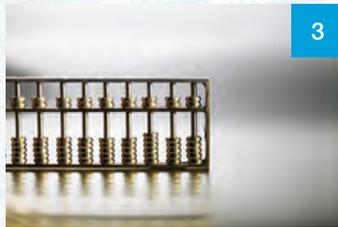


McKinsey on Risk

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Number 5, June 2018

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Introduction

Welcome to the latest issue of *McKinsey on Risk*, the journal offering McKinsey's global perspective and strategic thinking on risk. We focus on the key risk areas that bear upon the performance of the world's leading companies.

We recognize that companies today are facing rising levels of uncertainty and volatility, including greater vulnerability as digitization of the business environment proceeds apace. Given the intensifying concentration of risk in all sectors, leading executives have increasingly come to recognize effective, risk-informed strategy as the path to corporate resilience and a major source of competitive advantage.

McKinsey on Risk takes a truly global, cross-sector, cross-functional view of risk issues. The articles in this volume attempt to distill deep industry insight and experience to highlight the strategic skills and analytical tools companies are using to transform all areas of risk management. Our lead article in this issue addresses the topic of regulatory risk and capital management in banking, analyzing the recently released final standards of the Basel III banking reforms. The authors worked out a methodology for calculating the impact on European banks and present their findings, along with discussions on global implications. A second regulatory piece delves into the part of the Basel reforms that will set in motion new investment in banks' data and systems for trading risk.

An article on cyberrisk argues that a new posture is needed to address this looming threat—one that presents potentially existential dangers to institutions in every sector, private and public. A sector-specific piece then addresses the formidable risk landscape in pharmaceuticals and how sector leaders are implementing holistic risk management to safeguard investments. Further articles address conduct risk in wealth management and the topic of digital risk—discussing the value in digitizing the risk function in financial institutions.

We conclude with a gathering of pieces addressing challenges in collections, where managers in some markets are facing the first significant upward trend in delinquencies since the financial crisis. The first piece advances the fundamental considerations lenders need for transforming collections in digital and value-based directions. Two further articles discuss the innovative approaches and new technology that this transformation will support.

We hope you enjoy these articles and find in them ideas worthy of consideration. Let us know what you think at McKinsey_Risk@McKinsey.com and on the McKinsey Insights app.

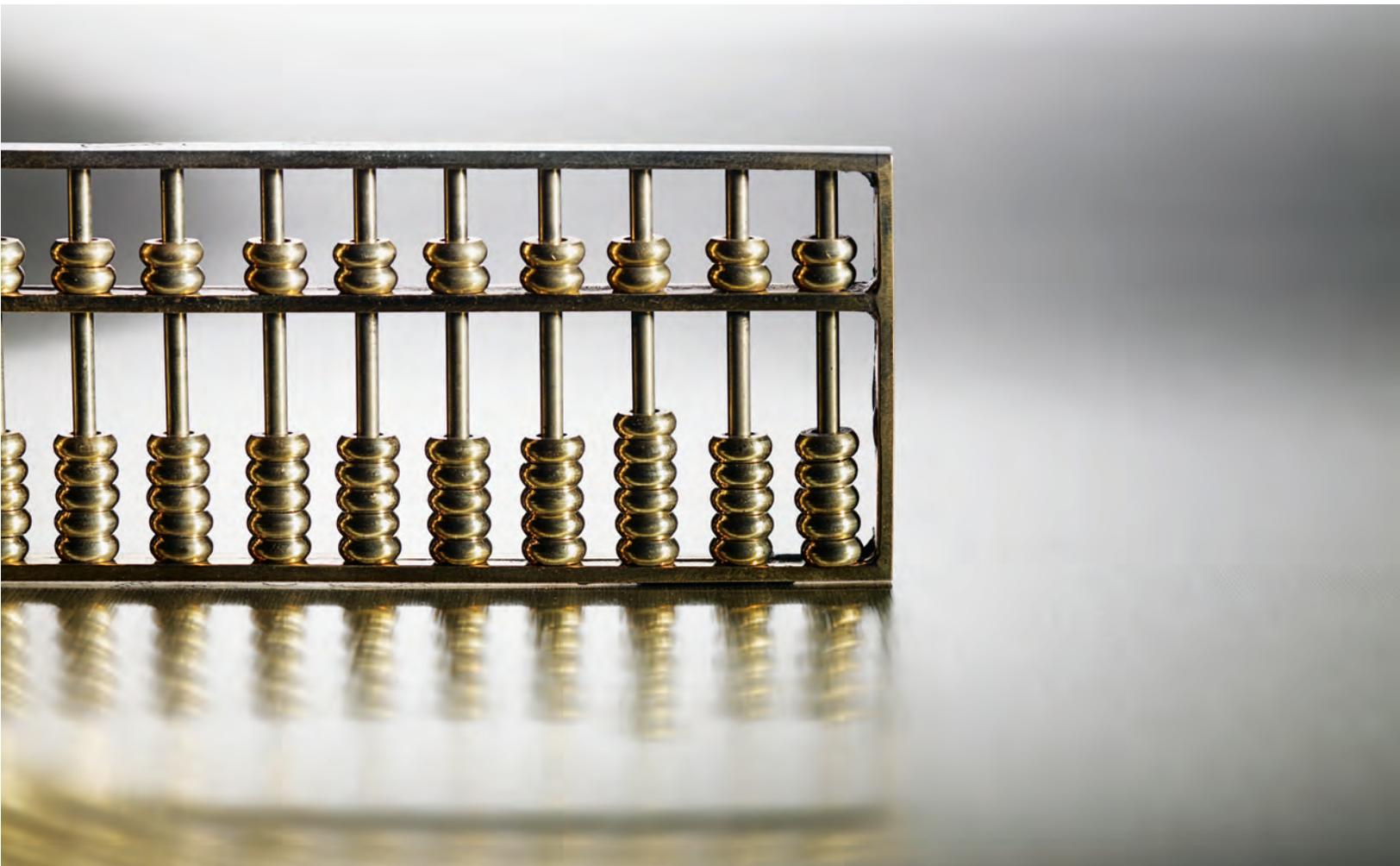


Thomas Poppensieker
Chair, Global Risk Editorial Board

Basel III: The final regulatory standard

Basel III's finalized regulatory standards will have less impact than was first assumed, but banks still need a holistic approach to capital management.

Thomas Poppensieker, Roland Schneider, Sebastian Schneider, and Lennart Stackebrandt



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On December 7, 2017, the Basel Committee for Banking Supervision (BCBS) published the final regulatory standards in its postcrisis Basel III reforms. The standards reflect changes that were long discussed, as reported in BCBS consultation papers. During the discussions, the proposals were sometimes referred to as “Basel IV.” In previous reports, we analyzed potential outcomes for European banks of the finalized regimen, establishing a rigorous methodology to calculate the impact while taking what turned out to be a conservative view with respect to both capital ratios and the time to implement.¹ Using the same methodology, we can now estimate the impact more accurately, based on the BCBS’s finalized Basel III regimen.

Regulatory developments since the ‘Basel IV’ proposals

The impact of the finalized regimen is expected to be smaller than was assumed during the consultation period, as many of the proportional requirements and the time to implement them proved to be more relaxed than many analysts had predicted.

The risk weighted–asset output floor and revisions to the credit-risk framework

As suggested in an address given last spring by BCBS secretary general William Coen, much debate about the final standards centered around the internal model floor of total risk-weighted assets (RWA).² This level was ultimately calibrated at 72.5 percent. In our 2017 paper, “‘Basel IV’: What’s next for European banks?,” we made an initial conservative assumption that this level would be set higher, at 75 percent. In a number of areas, furthermore, the published standards specify changes that will have less impact than was at first expected. In the revised credit-risk standardized approach, for example, corporates rated BBB+ to BBB– receive a risk weight of 75 percent rather than 100 percent, while financial institutions rated A+ to A– receive a risk weight of 30 percent instead of 50 percent. Residential-mortgage risk weights are also revised

downward, by approximately five percentage points, along the whole risk-weight mapping table. A new approach reflecting mortgage splitting (multiple loan accounts for the same property) can be adopted at member nations’ discretion.³ On the other hand, the introduction of a 10 percent floor for standardized credit-conversion factors is expected to increase exposure values.⁴ All these changes also affect the internal model floors indirectly, by reducing the risk weighted–asset positions calculated according to the credit-risk standardized approaches.

One significant change in the internal model standards for credit risk is the elimination of the 1.06 calibration factor introduced with Basel II. Moreover, the revenue threshold for large and medium-size corporates is revised upward, to more than €500 million; large corporates can still be treated under the foundation internal model approach, similar to financial institutions. Finally, input parameter restrictions for own estimates of loss given default (LGD) are lowered in many cases by five percentage points. In contrast to the internal model floor, these adjustments are beneficial for banks using internal models: they reduce the impact or even reduce today’s internal model risk weights. However, they also increase the relative impact of the aggregate risk weighted–asset floor.

Standardized measurement approach for operational risk

The new proposal for the operational-risk standardized measurement approach (SMA) was already known before final standards were published. In the final standards, a number of important changes were specified. First, the SMA allows national regulators to decide whether to require institutions to include historical operational-risk losses into the operational-risk capital calculations. The new SMA also recognizes three rather than five business-size categories for measurement: up to €1 billion, €1 billion to €30 billion, and above €30 billion. The coefficients for these categories are now 12, 15, and 18 percent respectively—as

opposed to coefficients of 11, 15, 19, 23, and 29 percent for the five former categories. This substantially lowers the capital requirements from those proposed in the consultation documents.

The finalized regulatory scenario is briefly sketched in Exhibit 1.

Adoption timeline

A long transitional phase-in period is provided, with first-time adoption in January 2022 for the standardized approaches. Phase-in arrangements for the internal model floor, including a risk weighted–asset cap of 25 percent, will run until 2027. This follows the revised implementation of the finalized market-risk standards—also known as the fundamental review of the trading book (FRTB)—which was pushed back to 2022 but is again under consultation. The long phase-in arrangements are especially beneficial for portfolios with long maturity profiles, such as mortgage books; they also give banks the time to build up capital organically to cover remaining shortfalls. Banks should be aware that analysts and investors will expect them immediately to report fully loaded numbers, irrespective of the phase-in arrangement (as happened with the previous Basel III phase-in).

Additional developments relevant for a comprehensive picture

In conjunction with the finalized Basel III standards, banks need to consider related initiatives to obtain a comprehensive regulatory picture. These initiatives include risk weights for sovereigns (for which the Basel Committee published a discussion document), the European Targeted Review of Internal Models (TRIM), the requirement to set up intermediate parent undertakings for large non-European banks, and the revised capital frameworks for securitization, counterparty credit risk, and credit-valuation adjustment (CVA).

Banks holding large amounts of sovereign debt—where governments relied on banks when financing

public deficits, for example—may experience a significant impact from the sovereign risk weight proposals. The European Banking Authority (EBA) also released important guidance for model risk. European firms will be required to quantify model risk, and as such today’s RWA have to be split into “best-estimate RWA” (best estimate not considering model risk) and “margin of conservatism” (MOC). The EBA explicitly asks firms to reduce MOC over time. Given this context and the TRIM, firms will need to review their internal risk parameter models used to calculate RWAs as well as better understand how the floor will relate to the best-estimate RWAs and the reduced MOC. The effects of a number of these initiatives can be precisely assessed only by each firm, relying on its own proprietary information.

For this article, we were able to measure the impact of three important initiatives: risk weights for sovereigns, TLAC/MREL, and IFRS9. The acronyms refer to the Financial Stability Board’s minimum standard for “total loss-absorbing capacity” (TLAC) for global systemically important banks, its European extension for banks regulated by the Single Resolution Board—the “minimum requirement for own funds and eligible liabilities” (MREL)—as well as the “international financial reporting standard” of the International Accounting Standards Board (IFRS 9). Loss-absorbing capacity is indirectly affected, given that MREL/TLAC requirements are based on RWA and leverage requirements and will therefore increase with the introduction of the new standards. Rather than outlining any bail-in-related capital shortfalls, however, our analysis includes the increasing funding costs driven by issuance of bail-in instruments into the profitability analysis. Since the baseline analysis does not include the effects of IFRS 9, the effects on common equity Tier 1 capital (CET1) ratios have been considered.

Updated capital impact for the European banking industry

The capital impact of the finalized Basel III regimen can now be estimated more precisely.

Improved baseline capitalization of European banks

While our earlier “Basel IV” publications reflected data from the first half of 2016, this update reflects the capital and portfolio migrations of European banks from the first half of 2016 to the first half of 2017.

