

The future of bank risk management

McKinsey Working Papers on Risk



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Executive summary

By 2025, risk functions in banks will likely need to be fundamentally different than they are today. As hard as it may be to believe, the next ten years in risk management may be subject to more transformation than the last decade. And unless banks start to act now and prepare for these longer-term changes, they may be overwhelmed by the new requirements and demands they will face.

The structural trends that are driving many of these substantial shifts stem from multiple sources. Regulation will continue to broaden and deepen as public sentiment becomes less and less tolerant of any appearance of preventable errors and inappropriate business practices. Simultaneously, customers' expectations of banking services will rise and change as technology and new business models emerge and evolve. Risk functions will also have to cope with the evolution of newer types of risk (e.g., model, contagion, and cyber)—all of which require new skills and tools. Fortunately, evolving technology and advanced analytics are enabling new products, services, and risk-management techniques, while de-biasing approaches that improve decision making will help risk managers make better choices about risks. However, the risk function of the future will probably be expected to deliver against all these requirements and deal with these trends at a lower cost, because banks will in all likelihood have to reduce their operating costs substantially.

So what will the risk function look like in 2025? It is likely to have broader responsibilities, to be very engaged at a strategic level, and to have much stronger, collaborative relationships with other parts of the bank. At the same time, its talent pool will probably have experienced a massive shift in expertise toward better analytics and greater collaboration, and away from operating processes. Most of the latter can reasonably be expected to be automated, real-time, and paperless by then. IT and data will likely be much more sophisticated, often employing big data and complex algorithms. As a result, the risk function may be able to make better risk decisions at lower operating costs while creating superior customer experiences.

If banks want their risk functions to thrive during this period of fundamental transformation, they need to rebuild them during the next decade. To be successful, they need to start now with a portfolio of initiatives that balance a strong short-term business case with enabling the long-term achievement of the target vision. Such initiatives could include digitizing the underwriting processes, use of machine-learning techniques, and interactive risk reporting. They should be complemented by enablers such as a shift in recruiting toward more technology-savvy profiles or the introduction of data lakes. However, to succeed, this transformation could also require a shift in the organizational risk culture—the adoption of an approach that embeds shared and communicated values and principles throughout the organization.



Introduction

Risk management in banks has changed substantially over the past ten years. The regulations that emerged from the global financial crisis and the fines that were levied in its wake triggered a wave of change in risk functions. These included more detailed and demanding capital, leverage, liquidity, and funding requirements, as well as higher standards for risk reporting, such as BCBS 239. The management of nonfinancial risks became more important as the standards for compliance and conduct tightened. Stress testing emerged as a major supervisory tool, in parallel with the rise of expectations for bank risk-appetite statements. Banks also invested in strengthening their risk cultures and involved their boards more closely in key risk decisions. They also sought to further define and delineate their lines of defense. Given the magnitude of these and other shifts, most risk functions in banks are still in the midst of transformations that respond to these increased demands.

In 2007, no one would have thought that risk functions could have changed as much as they have in the last eight years. It is a natural temptation to expect that the next decade has to contain less change. However, we believe that the opposite will likely be true.

Although we do not possess a crystal ball that will tell us what banks' risk functions will look like in 2025, or what financial crises or technological changes may disrupt risk management between now and then, we believe that six structural trends are likely to fundamentally reshape banks' risk management over the next ten years.

This paper first describes these six structural trends. It then outlines how risk functions may look in 2025 and highlights what senior risk managers can and should do now to start preparing their functions to deal with these trends. Our insights and recommendations build on our experience serving a broad range of clients on risk management, research done on related topics (e.g., the future of banking overall, regulation, digital banking, and advanced analytics), and many discussions with senior executives, chief risk officers (CROs), and risk managers in banks worldwide.

1. Six structural trends will transform bank risk management over the next ten years

While many other occurrences that will have a substantial impact on risk functions over the next decade are unpredictable, we believe that at least six key trends are powerful and certain enough to help paint a picture of the future risk function.

Trend 1: Continued expansion of the breadth and depth of regulation

The scope of regulation will continue to expand, propelled by four drivers. First, public and hence government tolerance for bank failures has shrunk since the global financial crisis, and the appetite for interventions using taxpayers' money to save banks has evaporated. After 2008, new regulations focused on the expansion of the regulatory framework by tightening micro- and macro-prudential regulation across the board. Open items still include the future of internal models for the calculation of regulatory capital and the potential use of a standardized approach as a floor; for instance, Basel IV is expected to reduce the complexity of banks' internal models to narrow the differences between internal modeling and the standardized approach. Such likely changes could have substantial implications, particularly for low-risk portfolios such as mortgages or high-quality corporate loans. However, apart from these, the future prudential framework is now largely in place.

Second, governments are policing illegal and unethical behavior much more tightly. This has been driven by a general shift of attention toward financial crime, the vanishing tolerance for tax avoidance, and the perceived increased threat of terrorism from individuals and countries since the September 11, 2001, attacks in the United States. Authorities look at banks' central role in the payment system and their access to customer data, and are making them increasingly responsible in their roles as lieutenants that "police" these policy objectives. For instance, banks are asked to help prevent financial crimes (e.g., fraud, money laundering, breaching sanctions, terrorist finances) and collect taxes effectively (e.g., Foreign Account Tax Compliance Act, automatic information exchange). We expect this trend to continue.

Third, governments are increasingly demanding both domestic and global compliance with their regulatory standards. They want "good banks," not just "good banking practice within their borders." As a result, laws and regulations are increasingly applied with extraterritorial effect. Although this has always been the case for a significant share of US regulations (e.g., the US securities laws), its scope has expanded substantially in the United States and other jurisdictions. It now includes anti-money-laundering regulations, sanctions, and laws concerning bribery, fraud, and tax collection. Other examples include the extraterritorial application of bribery laws in the United Kingdom and several countries in Europe, and the extension of the UK prudential senior-persons' regime to managers of UK banks globally. Employment practices, environmental standards, and financial inclusion appear to be next.

Lastly, we expect the regulation of banks' behavior toward their customers to tighten significantly, as the public increasingly expects improved customer treatment and more ethical conduct from banks. This is the culmination of a long-term trend where, over the last 150 years, most societies have become less and less tolerant of the exploitation of minorities or less well-protected populations by majorities or the more powerful.¹

This type of regulation has already reached businesses. While traditional economic theories suggested that market forces and competition would achieve optimal outcomes for consumers, it is now well understood that this is not the case. For instance, general terms and conditions of contracts were regulated once it became clear that consumers had neither the time nor the competence to negotiate detailed terms on their own. Other areas that have been increasingly regulated include marketing, branding, and sales practices.

Although governments and regulators often follow shifts in public sentiment, sometimes they get ahead of it. Banks' long-standing business practices have already been challenged and regulated in multiple areas. Examples include the prohibition of insider trading in the 1990s, the abolition of preferred treatment of certain clients in securities offerings, and the calculation of effective interest rates for consumer loans. Many jurisdictions also regulate investment sales practices (e.g., the EU Market in Financial Instruments Directive I and II), mortgages (e.g., the Mortgage Distribution Review in the United Kingdom), and the use of inducements (e.g., the "kickback" payments of a share of the mutual-fund management fee to the distributor). Recent examples include the US Department of Labor's proposed rule on the fiduciary responsibilities of investment advisers.

