

JULY 2016



© dowell/Getty Images

R I S K

# The value in digitally transforming credit risk management

To withstand new regulatory pressures, investor expectations, and innovative competitors, banks need to reset their value focus and digitize their credit risk processes.

Juan Antonio Bahillo, Saptarshi Ganguly, Andreas Kremer, and Ida Kristensen

External and internal pressures are requiring banks to reevaluate the cost efficiency and sustainability of their risk-management models and processes. Some of the pressure comes, directly or indirectly, from regulators; some from investors and new competitors; and some from the banks' own customers.

The impact is being felt on the bottom line. In 2012, the share of risk and compliance in total banking costs was about 10 percent; in the coming year the cost is expected to rise to around 15 percent. Overall, return on equity in banking globally remains below the cost of capital, due to additional capital requirements, fines, and lagging cost efficiency. All of this puts sustained pressure on risk management, as banks are finding it increasingly difficult to mitigate risk through incremental improvements in risk-management processes.

To expand despite the new pressures, banks need to digitize their credit processes. Lending continues to be a key source of bank revenue across the retail, small and medium-size enterprise (SME), and corporate segments. Digital transformation in credit risk management brings greater transparency to risk profiles. With a firmer grip on risk, banks may expand their business, through more targeted risk-based pricing, faster client service without sacrifice in risk levels, and more effective management of existing portfolios.

## Incumbents under pressure

Five fundamental pressures that relate directly to risk management are being exerted on banks' current business model: customer expectations for digitally managed services; regulatory expectations of a high-performing risk function; the growing importance of strong data management and advanced analytics;

new digital attackers disrupting traditional business models; and increasing pressure on costs and returns, especially from financial-technology (fintech) companies (Exhibit 1).

**Customer expectations.** Traditionally reliant on physical distribution, banks are finding it difficult to meet changing customer needs for speed and simplicity, such as fast online credit approvals.

**Regulatory and supervisory road map.** Regulators are expecting the risk function to take a more active role in the context of new, digitized business models. New regulations are being put in place to address cyberrisk, automation of controls, and issues relating to risk-data aggregation. Directives pertaining to the Comprehensive Capital Analysis and Review, BCBS 239, and asset-quality reviews specify requirements for data management and the accuracy and timeliness of the data used in stress testing.<sup>1</sup>

**Exhibit 1 Five trends are altering the current risk-management model and making digitization a ‘must-have.’**

Trends transforming the banking industry	Impact on risk management (examples)
<b>1. Changing customer expectations</b>	<p>Customer demand for online and mobile experience: mobile payments are expected to grow four times by 2020</p> <p>Internal users of risk reports (eg, chief risk officers) have heightened expectations for quality and timeliness</p>
<b>2. Tighter regulatory control requiring greater risk-function effectiveness</b>	<p>New regulations (eg, BCBS 239,<sup>1</sup> Basel AML/KYC<sup>2</sup>)</p> <p>Tighter supervision and increased enforcement action (eg, more than \$200 billion in fines since crisis; more than 4,000 MRAs<sup>3</sup> still outstanding from OCC<sup>4</sup>)</p>
<b>3. Growing importance of strong data management and advanced analytics in staying competitive</b>	<p>Robust customer-differentiation and risk-decision capabilities (eg, risk-based pricing, targeted segmentation through machine learning)</p> <p>Early-warning detection techniques to identify potential losses and exposures proactively</p>
<b>4. New attackers driving business-model disruptions</b>	<p>Risk management is critical in enabling banks to compete and/or collaborate with fintech companies on products and customer experience</p> <p>Risk can position banks favorably if fintech companies take inappropriate risks (“bets”)</p>
<b>5. Increasing pressure, especially from financial-technology companies, on costs and returns</b>	<p>Return on equity for global banking remains below cost of capital despite lower risk losses</p> <p>JP Morgan Chase spending well over \$1 billion on risk and compliance; HSBC adding more than 3,000 resources</p>

<sup>1</sup>Basel Committee on Banking Supervision regulation number 239.

<sup>2</sup>Anti-money laundering/know your customer.

<sup>3</sup>Matters requiring attention.

<sup>4</sup>US Office of the Comptroller of the Currency.

**Data management and analytics.** Rising customer use of digital-banking services and the increased data this generates create new opportunities and risks. First, banks can integrate new data sources and make them available for risk modeling. This can enhance the visibility of changing risk profiles—from individuals to segments to the bank as a whole. Second, as they collect customers’ personal and financial data, banks are mandated to address privacy concerns and especially protect against security breaches.