Our new impact estimate is based on the new regulatory endpoint scenario (detailed in Exhibit 1) and the latest available transparency exercise of the European Banking Authority, published in November 2017. Our earlier sample of 130 banks has been adjusted to 132 to reflect the latest changes

in bank structures. We also recognize that the new baseline demonstrates improved CET1 ratios by approximately 0.8 percentage points, from 13.4 percent in the first half of 2016 to 14.2 percent in the first half of 2017. On a fully loaded basis, the improvement amounts to approximately one percentage point. The effect was the result of capital built up through retained earnings and issuance (approximately 0.3 percentage points) and risk weighted–asset reductions (approximately 0.7 percentage points).⁵ These movements in balance sheets and capital composition might have been motivated by initial considerations of “Basel IV” papers.

Exhibit 1 Final regulatory initiatives and assumptions of Basel III, analyzed for European institutions.

Initiatives	Key scenario assumptions	Finalized standard?
Fundamental review of the trading book	<ul style="list-style-type: none"> Assuming the standardized approach, market-risk risk-weighted assets increase by 70–80% and internal model market-risk risk-weighted assets increase by 25–40%, depending on a bank’s capital-markets footprint 	
Revised credit-risk standardized approach	<ul style="list-style-type: none"> Regulatory ratings–based risk weights for banks and corporates using revised risk-weight tables Assumption: 5% of exposures fail due diligence Corporate SME¹ exposure receives 85% risk weight (and SME factor of 0.7619) Mortgage risk weights based on loan-to-values (LTVs); assumption: 20% of exposures dependent on cash flows of property and mortgage splitting allowed 80% of qualifying revolving and other retail receive 75% risk weight (remainder receives 100%) Equity and subordinated exposures’ risk weights range from 150% to 400%; assumption: risk weight of 250% for “all other equity holdings” 	
Change in credit-risk internal ratings–based approach	<ul style="list-style-type: none"> Financial institutions to use foundation internal ratings–based approach (F-IRB) Large and medium-size corporates (turnover above €0.5 billion) move to F-IRB Specialized lending remains under advanced internal ratings–based (IRB) approach Equity exposure moves to standardized approach Removal of adjustment factor of 1.06 to IRB formula 	
Aggregate risk weighted–asset floor	<ul style="list-style-type: none"> Aggregate IRB output floor of 72.5% 	
Revised operational risk	<ul style="list-style-type: none"> Removal of advanced measurement approach (AMA) Application of standardized measurement approach (SMA) for all banks and exclusion of loss component in SMA formula 	
IFRS 9	<ul style="list-style-type: none"> Impact on common equity Tier 1 capital (CET1) through retained earnings, driven by provisioning based on revised expected-loss model 	
Risk weight for sovereigns	<ul style="list-style-type: none"> Removal of IRB approach and application of proposed standardized risk weights Risk-weighted asset add-on for concentration risk 	

Note: IFRS 9 refers to International Financial Reporting Standard 9.

¹ Small and medium-size enterprise.

Capital relief resulting from lighter regulatory proposals

As shown in Exhibit 2, Basel III finalization and related regulation brings down CET1 ratios for European banks by 2.4 percentage points, from 14.2 percent to 11.8 percent. The remaining CET1 capital shortfall comes to approximately €56 billion, considerably below our initial assessment of €120 billion.⁶ The largest share in the CET1 reduction, 1.4 percentage points, is expected from the aggregate risk weighted–asset floor of 72.5 percent; the operational-risk SMA will probably account for 0.3 percentage points in the reduction. Our assessment also shows that the revised frameworks for credit-risk internal

ratings–based (IRB) approach (0.4 percentage points) and standardized approach (0.1 percentage points) have a facilitating effect. Our initial assessment of the new sovereign-risk consultation indicates a drop in the CET1 ratio of 0.4 percentage points. An analysis of the impact by bank reveals that for about 50 percent of all banks, the RWA-based metrics will impose the highest capital requirements. By contrast, 35 percent of banks will be most constrained by the aggregate RWA floor and only about 15 percent by the revised leverage ratio.

Moving on to Exhibit 3 below, we can see how the impact for European banks has changed under the final Basel III standards. The average CET1

Exhibit 2 Basel III finalization and related regulations lower the common equity Tier 1 capital (CET1) ratio for European banks to 11.8 percent.

Implicit weighted-average CET1 ratio of 132 banks participating in the European Banking Authority’s transparency exercise, as of the first half of 2017, %



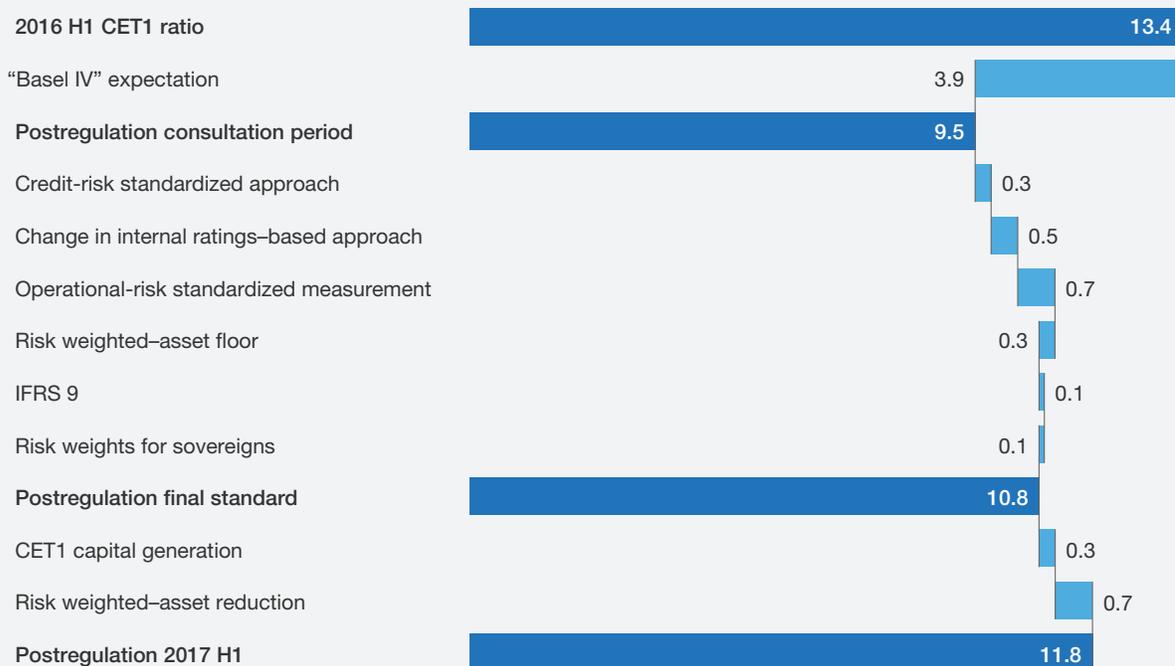
Note: IFRS 9 refers to International Reporting Standard 9; figures may not sum, because of rounding.

¹ If 4 banks marked as outliers are excluded, the impact drops to 0.3 percentage points.

Source: European Banking Authority transparency exercise; SNL Financials; McKinsey analysis

Exhibit 3 The finalized Basel III regimen will have less impact on banks than had been expected during the consultation period.

Impact of common equity Tier 1 capital (CET1) ratio on European banks: consultation period vs finalized regimen,¹ %



Note: IFRS 9 refers to International Reporting Standard 9; figures may not sum, because of rounding.

¹ Bank sample of 130 for 2016 H1 revised to 132 for 2017 H1; impact for CET1 capital generation and risk weighted-asset reduction might be distorted due to different banking samples used for the reconciliation.

Source: European Banking Authority transparency exercise; SNL Financials; McKinsey analysis

ratio would drop by 1.6 percentage points, from approximately 13.4 percent in mid-2016 down to 11.8 percent in the first half of 2017. This improvement of around 2.3 percentage points over our initial assessment is driven predominantly by the operational-risk SMA (0.7 percentage points) and changes to credit-risk methodologies, both for the IRB approach (0.5 percentage points) and the standardized approach (0.3 percentage points). The relief for the operational-risk standardized measurement approach results from the exclusion of the loss component, which we had assessed earlier. Improvements of the credit-risk approaches stem

from the removal of the IRB adjustment factor of 1.06, the application of the F-IRB approach for large corporates, as well as lower risk weights for corporates, institutions, and mortgages under the standardized approach. The new consultation on sovereign risk under Pillar 1, including the revised standard approach, the removal of the internal ratings-based approach, and the add-on for concentration risk, does not appreciably change the impact estimates in the analysis.

Although we initially analyzed an aggregate risk weighted-asset floor of 75 percent, the floor

Differences in the McKinsey and the European Banking Authority assessments

McKinsey's assessment of the Basel III finalization on a stand-alone basis indicates a drop of around 1.2 percentage points in the common equity Tier 1 (CET1) ratio: from 13.5 percent to 12.3 percent (see Exhibit 2, on page 7). The cumulative impact assessment of the European Banking Authority (December 2017) indicates a smaller drop, however, of around 0.8 percentage points, translating into a capital shortfall of €17.5 billion. If the stand-alone Basel III finalization is taken into account, the McKinsey estimate of the overall capital shortfall of €56 billion, which includes all regulatory effects, becomes only €2.2 billion. This smaller figure is based on CET1 minimum capital requirements plus global systemically important bank (G-SIB) surcharges, whereas the larger figure (€56 billion) also reflects Pillar 2 add-ons.

The differences between the European Banking Authority (EBA) assessment and our shortfall can be attributed to two factors: the two analyses use different banking samples and data from different points in time. For the McKinsey analysis, 132 banks were included, while the EBA used 88. More important, the EBA assessment was based on data through 2015 collected from individual institutions, whereas the McKinsey analysis is based on the latest data from the first half of 2017. As mentioned above, banks have significantly improved their CET1 ratio since 2015, resulting in more comfortable levels above regulatory minimums.

That the effects of Pillar 2 add-ons and capital buffers should result in two widely different assessments, of €56 billion and €2.2 billion, is notable, highlighting the room for national discretion during implementation. In Sweden and Norway, for example, supervisors are reflecting higher risk weights for mortgage loans in Pillar 2 capital requirements. Some analysts are therefore expecting that these add-ons will be removed, given that they are already captured by an internal model floor for mortgages under Pillar 1.

This example and others demonstrate the shift from global standards to national implementation

discussions. Banking associations, especially in the Nordic countries and Benelux, are in a position to argue for further risk sensitivity in European regulations. The Belgian supervisor recently decided to further increase internal-model risk weights by establishing a five percentage-point add-on for mortgage risk weights plus an additional multiplier of 1.33, effectively raising the internal model mortgage risk weight from 10 percent to 18 percent. As a result, the capital requirements of Belgian institutions are expected to increase by €1.5 billion as these banks adapt early to the impact expected from the internal model floors under the final Basel III rules. Some national approaches will thus curtail the size of the impact. The Basel Committee has already encouraged impact-reducing approaches, by providing leeway for the operational risk loss component or the internal ratings-based floor cap of 25 percent until final implementation in 2027.

Finally, it is important to keep in mind that the two assessments, McKinsey's and the EBA's, have different objectives. The McKinsey assessment sought a broad view of the regulatory impact, reflecting Basel III finalization, Basel III capital deductions, IFRS 9, and TLAC/MREL in the profitability analysis. Our analysis includes impact by country, bank size, and business mix, as well as a perspective on profitability. As stressed in McKinsey's earlier publications on "Basel IV," as well as in publications by the Institute for International Finance, a comprehensive and timely assessment of all regulatory effects is needed to provide transparency to the whole industry and prepare for national implementation discussions. An all-sided consideration is needed, in other words, to understand the impact of as many constraints as possible on business lines and products, as well as the implications for strategy and pricing. In this light, capital shortfalls should be assessed against total CET1 capital requirements, including Pillar 2, given the negative consequences of breaching those requirements.

calibrated at 72.5 percent now has a proportionally larger impact on the CET1 ratio (approximately –0.3 percentage points). This is because the revised IRB methodology uses a lower level of risk-weighted assets, and under the standardized measurement approach, significantly lower operational risk-weighted assets work as a buffer for the aggregate IRB floor. Both effects lead to a higher impact from the aggregate floor, even calibrated at 72.5 percent.

Furthermore, the change (described above) to the latest available EBA transparency-exercise data

set demonstrates that retained earnings (around 0.3 percentage points) and the reduction of risk-weighted assets (0.7 percentage points) have further contributed to the overall higher end-point CET1 ratio of the European banking sector (see sidebar “Differences in the McKinsey and the European Banking Authority assessments”).

Impact by country, institution size, and banking sector

From country to country in Europe, the finalized Basel III standards and related initiatives will have

Some observations on the impact among European, US, and Japanese institutions

Analyses by the BCBS and the EBA indicate that European institutions carry nearly 60 percent of the total CET1 shortfall globally. Two main forces are behind the shortfall concentration on European firms. First, US firms have fewer low risk-weight portfolios on their balance sheets (especially given the role in the United States of Fannie Mae and Freddie Mac), and their balance-sheet structures are less sensitive to floors. Second, the internal model floor may present less of a challenge for US institutions, since this floor already exists at 100 percent for the largest banks using the internal models under the Collins Amendment to the Dodd–Frank law. The standard approach and internal models are in fact similar with respect to consumed capital, despite the fact that operational risk and credit valuation–adjustment capital charges are reflected in internal models but not in the standard approach.

