choose all that were relevant to their institutions (Figure 34). The most frequently marked concern was that legacy systems do not integrate with changing requirements. Similarly, many respondents noted the challenge of adapting risk technology to address changing regulatory requirements. Respondents from institutions of all sizes indicated that they share these concerns.

“Widespread technology challenges include integrating legacy systems and applying risk technology to changing requirements.”

Figure 34: Key issues with risk management information technology systems
(Number of responses)





Risk control self-assessment strategies

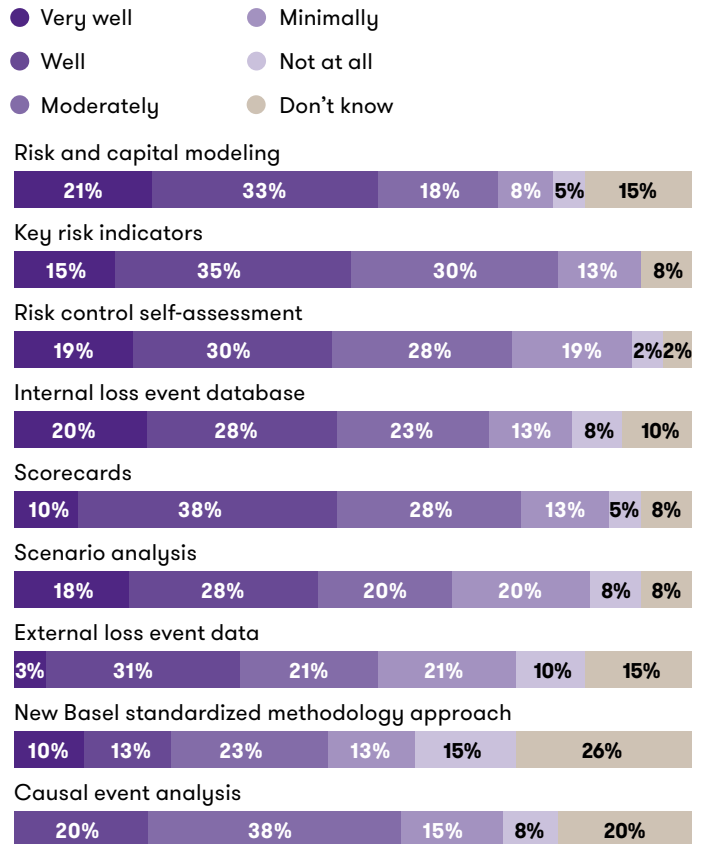
While survey results indicate that risk control self-assessment (RCSA) is a generally well-developed risk management tool among respondent institutions, it does not necessarily take the same form at every institution. To get a better sense of how banks are conducting their RCSA processes, we provided survey participants with a list of potential strategies and asked them to select those used by their institutions.

Figure 36: Which of these strategies is your institution using in its risk and control self-assessment process?



Shifting from data systems to analytics, we asked participants about the status of particular operational risk management methodologies. Among those, risk and capital modeling, key risk indicators and RCSA were the most frequently rated as well developed (Figure 35). High ratings for risk and capital modeling and key risk indicators were driven mainly by banks with more than \$50 billion in assets. RCSA, on the other hand, was a popular choice among respondents from all asset size groups.

Figure 35: How well developed are each of the following operational risk management methodologies at your institution?



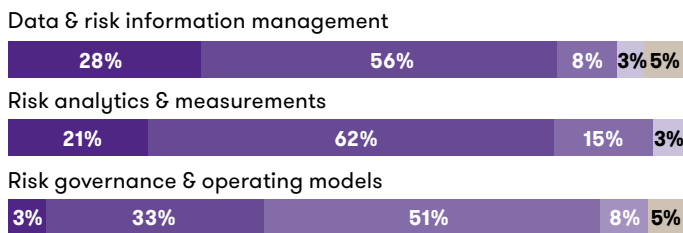
Potential for the future

Most survey respondents expect to expand the use of analytics and other quantitative methodologies to further enhance their risk management. More advanced data mining techniques, machine learning and robotics are expected to support superior risk technology. As discussed in other parts of this report, adopting stress-testing techniques and forecasting outcomes under multiple scenarios, including new standards such as those applicable to Current Estimated Credit Losses (CECL),¹⁰ are quickly becoming business-as-usual practices.

With respect to efficiency, a large majority of respondents (85 percent) believe that many or very many additional efficiencies could be realized in data and risk information management in their institutions, with a similar majority (82 percent) indicating the same for their institution's risk analytics and measurements (Figure 37).

Figure 37: Are there additional efficiencies in your risk management process and systems that could be realized in the following categories?