We expect that this trend toward more consumer protection and "conduct" regulation will continue and possibly even accelerate over the next decade. Information asymmetries, barriers to switching, inappropriate or incomprehensible advice, and nontransparent or unnecessarily complex product features or pricing structures are all likely to come under much closer scrutiny. Bundling and cross-subsidies of products also could become problematic and could lead to an expectation of "fair pricing" in some markets. In certain cases, banks may even be obliged to inform their customers if they could switch to a product that better suits their needs (e.g., remortgage at better terms). This last example may sound far-fetched but is already a reality for energy utilities in some markets, where consumers need to be informed regularly about cheaper tariffs they could switch to.

It is difficult to judge how quickly these regulatory changes will happen, and different jurisdictions are expected to move at different speeds. While the UK and some Continental European countries seem to be leading the charge right now, others could take over. These step changes often seem to happen because of scandals. For example, in 2007, a scandal involving insurance-product fees in the Netherlands triggered a regulatory response, including the introduction of tax incentives for competing bank and investment products, which leveled the playing field with insurance products, and a complete ban of commissions. Very often, a scandal is triggered when long-established bank behaviors clash with changed public or government expectations not yet codified in rules.

¹ For a fuller discussion, see, for example, Steven Pinker, *The Better Angels of Our Nature: Why Violence Has Declined*, New York: Viking, 2011.

Once these clashes occur, the new rules apply and often have a retroactive effect, which results in massive costs for the banking industry (e.g., the payment protection insurance scandal in the United Kingdom, the calculation of interest on interest in Italy, the conversion of foreign-currency-denominated loans in Central Europe, and the mortgage-servicing consent orders in the United States). While this is contrary to the general rule that new regulations should affect only future business behavior, the regulatory authorities or courts often apply these retroactively because new rules are issued as specific interpretations of vague general principles such as the “fair treatment of customers.”

Supervisory oversight practices also are evolving. In the near future, banks will probably have to provide supervisors with even more information and support their claims with quantitative data. For example, some regulators no longer accept qualitative statements about how banks are introducing a stronger risk culture, but demand regular staff surveys that track progress and benchmark the bank against its peers. Likewise, the data-submission requirements for Comprehensive Capital Analysis Review (CCAR) in the United States have been constantly growing. We expect that supervisory authorities will increasingly force banks both to measure how they are doing and to make this information available to them.

It almost goes without saying that changes in regulation are unlikely to be uniform across countries. The speed and magnitude of the changes described here will vary significantly by country. Yet we believe that over the next decade, also emerging-market banks will be subject to much more breadth and depth of regulation than today.

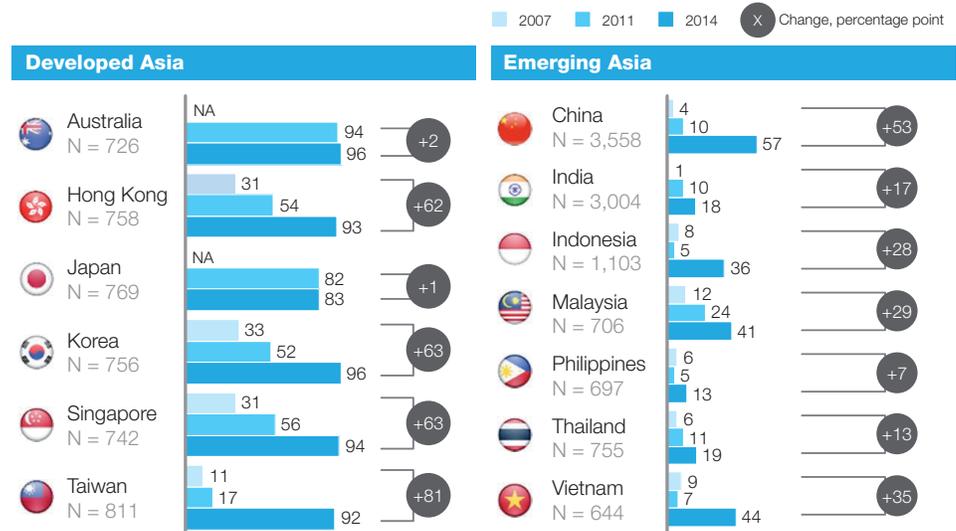
These regulatory trends are expected to have substantial implications for banks' risk management, including the following:

- **Optimization within a regulatory framework.** Capital, liquidity, funding, and leverage ratios, as well as recovery and resolution regimes, will likely force banks to construct balance sheets and businesses that comply with all constraints while aiming to fully utilize the capacity under the ratios. This limits banks' strategic degrees of freedom and demands a new, highly analytical business-optimization and strategy-setting process. Risk functions could play a key role because of their superior skills in these areas.
- **Principles-based compliance.** Compliance with existing rules is unlikely to be sufficient; rather, banks will need to comply with broad principles if they are going to protect themselves against potential future rules and interpretations with retroactive effects. For example, they should ask themselves whether practices are “fair” from a customer's perspective, or whether they would feel comfortable fully disclosing their business practices to customers, supervisory authorities, and the public. If they would not be comfortable, this is a clear warning sign. Banks will probably need to review their entire sales and service approach, examining end-to-end processes along with pricing structures and levels.
- **Automated compliance.** As the rules become ever more complex and the consequences of noncompliance ever more severe, banks will likely have no choice but to eliminate human interventions as much as possible in risk's dealings with customers and to hardwire the right behaviors into their products, services, and processes. Where these interventions cannot

Exhibit 1

Digital-banking penetration for transactions and services is on the rise across both developed and emerging countries, as Asia illustrates.

2007–14, % of respondents using online banking



SOURCE: McKinsey survey on personal financial services in Asia, 2007–14

be automated, robust surveillance and monitoring will be increasingly critical. This is the only way to ensure a very low error rate within the first line of defense and to allow proper oversight by the second line.

- **Collaboration with businesses.** Regulatory preparedness can be achieved only if the risk function works even more closely with businesses than it does now. How to achieve full compliance and protect the bank from risks needs to be an integrative part of the thinking process at the beginning, not an afterthought once businesses have set up their strategies or designed a new product.