The new regulatory credit-risk standardized approach distinguishes between jurisdictions where external ratings for the calculation of risk-weighted

assets are permitted and those where they are not. The distinction gives US banks a structural advantage compared with their European peers. For demonstrated investment-grade exposures, the standards allow US banks to apply a risk weight of 65 percent for unrated corporates; European institutions by contrast would have to apply risk weights of 85 to 100 percent. This difference might cause some European institutions to stop offering certain capital-intensive products in certain regions.

The regulatory impact of the new standards on large Japanese banks appears to be comparable to the impact European institutions are facing. These banks also rely heavily on internal models and would be confronted with high standardized-approach risk weights for small and medium-size corporates. According to SMFG’s own estimates, for example, the bank’s risk weights are expected to increase by as much as 30 percent. Analysts expect the impact on Mizuho to be somewhat less (20 to 25 percent) and still less for MUFG (below 10 percent).

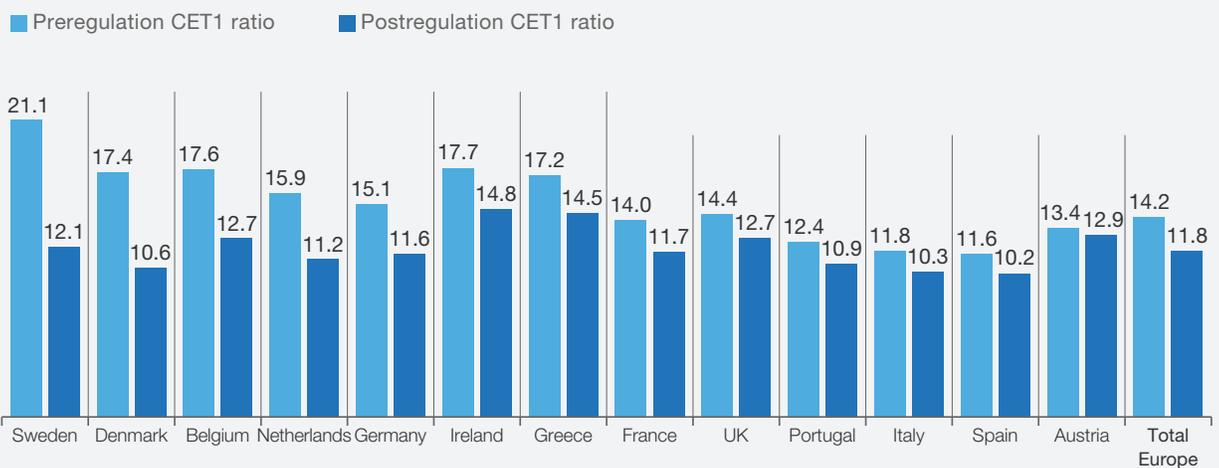
different levels of impact on national banking sectors. Measured in percentage points, the deepest drops in CET1 ratios will be experienced by financial institutions in the Nordic countries and Benelux: Sweden (9.0), Denmark (6.8), Belgium (4.9), and the Netherlands (4.7). Banks in these regions rely heavily on internal models that produce low risk weights. The effect of the finalized Basel III aggregate risk weighted–asset floor of 72.5 percent will therefore be a significant limit. Among the five largest European economies, Spain and Italy will be least affected by the reforms (1.4 and 1.5 percentage points, respectively). This is because the banking sectors in these countries place greater reliance on standardized approaches and produce overall higher risk weights under internal models (Exhibit 4).

In this context, our estimates for transitional phase-in arrangements indicate that some institutions in major European countries will feel the impact of the aggregate RWA floor of 50 percent on January 1, 2022. The impact will be particularly significant in Sweden (1.5 percentage points) and Denmark (0.6 percentage points). On the other hand, our analysis shows that the aggregate RWA floor will not be a binding constraint for Spanish institutions, even when it reaches its highest level, 72.5 percent, on January 1, 2027. The large impact of the final step-up, from 70.0 percent to 72.5 percent in the transition from 2026 to 2027, will be caused by a 25 percent cap on the impact of the RWA floor during the transitional phase—a new element of the revised standard.

Exhibit 4

Sweden, Denmark, the Netherlands, and Belgium are among the countries most heavily affected by regulatory reforms.

Common equity Tier 1 capital (CET1) ratio: implicit weighted average, as of the first half of 2017, %



Note: Without the impact of outliers in assessment of risk weights for sovereign exposure, postregulation CET1 would be 11.7% for the Netherlands (2 outliers) and 12.4% for Sweden (1 outlier).

Source: European Banking Authority transparency exercise; SNL Financials; McKinsey analysis

A closer look at the effects of the proposals for sovereign-risk weights under Pillar 1 reveals that the impact will be greatest at German, Dutch, and Swedish banks (0.7, 0.7, and 0.6 percentage points, respectively). This is an effect of large exposures in regional governments, which receive relatively high risk weights under the new mapping table. The impact on Southern European banks will generally be smaller than calculated in McKinsey's earlier analysis. Belgian banks too would be less affected under the new methodology, since the authorities have already asked banks to hold adequate capital for sovereign portfolios.

When examining institutions by total asset size, we confirmed the finding of our earlier reports, that larger institutions will experience greater impact from FRTB and operational risk SMA (0.4 and 0.5 percentage points, respectively). Small institutions might experience a slight overall impact from the final standard, mainly because of the higher risk sensitivity of the revised credit-risk standardized approach (an added 0.8 percentage points).

At the level of banking segments, the assessment reveals that the finalized Basel III standards will most affect regional and IRB retail banks (2.7 and 2.9 percentage points, respectively), as well as specialized institutions, where the impact is estimated at 7.8 percentage points—a drop from 19.3 percent before finalization to 11.5 percent after it. For universal banks, the approximate impact will be only 1.9 percentage points, thanks to their diverse business activities, a factor that reduces the overall effect of the output floor.

In line with the experience of small institutions, banks using the standardized approach will see little impact on their CET1 ratios. What impact they do feel will be mainly the result of a reduction in standardized-approach risk weights. Furthermore, the impact of Basel III finalization on profitability will probably be manageable, especially given the long transition period. This conclusion is consonant with the downward revision in the CET1 capital

shortfall, from €120 billion to €56 billion (see sidebar “Some observations on the impact among European, US, and Japanese institutions”).

A holistic capital-management approach

Although the impact of the finalized standards will be less than initially expected, and the implementation timelines more relaxed, some institutions still face significantly diminished capitalization and risk missing their capital targets. Overall profitability will still decrease, furthermore, but the impact on individual businesses will differ. Profitability is affected not only by the finalized Basel III rules but also by the implementation of other regulatory programs. These require substantial investments and will constrain resources and budgets.

TLAC/MREL will have an impact on funding costs and balance-sheet composition, for example. RWA increases are linked to the resolution requirements of bail-in instruments defined by TLAC/MREL. The Single Resolution Board recently estimated that current MREL shortfalls for European institutions will be as high as €117 billion. This shortfall will become even greater, given its linkage to risk-weighted assets and the RWA inflation imposed by the finalized Basel III standards.

Such secondary effects demonstrate that banks need to take a holistic approach to capital management, rather than attempting to address the effects of each program in isolation. Implementing these programs will involve many different departments and functions within the bank and create steering demands that will define the structure of balance sheets and corresponding risks for a long time to come.

Against this background, European firms need to demonstrate their ability to generate sufficient additional capital while still paying dividends to investors. To achieve this level of financial resilience, the holistic approach to capital management described in McKinsey's “Basel IV” publications remains the best approach. The approach will involve

three transformational changes in capital steering and planning that will prepare banks for the new reality under the finalized Basel III rules.

- *Adjust performance management and capital allocation.* Some banks are responding by moving away from traditional target capital ratios based on return on equity/risk-adjusted return on capital (ROE/RAROC). They are instead adopting hybrid measures such as capital employed as a blend of CET1 capital requirements and leverage-ratio capital requirements. This involves considering the implications of the IRB floor and resulting constraints on the capital-allocation frameworks of business units, geographic regions, and products. Given the implied shifts in business-line profitability, furthermore, firms will probably need to review the allocation of other scarce resources, such as IT and HR budgets, and align with overall capital allocation.
- *Establish an approach that integrates financial planning and balance-sheet management.* The approach will enable banks to optimize their business mix and balance sheets simultaneously, against all implied regulatory ratios. These include regulatory capital requirements from Pillars 1 and 2, as well as bail-in funding requirements. Optimally, this integration will build upon a clearly defined and robust capital-allocation framework under the final Basel III rules. Balance-sheet optimization will mean much more than it does now. Given the significant shifts in profitability of business lines, customers, and products, European and Japanese institutions could consider new business models that pass through or distribute originated risks to investors. Balance sheets would thus begin to resemble North American-style balance-sheet structures.
- *Strengthen cost efficiency to meet capital-generation and dividend targets simultaneously.* Cost-efficiency targets could even be “reverse engineered” from optimized profit-and-loss and

balance-sheet assumptions. The cost-efficiency target would thus be based on optimized dividend promises and required capital generation. Firms whose operations are more cost efficient could thus find it easier to meet Basel targets. Scandinavian institutions, for example, exceed their German and French peers in efficiency, and despite being more heavily affected by the finalized standards, they are better positioned to meet them.

Capital steering, capital allocation, and performance management

The finalized Basel III standards could have significant implications for capital steering and allocation, including the performance component of the steering metrics banks use. For this reason, banks will have to reconsider their capital-steering and allocation approaches.

It is true that the sensitivity of the standardized approaches increased, leading to lower capital requirements. However, for those institutions constrained by the IRB floor, risk sensitivity decreased. In our sample, 35 percent of banks are constrained by the floor of 72.5 percent, meaning that for these institutions, economic and regulatory capital steering diverge. Furthermore, all IRB banks, whether constrained or not, will see a buildup of capital buffers arising from risk types or portfolios that are required to be under standardized approaches (including operational risk, credit-value adjustments, and equity exposures). Buffers of 27.5 percent resulting from the IRB floor are automatically improving the position of banks in the standardized versus the internal ratings-based approaches. The question arises, however, of how to reflect these effects in capital steering, allocation, and business steering.

Most important, banks using IRB approaches constrained by the IRB floor will have to decide how to allocate the additional RWA overhead among business units and products. Several fairly sophisticated approaches are theoretically possible—

such as steering by 72.5 percent of standardized RWA, distributing additional RWA according to the deviation of IRB and standardized-approach risk weights, or distribution based on an economic-capital approach. Banks must first keep an eye on the overall impact and consequences of their choices, however. Should a bank fail to distribute overhead RWA evenly, for example, with too much falling on a certain product type, the resulting price increases could be economically unjustified and lead the bank toward a noncompetitive position among peers. Further factors that banks need to consider and integrate into their response are the implications from existing capital and the new leverage-ratio buffers.

To steer capital and their businesses by the new requirements, banks will need to develop solutions according to their individual capital profiles. Banks constrained by the IRB floor might steer economically or create a strategic-decision tool that uses arising buffers for business steering. Institutions on the borderline of being constrained by the IRB floor should also review their steering mechanisms in light of the new requirements, taking into account different capital definitions while ensuring that capital will be appropriately allocated under all potential scenarios. Even banks not constrained by the IRB floor might consider revising their steering metrics, since those institutions face considerable capital demands from stress testing. Each bank will want to take a holistic approach to its own position to ensure that effects are judiciously diffused across all business segments. Rather than relying on minimum capital requirements alone, banks should also take into consideration the allocation of buffers and capital deductions.

In addition to distributing RWA overhead, banks will need to adjust key performance measures to the new regulatory environment. To be consistent, banks using risk-adjusted performance measures (such as RAROC) need to reconsider their calculation approach for expected losses. Banks should develop

a tailored solution from among several approaches—such as using IFRS9 estimates or IRB estimates, with or without parameter floors. In some cases, a bank might even consider changing its key performance measures to reinforce a reliance on economic capital. Furthermore, to comply with use-test requirements, those banks would still need to demonstrate, in regulatory exercises like TRIM and model validation/approval, that internal model parameters are used in steering.

Banks need to integrate these changes into the overall capital-steering process. This primarily includes capital allocation and the setting of hurdle rates, but may involve risk monitoring and risk-appetite statements as well. At this level, metrics and mechanisms should be transparent and well understood by the business units and all involved departments. Achieving a meaningful level of comprehension among the involved staff is not a simple, straightforward task, however, given the rising complexity of steering metrics. Banks must therefore be ready to invest the necessary time and resources.