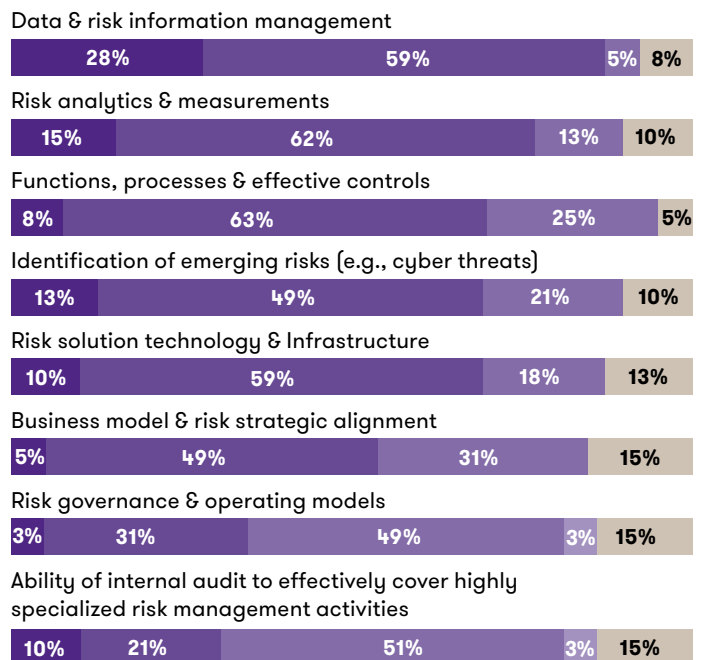
- Very many
- Many
- Some
- Few
- None
- Don't know



In keeping with the previous finding, most respondents indicated that they plan to invest more in these areas in various ways in the next three to five years than in the past three years (Figure 38). In addition to data and risk information management and risk analytics and measurement, respondents generally noted an intention to invest further in the identification of emerging risks; functions, processes, and effective controls; and risk solution technology (including technology related to regulatory mandates) and infrastructure.

Figure 38: Relative to the last three years, how much do you plan to invest in each of the following?

- Much more
- More
- No change
- Less
- Much less
- Don't know



¹⁰ FASB ASU 326

IV. Sustaining an effective risk culture

An effective risk function requires an institutionally ingrained risk culture—a set of shared and accepted values, principles, guidelines, discussions, behaviors and other attributes that determine the approach that people in the institution take toward risk. Culture both characterizes an institution and guides individuals' thinking, decisions and actions in the institution.

Over time, risk regulatory frameworks have emphasized the importance of institutional risk culture, recognizing that effective regulation and regulatory supervision have played instrumental roles in improving risk culture in banking.

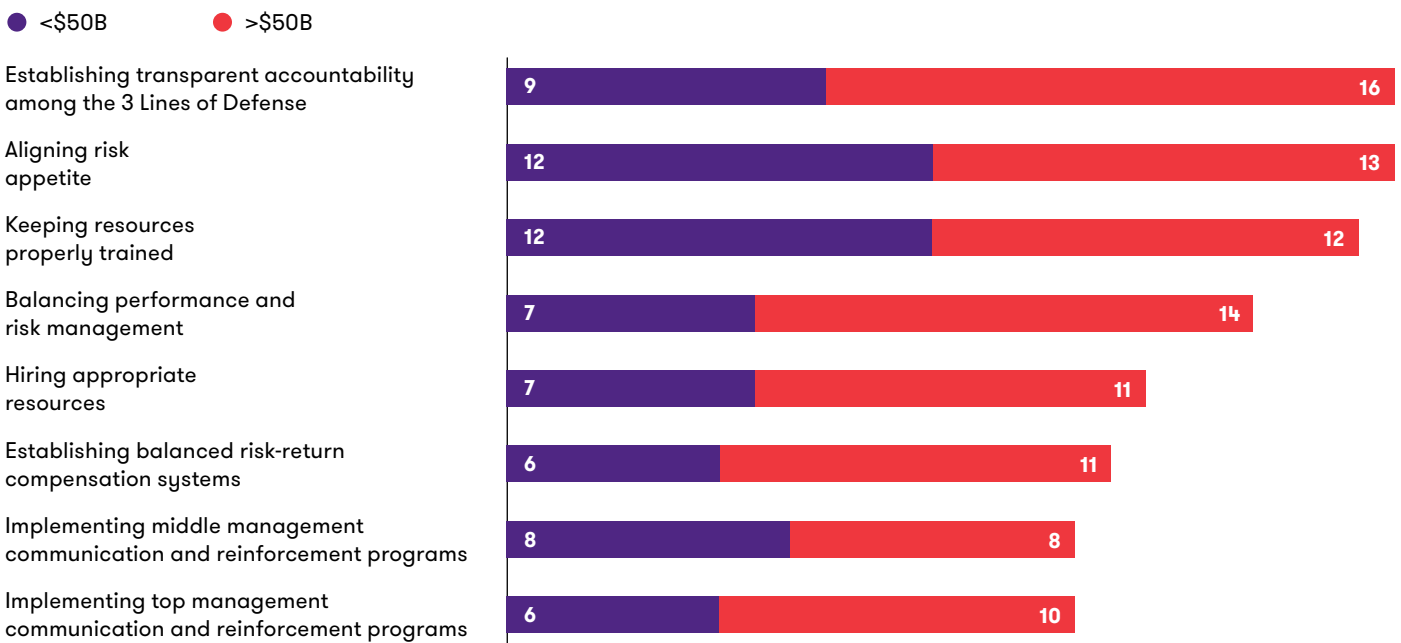
“An effective, well-maintained risk culture has become essential to effective risk management in financial institutions.”