Trend 2: Changing customer expectations

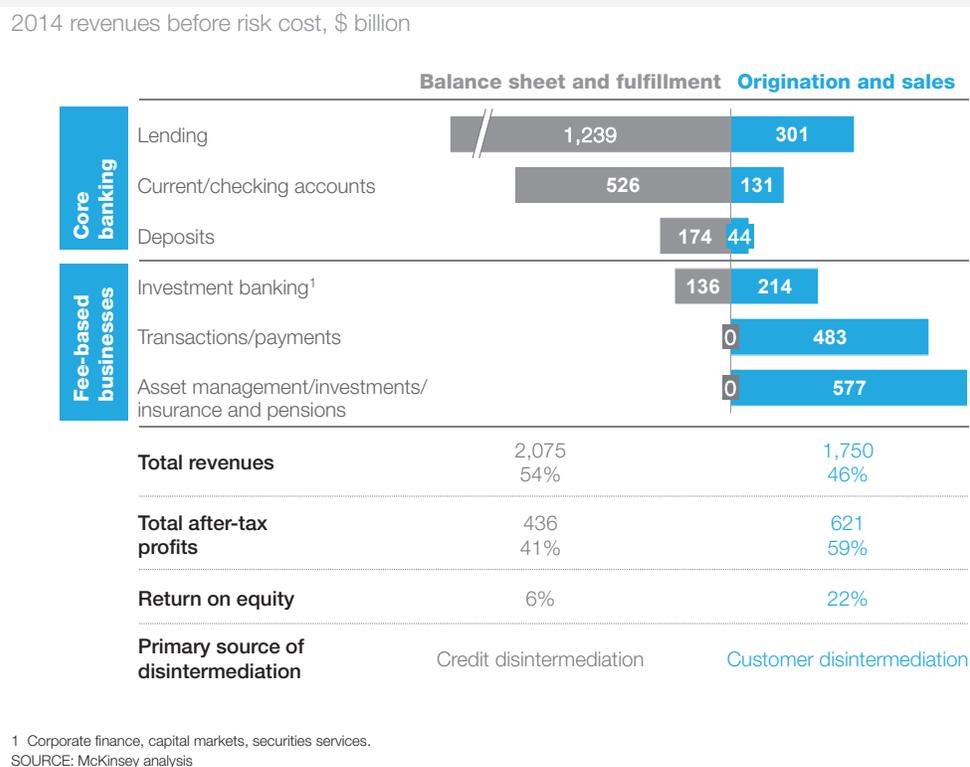
Over the next decade, shifts in customer expectations and technology are expected to cause massive alterations in banking and give it an entirely different profile. By then, widespread technology use is likely to be the norm for customers. The current tech-savvy younger generation will be the major revenue contributor to banks by 2025, because banks make most of their money with customers over 40. Simultaneously, older bank customers are expected to adopt technology at a much higher rate. Technology use by banking customers is already exploding in both developing and emerging markets (Exhibit 1).

Over the last two years, the amount of innovation has increased across the sector, and investment in financial-technology (fin-tech) start-ups has grown rapidly. Innovation affects every part of the value chain, but the most important disruption will probably occur in banks' origination and sales processes. Fin-tech and technology-firm attackers do not want to become banks; instead, they want to take over the direct customer relationship and tap into the most lucrative parts of the value chain: origination, sales, and distribution.²

² For a more detailed discussion, see *The Fight for the Customer*, McKinsey's 5th Global Banking Annual Review, September 2015, on mckinsey.com.

Exhibit 2

A majority of profits and more favorable returns come from customer-facing activities like origination and sales.



An examination of banks' basic business models makes these economics clear (Exhibit 2). Almost 60 percent of banks' profits come from origination, sales, distribution, and other customer-facing activities. They earn an attractive 22 percent return on equity (ROE) from these, much higher than what they gain from the provision of balance sheet and fulfillment, which generates only a 6 percent ROE.

Fin-tech start-ups offer an ever-wider range of highly competitive, seamless offerings. Their new apps and online services are beginning to break the heavy gravitational pull banks have always exerted on customers. One of the most important strategies they use is that they ask customers only to transfer a piece of their financial business at any one time. Some platforms, such as NerdWallet, a US start-up, and India's BankBazaar.com, aggregate many banks' offerings in loans, credit cards, deposits, insurance, etc. Others, such as fxcompared.com, specialize in a single product. Yet others, such as moneysupermarket.com, started with a single product but have extended their services into the full gamut of financial products and even further (e.g., energy, telecommunications, and travel). These new services make it incredibly simple for customers to open an account; once they have the account, customers can switch among providers with a single click.

If banks want to win the fight for their customer relationships, many things will need to happen. Customers will likely expect intuitive experiences, access to services at any time on any device, customized propositions, and instant decisions. To deliver on the customers' expectations, banks will probably require redesigning the whole organization from a customer-experience perspective and digitizing at scale. To achieve this, the risk function will need to be a core contributor and collaborate closely with the businesses throughout. It would most likely focus on two priorities:

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- **Automated instant decisions.** Banks have to offer rapid real-time answers to customer requests (e.g., applications for loans, opening accounts) with highly customized processes. To achieve this, risk functions will likely need to find ways to help banks assess risks and make decisions without human intervention. This often calls for major, zero-based process redesign and the use of more nontraditional data. Kabbage, a small-business-lending solution in the United States and the United Kingdom, is a case in point. It provides a rapid, convenient online loan-application experience where applicants do not have to submit lengthy documents. Instead, Kabbage assesses various data sources (e.g., PayPal transactions, Amazon and eBay trade information, and UPS shipment volume). Some banks are now designing account-opening processes where most of the requested data are prepopulated from public sources to make the onboarding experience as simple, seamless, and short as possible. In such cases, the risk function's challenge is to enable a secure yet customer-friendly approach for identification and verification.
 - **"Segment of one."** As banks become more sophisticated in their customer segmentation and offerings, they may eventually be able to create the "segment of one" where they can tailor prices and products to each individual. However, this customization costs banks dearly because of the much more complex supporting processes. Also, regulators are likely to constrain banks in an attempt to protect consumers from inappropriate pricing and approval decisions. Risk functions will be expected to work with operations and other functions to find ways to manage these emerging concerns while still providing highly customized solutions.

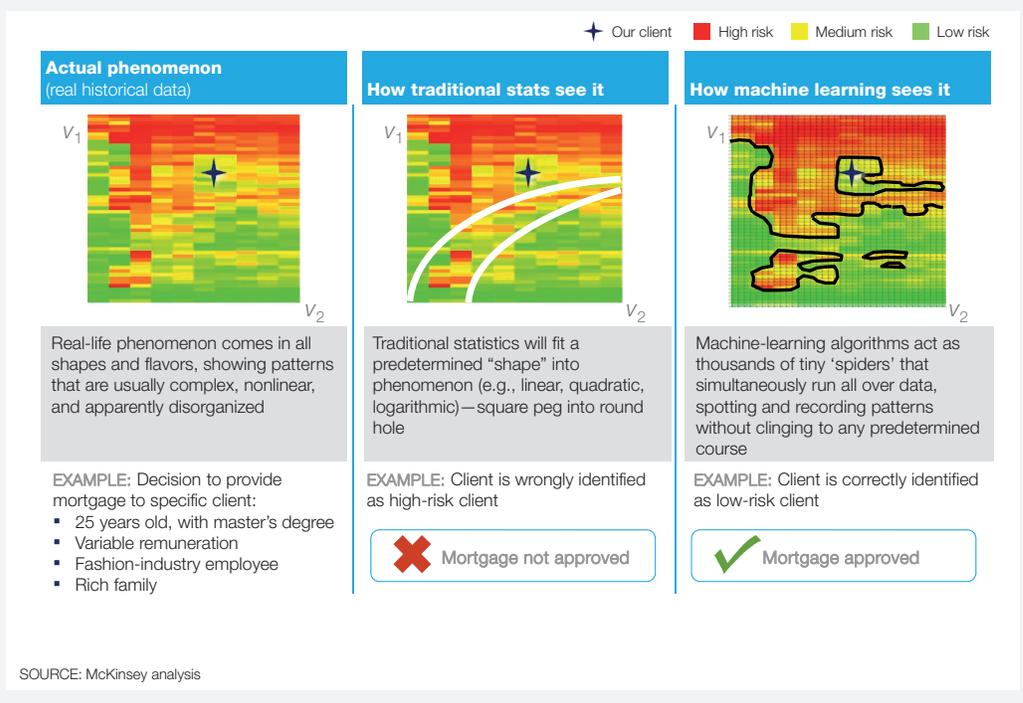
Trend 3: Technology and analytics as a risk muscle