Balance-sheet management and financial planning

The finalized Basel III regime will thus introduce changes in capital requirements at the product level, requiring banks to reassess their business plans. It will also introduce new leverage-ratio buffers that could pose additional business constraints. As can be seen in Exhibit 5, the new rules on leverage ratios come in force on January 1, 2022. Banks should not, however, delay considering the regulatory requirements for new long-term business—under Basel III currently as well as under the finalized regime.

Given all other regulatory initiatives—including the liquidity coverage ratio (LCR), the net stable funding ratio (NSFR), and stress testing—the analysis that banks undertake must be multidimensional, integrating all aspects of the regulatory environment.

Exhibit 5 Final Basel III postcrisis reforms: Implementation schedule and transition to the aggregate output floor go into effect in January 2022.

Initiative	Implementation date
Revised standardized approach for credit risk	<ul style="list-style-type: none"> • January 1, 2022
Revised internal ratings-based floor (IRB floor)	<ul style="list-style-type: none"> • January 1, 2022
Revised credit valuation-adjustment framework	<ul style="list-style-type: none"> • January 1, 2022
Revised operational-risk framework	<ul style="list-style-type: none"> • January 1, 2022
Revised market-risk framework	<ul style="list-style-type: none"> • January 1, 2022
Leverage ratio	<ul style="list-style-type: none"> • Existing exposure definition: January 1, 2018 • Revised exposure definition: January 1, 2022 • G-SIB¹ buffer: January 1, 2022
Output floor	<ul style="list-style-type: none"> • January 1, 2022: 50% • January 1, 2023: 55% • January 1, 2024: 60% • January 1, 2025: 65% • January 1, 2026: 70% • January 1, 2027: 72.5%

¹ Global systemically important bank.

At the same time, banks need to meet the expectations of investors and rating agencies, an obligation that would imply the creation of internal performance targets. The aim is to optimize business models according to a comprehensive view of the different restrictions and dependencies. The solutions should enable banks to derive an optimal balance-sheet structure, including directional balance-sheet steering impulses.



Once banks can think holistically about the finalized Basel III regime, as well as the full scope of other regulatory programs, they can proceed to align strategic and capital planning. Insights from internal and regulatory stress tests can be combined with fact-based projections to optimize the resilience of balance sheets in a range of scenarios. Implementation timelines aside, the time to begin integrating strategy and planning is here. ■

¹ Stefan Koch, Roland Schneider, Sebastian Schneider, and Gerhard Schröck, "Basel IV: What's next for European banks?," April 2017, McKinsey.com; Stefan Koch, Roland Schneider, Sebastian Schneider, and Gerhard Schröck, "Bringing 'Basel IV' into focus," *McKinsey on Risk Number 4*, January 2018.

² "Regulatory equivalence and the global regulatory system," keynote address by William Coen, secretary general of the Basel Committee, at the International Financial Services Forum, London, May 25, 2017.

³ Mortgage splitting allows banks to take advantage of lower risk weights and floors for low loan-to-value parts of mortgages—those booked, for example, within a fully owned covered bond subsidiary, while the bank takes the remaining unsecured part separately.

⁴ The impact will vary depending on how banks apply the "unconditionally cancellable" clause to undrawn credit facilities.

⁵ These estimates may be distorted by the different bank samples in the latest and the previous European Banking Authority transparency exercises.

⁶ CET1 requirements include 4.5 percent CET1 minimum, 2.5 percent capital-conservation buffer, 2.5 percent Pillar 2 requirements, and bank-specific buffer requirements relating to global systemically important banks (G-SIBs) or other systemically important institutions (O-SII).

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FRTB reloaded: Overhauling the trading-risk infrastructure

Investing in infrastructure isn't glamorous. But a thoughtful rebuild will pay dividends for years to come.

Mark Azoulay, Daniel Härtl, Yuri Mushkin, and Anke Raufuss



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The Fundamental Review of the Trading Book (FRTB) introduces many new elements to Basel's market-risk framework.¹ Some of the most important include new methodologies and approaches—such as expected shortfall, a revised standardized approach to calculating capital requirements, and nonmodelable risk factors (NRMF)—as well as new processes and forms of governance (for example, the P&L attribution test and desk-level approvals). Banks are expending enormous effort to add these capabilities.

Less noticed are the implicit demands these changes make on the trading-risk infrastructure—the data and systems that support the enhanced methodologies and processes introduced by FRTB. Indeed, it might seem that FRTB asks banks only for some light housekeeping; the Basel paper barely mentions infrastructure *per se*. But the implications are actually enormous: at larger banks, what's needed is nothing less than a fundamental overhaul. At smaller banks, the stakes are not as high, but these institutions also have work to do.

Throughout the industry, the trading-risk infrastructure is showing signs of strain in the face of FRTB compliance. In large measure, that's because banks have underinvested in this area since the introduction of Basel 2.5 and haven't always tackled the work strategically. Indeed, in a 2017 McKinsey survey of banks about their priorities for traded risk, banks put data quality and enhancements to the technology platform at the top of the list. One of the bigger issues that many banks seek to fix is the parallel yet misaligned risk and finance architectures (including different pricing or valuation models, market-data sources, and risk-factor granularity), which leads to contradictory and confusing results.

Recent quantitative-impact studies (QIS) by the Basel Committee and many banks' own analyses on the new P&L attribution test show that more than

70 percent of the desks in a bank fail the test; that is, banks cannot adequately explain the P&L and its drivers. Or consider the large number of manual overrides needed to get the trade-population right, the onerous chore of risk-factor mapping, stale market data, missing reference data, and pricing-model breaks resulting from nonstress calibration: all are infrastructure challenges. Even before FRTB takes full effect, these and other challenges have led to poor backtesting results and further supervisory “add on” capital charges—for example, value-at-risk (VAR) multipliers greater than five—as outlined in a 2013 study by the Basel Committee.²

The banks that read between the lines of the original FRTB requirements and started to fix their infrastructure have a strategic advantage now. But the confirmed delay of FRTB implementation to January 1, 2022, has thrown other banks a lifeline (Exhibit 1).³ In our view, there is just enough time before the deadline to tackle the deeper challenges. Rather than coasting to the finish line, banks should focus on implementing FRTB in a smart way, including the broader strategic goal of upgrading the trading-risk infrastructure from front to back.

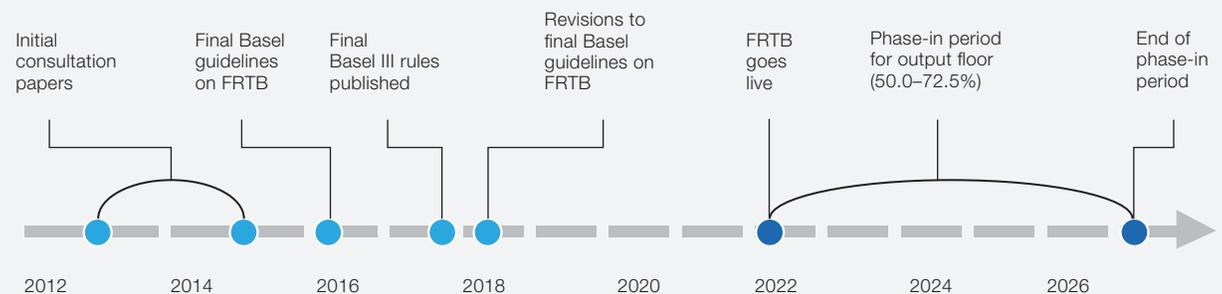
Banks that choose this path will capture benefits in capital efficiency, cost savings, and operational simplification. We believe that these benefits can mitigate the full extent of the reduction in banks' ROE resulting from FRTB and other regulations—a reduction we estimate at three percentage points. In this article, we will examine the business case for an infrastructure overhaul, including the core sources of efficiency and savings; the design principles of a best-in-class infrastructure; and the steps banks can take to implement these ideas.

Banks have been given a golden opportunity to get their trading houses in order and to set the stage for all the advanced technologies (robotic process automation, smart work flows, machine learning, and so on) that are so thoroughly remaking the industry.⁴

Exhibit 1

The delay of FRTB implementation to January 1, 2022, has thrown many banks a lifeline.

Fundamental Review of the Trading Book (FRTB) timeline



Source: Bank for International Settlements

The case for investing in infrastructure

Compliance with FRTB is not the only reason to overhaul infrastructure, but it is a powerful one. A coherent front-to-back technical architecture and aligned organizational setup eliminate many sources of discrepancy among the business, risk, and finance views. With that, the chances of supervisory approval increase.

Take one example: the better alignment between front office and risk required under FRTB is impossible unless both share an efficient, consistent firmwide data infrastructure. Without it, banks cannot remediate discrepancies between risk's P&L and the front office's—for instance, the differences that arise in sensitivities, backtesting, and P&L attribution.

Just as important, an overhaul of the trading-risk infrastructure makes eminent sense from a business perspective. Key risk metrics, such as sensitivities,

value at risk or expected shortfall, and risk-weighted assets (RWA), are not just technical or regulatory concepts but also the foundation of senior managers' decision making. To produce reliable, fast, high-quality measurements (as specified in BCBS 239), an institution needs reliable, high-quality data processed by the cogs of an efficient operating model. Only then can the bank truly know its complete risk profile and profitability, and execute its strategy with assurance.

Underlying both arguments—compliance and business—are the considerable benefits of consistency and efficiency.

Consistency through unique taxonomies

Consistency is paramount to establish trust and confidence in the metrics. Unique data taxonomies (or dictionaries or libraries) and a clear data model enable provenance and a clear data lineage for the whole front-to-back trading risk-data flow. "Golden sources"—single data sources for a certain data type,

used as a reference in all downstream calculations across the bank—inspire confidence and provide accountability by ensuring that only one version of the truth exists for each data type in the bank. (Note that multiple databases can constitute such a golden source if they use the same data taxonomies and structure.) For example, using one source of market data for both risk and P&L calculations directly improves backtesting and P&L attribution results, and it can empower aligned measurements, erase operational risk in data reconciliation, and increase the quality and completeness of data.

Further, there must be a clear ownership and subscription model for specific data types, as well as adequate enforcement around it. In other words, ownership typically lies upstream, where the data are created or sourced, and downstream systems and users subscribe to the upstream golden sources.

The knock-on effects of unique taxonomies and golden sources extend to the broader organization. By standardizing risk factors and sensitivities throughout a firm, say, or by making universal use of the same pricing-model libraries, banks can move with greater confidence as they design new products or tie together different databases in search of new insights.

We see several examples of banks setting out to establish golden sources for market data and reference data, as well as a single pricing-model library, with significant cost savings and significant capital savings beyond that (Exhibit 2).

Efficiency: Standardization, automation, and outsourcing

Efficiencies are always welcome, but especially now in view of the significantly higher computational capacity and storage needs of FRTB (such as a tenfold increase in the number of P&L vector calculations and the demands of desk-level reporting). Further, the benefits of consistency—the “goldenness” of the sources—are quickly lost if the infrastructure is

not operating efficiently. Primarily, this creates a powerful bias for standardization and automation wherever possible. For example, banks need to standardize their risk-factor and reference-data taxonomies, so that they can easily use their golden sources without time-consuming mapping exercises. Standardization may also mean that banks need fewer vendor licenses and less maintenance and can free up staff and computational capacity. Automated data cleaning (potentially using advanced-analytics and machine-learning methods) and automated report production are further key drivers of efficiency, as they address some of the most resource-intensive activities.

Organizational efficiencies are available, too. For example, processes such as VAR and P&L production and reporting, as well as the development and validation of models, can be moved to shared service centers and centers of excellence.

Efficiency also comes from acknowledging that not everything can be done in-house. Outsourcing relevant business-as-usual processes and using products from vendors add value and help a bank to concentrate on building capabilities from within. Such processes include data sourcing and the cleaning of market and reference data; transaction-data pooling for NMRP; pricing and risk modeling; and the development, production, reporting, and validation of models. Efficiency is not a positive side effect but a design choice.