Building a risk culture

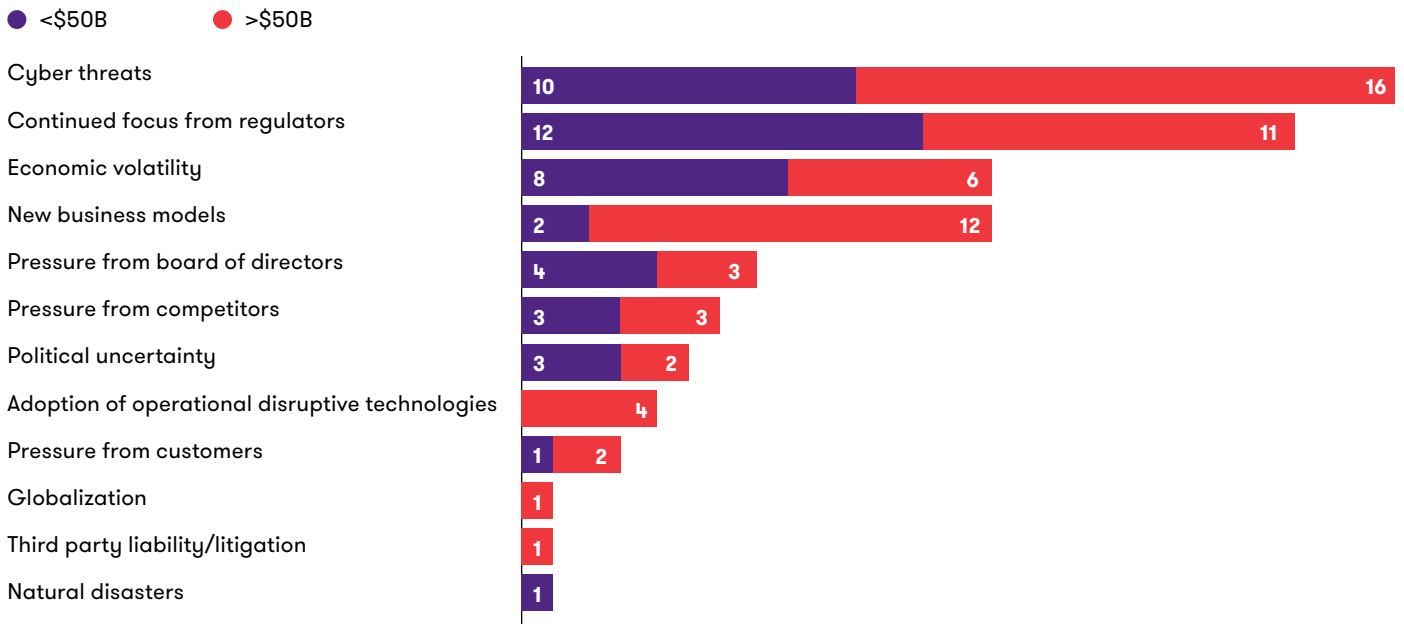
Apart from regulatory compliance, how do firms develop a risk-aware operating culture? Such a culture generally results from a combination of external forces and internal actions. For instance, respondents commonly report that their institutions are planning specific internal actions to strengthen their risk culture, such as establishing transparent accountability among the three lines of defense, aligning risk appetite and keeping personnel properly trained (Figure 39).

Figure 39: What action(s) is your institution planning to strengthen its risk culture?
 (Number of responses)



The primary external forces motivating banks to strengthen risk management are cyber threats and regulatory pressure (Figure 40).

Figure 40: Which three of these external drivers do you foresee providing the greatest motivation for strengthening risk management in your institution?
 (Number of responses)



Of course, other factors are both drivers and effects of risk culture, notably the number of full-time employees in a bank's RMF. Most survey respondents representing institutions with assets of \$50 billion or larger report having more than 200 employees working in the RMF (Figure 41).

The role of the chief risk officer is critical in bank risk management culture. In considering how that role might evolve in the next three to five years, most respondents indicate that they expect the CRO to become more strategic (71 percent) and influential (69 percent). An increasingly influential CRO would appear to reflect a bank prioritizing risk management while further strengthening its risk culture (Figure 42).

Figure 41: How many full-time employees does your institution's risk function have (by asset size)?

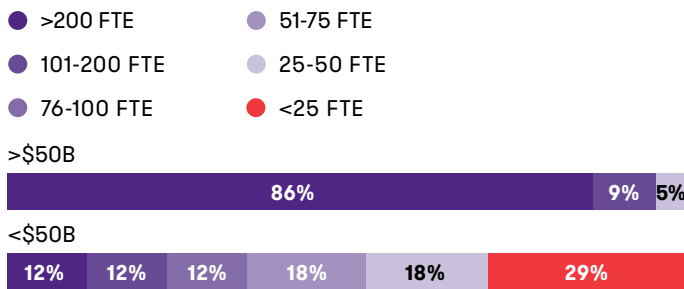


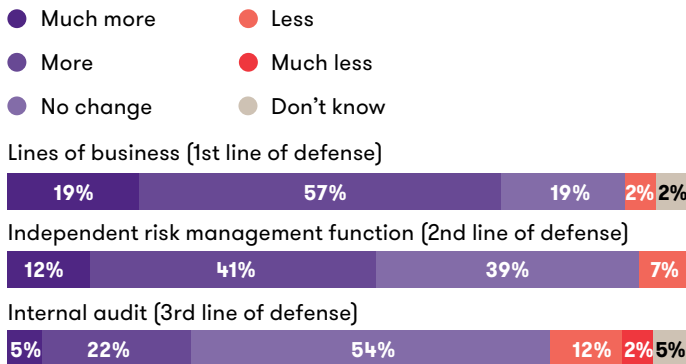
Figure 42: To what extent will the Chief Risk Officer see a change in their involvement with regard to the following elements of their role?