Technology will not only change customer behavior, but also enable new risk-management techniques, often coupled with advanced analytics. The proliferation of new technologies provides cheaper, faster computing power and data storage, which enable better risk decision support and process integration. While many unknown innovations will emerge over the next ten years, we are already experiencing the effects of some that have important implications for risk management, including the following:

- **Big data.** Today, a vast amount of customer data is available and accessible to banks. Faster, cheaper computing power enables banks to leverage new information—for instance, granular customer-payment and spending behavior, social-media presence, and online-browsing activity—in risk decision making. Accessing external, unstructured data offers substantial upside not only for better credit-risk decisions, but also for portfolio monitoring and early warning, the detection of financial crime, and prediction of operational losses. Banks have only started to exploit this potential, and many challenges remain. A major question is whether banks can obtain both regulatory and customer approval for models that use social data, and if so, what usage of data is legal and acceptable.
- **Machine learning.** The rapid adoption of a new breed of models is offering much deeper insights into data. Machine learning identifies complex, nonlinear patterns in large data sets and makes more accurate risk models possible (Exhibit 3). These models learn with every bit of new information they acquire, improving their predictive power over time. Many sectors already employ machine-learning techniques; examples include weather forecasting, Amazon product recommendations, Google's email spam recognition, and Netflix suggestions. Some banks have started to experiment with them in collections or

Exhibit 3

Machine learning surfaces insights within large, complex data sets, enabling more accurate risk models.



credit-card-fraud detection, with very encouraging results. Gini factors, measures of a model's predictive power, often improve substantially. We expect banks' risk functions to apply machine learning in multiple areas, such as financial-crime detection, credit underwriting, early-warning systems, and collections in the retail and small-and-middle-enterprise (SME) segments. However, widespread adoption of self-learning models may face regulatory challenges, since such models cannot be validated in the traditional way. Even if regulators do not approve such models for regulatory-capital purposes, we still expect banks to use them for other purposes, given their significant accuracy advantages.

- **Crowdsourcing.** The Internet enables the crowdsourcing of ideas, which many incumbent companies use to improve their effectiveness in certain areas. Allstate, an insurance company, hosted a challenge for data scientists to crowdsource an algorithm for car-accident insurance claims.³ Within three months, they improved the predictive power of their model by 271 percent.

Many of these technological innovations can reduce risk costs and fines. Banks that apply these techniques early and boldly can gain a competitive advantage. However, data privacy and protection are expected to be an important prerequisite.

Trend 4: Additional (nonfinancial) risk types are emerging

Although management of financial risks has advanced significantly over the last 20 years, this is not the case for other risk types, particularly nonfinancial ones. The tremendous increase in fines, damages, and legal costs related to operational and compliance risk over the past five years has forced banks to pay much more attention to these risks. This will probably increase even further, due to the regulatory trends discussed earlier and given the expected rise in capital requirements for operational risk.

³ Clint Boulton, "How Allstate used crowdsourcing to tune up its car insurance business," *Wall Street Journal*, March 27, 2012, wsj.com.

As if this were not enough, other crucial risk types have been emerging. Examples include the following:

- **Contagion risk.** Financial and macroeconomic connectedness makes economies, corporations, and banks more vulnerable to financial contagion. Negative market developments can spread to other parts of a bank, other markets, or involved parties and can cause a bank's operating environment to deteriorate quickly and significantly. This can occur domestically and across borders, based on international capital flows and the globalization of finance.⁴ The more closely connected the markets, the more quickly volatility spreads.

Although central banks are the primary entities that worry about contagion risk, individual banks need to understand how they can be exposed to it. Banks have to measure and track it. Reducing this risk can reduce the bank's total risk and lower its capital requirements, because a bank's exposure to contagion risk is one of the main underlying drivers for its classification as a global systemically important bank (G-SIB) and for G-SIB capital surcharges.

- **Model risk.** Banks' increasing dependence on models requires that risk managers better understand and manage model risk. Increased data availability and advances in computing, modeling, and algorithms have expanded model use. However, errors from suboptimal models can lead to poor decision making and increase banks' risks. Some banks have experienced model-risk-related losses, although most of these cases are not reported publicly. For instance, one large US bank had losses of \$6 billion, which were partially due to value-at-risk model risk (i.e., lack of modeling experience by the operator, no back-testing, and operational problems in the model).⁵ In another example, a large Asia-Pacific bank lost \$4 billion when it falsely applied interest-rate models—for example, through incorrect assumptions, data-entry errors, and breakdowns and errors in the models.

Model errors stem from issues with data quality, conceptual solidity, technical or implementation errors, correlation or time inconsistencies, and uncertainties about volatility. There are multiple mitigation strategies, which center on more rigorous, sophisticated model development, better execution (with higher-quality data), thorough validation, and constant monitoring and improvement of the model.

- **Cyberattacks.** Most banks have already made protection against cyberattacks a top strategic priority, as these attacks can have devastating consequences. This is partially due to the banks' heavy reliance on software, systems, information technology (IT), and data, but also to the fact that these attacks would risk not only the banks' operations but also confidential customer data. Given the current geopolitical context and its likely evolution, we expect cybersecurity only to increase in importance and require an even greater deployment of resources at the individual-institution level, as well as much greater cross-industry and industry-government collaboration.

Risk functions will most likely need new capabilities and processes to manage and track these emerging risks.

⁴ Whether this will continue is not clear; see McKinsey Global Institute, *Financial globalization: Retreat or reset?*, March 2013, on mckinsey.com.

⁵ Dawn Kopecki and Michael J. Moore, "JPMorgan switches risk model again after whale loss," *Bloomberg Business*, April 12, 2013, bloomberg.com.

Trend 5: Better risk decisions through the elimination of biases

Another risk is that of making wrong decisions due to unrecognized biases. Over the last 30 years, enormous strides have been made in understanding how real humans, not the *Homo economicus* of traditional economic theory, make economic decisions. We have learned that even when people attempt to approach a problem rationally and diligently, their decisions are often suboptimal, due to various conscious and unconscious biases. People are overconfident (e.g., 93 percent of car drivers in the United States put themselves in the top 50 percent of all drivers; 87 percent of Stanford MBA students rated themselves as above average in an experiment).

Businesses are no exception to this. For example, business cases are almost always inflated. We look for confirmation and disregard evidence that does not fit the picture. “Anchoring” occurs frequently in group discussions; for instance, if the first person speaking up argues in favor of an outcome, the likelihood is very high that most if not all the others will vote for the same outcome later. In the context of bank risk management, think of a credit application for a corporate loan that reads, “While the management team only recently joined the company, it is very experienced.” In this case, the credit officer appears to have made up his or her mind, wants the credit approved, and is putting balancing evidence in a narrative that neutralizes the potentially negative evidence. These are just some of the most important biases.⁶

Leading academics and practitioners have translated these insights into techniques for overcoming such biases, and various industries are beginning to apply them with promising results. Several of these sectors are far more advanced in this arena than banking. For example, some energy utilities that have to make multibillion-dollar investments that can make or break the company (e.g., building a nuclear-power plant) have completely redesigned their major investment-decision processes with the help of these techniques. These are very relevant for banks, which make thousands of risk decisions every day; every bias that affects each decision can lead to an incorrect underwriting decision or poor pricing. Not only that, but a cascade effect can set in, with multiple biased decisions having a cumulative effect on the bank’s overall risk levels.