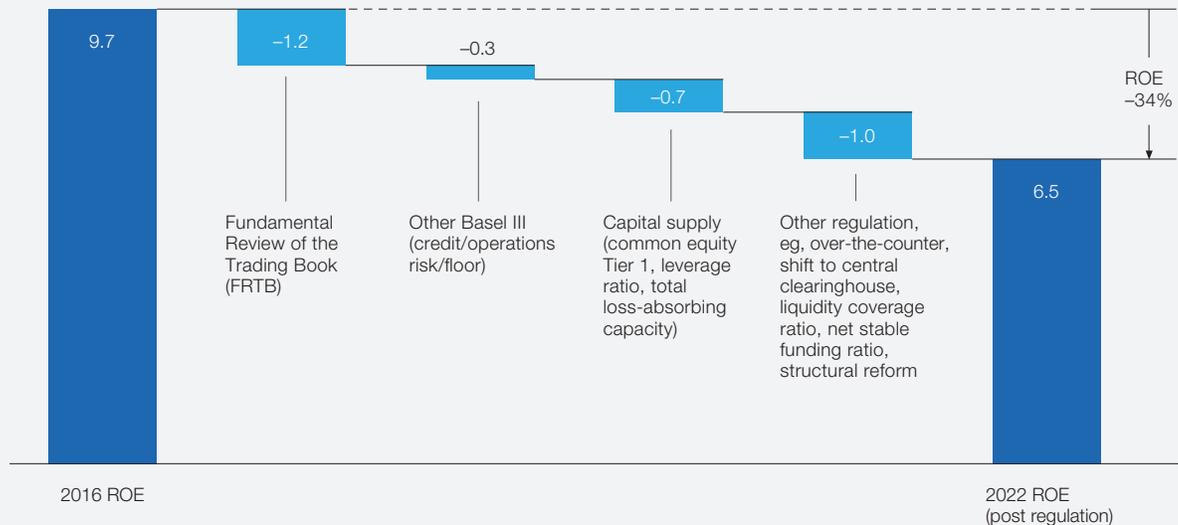
Sizing the opportunity

In a competitive and uncertain environment, capital efficiency and cost savings become significant drivers for boosting ROE. Both are powered by a revamped trading-risk infrastructure.

And both may be necessary to counter a likely decline in ROE due to FRTB. On average, the global industry’s ROE remained in the single digits in the last few years (8.6 percent in 2016); so did the ROE of the top ten global capital-markets players, at 9.7 percent. For the next few years, regulatory-capital

Exhibit 2 FRTB and other new rules will dent returns unless banks act.

Impact on capital-markets and investment-banking returns on equity (ROE),¹ %



Note: Figures may not sum to 100%, because of rounding.

¹ Only direct impact from regulation included (first-order effects), before mitigation actions and business changes. Analysis based on 10 largest capital-market banks.

Source: McKinsey analysis

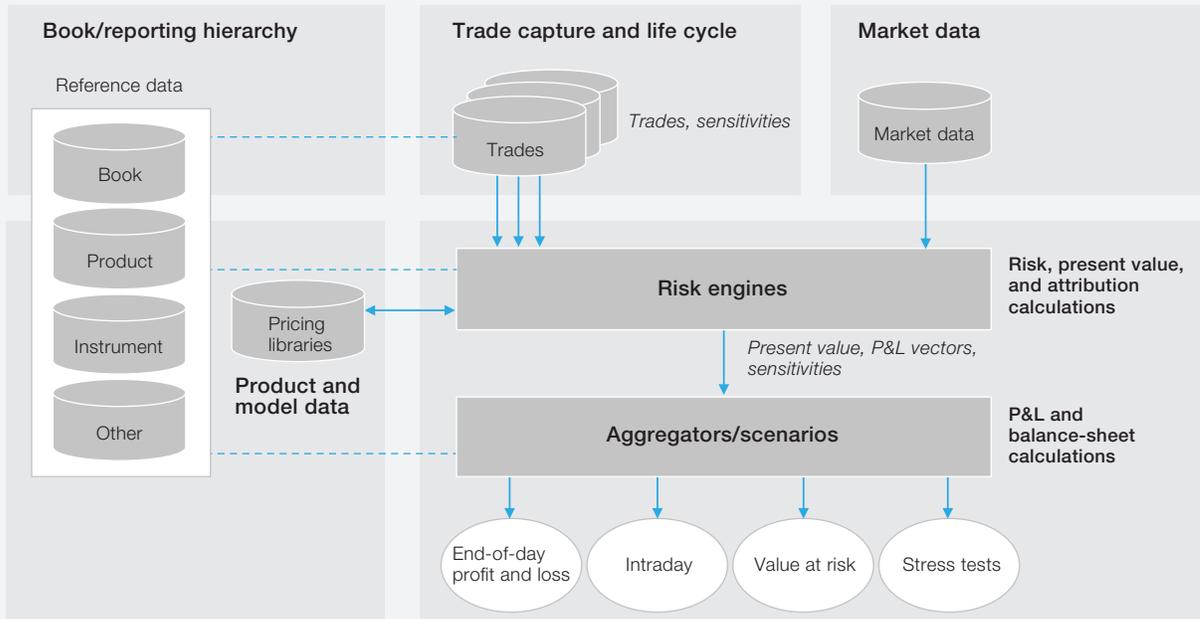
constraints, many embodied in FRTB, are likely to keep pressure on profitability. The top ten capital-markets banks’ average ROE might fall by about 34 percent by 2022, mainly as a result of higher capital requirements (Exhibit 3). We estimate that, on average, the top ten global capital-markets banks will each have to reserve an additional \$9 billion in capital, of which \$4.5 billion results directly from FRTB.⁵ Diminished profits lead to strategic complications, not least a limit on the ability of banks to finance future growth. And revenue growth is slowing in many parts of the world.

Capital efficiency. McKinsey’s capital-management survey highlights the fact that banks, especially in Europe, have significant scope to improve the management of their balance sheets.⁶ Banks can use three sets of technical levers that, combined, could reduce RWAs by 10 to 15 percent:

- **Improve data quality and infrastructure.** Effective data management can reduce capital charges, even in the standardized approach (STA). For example, banks can develop a comprehensive, relevant, and cross-cutting data model that considers issues such as product classification and segmentation and how to allocate positions to the relevant models, approaches, and risk-weight categories. They can identify gaps in the data and mitigate them by, say, checking the availability of historical market-data time series and sourcing all relevant external ratings. In fact, tapping the full range of external data sources (such as emerging trade repositories and industry utilities) is desirable to ensure comprehensive data sets. Finally, banks can enhance and validate their data through backfilling and thoughtful proxies for hard-to-find data.

Exhibit 3 Banks can design a streamlined infrastructure with golden sources.

New streamlined banking system, example



Source: McKinsey analysis

- **Enhance processes.** Many processes that figure in the calculation of capital requirements—such as hedging, netting, and collateral management—can be enhanced by, for example, ensuring full coverage and the timeliness and rigidity of the process, as well as by allowing only limited deviations. Further, the data process involved can be standardized and automated. Like cost efficiencies (mentioned previously), this approach can help capture capital efficiencies.
- **Carefully choose and parameterize models and methodologies.** One core lever for capital efficiency (and accuracy in capturing the risk profile) is opting for the internal model approach (IMA)—in particular, for products that are heavy

RWA consumers. Indeed, the standardized approach often leads to more conservative capital charges and is more prescriptive, offering less flexibility for banks to optimize further. Recent QIS and banks’ internal analyses of FRTB’s impact show that use of the IMA leads to a 1.5-time increase in market-risk RWAs, versus 2.5 for STA. While impressive, this capital-efficiency gain must be weighed against the operational complexity and cost of implementing and maintaining IMA. The potential volatility in capital caused by switching from IMA to STA when certain desks fail P&L attribution tests is also an issue. Smaller banks, in particular, might make decisions about IMA different from those of larger banks. And those larger banks may

carefully consider the portfolios or desks to place their bets for initial IMA approval—they should be clear winners.

Banks must build and enhance the models needed for FRTB, such as expected shortfall, default risk charge, and NMRFs. As they do, they should carefully consider the model type (for instance, the choice of full revaluation or the sensitivities-based approach), as well as the model's underlying parameters, such as risk-factor coverage and assumptions about correlation and liquidity.

Risk factors are an area of special concern. FRTB introduces a steep capital charge for holding illiquid, NMRF-linked products, such as exotic currency pairs and small-cap single credit names. Risk factors such as these are defined by their frequency of observation; NMRFs have fewer than 24 observations a year, with no more than a 30-day gap between observations. NMRFs alone will boost market-risk capital by 35 percent, suggesting that there is material value for banks in demonstrating the observability of risk factors. Besides sourcing market data from vendors, exchanges, and trade repositories, banks can meet the observability criterion by pooling transaction data among themselves—for example, through an industry utility.

Cost savings. Reaching double-digit ROEs also depends on the cost savings delivered by a modern infrastructure. Typically, these range between 15 and

20 percent of the current infrastructure cost base, or \$250 million to \$350 million for an average top ten global capital-markets bank. (Such efficiencies are additions to the significant cost savings already achieved in the past few years.) Moreover, these cost-saving moves have significant synergies with the process optimization and standardization described earlier.

Cost savings can be achieved in three main ways. Start with the systems infrastructure, which often has duplicative elements, and the data. Banks can centralize unique data warehouses into golden sources, remove duplicative applications, and consolidate front-office risk calculation “engines” (and repurpose the hardware and people supporting them). We have seen examples of banks consolidating their fragmented landscape of about 40 or so front-office risk engines into fewer than five, with an immense impact on savings.

Standardization and automation, with their strong contributions to efficiency, play a role in cost savings. So does a better prioritization of activities, such as a hierarchy of needed reports. Banks can also streamline their outputs. Eliminating “nice to have” information makes reports simpler; consolidating risk reports to different recipients into one saves time and effort. Automation reduces manual work and improves effectiveness by significantly reducing the number of errors.

FRTB introduces a steep capital charge for holding illiquid, NMRF-linked products, such as exotic currency pairs and small-cap single credit names.

Third, banks can mutualize their costs. New platforms and industry utilities provide shared data—most prominently, market data and reference data—and reduce the cost of the common activities that all banks need to undertake but that don't offer a competitive advantage to any.

A large European bank, which was particularly troubled by problems with duplicative applications and confusion among its data sources, recently put most of these capital-efficiency and cost-saving moves in play. It defined five initiatives. On the technology front, the bank reduced the number of applications and transferred production of some services to a shared service. On data, it worked to build golden sources. In risk and finance, it aligned governance and did technical work to bring finance's P&L and risk's exposure reports into alignment. It simplified its processes. Finally, the bank used demand management to lower the cost of new development (for instance, by asking users to prioritize new functionalities in risk applications) and the costs involved in the daily run of systems (reducing daily breaks, for example, and the associated cost of support and maintenance). Costs fell by more than 10 percent; regulatory delivery became faster; and the accuracy of information improved.

Building the new infrastructure

Taking these steps is of course challenging—and made harder by the scarcity of an implementation budget and other resources at banks that are having trouble generating profits. Nonetheless, having seen several banks successfully develop and execute programs to revamp the infrastructure, we identified five actions critical to their success.

Prioritize well

At a large bank, implementation expenses that include significant parts of these infrastructure changes will probably cost \$100 million to \$200 million. At the same time, banks will quickly start saving on capital and operational costs.

Carefully weighing these benefits and expenses for each asset class, geography, and group of trading desks is a core lever to manage the scope, complexity, and cost of implementation.

Establish senior oversight

Leading banks have put in place a governance committee specifically for the front-to-back capital-markets infrastructure. This committee executes its core oversight responsibility by designing the strategic infrastructure, outlining and monitoring the transformation road map, overseeing progress made across infrastructure-transformation projects, and resolving any issues that might arise from conflicting requirements. Typically, such a committee includes the chief operating officers for capital markets, market/traded credit risk, and finance; senior managers of risk-data aggregation and risk reporting; and others as needed.

Exploit synergies with ongoing programs

Business and regulatory programs already under way might have different goals but often touch upon the same infrastructure. An example could be the program to develop global market shock (GMS) loss forecasts, as required under the Comprehensive Capital Analysis and Review (CCAR). Other regulatory programs include the targeted review of internal models (TRIM), the European Banking Authority (EBA) Stress Test, the Markets in Financial Instruments Directive 2 (MiFID 2) for European banks, the guidelines for interest-rate risk in the banking book (IRRBB), the standardized approach for measuring counterparty credit-risk exposures (SA-CCR), and IFRS 9.

Banks usually try to manage these overlaps by putting in place alignment and feedback loops or by staffing programs with the same colleagues. In large organizations, this gets exceedingly difficult, particularly when programs are commissioned by different departments or located in different geographies. Banks should be on the lookout for synergies between FRTB and other ongoing

regulatory programs and exploit these synergies in moving toward a more centralized infrastructure (including golden data sources, the application programming interfaces to key calculation engines, and so on). In our experience, a productive approach toward a more centralized platform for traded risk starts with programs where significant overlap can be expected, such as FRTB and CCAR GMS (Exhibit 4). By closely connecting infrastructures to comply with big regulatory programs, banks can derive significant efficiency benefits.

Reconsider build or buy options

In response to FRTB, platform and data vendors have begun to offer infrastructure solutions, as well as components such as front-office risk engines, aggregation and reporting systems, and data-management platforms. With a broad range of solutions now commercially available, banks are in a comfortable position to investigate their buy-or-build trade-offs. They can then focus their

implementation efforts on areas where in-house solutions are required to ensure flexibility or other desired characteristics. Many banks still think that certain parts of the infrastructure give them a competitive advantage. But as risk IT gets increasingly standardized, this argument makes less sense, and the option to buy becomes more attractive.