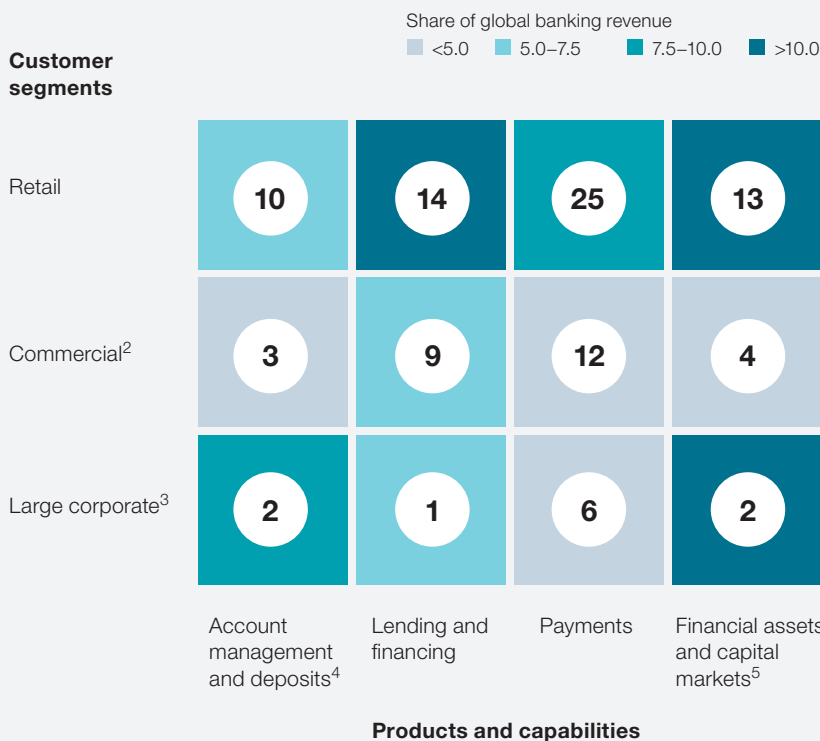
**Fintech companies and other innovative attackers.**

The digitally savvy segments have responded to innovative offerings from new nontraditional competitors, especially fintech companies and digital-only banks. These start-ups are extending innovation throughout the digital-banking space, creating a competitive threat to traditional banks but also potentially valuable opportunities for partnerships (Exhibit 2).

Exhibit 2

**Financial-technology companies are extending innovation in the digital-banking space to all client segments.**

**Share of fintechs in digital-banking space, % of start-ups and innovations in fintech database, by segment and product<sup>1</sup>**



**Implications for risk**

Faster innovation from thousands of fintech start-ups creates new opportunities in risk management

Potential partnerships are available to accelerate the risk function’s transformation

Internet technology is enabling crowdsourcing and risk disintermediation—but also giving banks opportunities to increase connectivity with their clients’ digital ecosystems (eg, peer-to-peer lending integration)

<sup>1</sup>McKinsey’s financial-technology database includes >350 of the best-known start-ups, but it may not be fully representative for any one segment or product.

<sup>2</sup>Includes small and medium-size enterprises.

<sup>3</sup>Includes large corporations, public entities, and nonbanking financial institutions.

<sup>4</sup>Revenue share includes current-account deposit revenue.

<sup>5</sup>Includes investment banking, sales and trading, securities services, retail investment, noncurrent-account deposits, and asset-management factory.

*Pressure on cost and returns.* The new competitors are beginning to threaten incumbents' revenues and their cost models. Without the traditional burden of banking operations, branch networks, and legacy IT systems, fintech companies can operate at much lower cost-to-income ratios—below 40 percent.

### **Fighting back**

Banks are beginning to respond to these trends, albeit slowly. Over the past several years, leading banks have begun to digitize core processes to increase efficiency—in particular, risk-related processes, where the largest share of banks' costs are typically concentrated. Most banks started with retail credit processes, where the potential efficiency gains are most significant. Digital approaches can be more easily adopted from well-established online retailers: mobile applications, for example, can be developed to enable the origination of tailored personal loans possible instantaneously at the point of sale. More recently, banks have begun to capture efficiency gains in the SME and commercial-banking segments by digitizing key steps of credit processes, such as the automation of credit decision engines.