We expect significant advances in the development and employment of de-biasing techniques in the near future. Bank risk functions can already apply the following:

- **Bias recognition.** The first step is an assessment of which risk decisions in the bank are subject to biases. Once this is understood, it is easier to identify them and reduce their impact. This is less trivial than it sounds. While it is relatively clear that biases are always present when people make risk decisions, as in the case of large-corporate-loan underwriting, is this also true with models? They are certainly less problematic than credit decisions made by people. However, they are subject to biases when they are built. Traditional regression models start with the modeler’s hypothesis about which factors have predictive power and should be included. Exploring machine learning offers an alternative approach, where the algorithms themselves determine the drivers of risk.
- **Elimination techniques.** Banks can use three techniques to reduce or avoid decision biases: Analytical measures provide decision makers with more fact-based inputs; debate techniques help remove biases from conversations and decisions; and organizational measures embed the new way of decision making into the company (Exhibit 4).

⁶ For a fuller discussion, see, for example, Daniel Kahneman, *Thinking, Fast and Slow*, New York: Farrar, Straus & Giroux, 2011.

Exhibit 4

Three techniques can de-bias decision making.

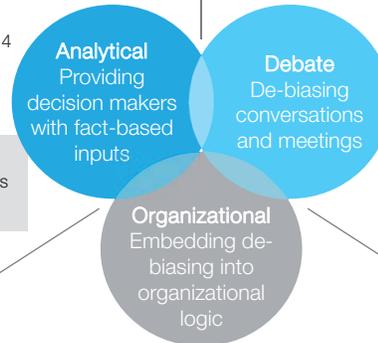
EXAMPLE: Qualitative credit assessment (QCA)

QCA was developed for small-and-middle-enterprise credit decisions in emerging markets where satisfactory financial data are not available and banks must rely on expert judgment

- Converts judgment into consistent, objective, practically quantitative data
- Mitigates human biases with several methodologies:
 - Very objective and precise questions and answers
 - De-biased survey design (e.g., 4 answer categories)
 - Additional, redundant questions to obscure logic

Further examples

- Increased use of analytical models
- Real-option valuation



EXAMPLE: Discussion rules

This set of rules eliminates opinionated discussion and provides room for fact-finding

- Presenter presents a case (e.g., credit proposal, promotion)
- Group of judges may formulate questions; no statements allowed
- Presenter answers questions; no discussion allowed
- One group member frames potential decisions and need-to-believes
- Group votes anonymously

Further examples

- Reanchoring
- Criteria for yes
- Devil's advocate

EXAMPLE: De-biasing training

- All relevant employees undergo de-biasing training
- Core topics included:
 - Types of decision biases
 - Practical techniques to recognize and address such biases

Further examples

- Central de-biasing team
- Rolling budget

SOURCE: McKinsey analysis

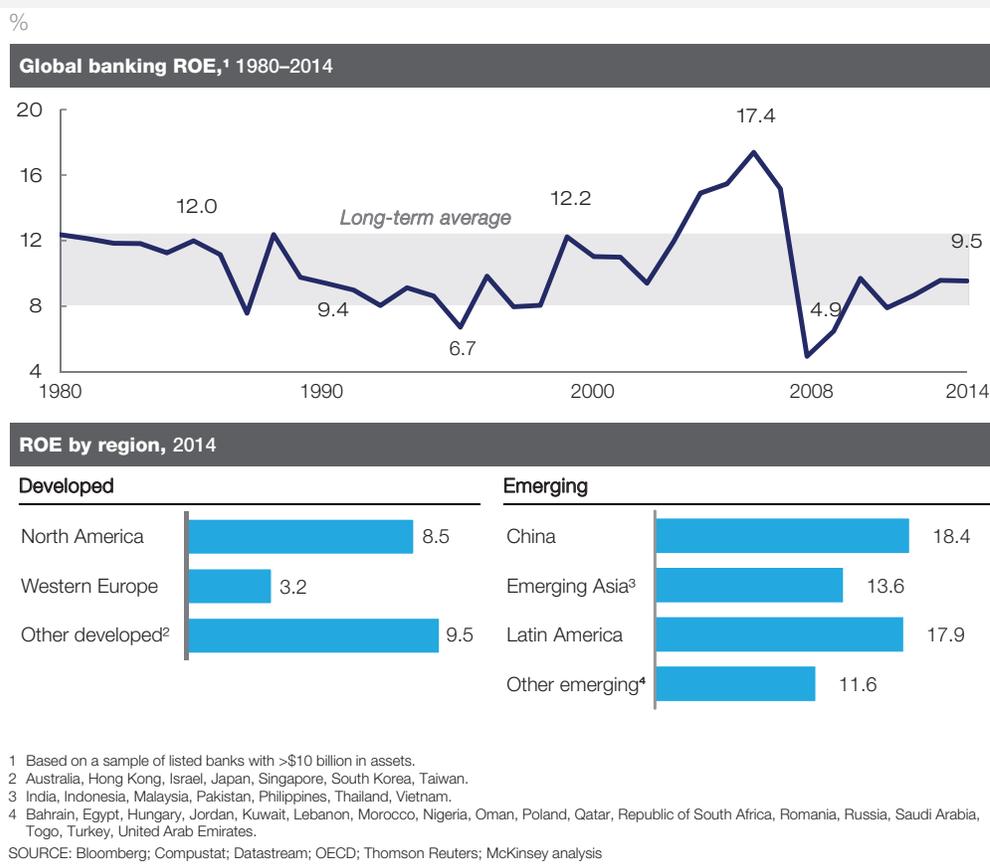
One example of the analytical method is qualitative credit assessment (QCA). Several banks around the globe implemented QCA for the underwriting of SME loans in emerging markets, where financial data are often unavailable, insufficient, or unreliable. Banks typically rely on expert judgment in these cases. While this is unavoidable, much can be done to improve the quality of this decision making. QCA identifies a long list of potential predictive factors in workshops with the best credit officers, then filters them by back-testing them against the loss history. These are then translated into structured questionnaires, which reduce biases (e.g., with a qualitative description of what constitutes good or bad, or use of four grades for each factor to avoid a middle option, because people tend to choose that).

A particular debate technique implements strict discussion rules for credit committees, rules that eliminate opinionated discussion and promote fact-finding. After everybody has read the papers and the presenter summarizes the case, participants are only allowed to ask the presenter factual questions; the case is then put to an anonymous vote (to avoid the anchoring bias). If the vote is unclear, the case is discussed and potentially re-raised.

The risk function could be the front-runner for de-biasing within banks. It could even become a center of competence that rolls out de-biasing processes and tools to other parts of the organization.

Exhibit 5

Global banking profits have returned to the long-term average of 8%–12% return on equity (ROE).