Secure talent

Given the extensive regulatory book of work at many banks, people with relevant capabilities are in high demand: everyone is looking for skilled analytics experts, data engineers, and IT developers, and for knowledgeable program managers. One solution is to rotate such people frequently across the bank. Another is to provide an inspiring atmosphere to attract and retain that talent. But there are more innovative approaches to talent management: collaboration with fintechs and other vendors may be one; another could be collaboration within the bank (for instance, by building joint advanced-analytics

Exhibit 4 Banks can exploit synergies between FRTB and CCAR GMS.

	Fundamental Review of the Trading Book (FRTB)	Comprehensive Capital Analysis and Review (CCAR) global market shock (GMS)	Potential synergies
Parameters	Regulatory-assigned liquidity horizons by broad product category	Different liquidity horizons for product-specific shocks	Leverage P&L vectors, from FRTB expected shortfall calculation, for GMS scenario design
Measures	Standardized approach based on sensitivities-based approach	Full set of sensitivities to be reported in Federal Reserve Y-14Q template	Build single process and data model for sensitivities
Reporting and controls	Increased complexity of market-risk processes/reporting (eg, desk level)	Increasing set of controls on stress input and output (eg, CFO attestation)	Enhance data lineage and build single data-control infrastructure for both GMS and FRTB
Scenario generation and computation	Increased computational burden from regulatory requirements (eg, repricing, higher liquidity-horizon granularity)	Increased computational burden from regulatory requirements (eg, repricing, higher liquidity-horizon granularity)	Make pricing data centrally accessible to provide for pricing optimization (eg, machine learning)
Results aggregation	P&L attribution test for internal model-approach approval	Drivers of P&L to be evaluated on granular level	Leverage FRTB P&L attribution test to help explain portfolio vulnerabilities and validate GMS results
Processes	Identification of nonmodelable risk factors	Comprehensive risk-identification framework, also quantifying "risks not in GMS"	Develop common single risk-factor taxonomy and data model

Source: McKinsey analysis

or data-analytics centers of competence). Banks should scout things out—for example, by joining communities where digital talent resides, such as conferences and online developer forums. In this way, banks put themselves right in front of the talent pool and can attract people to compelling jobs in banking-risk technology.



Time has a way of sneaking up on us. As one risk leader said recently, “FRTB forces us to do the housekeeping that we should have done years ago.” Every bank should take the message to heart and not wait until the next deadline rolls around. ■

¹ “Minimum capital requirements for market risk” (BCBS 352), Basel Committee on Banking Supervision, Bank for International Settlements, January 2016, bis.org.

² “Regulatory consistency assessment program (RCAP): Analysis of risk-weighted assets for market risk” (BCBS 240), Basel Committee on Banking Supervision, Bank for International Settlements, January 2013, bis.org.

³ “Basel III: Finalising post-crisis reforms” and “High-level summary of Basel III reforms” (BCBS 424), Basel Committee on Banking Supervision, Bank for International Settlements, December 2017, bis.org.

⁴ *The future of risk management in the digital era*, a joint report from the International Institute of Finance and McKinsey & Company, December 2017, McKinsey.com.

⁵ We made this estimate before the Bank for International Settlements published its recent consultation paper.

⁶ Bernhard Babel, Daniela Gius, Roland Schneider, and Sebastian Schneider, *McKinsey Capital Management Survey 2015*, October 2015, McKinsey.com.

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A new posture for cybersecurity in a networked world

As the dangers mount, current approaches aren't working. Cyberrisk management needs a root-and-branch overhaul.

Thomas Poppensieker and Rolf Riemenschneider



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Until recently, financial firms and governments were the primary targets of cyberattacks. Today, with every company hooking up more and more of their business to the Internet, the threat is now universal. Consider the havoc wreaked by three recent events. From 2011 to 2014, energy companies in Canada, Europe, and the United States were attacked by the cyberespionage group Dragonfly. In May 2017, WannaCry ransomware held hostage public and private organizations in telecommunications, healthcare, and logistics. Also in 2017, NotPetya ransomware attacked major European companies in a wide variety of industries. And in 2018, Meltdown and Spectre were exposed as perhaps the biggest cyberthreat of all, showing that vulnerabilities are not just in software but hardware too.

Little wonder, then, that risk managers now consider cyberrisk to be the biggest threat to their business. According to a recent McKinsey survey, 75 percent of experts consider cybersecurity to be a top priority. That's true even of industries like banking and automotive, which one might think would be preoccupied with other enormous risks that have emerged in recent years.

But while awareness is building, so is confusion. Executives are overwhelmed by the challenge. Only 16 percent say their companies are well prepared to deal with cyberrisk. The threat is only getting worse, as growth in most industries depends on new technology, such as artificial intelligence, advanced analytics, and the Internet of Things (IoT), that will bring all kinds of benefits but also expose companies and their customers to new kinds of cyberrisk, arriving in new ways.

So what should executives do? Keep calm and carry on? That's not an option. The threat is too substantial, and the underlying vectors on which they are borne are changing too quickly. To increase and sustain their resilience to cyberattacks, companies must adopt a new posture—comprehensive, strategic, and persistent. In our work with leading companies across industries, and in our conversations with leading experts, we have seen a new approach take root that

can protect companies against cyberrisk without imposing undue restrictions on their business.

A global insurance company's experience indicates the potential. It budgeted \$70 million for a comprehensive cybersecurity program. One year later, only a fraction of the planned measures had been implemented. Business units had put pressure on the IT department to prioritize changes they favored, such as a sales campaign and some new reports, at the expense of security measures, such as email encryption and multifactor authentication. The business units also took issue with the restrictions that came with cybersecurity measures, such as the extra efforts that went into data-loss prevention, and limitations on the use of third-party vendors in critical areas.

To get its cybersecurity program back on track, the company took a step back to identify the biggest business risks and the IT assets that business continuity depends upon. It then streamlined its cybersecurity investment portfolio to focus on these "crown jewels." It also established a new model of governance for cybersecurity that empowered the central team to oversee all cyberrisk efforts across the enterprise. Because business owners were involved in the analysis, they warmly welcomed the required initiatives. Not only did the crown-jewels program increase buy-in and speed up implementation, it also led to a substantial cost savings on the original plan.

Spinning their wheels

Even after years of discussion and debate, the attacks continue and even escalate. Most companies don't fully understand the threat and don't always prepare as well as they might. We don't claim to have all the answers, either, but we hope that this recap of the problems and the pitfalls will help companies calibrate their current posture on cyberrisk.

More threats, more intense

The US government has identified cybersecurity as "one of the most serious economic and national security challenges we face as a nation."¹ Worldwide, the threat

from cyberattacks is growing both in numbers and intensity. Consider these figures: some companies are investing up to \$500 million on cybersecurity; worldwide, more than 100 billion lines of code are created annually. Many companies report thousands of attacks every month, ranging from the trivial to the extremely serious. Several billion data sets are breached annually. Every year, hackers produce some 120 million new variants of malware. At some companies, 2,000 people now report to the chief information security officer (CISO)—and he or she in turn reports to the chief security officer (CSO), who has an even larger team.

Paradoxically, most of the companies that fell prey to the likes of NotPetya and WannaCry would probably have said that they were well protected at the time of the attacks. Even when a company is not a primary target, it's at risk of collateral damage from untargeted malware and attacks on widely used software and critical infrastructure. And despite all the new defenses, companies still need about 99 days on average to detect a covert attack. Imagine the damage an undetected attacker could do in that time.

Growing complexity makes companies more vulnerable

While hackers are honing their skills, business is going digital—and that makes companies more vulnerable to cyberattacks. Assets ranging from new product designs to distribution networks and customer data are now at risk. Digital value chains are also growing more complex, using the simplicity of a digital connection to tie together thousands of people, countless applications, and myriad servers, workstations, and other devices.

Companies may well have a state-of-the-art firewall and the latest malware-detection software. And they might have well-tuned security operations and incident-response processes. But what about third-party suppliers, which might be the weakest link of a company's value chain? Or the hotshot

design studio that has access to the company's intellectual property (IP)? They may have signed a nondisclosure agreement, but can companies be sure their cybersecurity is up to snuff? The entry point for cyberattackers can be as trivial as a Wi-Fi-enabled camera used to take pictures at a corporate retreat. Some prominent recent cases of IP theft at media companies targeted third-party postproduction services with inferior cybersecurity.

Billions of new entry points to defend

In the past, cyberrisk has primarily affected IT. But as the IoT grows and more companies hook their production systems up to the Internet, operating technology (OT) is coming under threat as well. The number of vulnerable devices is increasing dramatically. In the past, a large corporate network might have had between 50,000 and 500,000 end points; with the IoT, the system expands to millions or tens of millions of end points. Unfortunately, many of these are older devices with inadequate security or no security at all, and some are not even supported anymore by their maker. By 2020, the IoT may comprise as many as 30 billion devices, many of them outside corporate control. Already, smart cars, smart homes, and smart apparel are prone to malware that can conscript them for distributed denial-of-service attacks. By 2020, 46 percent of all Internet connections will be machine to machine, without human operators, and this number will keep growing. And of course, billions of chips have been shown to be vulnerable to Meltdown and Spectre attacks, weaknesses that must be addressed.

Common pitfalls

Corporate cybersecurity is struggling to keep up with the blistering pace of change in cyberrisk. We've seen the following three typical problems:

- *Delegating the problem to IT.* Many top executives treat cyberrisk as a technical issue and delegate it to the IT department. This is a natural reaction, given that cybersecurity presents many

technical problems. But defending a business is different from protecting servers. Defending a business requires a sense of the value at risk, derived from business priorities; the business model and value chain; and the company's risk culture, roles, responsibilities, and governance. IT alone cannot tackle cybersecurity.

- **Throwing resources at the problem.** Other companies try to spend their way to success, assuming that the threat will go away if they persuade enough high-profile hackers to join the company's ranks. But even the finest hackers don't stand a chance at anticipating and fending off tens of thousands of attacks on millions of devices in a complex network.
- **Treating the problem as a compliance issue.** Some companies introduce new cybersecurity protocols and checklists seemingly every other day. But these efforts often bring about an undue focus on formal compliance rather than real resilience. Even when all boxes on the CISO's checklist are ticked, the company may be no less vulnerable to cyberattacks than before.

A new posture

To ready global companies for an age of all-encompassing connectivity, executives need a more adaptive, more thorough, and more collaborative approach to cyberrisk (Exhibit 1). We have observed the following principles used by some of the world's leading cybersecurity teams at global companies:

- **Cyberrisk needs to be treated as a risk-management issue, not an IT problem.** Cyberrisk is much like any other complex, critical, nonfinancial risk. Key elements of its management include the prioritization of relevant threats, the determination of a company's risk appetite (its willingness to accept some risk), and the definition of initiatives to minimize risk. Additionally, companies need to put in place an organizational structure and a governance

approach that bring transparency and enable real-time risk management.

- **Companies must address cyberrisk in a business context.** Technical experts cannot solve the problem without understanding the underlying commercial and organizational requirements. Companies tend to overinvest in technical gadgets and underinvest in complexity reduction and consistent coverage of their whole value chain, such as vendor-risk management. The result is an inefficient system.
- **Companies must seek out and mitigate cyberrisk on many levels.** Data, infrastructure, applications, and people are exposed to different threat types and levels. Creating a comprehensive register of all these assets is tedious and time-consuming. Companies should take advantage of automated tools to catalog their assets, the better to focus on those at most risk.
- **Adaptation is essential.** Sooner or later, every organization will be affected by a cyberattack. A company's organization, processes, IT, OT, and products need to be reviewed and adjusted as cyberthreats evolve. In particular, companies must fine-tune business-continuity and crisis-management structures and processes to meet changes in the threat level.
- **Cyberrisk calls for comprehensive, collaborative governance.** Traditionally, many companies distinguish between physical and information security, between IT and OT, between business-continuity management and data protection, and between in-house and external security. In the digital age, these splits are obsolete. Scattered responsibility can put the entire organization at risk. To reduce redundancies, speed up responses, and boost overall resilience, companies need to address all parts of the business affected by cyberthreats—which is to say, all parts of the business, and

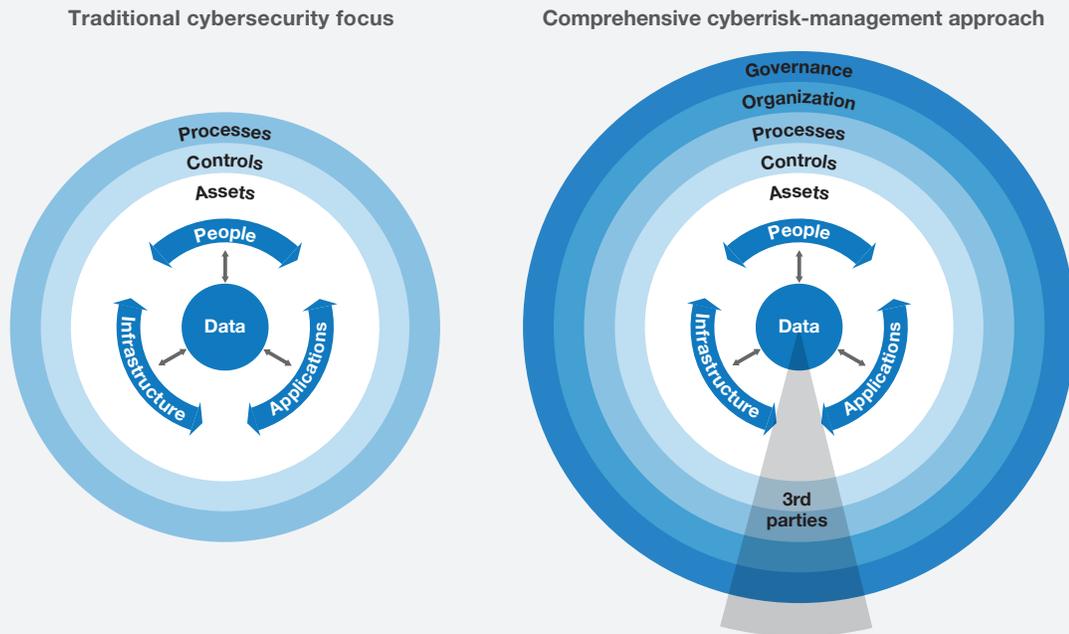
suppliers and customers too. While it may be hard—or even impossible—to protect a company against the most advanced attacks, systematic governance is the best insurance against the bulk of everyday attacks.