The automation of credit processes and the digitization of the key steps in the credit value chain can yield cost savings of up to 50 percent. The benefits of digitizing credit risk go well beyond even these

improvements. Digitization can also protect bank revenue, potentially reducing leakage by 5 to 10 percent.

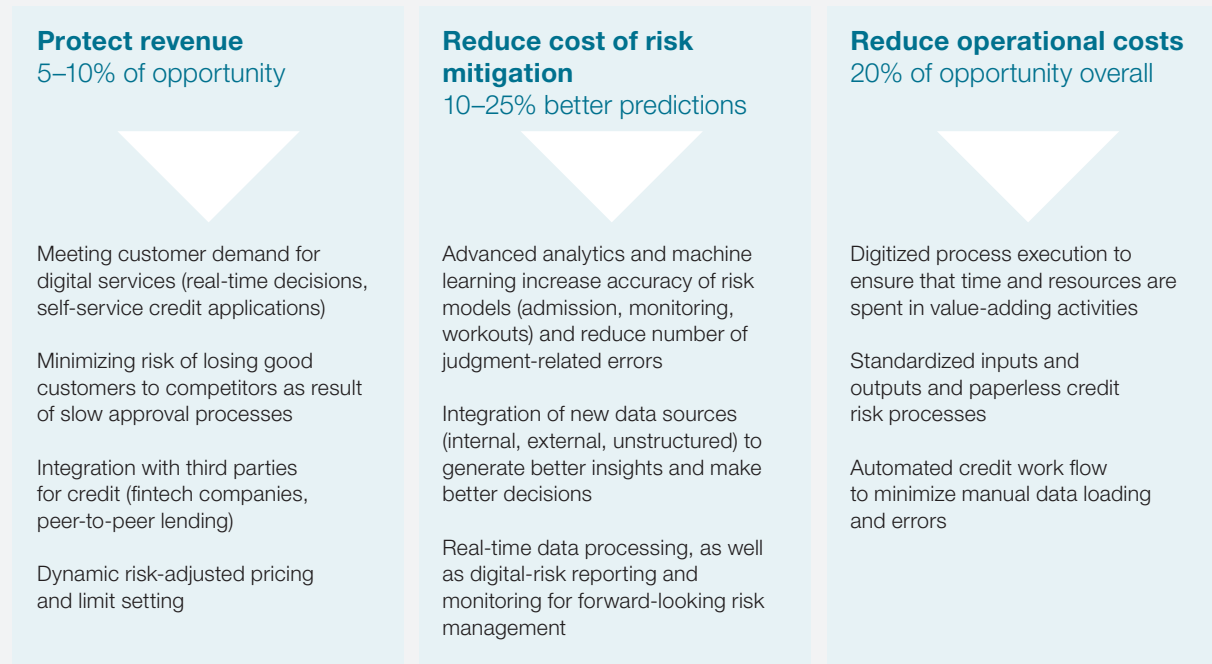
To give an example, by putting in place real-time credit decision making in the front line, banks reduce the risk of losing creditworthy clients to competitors as a result of slow approval processes. Additionally, banks can generate credit leads by integrating into their suite of products new digital offerings from third parties and fintech companies, such as unsecured lending platforms for business. Finally, credit risk costs can be further reduced through the integration of new data sources and the application of advanced-analytics techniques. These improvements generate richer insights for better risk decisions and ensure more effective and forward-looking credit risk monitoring. The use of machine-learning techniques, for example, can help banks improve the predictability of credit early-warning systems by up to 25 percent (Exhibit 3).

Good progress has been made, but it is only a beginning. Many risk-related processes remain beyond the digital capabilities of most banks. Significant effort has been expended on the digital credit risk interface, but the translation of existing credit processes into the online world falls far short of customer expectations for simple digital management of their finances.

---

Good progress has been made, but it is only a beginning. Many risk-related processes remain beyond the digital capabilities of most banks.

---

**Exhibit 3****Digital credit risk management uses automation, connectivity, and digital delivery and decision making to create value in three ways.**

There is plenty of room for digital improvement in client-facing processes, but banks also need to go deeper into the credit risk value chain to find opportunities to create value through digitization. The systematic mapping and analysis of the entire credit risk work flow is the best way to begin capturing such opportunities. The key steps—from setting risk appetite and limits to collection and restructuring—can be mapped in detail to reveal digitization opportunities. The potential for revenue improvement, cost reduction, and credit risk mitigation for each step should be weighed against implementation cost to identify high-value areas for digitization (Exhibit 4).