Trend 6: Need for strong cost savings

The banking system has suffered from slow but constant margin decline in most geographies and product categories. Banks have worked very hard and used operational cost improvements to compensate for these declines, resulting in constant return on equity at the lower end of the long-term average, which is in the upper single digits (Exhibit 5).

While there will probably be substantial regional differences, the downward pressure on margins is expected to continue across all geographies. We even expect this pressure to accelerate due to further tightening of regulations (e.g., capital requirements, increasing compliance costs) and the emergence of low-cost digital attackers. Some products are expected to be particularly affected. For example, by 2025, up to 40 percent of revenues could be at risk in certain product categories if banks do not act (Exhibit 6).⁷

As a result of these disruptions, banks will possibly need to rethink their operating costs so they can deliver more value at lower cost. Once banks have exploited traditional and incremental cost-cutting approaches such as zero-based budgeting, value-added analysis (i.e., demand management), and outsourcing, we believe that simplification, standardization, and digitization will likely be the only sizable avenues left for substantial cost savings.

⁷ For a more detailed discussion, see *The Fight for the Customer*, McKinsey's 5th Global Banking Annual Review, September 2015, on mckinsey.com.

Exhibit 6

Five retail businesses have substantial value at risk.

Expected 'value at risk' of banking revenues and profits by 2025

EXAMPLE: Retail-banking products

	Revenues, ¹ % change	Profits, ¹ % change
 Consumer finance	-40	-60
 Payments	-30	-35
 SME lending	-25	-35
 Wealth management ²	-15	-30
 Mortgages	-10	-20

Sample analysis: Consumer finance

Revenues, 2025, \$ billion



ROE impact:
-6
percentage points

¹ Compared with 2025 projections without the impact of fin-tech and digital attackers. Profit numbers include impact of savings on operating costs as a result of digital. Revenues are after risk cost, profits are after taxes. Figures are rounded.

² Excluding deposits.

³ Including currently unbanked segments. Fin-techs are financial-technology companies.

SOURCE: McKinsey analysis

Risk functions cannot be over the long term exempted from contributing to these cost savings. At the same time, they will need to invest substantially to address many of the structural trends described earlier. There is no easy solution to this challenge under the current industry and regulatory constructs, and we believe banks will need to reexamine these decisions over the next decade.

2. By 2025 bank risk functions will probably be even more critical in making banks successful than they are today

Because of the six fundamental trends, banks are likely to face a multifaceted challenge: become more effective in identifying and mitigating risks, more efficient and faster in supporting businesses and fulfilling customer needs, better suited to support decision making across the organization, and better prepared to meet regulatory expectations. We believe that our suggested vision for the risk function in 2025 would address these challenges—but this future risk function is a significant departure from today's in multiple areas.

In 2025, risk functions in banks have the potential to be the primary architects of seamless, de-biased risk decisions and monitoring throughout the organization. They could deliver higher value by lowering risk and operating costs, contributing more to intuitive customer experiences, and helping steer the bank as it complies with regulations. This vision entails the risk function driving the following actions:

- Minimizing manual interventions while making modeling, simplification, standardization, and automation much more the rule when dealing with regulations, delivering superior customer experiences, capturing the benefits of big data, and de-biasing decisions. This is expected to substantially reduce nonfinancial risk and lower the risk function's operating expenses.
- Collaborating more closely with businesses—for example, on revised customer journeys or the joint reduction of operational risk—and with other functions, such as with strategic planners on balance-sheet optimization. This helps the bank respond to new regulations, develop compelling customer experiences, de-bias decisions, address emerging risk types, and lower costs.
- Becoming a strong advocate of corporate values and principles through a more robust risk culture that is defined, communicated, and reinforced throughout the bank. When in place, risk detection, assessment, and mitigation are part of the daily job of all employees across the entire organization. Various initiatives help embed the mind-sets and behaviors that make up this risk culture.
- Developing and hiring people with different skills who can build and manage the new models and data sets, and collaborate with the businesses and other functions.

The risk function will probably become even more strongly embedded in all areas of the organization. To carry out these changes, it will likely need to transform its operating model, processes, IT/data infrastructure, and talent pool.

The operating model

The operating model is expected to change significantly as analytical services and advisory and counseling relationships become more important parts of risk management (Exhibit 7). For instance, the risk function will need to be able to work with strategy to manage all regulatory constraints proactively. It also will need to build the analytical capabilities to manage all current and new models and analytical approaches, such as machine learning.

Exhibit 7

The future risk-management operating model will shift resources from operational processes to analytics.

Changed profiles of risk-management staff

% of central risk full-time equivalents (FTEs)



Massive shift toward analytics and new areas (modern-day quants and business translators)

Biggest FTE reduction will be in operational processes and reporting

¹ McKinsey Risk FTE benchmarking 2014/2015.
SOURCE: McKinsey analysis

During this transition, some areas will probably stay the same size but shift their focus. For example, the risk function's management will likely benefit from the leaner overall model, engage more with businesses and other functions to improve customer journeys and product propositions, reduce nonfinancial risks at their source, and assist in the bank's overall strategy.

The risk function is also expected to take on new responsibilities for stakeholder management, de-biasing, regulatory management, and emerging risks. Its individual and industry activities will likely intensify as it concentrates on internal and external stakeholder management, and it will probably establish a de-biasing department to help ensure that relevant employees are trained in de-biasing techniques. In addition, a risk-process task force could instill the notion of continuous improvement and zero-based process redesigns within the risk organization. New teams could focus on the emerging risk types that banks are expected to encounter (e.g., model, contagion, and cyberattacks). As a result, some parts of the risk function will probably have a great many more resources than today—for instance, those that cover new risk types.

Processes

Some areas, including manual operational processes and risk reporting, will likely need fewer resources because of simplification, standardization, and automation. While risk decision making is expected to be firmly embedded in end-to-end customer journeys, the underlying processes are highly likely to be paperless, with automatic, real-time processing. The division of tasks between machines and people will most probably be very different from today. Humans would only review select cases that do not fall firmly within the bank's policies, approve decision proposals, and perform case handling for very complex cases. This is expected to be true for both retail and SME banking. Automation also offers significant potential for wholesale banking when rolling over loan facilities or when making credit decisions for existing clients about trade-finance or receivable-finance products.

Nonfinancial risks present another major opportunity for embedding the controls directly in the core processes. In operational risk, we expect human activity to focus on eliminating the risk at source, designing key risk indicators (KRIs), implementing control points, and creating procedures for incident management. Most other activities, including monitoring, are expected to be automated over time. As a result, the number of compliance staff will probably decline; for example, the detection of financial-crime cases would rely on models like machine learning.

IT/data infrastructure

The supporting IT infrastructure and data could take a variety of forms, although the most recent trends lean toward a “two-speed architecture” and data lakes. A two-speed architecture decouples the bank’s IT architecture into a slower, reliable back-end (e.g., the bank’s core IT systems, often the legacy systems) and a flexible, agile front-end that is customer-facing. A data lake gathers and stores all types of data, structured and unstructured, internal and external. Data entering the bank need not follow strict rules (as would be required of data entering an enterprise data warehouse). Instead, the users of the data define the rules when they extract the data from the lake. By combining this flexibility with Google-like search technology, the data lake provides banks with a step-change that helps them leverage their data for multiple purposes, ranging from marketing to risk to finance. The scope and flexibility of the system help banks use big data tools for complex data investigation and analysis.