Companies that adhere to these principles tend to be much more resilient to most attacks than their peers. A defense ministry set out to ramp up cyberresilience across its entire organization. Scenario exercises helped increase cyberrisk awareness and instill a sense of urgency, by focusing on the mind-set of potential attackers and the concept of the weakest link in the chain of defense. Through an extensive training program, this kind of thinking was rolled out to the entire agency, making sure skills were passed on from

expert to expert. Throughout, the intelligence unit acted as the stronghold of cybersecurity expertise and the catalyst of change. In parallel, the institution reviewed and adjusted its IT architecture to increase resilience against destructive attacks, such as those that corrupt current data and backups, leading to a nonrecoverable situation.

The new approach also makes better use of cybersecurity resources and funds. Just refocusing investment on truly crucial assets can save up to 20 percent of cybersecurity cost. In our experience, up to 50 percent of a company’s systems are not critical from a cybersecurity perspective. We’ve also seen that the cost of implementing a given security solution can vary by a factor of five between comparable companies,

Exhibit 1 In a world where everything is connected, cybersecurity must be comprehensive, adaptive, and collaborative.



Source: NIST; McKinsey analysis

suggesting that many companies are missing out on considerable efficiencies.

Other benefits include less disruption of operations, which cybersecurity initiatives often bring about. And by involving business owners from the beginning, companies can speed up significantly the design and implementation of their cybersecurity architecture.

Building resilience, step by step

Successful cyberstrategies are built one step at a time, drawing on a comprehensive understanding of relevant business processes and the mind-set of prospective attackers. Three key steps are to prioritize assets and risks, improve controls and processes, and establish effective governance.

Prioritize assets and risks by criticality

Companies can start by taking stock of their cyber risk capabilities and comparing them with industry benchmarks. With that knowledge, they can set realistic aspirations for their resilience level. Generic visions to become world-class are usually not productive. Rather, the aspiration should be tailored to the industry and the current threat level.

Almost all companies are exposed to automated attacks and, indirectly, to industry-wide attacks. Beyond these unspecified threats, the relevance of other attack categories differs significantly, depending on the industry and the company's size and structure. Before investing in cyberdefenses, executives should strive to clarify the most relevant risks (Exhibit 2).

Exhibit 2 Companies should assess threats and develop appropriate controls for guarding against them.

Assets	Threats	Controls
 Data	<ul style="list-style-type: none"> • Data breach • Misuse or manipulation of information • Corruption of data 	<ul style="list-style-type: none"> • Data protection (eg, encryption) • Data-recovery capability • Boundary defense
 People	<ul style="list-style-type: none"> • Identity theft • "Man in the middle" • Social engineering • Abuse of authorization 	<ul style="list-style-type: none"> • Controlled access • Account monitoring • Security skills and training • Background screening • Awareness and social control
 Infrastructure	<ul style="list-style-type: none"> • Denial of service • Manipulation of hardware • Botnets • Network intrusion, malware 	<ul style="list-style-type: none"> • Control of privileged access • Monitoring of audit logs • Malware defenses • Network controls (configuration, ports) • Inventory • Secure configuration • Continuous vulnerability assessment
 Applications	<ul style="list-style-type: none"> • Manipulation of software • Unauthorized installation of software • Misuse of information systems • Denial of service 	<ul style="list-style-type: none"> • Email, web-browser protections • Application-software security • Inventory • Secure configuration • Continuous vulnerability assessment

Source: European Union Agency for Network and Information Security; The SANS Institute

Turning to assets, companies need to know what to secure. Automated tools can help executives inventory all assets connected to the corporate network (that is, IT, OT, and the IoT). With some extra work, they can even catalog all the people that have access to the network, regardless of whether they are on the company payroll or work for a supplier, customer, or service provider. The asset inventory and people registry can be studied to help companies prioritize their security initiatives as well as their response to attacks and recovery afterward.

Establish differentiated controls and effective processes

Blunt implementation of controls across all assets is a key factor behind cybersecurity waste and productivity loss. Not all assets need the same controls. The more critical the asset, the stronger the control should be. Examples of strong controls include two-factor authentication and background checks of employees who have access to critical assets.

Similarly, processes can be made more effective. The traditional focus on compliance—adhering to protocols, ticking boxes on checklists, and filing documentation—is no longer suited to the quickly evolving cyberthreat landscape, if it ever was. Companies need to embrace and adopt automation, big data solutions, and artificial intelligence to cope with the ever-increasing number of alerts and incidents. And in a world where digital and analytical talent is scarce, and cybersecurity skills even more so, they should build a network of partners to fill gaps in their capabilities. Companies should keep reviewing their partner strategy, checking which processes can be outsourced and which should be handled in-house to protect intellectual property or fend off high risk.

Consolidate the organization and establish universal governance

Most current security organizations are still driven by analog dangers. The resulting structures, decision rights, and processes are inadequate to deal with

cyberrisk. A state-of-the-art cybersecurity function (Exhibit 3) should bridge the historical splits of responsibility among physical security, information security, business continuity, and crisis management to minimize conflicts of interest and duplication of processes. It should align its cybersecurity work with relevant industry standards so that it can more effectively work with others to manage incidents. The organizational structure should clearly define responsibilities and relationships among corporate headquarters, regional teams, and subsidiaries. And it should establish strong architectures for data, systems, and security to ensure “security by design” and build long-term digital resilience.

To be effective, though, the organization needs a company-wide governance structure, built on a strong cyberrisk culture. Governance of IT, OT, the IoT, and products should be consolidated into one operating model, and the entire business system should be covered, including third parties. Ten elements characterize the ideal governance structure. The cybersecurity unit should hold responsibility for cybersecurity company-wide and should do the following:

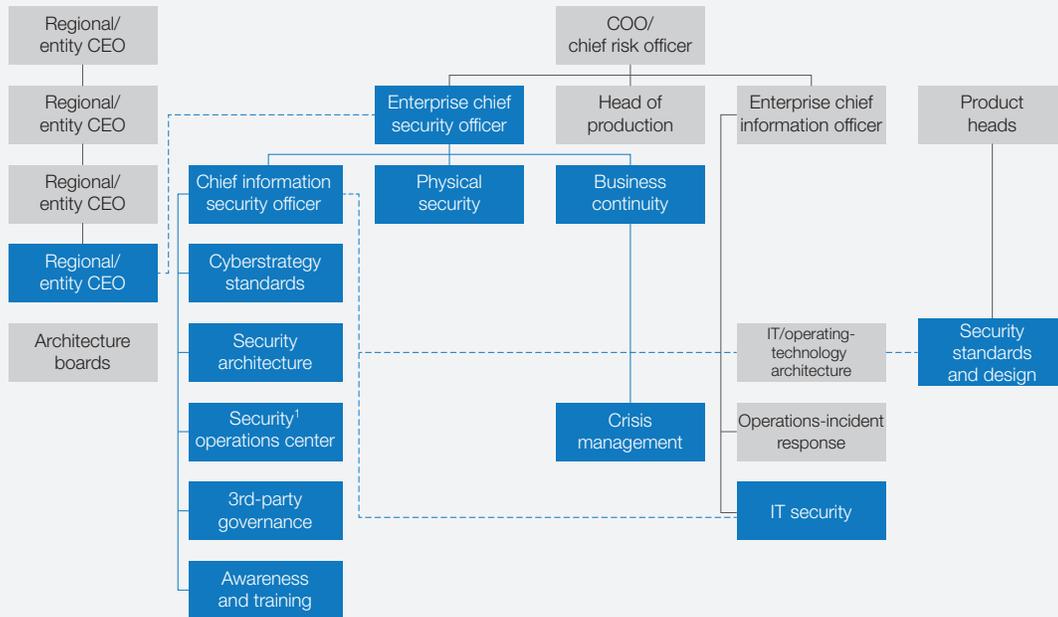
- Be led by a senior, experienced CSO with a direct reporting line to the board.
- Own the overall cyberrisk budget.
- Be accountable for implementation of a portfolio of initiatives.
- Report regularly on the progress of risk remediation to the board and other stakeholders (this task might be handled by the chief risk officer (CRO)).
- Maintain a veto on all cyberrisk-related decisions, such as outsourcing, vendor selection, and exceptions from security controls.
- Establish an effective committee structure from the board down, ensuring coverage of all.

Exhibit 3

Controls for the most critical threats should be carefully designed.

Example of consolidated structure

■ Cybersecurity team



¹ Including forensics, intelligence, and response.
Source: McKinsey analysis

cyberrisk-related activities (such as outsourcing, vendor management, and third-party management) across all businesses and legal entities.

- Build awareness campaigns and training programs, and adjust these regularly to cover the latest threats (this task might be handled by the CRO).
- Set clear and effective communication and incentive structures to enforce cybersecurity controls.
- Stage frequent and realistic attack and crisis simulations within the organization, with partners, and with other players in the industry.

- Set up efficient interfaces with law enforcement and regulators.

How one company built resilience

A global industrial company suffered substantial damages from a cyberattack, surprising its leaders, who had believed that its IT security processes and a highly standardized software architecture would not be so easily breached. Its IT organization had regularly issued patches and updates to cope with new threats and had a strong protocol of automated backups. However, IT was managed regionally, and it took some time before the attacked region discovered the breach and reported it. It also turned out that there were gaps in business-continuity management, vendor-risk

management, and stakeholder communication along the value chain.

Based on a thorough postmortem, the company designed a number of initiatives to increase resilience, including the following:

- creating an empowered CSO function to increase cyberrisk awareness and establish a cybersecurity culture at all levels of the organization
- implementing state-of-the-art global business-continuity-management processes across the organization
- building redundancy of critical systems (for example, Linux backups for Windows-based production systems) to reduce risk concentration
- improving processes to manage vendor risk

The company now thinks its resilience is improved, as it can now monitor the concentration of risks, reduce them systematically, and have confidence that the gaps in governance have been plugged.



As companies shift to this new posture, special thought must be given to the people who will make it happen. Ultimately, winning the war against cyberrisk is tantamount to winning the war for cyber talent. Cybersecurity functions need to attract, retain, and develop people who are nimble, innovative, and open-minded. No matter how refined the technology, it is the human factor that will win the war. ■

¹ “The Comprehensive National Cybersecurity Initiative,” May 2009, obamawhitehouse.archives.gov.

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Expanding horizons for risk management in pharma

With risks mounting, drugmakers can take a page from other highly regulated, capital-intensive businesses.

Ajay Dhankhar, Saptarshi Ganguly, Arvind Govindarajan, and Michael Thun



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Risk management has become a top-of-mind issue for C-suites and boards around the world—nowhere more than in pharmaceutical companies. In a politically and economically turbulent environment, the risks pharma companies face, especially in clinical-trial design and execution, drug approval, product quality, and global commercial practices,

are increasing in both frequency and magnitude (see sidebar, “Growing risks in pharmaceuticals”). One obvious sign of the challenging risk environment (among several factors at work) is the sharp decline in the valuation of specialty companies (35 percent decrease), generic-drug manufacturers (25 percent decrease), and biotech companies

Growing risks in pharmaceuticals

Our experience suggests that pharma companies are likely to face heightened risks over the next few years in the following areas:

- **Pricing, reimbursement, and market access.** Traditional models of pricing are losing their relevance in the context of expanding exclusion lists, indication-specific pricing, complex and often outcomes-based rebate structures, drugs that can cure rather than just control disease, and intensified public scrutiny. Many companies have run afoul of pricing concerns, particularly in the heated environment of US healthcare politics. By way of response, the pharmacy benefit managers CVS and Express Scripts have increased the number of drugs on their exclusion lists from 132 to 344 from 2014 to 2018, a jump of more than 160 percent, and signaled that they will exclude products with very large price increases.
- **Clinical-trial design and drug approval.** Late-stage failures and sustained high attrition rates—now averaging around 86 percent from Phase I to new drug application—can sink a company’s growth prospects and stock price. Between 2007 and 2016, the probability of moving from Phase I to launch was lower than in the previous ten-year period for eight out of the top ten pharma companies globally. Even when drugs succeed in trials, they can still fail in the market, as several new drugs have done recently.