In addition to the issue of who is working on risk management is the matter of where risk management is located. The promulgation of risk awareness within an institution reflects the institution's risk culture. A strong majority of respondents (75 percent) indicated that they expect their institutions' risk management activities will be performed more or much more by the first line of defense (Figure 43).

“Institutions are increasingly moving risk management into the first line of defense.”

Figure 43: Will your institution's risk management activities fall more or less into each of the following categories?



Concluding thoughts

This survey and the resulting report were undertaken to examine how U.S. banks view and are reacting to the regulatory mandates emanating from the federal government's response to the financial crisis of 2007-2008. We also sought to determine the extent to which those regulations are strengthening current and future risk management practices at banks. For a complementary perspective, we queried various regulation experts for their views on those questions. We also wanted to learn about the risks that bankers see as most important and to better understand how the RMF is expected to evolve to address those challenges.

This research found that banks are exploiting enhanced analytical methodologies and data capabilities to improve the efficiency of their risk management functions. Such developments appear to be supplemented by a strategic shift toward enhancing risk activities in the first line of defense—the business units themselves. Yet heightened regulatory mandates impose costs. More than 60 percent of bank respondents indicate a high or very high cost burden of complying with Dodd-Frank stress tests, capital requirements and CFPB mandates. However, 86 percent of regulatory experts surveyed contend those regulatory requirements have yielded the intended benefit of reducing the likelihood a large systemic event.

While most bank respondents report that risk management activities are primarily compliance driven, market forces are

accelerating the adoption of risk management practices that add business value. The survey sought information on this development, and we conclude that some compliance exercises have been valuable for business purposes. They have helped banks to understand their exposure to risks and to address concerns regarding trust and reputation while providing useful data. Currently, banks are focusing on becoming more efficient in risk management. In addition, the risk function appears to be evolving to apply emerging technologies in managing a broader spectrum of risks, and becoming more prominent in banks' cultures.

As regulatory reform continues to take shape through both executive and legislative actions, policymakers may find this report useful as they assess the effectiveness of regulations and the magnitude of compliance costs when considering new approaches. Policymakers should be cognizant that the types of regulation perceived as most burdensome within the regulatory community are not necessarily those perceived as most burdensome among bankers.

This report captures the views of survey respondents at a particularly intriguing point in time. As the regulatory landscape continues to shift in Washington, and elsewhere around the world, the costs and benefits of bank regulation and the continuing adoption and evolution of enhanced risk management practices by banks are topics worthy of continuing consideration and study.

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Glossary of key terms

Basel Accords: The Basel Accords (e.g., Basel III), which are set by the Basel Committee on Bank Supervision (BCBS), provide recommendations to governments on banking regulations, particularly with regard to risk management.

Comprehensive Capital Analysis and Review (CCAR):

The CCAR is an annual exercise required by the Federal Reserve to assess whether the largest bank holding companies operating in the United States have sufficient capital to continue operations throughout times of economic and financial stress, and a robust capital management process.

Current Expected Credit Loss (CECL): CECL is the new criterion stemming from the Financial Accounting Standards Board for the recognition and measurement of impaired values for certain asset classes, loan portfolios and securities. The new standard will generally be effective for SEC registrants' 2019 financial statements and in 2020 for banks that are not SEC registrants.

Consumer Financial Protection Bureau (CFPB): The CFPB was established under the Dodd-Frank Act to provide protections related to consumer financial products and services. CFPB's jurisdiction includes banks, credit unions, securities firms, payday lenders, mortgage-servicing operations, foreclosure relief services, debt collectors and other financial companies operating in the United States.

Dodd-Frank Act (Dodd-Frank): The Dodd-Frank Wall Street Reform and Consumer Protection Act is a sweeping regulatory reform bill enacted in 2010 in response to the financial crisis of 2007-2008. Its provisions are primarily aimed at promulgating new regulations, and reorganizing and augmenting regulatory agencies, to reduce various risks to the U.S. financial system and increase consumer protections.

Dodd-Frank Act Stress Testing (DFAST): Section 165(i)(2) of the Dodd-Frank Act requires all financial institutions with total consolidated assets of more than \$10 billion to conduct defined annual stress tests according to rules, scenarios and disclosures established by U.S. regulatory agencies (OCC, FDIC and FRB). The results of the institution-run stress tests provide the agencies with forward-looking information to assess the institution's risk profile and capital adequacy. These stress test results are also expected to support ongoing improvement in the institution's overall capital planning and its risk management function.