Getting to the target state, especially in terms of systems and infrastructure, is expected to require significant expenditures. While remaining in the forefront is likely to make such investments vital, the cost pressures described here would probably make this task a nontrivial consideration. In all likelihood, some banks will lag behind because they are unable or unwilling to make these investments.

Talent pool

Talent and resources in the risk function will likely need to shift toward analytics, collaboration, and the function’s other new areas of responsibility; at the same time, substantially fewer people are expected to be involved in manual risk decision making. The new staff will most probably be highly talented data scientists who have advanced mathematical and statistical knowledge and are experts in machine learning and other sophisticated data-analysis methods, as well as business translators who can work well with other parts of the bank to convert data insights into business actions. As these risk managers become trusted counselors to business areas, they can be expected to form a strong contrast to today’s operators and specialists, who focus more on case processing.

As banks search for the best candidates for these positions, they will likely find themselves competing directly against technology firms for the best candidates. Building cooperative relationships with universities and financial-technology companies will probably help banks gain access to this talent. To win these candidates, the risk function will need to reshape its employee value proposition and tailor it to these new recruits. The function would also need to change its culture to one that promotes entrepreneurship and creativity. These new recruits will likely need a sophisticated technology environment with high-end digital tools, and training and development so they can keep abreast of emerging trends.

3. Banks need to start transforming their risk functions now through initiatives with an immediate impact

Achieving the target state will most likely require a major transformation of the risk function. However, it is impossible to define a detailed blueprint for how a risk function will look in 2025. Nor can one predict all the technological advances, the macroeconomic shocks, the next banking scandals, or the innovations in risk-management practices that will happen over the next decade and that will influence the shape of the future risk function.

However, the six trends alone are sufficient to form the basis of a clearly articulated vision, which can help to mobilize today's risk function and identify initiatives that are critical to move the risk function in the right direction. Successful functions will also fulfill the many more current demands, such as investments in stress-testing capabilities, the full implementation of the three lines of defense framework, and investments in data quality and reporting (BCBS 239).

CROs who want to prepare their risk function for the future need to develop transformation agendas that combine the initiatives that are necessary due to current demands with those that make substantial contributions to preparing the function for the future and moving it toward the vision. We firmly believe that the initiatives that position the risk function for the future need to have a strong short-term business case as well.

The following five potential initiatives can all help risk functions prepare for the future.

Initiative 1: Digitization of core processes

Many banks are already digitizing many of the core processes that affect the risk function (e.g., client onboarding, Know Your Customer, and credit processes). In our experience, banks can usually do more in this area than many risk managers currently suspect. In just one example, a bank's credit-process digitization reduced end-to-end processing time for the opening of a digital current account by more than 90 percent, and lowered overall costs by more than 60 percent. It also reduced financial-crime risk substantially. The bank's compliance department originally thought new customers had to come to the branch to have their identity verified through an in-person meeting. It believed that this was a local regulatory requirement. However, the bank was able to redesign and automate the process. The customer took a picture of his or her passport or identity card plus a utility bill and submitted this with the online application. The information was sent automatically to a third party, which used sophisticated software and access to various databases to automatically verify the identity and the validity of the identification documents.

The local regulator approved this solution because the bank could demonstrate that the reliability of the automated system was much higher, as it did not entail human errors, and that the sophisticated software, with access to the right databases, was much better positioned to spot false documents. It also better protected the bank against fines should the system make mistakes, because the bank would only need to demonstrate that it designed the right process and exercised the right level of third-party-vendor oversight, but did not itself make any mistakes in onboarding the client.

Many risk functions support their businesses when those businesses ask risk to help them redesign their core processes. However, fewer risk functions proactively reach out to businesses with suggestions about digitizing embedded risk decisions. We believe risk functions could unlock significant savings if they were more proactive with their colleagues. In addition, process digitization often creates a win-win situation: increased efficiency and lower costs are often coupled with superior customer experience and results in improved sales.

Initiative 2: Experiment with advanced analytics and machine learning

Risk functions should start to experiment with analytics (e.g., machine learning) in some areas, such as credit decisions. These algorithms have already significantly improved credit decisions on multiple occasions for some banks. For example, one bank that used machine learning in its early-warning systems increased Gini scores on high-risk clients from the low to mid-70s to about 90 percent. On collections, it brought Gini up to the low-90-percent range from the mid-60s and 70s. All of these represent significant improvements. In a recent European credit-card example, machine-learning techniques improved the “Late on same day” Gini score by 18 percentage points (from 71 percent to 89 percent) and the “Default on day 90” Gini score by 18 percentage points (from 75 percent to 93 percent). We believe that applying machine-learning algorithms can help banks improve the identification of risky customers.

Initiative 3: Enhanced risk reporting

Developing next-generation risk reporting can start to enhance risk management now. BCBS 239 requirements have already prompted enormous efforts at all G-SIBs and domestic systemically important banks (D-SIBs). These initiatives usually improve overall data quality, aggregation capabilities, and risk-reporting timeliness. They typically focus less on format, how the reports are delivered, or how they could be better used in risk decision making. However, we have seen some innovative thinking by a few banks in these latter areas. They have employed management information systems that replaced paper-based reports with an interactive tablet solution that offers a great deal of information in real time and allows users to do root-cause analyses. These solutions were firmly embedded in the banks’ performance management processes. We could envision something very similar for risk reporting. Such improved reports would enable banks to make decisions faster, based on more transparent and consistent data, and improve the quality of fact-based decisions. In addition, real-time risk reporting would help banks identify potential risks even sooner, allowing a more timely response.

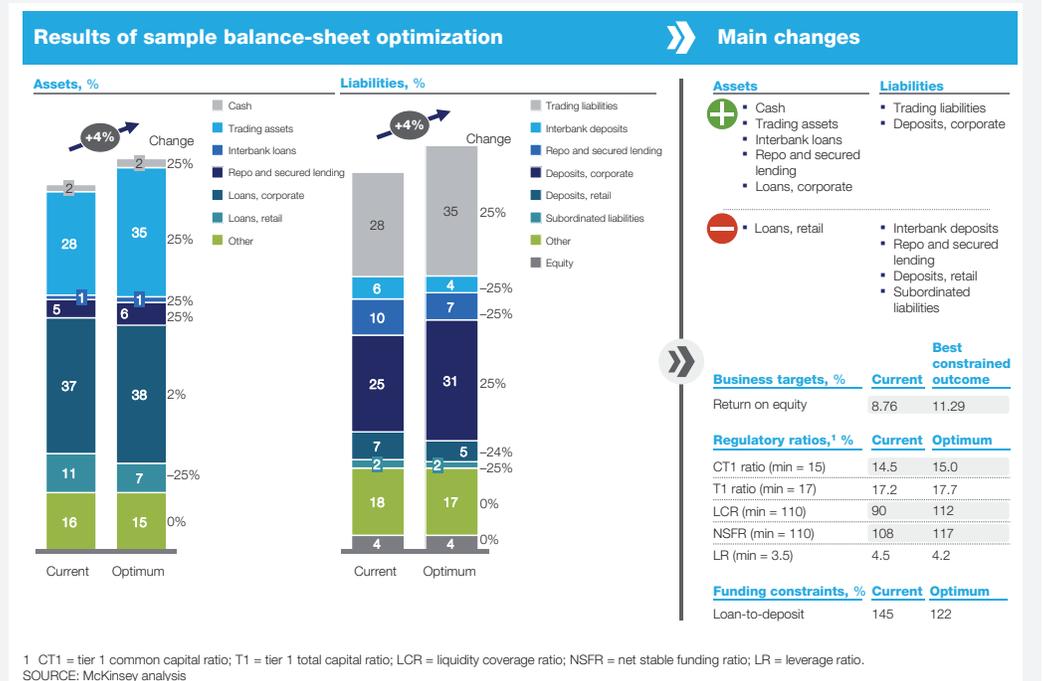
Initiative 4: Balance-sheet optimization