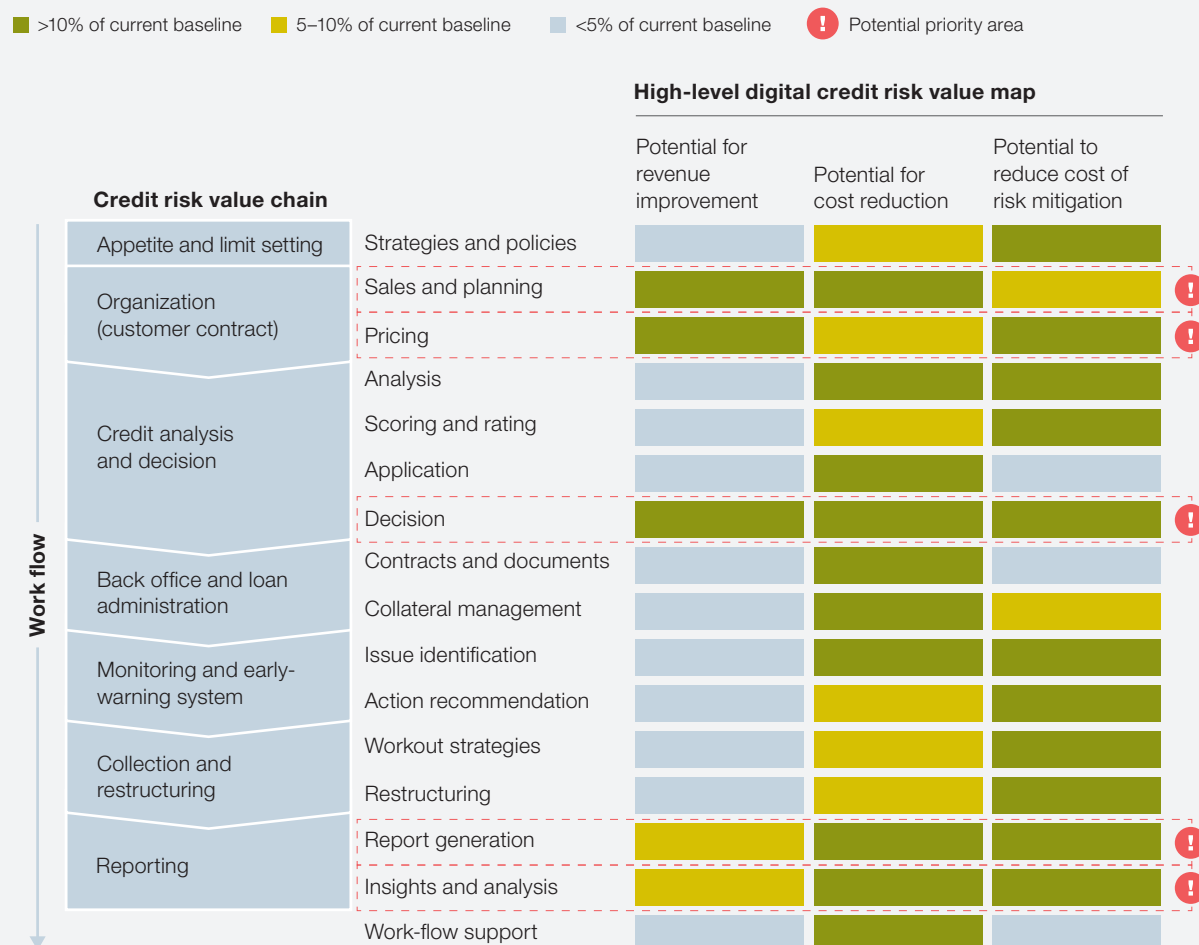
Some improvement opportunities will cut across client segments, while others will be segment specific. In origination, for example, most banks

will probably find that several segments benefit from a digitally connected, paperless credit underwriting process (with live access to customer data). At the stage of credit monitoring and early warning, furthermore, advanced analytics and fully leveraged internal and external data could improve risk models for identifying issues across different segments. Back-office and loan-administration tools such as straight-through processing and automated collateral valuation are also cross-cutting improvements, as are the automation and interactivity of risk reporting.