FinTech: Financial technology (FinTech) encompasses a range of new technologies and innovations that compete with traditional means of delivering financial services. Notably, blockchain or distributed ledger technology (DLT) have the potential to reduce the cost of transactions. Both startups and established financial and technology companies are engaged in FinTech initiatives.

Key Risk Indicator (KRI): KRIs are metrics used by organizations to provide an early signal of increasing risk exposures in various areas of the enterprise.

Liquidity Coverage Ratio (LCR): The LCR reflects a bank's ability to repay short-term creditors on demand. It is defined as the ratio of total cash to short-term borrowings.

Living will: The Dodd-Frank Act requires bank holding companies with total consolidated assets of \$50 billion or more and certain nonbank financial companies to submit resolution plans annually to the Federal Reserve and the Federal Deposit Insurance Corporation (FDIC). The plan, commonly known as a living will, must describe the company's strategy for rapid and orderly resolution under the Bankruptcy Code in the event of material financial distress or failure of the company.

Regulatory stress testing: Regulators use stress tests to evaluate the capital adequacy of certain financial institutions in severe stress scenarios such as a protracted economic recession. Stress tests rely on regulatory simulation models and scenario analysis, as well as qualitative factors. The Federal Reserve may order banks that fail certain stress tests to suspend certain activities, such as cash distributions to shareholders, until the target capital level is reached. There are two regulatory stress testing regimes in the U.S.: CCAR and DFAST.

Regulatory compliance: Regulatory compliance is a set of activities aimed at meeting the requirements of relevant laws, polices and regulations so as to avoid fines or other penalties.

Resilience: The ability of an organization to continue to function normally even after it has been impacted by a risk event. Resilience in the context of risk management has to do with critical capabilities, such as information, processes, organizational planning and technology, that help an organization return to normal operation after it has experienced a risk event.

Risk accounting: Risk accounting is introduced in this survey as a term to describe the costs and cost allocations related to risk function activities.

Risk analytics: Risk analytics are applied quantitative techniques and methodologies that support the RMF. The objectives of risk analytics include but are not limited to: 1) distilling raw data to produce insights, 2) aggregating and analyzing data to produce reports and populate dashboards, 3) developing predictive statistical models and 4) developing risk indicators. Robust risk analytics rely on high-quality data and data governance as well as analytical methods applied to risk management problems.

Risk appetite: The level of risk that an organization is prepared to accept in pursuit of its objectives, and before action is deemed necessary to reduce the risk. The ISO 31000 risk management standard refers to risk appetite as the “Amount and type of risk that an organization is prepared to pursue, retain or take.”

Risk capabilities: Risk capabilities enable activities performed in support of any risk management function. They typically include 1) business models and strategic alignment of risk policies, 2) risk governance and operating models, 3) risk functions, processes and controls, 4) data and risk information management, 5) risk analytics and measurements and 6) risk technology and infrastructure.

Risk culture: The system of values and policies present in an organization that shapes risk-related decisions of management and employees.

Risk management effectiveness: Risk management effectiveness measures the performance of the risk function. For all risk activities, an effective risk function: 1) identifies relevant risks, 2) drives business decision-making at the point where risks are first recognized, 3) ensures that risk exposures are within risk appetite levels established by an organization and 4) influences business strategy directly.

Risk management efficiency: Risk management efficiency measures the benefits of the risk function vis-à-vis total costs. An efficient risk function exhibits: 1) minimized duplication of activities, 2) minimal resources required to complete risk activities and 3) optimized timing and execution of activities.

Risk Control Self-Assessment (RCSA): The RCSA is an approach intended to identify, inventory and manage operational risks. This bottom-up technique helps to establish an enterprise taxonomy for risk identification, identifies enterprise-wide risks, aggregates risks across the enterprise and evaluates institutional risk tolerance.

Risk Management Function (RMF): The RMF is a structured set of risk capabilities to assess, characterize, measure, aggregate, monitor, report and manage key business and operational risks. The RMF is typically implemented via operating models based on the three lines of defense model.

Systemically Important Financial Institution (SIFI): Large or highly interconnected financial institutions are designated by regulators as SIFIs when their failure could have significant adverse consequences for the financial system. SIFIs are subject to additional regulation, including higher capital requirements.

Supplementary Leverage Ratio (SLR): The SLR is the ratio of a bank's Tier 1 capital (essentially, common stock, retained earnings, and certain preferred stock) to a broad measure of its assets. Banks are required to maintain a minimum SLR to ensure that all activities are backed by a minimum level of capital.

Three lines of defense: In the three lines of defense model, management control is the first line of defense in risk management; the various risk control and compliance oversight functions established by management are the second line of defense; and independent assurance, usually provided by the internal audit function, is the third.

Volcker rule: The Volcker rule is a provision in the Dodd-Frank Act that restricts U.S. banks from engaging in certain investment activities perceived as involving potential conflicts of interest, such as trading on their own account.

Appendix A:

Survey methodology

This report draws on data collected through two survey questionnaires. One was sent to current senior officers in U.S. banking institutions and the other to banking regulatory experts.