The risk-management function could also work with finance and strategy to optimize the bank’s balance sheet under all regulatory constraints. Some banks already employ this technique. They use a structured process that aligns the balance-sheet data (if needed, it utilizes the most important balance sheets for international groups) and then agrees on economic scenarios, strategic assumptions (e.g., how much the bank would be prepared to increase or shrink a loan portfolio), and regulatory assumptions. Finally, the process has an optimization engine make suggestions for an optimized balance sheet. Typically, this yields suggestions for ROE improvements of 50–400 basis points, where the adjustments in the range of 50–150 basis points are typically moderate. Exhibit 8 provides an example of such an optimization.

In our experience, an optimization engine almost always produces counterintuitive insights, because the various regulatory ratios (e.g., capital ratios, net stable funding ratio, liquidity

Exhibit 8

Balance-sheet optimization can help increase key ratios.



coverage ratio, total loss-absorbing capacity, recovery and resolution requirements, Dodd-Frank, and ringfencing) are so complex and interrelated that it is almost impossible to find the optimal outcome without the support of an optimization engine.

The other advantage of building such an engine is that once it has been built, the numbers can be rerun when regulatory ratios or strategic assumptions change. Different regulatory scenarios, such as Basel IV, can be tested. Balance-sheet optimization can also be linked to the stress-testing activities that banks have started to build up as a response to regulatory requirements; the performance of banks under stress is expected to increasingly become the binding regulatory constraint, and this will need to be reflected in optimization efforts. As a result, balance-sheet optimization can become the nucleus of a sophisticated regulatory-management function that could be shared by risk management, finance, and strategy.

Initiative 5: Putting the enablers in place

Several enablers also need to be in place to make the vision a reality. These could include the buildup of supporting IT/data infrastructure, the necessary talent pool, and risk culture. Banks could put some of these enablers in place through several measures:

- **Shift the risk function's recruiting focus.** One of the function's most significant challenges will likely be achieving the shift in its talent mix over time. For risk functions to make a smooth transition, they need to start now and combine initiatives, so they can attract more tech-savvy and entrepreneurial talent while decreasing the number of traditional staff in more operational areas through digitization and other means.
- **Create data infrastructure.** As described previously, a flexible data infrastructure (e.g., data lakes) is expected to help banks create a repository for all types of structured and unstructured data. Banks can then use the data for different use cases such as credit underwriting, monitoring and early warning, or fraud detection. Since risk functions in the future are expected to become increasingly data driven, a supporting data infrastructure

is likely to be a critical enabler. Such an infrastructure cannot be built in isolation, however. It has to be part of an enterprise-wide effort that addresses at once the data needs of both businesses and control functions.

- **Enhance risk culture.** Building and maintaining a robust risk culture will be critical to ensuring the success of the risk function of the future. A robust risk culture is also likely to be a requisite element in banks' future competitive advantage. Although risk culture has gained traction in the last few years, many banks are only beginning to institutionalize it. The target vision of the risk function is expected to have an explicit aspiration with values and norms that the organization can use to manage risk. These values will most likely promote informed, conscious risk taking based on its risk appetite, coupled with the necessary checks and control systems to continuously detect, assess, and mitigate risks, as well as transparent procedures to follow up on breaches and deviations.

A strong, organization-wide risk culture is expected to be essential for three reasons. First, although the trends and changes we have articulated provide a clear path for getting things done, individuals are the ones who make it possible. For example, they need to define business practices, adhere to ethical principles, and ensure governance as part of their day-to-day work. Second, while the new risk function will most likely possess sophisticated analytical and technical capabilities, a strong, widespread risk culture is necessary to ensure that these are appropriately and ethically applied. In addition, they need to be effectively challenged, and appropriate checks and balances should exist for the technical capabilities. These latter will most probably require substantial human intervention and are most effective when a broad set of stakeholders from across the bank perform them routinely. Lastly, an organization-wide risk culture is expected to enable banks to manage the more decentralized activities and models that newer technologies make possible. This is particularly true at larger institutions.

Banks' risk-culture aspiration and values should identify specific attributes that are desired, as well as those that are not. Such a statement is often developed by engaging many stakeholders at the bank. After identifying the aspiration, the bank assesses the current risk culture and identifies its strengths and improvement opportunities. Strengthening the risk culture also requires changing individual's mind-sets and behaviors. First, the bank is expected to foster understanding and conviction about what changes are needed and why they are important to individuals and the bank. Second, various initiatives would develop the talent and skills that are needed to fulfill the various changes. Third, formal mechanisms would reinforce the new processes and procedures. These could include evaluation and compensation mechanisms, governance, and the accountability of the front line. Finally, role-modeling of desired behaviors by senior management would supplement all of these. This is one of the most important and impactful levers for change.

Making and maintaining changes to risk culture is no mean feat. It requires a multiyear program that emphasizes different elements of the desired culture if the organization as a whole is going to make meaningful progress. In a certain way, it can be misleading to talk about a program, because embedding the culture requires that it be woven into the fabric of the organization and its core processes. We believe that it is highly likely to be a key pillar of future risk management and well worth the investment and effort.

In sum

Bank risk management will likely look dramatically different by 2025, when it has become a core part of banks' strategic planning, a close collaborator with business heads, and a center of excellence in analytics and de-biased decision making. Its ability to manage multiple risk types while preparing for new regulations and complying with current ones is expected to make it even more invaluable to financial institutions, and its role in creating fulfilling customer experiences will most probably transform it into a key contributor to banks' bottom lines. The risk function is also expected to become increasingly a differentiating factor among banks, helping to determine which ones succeed. However, the only risk functions that are likely to achieve this state are those that undertake a wholesale, ambitious transformation—and that start to do so now. For those that do, a wealth of potential value awaits.



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Acknowledgments

The authors wish to thank their many colleagues in the Global Banking and Risk Practice—including Tobias Baer, Joyce Clark, Davide Grande, Daniel Grimm, Holger Harreis, Kata Horcsig, Cindy Levy, Raul Galamba de Oliveira, Mieke van Ostende, Cristina Sanjose, Gabriele Vigo, and Derek Waldron—for their contributions to this report.

The authors also wish to thank the many CROs and senior risk managers with whom they discussed this research. They provided invaluable challenge and insights.

Finally, they wish to thank Sarah Smith for her editorial support.

Philipp Härle is a director in McKinsey's London office; **Andras Havas** is an associate principal in the Budapest office, where **Daniel Rona** is a principal; **Andreas Kremer** is a principal in the Berlin office; **Hamid Samandari** is a director in New York office.



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