On the other hand, in credit analysis and decision making, banks will likely find that instant credit decisions are mostly relevant in the retail and SME segments, while the corporate and institutional segments would benefit more from smarter work-

Exhibit 4

**To find the areas where digitization will create the most value, map the entire credit risk work flow.**



flow solutions. The application of geospatial data, combined with advanced analytics, for example, can yield a high-performing asset-valuation model for mortgages in the retail segment. For collection and restructuring, automated propensity models will match customers in the retail and SME segments with specific actions, while for the corporate segment banks will likely need to develop debt restructuring-simulation tools, with a digital interface to identify and assess optimal strategies in a more efficient and structured way.

### How digital credit creates value

Several leading banks have implemented digital credit initiatives that already created significant value. These are a few compelling cases:

1. *Sales and planning.* One financial institution's journey to an interactive front line involved the construction of a digital workbench for relationship managers (RMs). The challenges to optimal frontline performance were numerous and included the lack of systematic skill



building, customer-relationship-management (CRM) systems with a fragmented overview of clients, and difficulty gathering relevant client and industry data. Onboarding, credit, and after-sales processes required many hours of paperwork, drawing frontline attention away from new client meetings. By engaging RMs with the IT solutions providers, the bank's transformation team created a complete set of frontline tools for a single digital platform, including best-practice CRM approaches and product-specialist availability. The front line soon increased client interactions four to six times while cutting administrative and preparation time in half.

**2. *The mortgage process.*** This presents a large opportunity for capturing digital value. One European bank achieved significant revenue uplift, cost reduction, and risk mitigation by fully automating mortgage-loan decisions. Much higher data quality was obtained through exchange-to-exchange systems and work-flow tools. Manual errors were eliminated as systems were automated and integrated, and top management obtained transparency through real-time data processing, monitoring, and reporting. Decisions were improved and errors of judgment reduced through rule-based decision making, automated valuation of collateral, and machine-learning algorithms. The bank's automated real-estate valuation model uses publicly known sale prices to derive the amount of real-estate collateral available as a credit risk mitigant. The model, verified and continuously updated with new data, attained the same level of accuracy as a professional appraiser. Recognized by the regulator, it is saving the bank considerable time and expense in making credit decisions on actions ranging from underwriting to capital calculation and allocation. Losses were further minimized by automated monitoring of customers and optimized restructuring solutions. The digital engine moved decision

making from 5 percent automated to 70 percent, reducing decision time from days to seconds.

**3. *Insights and analysis.*** By making machine learning a part of the effort to digitize credit risk processes, banks can capture nearer-term gains while building a key capability for the overall transformation. Machine learning can be applied in early-warning systems (EWS), for example. Here it can enable deeper insights to emerge from large, complex data sets, without the fixed limits of standardized statistical analysis. At one financial institution, a machine learning-enhanced EWS enabled automated reporting, portfolio monitoring, and recommendations for potential actions, including an optimal approach for each case in workout and recovery. Debtor finances and recovery approaches are evaluated, while qualitative factors are automatically assessed, based on the incorporation of large volumes of nontraditional (but legally obtained) data. Expert judgment is embedded using advanced-analytics algorithms. In the SME segment, this institution achieved an improvement of 70 to 90 percent in its model's ability accurately to predict late payments six or more months prior to delinquency.

### **The approach: Working on two levels**

While the potential value in the digital enablement of credit risk management can be significant for early movers, a complete transformation may be required to achieve the bank's target ambitions. This would involve building new capabilities across the organization and close collaboration among the risk function, operations, and the businesses. Given the complexity of the effort, banks should embark on this journey by prioritizing the areas where digitization can unlock the most value in a reasonable amount of time: significant impact from applying digital levers can be tangible in weeks.

Rather than designing a master plan in advance, banks can in this context develop a digital approach to one area of credit risk management based on existing technology and business value. Each bank may develop initiatives based on their specific priorities. Banks that most need to increase regulatory compliance and the quality of their execution may begin with initiatives in process reengineering to reduce the number of manual processes or to build a fully digital credit risk engine. Those looking to improve customer value from greater speed and efficiency might implement such initiatives as a state-of-the-art digital credit-underwriting interface, a digitally enabled sales force, data-driven pricing, or straight-through credit decision processing. Banks needing to mitigate risk through better decision making may develop initiatives to automate and integrate early-warning and recovery tools and create an automated, flexible risk-reporting mechanism (a “digital-risk cockpit”).