On the industry side, target participants were high-level officers (e.g. chief financial officers, chief risk officers) of U.S. banks with more than \$5 billion in total consolidated assets. While the bankers comprising our sample were not randomly selected from this population—the availability of contact information played a limiting role—efforts were taken to stratify the sample so it would include participants from banks of various asset sizes. A small number of institutions are represented by more than one respondent.

The survey was administered to participants from banks through two methods: an online questionnaire (about 60 percent) and an in-person interview in which the questionnaire was read orally (about 40 percent). Responses were collected from September 2016 to March 2017, with the majority collected after Election Day in the United States. Email invitations to participate in the study were sent to more than 1,000 bankers, though many proved undeliverable. Our final dataset includes responses from 51 bankers. Among bankers who answered at least one question, respondents answered about 52 percent of the survey questions, on average (standard deviation = 22 percent).

For the pool of regulatory experts, individuals were specifically selected for their expertise and experience with financial regulation. Experts solicited included past and current financial policymakers, academics and researchers in government and

at think tanks. We took care to include individuals representing a variety of perspectives. All regulatory experts completed the survey via an online questionnaire. Responses were collected from November 2016 to early January 2017. Email invitations to participate in the study were sent to 117 individuals, though some emails proved undeliverable, particularly those sent to current government email addresses. Our final dataset is comprised of responses from 37 regulatory experts, mostly academics and including some former regulators. Among regulatory experts who answered at least one question, respondents answered about 98 percent of questions, on average (standard deviation = 4 percent).

Online questionnaires for both bankers and regulatory experts were programmed to randomize the order of questions and response options to eliminate potential ordering effects.

The findings in this report are based on the analysis of responses to a subset of both the open- and closed-ended questions that were posed. Questions not included here either had low response rates or sought to gather background information. Survey results represent the perceptions and expectations of the individual respondents at the time of the survey. We have neither the sample size nor an appropriate sampling method to assume that these views are representative of the broader population of bankers or regulatory experts. Because results are not projected onto a larger population, there is no statistical significance associated with between-group differences (e.g., by asset size or respondent type) in responses to a given survey question.

Appendix B: Additional information for figures

This appendix presents the total number of respondents for each question featured in a figure. It also states the exact wording of the survey question presented to participants. The calculations used in constructing some of the figures also are explained.

Figure 1. Burden in terms of cost of compliance

Question text: Rate the overall burden in terms of the cost of compliance associated with each of the following types of regulation for your institution.

Regulation type	Total number of responses
Stress tests	48
Capital requirements	45
CFPB—Consumer protection	49
Liquidity coverage ratio	46
Volcker rule	45
Supplementary leverage ratio	46
Living will	46

Figure 2. Cost of compliance (by asset size)—Stress tests

This is a tabulation by asset size of responses to Figure 1 question on stress tests.

Asset size	Total number of responses
<\$10 Billion	4
\$10-50 Billion	16
\$50-250 Billion	19
>\$250 Billion	8

Figure 3. Significant types of costs for each regulation type

Question text: Indicate all of the types of costs which are significant for each of the regulations listed.

Regulation type	Total number of responses
Stress tests	72
Capital requirements	63
CFPB—Consumer protection	80
Liquidity coverage ratio	43
Volcker rule	44
Supplementary leverage ratio	30
Living will	23

Figure 4. Regulatory experts: Burden of compliance

Question text: Rate the overall burden for banks in terms of the cost of compliance associated with each of the following types of regulation.

Regulation type	Total number of responses
Stress tests	37
Capital requirements	37
CFPB—Consumer protection	36
Liquidity coverage ratio	37
Volcker rule	36
Supplementary leverage ratio	37
Living will	37

Figure 5. Disparity in banker/regulator views—Cost of compliance

Refer to Figures 1 and 4 for question texts and response totals. Disparity was calculated by first assigning each response option to a numeric score (None/NA = 1; Light = 2; Moderate = 3; High = 4; Very High = 5; “Don’t Know” responses were not used in the comparison), then calculating the average ratings among bankers and among regulatory experts, and then subtracting the

average regulatory expert rating from the average banker rating. Therefore, regulation types rated more costly by bankers than regulatory experts, on average, are shown to have positive values, while regulation types rated more costly by regulatory experts than bankers, on average, are shown to have negative values.

Note: Calculating means in this way assumes that the “distance” between each of the sequential response options (None, Light, Moderate, High, Very High) is equal, which is not necessarily the case with categorical survey questions such as these. Since there can be no true “average” of ordinal data, this figure merely provides a rough estimate by converting these ordinal responses into numerical ones.

Figure 6: Extent that regulatory costs are passed through to customers

Question text: To what extent are the regulatory costs passed through to customers either directly or indirectly?

Asset size	Total number of responses
>\$50 Billion	25
<\$50 Billion	22

Figure 7. Potential to reduce regulatory burden without increasing risk

Question text: What is one way your regulatory burden could be reduced without increasing risk?

Word cloud based on submissions from 41 respondents.

Note: Some submissions have been paraphrased in order to group similar ideas together. Larger font size indicates a more frequently submitted idea.

Figure 8. Effectiveness of regulations

Question text: Please evaluate the effectiveness of the following regulations in making your institution safer.

Regulation type	Total number of responses
Stress tests	44
Capital requirements	43
CFPB—Consumer protection	46
Liquidity coverage ratio	42
Volcker rule	43
Supplementary leverage ratio	40
Living will	40

Figure 9. Effectiveness of regulation (by asset size)—Stress tests

This is a tabulation by asset size of responses to Figure 8 question on stress tests.

Asset size	Total number of responses
>\$50 Billion	24
<\$50 Billion	20

Figure 10. Regulatory experts’ views on effectiveness

Question text: Please evaluate the effectiveness of the following regulations in making the banking system safer.

Regulation type	Total number of responses
Stress tests	36
Capital requirements	36
CFPB—Consumer protection	37
Liquidity coverage ratio	37
Volcker rule	37
Supplementary leverage ratio	37
Living will	37

Figure 11. Disparity in banker/regulator views—Effectiveness of regulations

Refer to Figures 8 and 10 for question texts and response totals.

As with Figure 5, disparity was calculated by first assigning each response option to a numeric score (None/NA = 1; Light = 2; Moderate = 3; High = 4; “Don’t Know” responses were not used in the comparison). Although bankers were given an additional response option, “Very High,” regulatory experts were not, so for the purposes of this comparison “Very High” is also assigned the numeric score of 4. While not ideal, the impact of this mismatch is limited—only one regulation type by one banker was given an effectiveness rating of “Very High” (CFPB).

Continuing with the comparison procedure, we then calculated the average ratings among bankers and among regulatory experts, and then subtracted the average regulatory expert rating from the average banker rating. Therefore, regulation types rated more effective by bankers than regulatory experts, on average, are shown to have positive values, while regulation types rated more effective by regulatory experts than bankers, on average, are shown to have negative values.

Note: Calculating means in this way assumes that the “distance” between each of the sequential response options (None, Light, Moderate, High) is equal, which is not necessarily the case with categorical survey questions such as these. Since there can be no true “average” of ordinal data, this figure merely provides a rough estimate by converting these ordinal responses into numerical ones.

It should also be noted that bankers and regulatory experts were not asked identical questions; bankers were asked about the effectiveness of various regulations in making their institutions safer while regulatory experts were asked about their effectiveness in making the banking system safer as a whole.

Figure 12. Likelihood of a large systemic event since financial crisis

Question text: How has the probability of a large systemic event been affected by regulatory changes since the financial crisis?

37 responses.

Figure 13. Extent to which risk management is compliance driven

Question text: How much of your risk management activities are primarily compliance driven?

48 responses.

Figure 14. Extent to which risk management is compliance driven (by asset size)

This is a tabulation by asset size of responses to Question 13 on risk management activities.

Asset size	Total number of responses
>\$50 Billion	26
<\$50 Billion	22

Figure 15. RM activities driven by compliance—regulator and banker views

Question text for bankers: How much of your risk management activities are primarily compliance driven?

Question text for regulatory experts: How much of banks’ risk management activities do you believe are primarily compliance driven?

Respondent group	Total number of responses
Bankers	48
Regulatory Experts	37

Focal point—Figure 16: Using stress testing for more than regulatory compliance

Question text: Beyond regulatory compliance, does your institution currently use stress testing for any of the following purposes? Please click all that apply

In this check-all-that-apply question, the number of responses for each item ranged from 8 to 30.

Figure 17. Institution's articulation of value

Question text: How does your institution articulate the value of the risk management function beyond regulatory compliance? Please click all that are significant.

In this check-all-that-apply question, the number of responses for each item ranged from 7 to 28.

Figure 18. Value-added for business

Question text: Rate each of the following in terms of value-added for business.

Item	Total number of responses
Data & risk information management	38
Risk analytics & measurements	39
Functions, processes & effective controls	40
Business model & risk strategic alignment	37
Risk governance & operating models	38
Risk technology & infrastructure	38

Figure 19. Leveraging risk management for profit

Question text: How much will your institution be able to leverage risk management infrastructure for profit making purposes?

Asset size	Total number of responses
>\$50 Billion	20
<\$50 Billion	20

Figure 20. Total cost of RM as a percentage of net income

Question text: What is your institution's current average Total Cost of Risk Management (TCRM) as a percentage of your net income? (Includes the risk management function, risk management activities within the line of business and internal audit. Does not include opportunity cost, the cost of adverse events or losses.)

Asset size	Total number of responses
>\$50 Billion	20
<\$50 Billion	17

Figure 21. Expected TCRM increase/decrease

Question text: Do you expect TCRM will increase or decrease over the next 3 to 5 years?

39 responses.

Figure 22. Dominant operating model the risk function

Question text: What is the dominant operating model implemented in your institution's risk function?

Asset size	Total number of responses
>\$50 Billion	20
<\$50 Billion	19

Figure 23. Risk management outsourcing in the future

Question text: Will your risk management activities be outsourced more or less than currently?

43 responses.

Figure 24. Determining risk management effectiveness

Question text: How does your organization determine the effectiveness of risk management? Please click all that are significant.

In this check-all-that-apply question, the number of responses for each item ranged from 6 to 18.