A credit risk transformation thus requires banks to work on two levels. First, look for initiatives that are within easy technological reach and that will also advance the core business priorities. Launching initiatives that bring in savings quickly will help the transformation effort become self-funding over time. Once a first wave of savings is captured, investments can be made in building the digital capabilities and developing the foundation for the overall transformation. Based on what has been learned in early-wave initiatives, moreover, new initiatives can be designed and rolled out in further waves. Typical first-wave initiatives digitize underwriting processes, including frontline decision making and reporting. Risk reporting is another likely candidate for early digitization, since digitization reduces production time and leads to faster decision making.

#### Building digital capabilities: Talent, IT, data, and culture

The experience of specific initiatives will help shape digital capabilities for the long term. These will be needed to support the overall digital transformation of credit risk management and keep the analytics and technology current. To begin, banks can examine their current capabilities and assess gaps based on the needs of the transformation. The talent focus in risk and across the organization will likely shift as a result toward a greater emphasis on IT expertise and quantitative analytics.

In addition to enhancing their talent profiles, banks will have to shift the direction of their IT architecture. The target will likely be two-speed IT, a model in which the bank’s IT architecture is divided into two segments. Accordingly, the bank’s core (often legacy) IT systems constitute a slower and reliable back end, while a flexible and agile front end faces customers. Without a two-speed capability, the agility needed for digital credit risk management would not be attainable.

Along with the supporting IT architecture and analytics talent, improved data infrastructure is an essential digital capability for the credit risk-management transformation. The uses of data are disparate throughout the bank and will continually change. For big data–analytics projects, great quantities of data are needed, but how they should be structured is not usually apparent at the outset. The construction of separate data sets for each use, furthermore, creates as many data silos within the organization as there are projects.

For these reasons, some leading companies are moving toward utilizing a “data lake”—an enterprise-wide platform that stores all data in the original



unstructured form. This approach can improve organizational agility, but it requires that each project has the capability to structure the data and understand data biases. All types of data infrastructure also pose security risks, moreover, which can be addressed only by IT experts. Finally, the reconfiguration of the data infrastructure needs to be done using methods that carefully respect legal privacy barriers and meet all regulatory requirements.

Last, building and maintaining a strong digital-risk culture will be of critical importance in ensuring the success of the risk function of the future. A shift in culture and mind-set is needed among employees, top executives, and regulators, as they acclimate themselves to the new digital credit environment. Here, machines and automation have a much greater role, while human capabilities are developed to support the continual improvement of the risk culture. The focus shifts from executing a risk process to managing true control systems that continuously detect, assess, and mitigate risks.

#### Toward a flexible digital-risk end state

From data input and management to decision making, from customer contact to execution, the initiatives should build step by step toward a seamless and interactive digital-risk function. The initiative-first approach builds in the capability of agile adaptation to changes in customer demand or the competitive and regulatory environments. The digital opportunities and the way banks address them, in other words, will continually evolve, and the digital end state must support such changes while maintaining enhanced risk-management and client-service capabilities.



The digital transformation of existing credit risk tools, processes, and systems can address rising costs, regulatory complexity, and new customer preferences. The digital enablement of credit risk management means the automation of processes, a better customer experience, sounder decision making, and rapid delivery. Digital-risk management will be the norm in the industry in five years, and banks that act now can attain enduring competitive advantage. ■

---

<sup>1</sup> The Comprehensive Capital Analysis and Review is the Federal Reserve's regulatory framework for evaluating the capital-planning processes and capital adequacy of large financial institutions; BCBS 239 is the Basel Committee on Banking Supervision's directive on addressing gaps in banks' risk-data aggregation and reporting. Both mechanisms have complex requirements and tight compliance deadlines. The asset-quality review (AQR) conducted by the European Central Bank in 2014 on 80 percent of EU banking assets helped determine capital adequacy and reduce overvaluation in balance sheets. The AQR prepared the way for the rollout of the Single Supervisory Mechanism.

**Juan Antonio Bahillo** is a partner in McKinsey's Madrid office, **Saptarshi Ganguly** is a partner in the Boston office, **Andreas Kremer** is a partner in the Berlin office, and **Ida Kristensen** is a partner in the New York office.

Copyright © 2016 McKinsey & Company.  
All rights reserved.