Figure 25. Assessing risk management efficiency

Question text: How is your institution currently assessing the efficiency of its risk management function? Please click all that apply.

In this check-all-that-apply question, the number of responses for each item ranged from 15 to 31.

Figure 26. Extent of risk control self-assessment standardization

Question text: In your organization, to what extent will risk control self-assessment become more or less coherently standardized across business lines?

Asset size	Total number of responses
>\$50 Billion	21
<\$50 Billion	20

Figure 27. Charging business units for their contribution to risk

Question text: Will business units be charged explicitly for their contribution to overall risk?

Asset size	Total number of responses
>\$50 Billion	20
<\$50 Billion	20

Figure 28. Plans for future RM activities in next 3-5 years

Question text: Which of the following do you foresee being implemented in your institution's risk management function? Please click all that are significant.

In this check-all-that-apply question, the number of responses for each item ranged from 7 to 36.

Figure 29. Top three priorities for improving risk management efficiency

Question text: What are your top three priorities for improving the efficiency of your risk management function? Please select three from the following options.

In this choose-three question, the number of responses for each item ranged from 2 to 18.

Figure 30. Impediments to improving risk management

Question text: Rate each of these impediments to continuing improvements to the risk management function within your institution.

Impediment	Total number of responses
Budget constraints	38
Unclear value of risk management	37
Risk culture	36
Other (Write-in)	9 from 8 respondents

Figure 31. Word cloud visualization of write-in responses from Figure 30.

Word cloud based on submissions from eight respondents. Rather than the frequency of an entry, this word cloud conveys the rating that respondents gave these write-in submissions. No entry was submitted more than once, so font size only reflects how much of an impediment the respondent indicated it is. Larger font size indicates the item is more of an impediment.

Figure 32. Expectation of specific risks

Question text: How much do you expect each of the following types of risks to affect your institution?

Item	Total number of responses
Operational – Cybersecurity risk	40
Information technology	39
Regulatory/Compliance	40
Credit	40
Strategic	40
Operational – Model risk	39
Reputation	39
Operational – Third party/Vendor risk	40
Operational & credit risks from new business models	39
Political	39
Market	39
Liquidity	39
Conduct	37

Figure 33. Comprehensiveness of the risk data management framework

Question text: How comprehensive is your institution's risk data management framework?

42 responses.

Figure 34. Key issues with risk management information technology systems

Question text: Please identify which key issues your organization is concerned about with respect to risk management information technology systems. Please click all that apply.

In this check-all-that-apply question, the number of responses for each item ranged from 5 to 24.

Figure 35. Development of operational risk management methodologies

Question text: How well developed are each of the following operational risk management methodologies at your institution?

Methodology	Total number of responses
Risk and capital modeling	39
Key risk indicators	40
Risk control self-assessment	44
Internal loss event database	40
Scorecards	40
Scenario analysis	40
External loss event data	39
New Basel standardized methodology approach	39
Causal event analysis	40

Focal point—Figure 36. Use of risk control self-assessment strategies

Question text: Which of these strategies is your institution using in its risk and control self-assessment process? Please select all that are relevant from the options below:

In this check-all-that-apply question, the number of responses for each item ranged from 3 to 34.

Figure 37. Potential additional efficiencies in risk management

Question text: Are there additional efficiencies in your risk management process and systems that could be realized in the following categories?

Area	Total number of responses
Data & risk information management	39
Risk analytics & measurements	39
Risk governance & operating models	39

Figure 38. Specific plans to invest

Question text: Relative to the last three years, how much do you plan to invest in each of the following?

Area	Total number of responses
Data & risk information management	39
Risk analytics & measurements	39
Functions, processes & effective controls	40
Identification of emerging risks (e.g., cyber threats)	39
Risk solution technology & infrastructure	39
Risk model & risk strategic alignment	39
Risk governance & operating models	39
Ability of internal audit to effectively cover highly specialized risk management activities	39

Figure 39. Plans to strengthen risk culture

Question text: What actions is your institution planning to strengthen its risk culture? Please click all that apply.

In this check-all-that-apply question, the number of responses for each item ranged from 16 to 25.

Figure 40. External drivers for stronger risk management

Question text: Which three of these external drivers do you foresee providing the greatest motivation for strengthening risk management in your institution? Please select three from the following options.

In this choose-three question, the number of responses for each item ranged from 1 to 26.

Figure 41. Full-time employees in the risk function

Question text: How many full-time employees does your institution's risk function have?

Asset size	Total number of responses
>\$50 Billion	22
<\$50 Billion	17

Figure 42. Role of the chief risk officer

Question text: To what extent will the Chief Risk Officer see a role in their involvement with regard to the following elements of their role?

Area	Total number of responses
Strategic	41
Influential	42
Focused on delivering objective business value	41
Cost conscious	41
Focused on preventing loss and harm	41
Focused on compliance and regulators	41
Focused on growth	41

Figure 43. Distribution of risk management across the three lines of defense

Question text: Will your institution's risk management activities fall more or less into each of the following categories?

Category	Total number of responses
Lines of business (1st line of defense)	42
Independent risk management function (2nd line of defense)	41
Internal audit (3rd line of defense)	41





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