- **Challenges abroad, including legal, compliance, and commercial issues.** As pharma companies grapple with a vast set of regulatory frameworks and requirements in different countries, they run an increasing risk of failing to comply with the guidance. In recent years, several companies have run afoul of complex regulations outside their home country. Companies have also sometimes misunderstood or struggled to adjust to the way business is done in these countries.
- **Operations, supply chain, and drug quality.** As supply chains globalize, outsourcing increases, and pharma companies manufacture more complex molecules, cost pressures and the quest for economies of scale are driving concentration. This increases pharma companies’ dependence on their suppliers and exposes them to significant supply-chain risks. In June 2017, Merck, in common with dozens of other multinational corporations, was hit by a severe cyberattack that disrupted its global operations, forced a temporary shutdown in its manufacturing, and caused extensive losses.¹

¹ See Michael Erman and Jim Finkle, “Merck says cyber attack halted production, will hurt profits,” Reuters, July 28, 2017, reuters.com.

(30 percent decrease) over the past two years. Many pharma companies admit they feel poorly prepared to navigate these choppy waters because their risk analysis and management is not as robust, data driven, action oriented, or far-reaching as they would wish.

We believe that the advanced risk-management practices developed in other heavily regulated sectors, such as banking and energy, can yield valuable insights and provide helpful models that pharma companies could usefully emulate.

Learning from other industries

The pharmaceutical industry is unique in several ways, such as the particular clinical challenges it faces in R&D processes, and the elaborate requirements for market access. However, our experience indicates that these unique characteristics, while important for risk management, are not the whole story. Several other sectors have much in common with the pharma sector, and the advanced risk-management practices they adopt can be readily adapted to a pharma context, just as leading risk-management practices in the pharma industry are transferable to other industries.

Like energy companies, pharma companies have high capital expenditure and long payoff periods for assets. Like banks, pharma companies operate in a highly regulated environment in which compliance risks are very high (for instance, for improper or poor filings) and other risks (such as sales-conduct risks) are present across many markets globally. Pharma companies also face risks that cut across sectors, such as cyberthreats, data breaches, supply-chain risks, quality risks, geopolitical exposures, and risks from third and fourth parties.

With these commonalities in mind, we have identified five risk-management ideas frequently seen in other sectors that can bring benefits to the pharma industry. These ideas will not only help

pharma companies protect themselves against risk but also enable them to optimize their risk taking—whether to differentiate themselves from competitors or to deepen their thinking about risk/return trade-offs in management decisions.

1. Develop a robust quantitative view of which risks matter most

Effective risk management begins with a robust process to identify, quantify, and inventory risks, both familiar and new. In this respect, pharma companies can emulate the leading banks that have established clear processes for identifying emerging financial and nonfinancial risks. One best-practice bank set up a process consisting of the following four steps:

Create an inventory of risks, and map them against a standardized risk taxonomy.

Estimate the likelihood and severity of each risk, and consider potential correlations among them.

Aggregate the risks, and rank them in order of priority.

Manage the risks by linking them to regular business processes, such as strategic and financial planning, enterprise risk management, and controls.

After a few cycles, this approach becomes second nature to institutions and boards. It is important that the risk inventory is neither so detailed that it becomes a box-ticking exercise nor so high-level that it cannot be acted on.

One leading biopharmaceutical company has already adapted its strategic planning to incorporate a taxonomy of risks and a process to calculate their impact. It began by holding a series of workshops for subject-matter experts from across the organization to identify and classify risks. Next it assessed each risk qualitatively and quantitatively by measures

such as probability, impact, and current mitigation efforts to sort the list in order of priority. It also developed a simulation-based model to estimate the cumulative impact of risks on its balance sheet, income statement, and cash flows decades into the future.

A global pharma company took an integrated approach to its strategic-planning process by introducing risk as a key input. The company used a risk taxonomy to rapidly identify roughly eight top risks (such as pipeline, safety, and launch risks, data breaches, and so on). It quantified each in terms of its potential impact on enterprise value (EV). Sensitivity analysis illuminated the cumulative impact on EV if two or more of the risks materialized at the same time. The analysis also showed that the biggest risk to the company stemmed from a relatively thin and concentrated pipeline.

2. Organize around three lines of defense to strengthen oversight and minimize duplication

Organizing roles, responsibilities, oversight, and governance along three lines of defense, known as the 3LOD model, is a proven method for risk management across sectors. The first line comprises the frontline teams that engage in activities that might create risk. The second line—usually the risk function—provides independent oversight and challenge and directly reports to the CEO. It sets policies and standards, ensures that the company's risk profile does not exceed its risk appetite, and oversees the effectiveness of controls. The third line is usually the corporate audit function, which might be supported by external auditors. When implemented well, the 3LOD structure clarifies roles and accountabilities as well as minimizes duplication through first-line processes with built-in controls, second-line testing and aggregation of risk, and independent assessment of risks and risk management undertaken by the first and second lines.

One large pharma company decided to apply the 3LOD principle to improve the efficiency and

effectiveness of its R&D-quality processes. It began by clarifying roles across each line of defense: clinical research and clinical operations monitoring teams in the first line, medical-quality teams in the second line, and corporate audit in the third line. While doing so, the company took care to eliminate overlaps in activities across the lines. For instance, instead of having all three lines of defense conduct full-scale quality testing of clinical-trial sites, the company switched to selective checks by the second and third lines to provide effective challenge to the first line.

Defining the lines of defense also helped the company identify missing activities and fill gaps. For instance, an undue focus on risk at individual clinical-trial sites meant that cross-cutting processes, such as vendor-risk management, were not getting the attention they deserved—a gap the company filled by redefining the remit of the second and third lines to include an end-to-end risk-management view.

3. Establish your risk appetite and prioritize where to focus

Developing a strong risk-appetite framework enables a company to make better informed risk decisions as well as appropriately allocate resources for monitoring and mitigation. It creates a fact base to underpin strategic decision making on topics such as capital allocation, M&A, investment, and divestment. The framework also provides a transparent view of the company's target risk profile. Well implemented, such a framework helps leaders align on key decisions and optimize their risk/return perspective.

Companies should base their risk-appetite framework on their risk taxonomy and business imperatives, ensuring that they take account of patient/customer, operational, financial, and employee dimensions. The framework usually contains qualitative statements about the company's risk-management goals as well as quantitative metrics that can be used to define risk appetite and monitor adherence. The enterprise and the

businesses that will use the framework on a day-to-day basis should jointly develop it so that ownership is shared from the outset.

Financial-services institutions have been leaders in defining risk appetite. One large public-finance corporation developed a series of statements about cyberrisk—such as “very low to no appetite for theft of customers’ personally identifiable information (PII)” —to focus resources on its most critical assets. It linked these statements to metrics such as the number of third parties with access to PII and the number of vulnerabilities identified from hacking simulations. Then it defined thresholds for each metric and set up reporting mechanisms to allow senior-level managers to understand how the corporation’s cyberrisk profile compared with its risk appetite and where investment was needed to fill gaps.

4. Take advantage of big data and advanced analytics

The use of advanced analytics and machine learning to improve risk management is rapidly gaining traction across industries. In the energy and materials sectors, for instance, companies have long used advanced analytics and simulation modeling in planning large projects, such as the opening of a new mine. Such an approach is highly applicable to the analysis of risks in the healthcare sector.

One global pharma company adopted an advanced analytic approach to help it prioritize clinical trial sites for quality audits. The model assesses level attributes to identify which sites are higher risk and the specific types of risk that are most likely to occur at each site. The company is tightly integrating its analytics with its core risk-management processes, including risk-remediation and monitoring activities of its clinical operations and quality teams. The new approach identifies issues that would have gone undetected under its old manual process while also freeing 30 percent of its quality resources.

A leading biopharma company has gone a step further by using simulation analytics to determine the interplay among strategic decisions, risks to the business, and overall outcomes. It analyzes risks across the life cycle of individual programs as well as those affecting the whole company. Next it considers a range of strategic choices: adding to or removing products from the portfolio, licensing development and commercialization to a partner, hiring decisions, and so on. The company then determines which set of choices creates the best conditions for success while enabling it to stay within its risk appetite.

Another area in which advanced analytics can capture significant value is in predictive maintenance. One railway operator applied advanced analytics to major component failures to reduce its total failure cost for rolling stock by 20 percent. In the pharma sector, in which production is dependent on multiple high-performance components, moving from standard maintenance practices to optimized analytics-driven approaches could yield similar cost reductions; more importantly, the approach could reduce downtime for valuable assets.

In the financial-services sector, institutions are exploiting rich data sources to develop new insights into risk in areas as diverse as underwriting, marketing, operations, and compliance.¹ One bank analyzed complaint data using a machine-learning engine to identify recurrent issues and monitor conduct risk. Taking a publicly available database published by the Consumer Financial Protection Bureau, it used automated natural-language processing to analyze the content of free-text complaints and extracted 15 topics, including potential fraud in account opening. It also developed insights into how new topics emerge, spike, and trend over time. Thanks to this effort, the bank can identify possible compliance risks before they become significant issues.

5. Form strong crisis-management preparedness

However robust an organization's risk-management capabilities, they can never rule out the possibility of a crisis event. Indeed, research has shown that such events have at least doubled—and in some cases more than quadrupled—over the past ten years across industries.² As the threat level increases, so does the need to not only improve core risk capabilities but also maintain a strong level of crisis preparedness.

Being prepared for a crisis includes both obvious elements, such as ensuring that senior leaders can quickly respond, and less-obvious aspects, such as integrating crisis scenarios into budgeting and planning. Too often, crisis-management training and preparation revolves around crisis communications, which is only one part of a much broader challenge. Instead, executives need to plan how the whole company would function during a crisis.

That preparedness planning needs to include considering how the organization and leadership will respond, how to stabilize stakeholders, and which operational and technical activities will be critical. It should include deciding how investigation and governance will be conducted; how marketing, brand, and communications teams can help with crisis management; and what financial and liquidity provisions are in place. Finally, it should include thinking through how legal, third-party, and other issues will be handled and how ready the whole organization is to cope with any crisis that might emerge.³

Best-practice institutions thoughtfully plan their crisis-management approaches and regularly update them by identifying risk scenarios, developing playbooks to manage each one, and using war-gaming techniques to practice their responses. One European bank went as far as devoting an entire day to perform a live test of a key crisis-recovery plan as part of its preparedness efforts.



In a fast-changing pharma-sector landscape with rising regulatory complexity, new delivery methods, and data-driven innovation, most companies urgently need to upgrade their risk-management capabilities. Now is the time to adopt best practices from other sectors. A surgical focus on the areas highlighted here will best equip companies to thrive in today's unpredictable environment. ■

¹ Sanjay Kalavar and Mihir Mysore, "Are you prepared for a corporate crisis?," *McKinsey Quarterly*, April 2017, McKinsey.com.

² Ibid.

³ For more information on a list of 25 questions that executives should ask to determine whether their organization is prepared for the worst, see Kalavar and Mysore, "Are you prepared for a corporate crisis?."

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Perspectives on conduct risk in wealth management

Here are four principles that can help financial institutions meet customer and regulator expectations for better conduct-risk management.

Björn Nilsson, Robert Schiff, and Dan Williams



© stereotype/Getty Images

Imagine you wake next Sunday morning to an alarming headline about your financial institution: “Advisers found misusing funds” or “Firm chose to ignore problem affecting 1,000 customers.” Conduct risk—including questionable sales practices and breaches of fiduciary duty—has shot to the top of the regulatory agenda in wealth management, and the repercussions are rippling out across firms and markets. In this article, we examine why conduct risk has become such a burning issue for wealth managers and set out four principles for ensuring that risks are raised and handled appropriately.

The emergence of conduct risk

All financial institutions and businesses have been affected in recent years by an increasing urgency surrounding conduct risk, wealth management being no exception. Among the many factors that have contributed to the heightened focus has been high-profile failures in the retail-banking sector. These have put increased attention and pressures on wealth managers operating in universal banks and bank holding companies.

Wealth managers with retail-banking affiliates can reasonably assume that new standards on the effective management of customer complaints and employee allegations will be applied at the enterprise level to universal banks. In the United States, wealth managers operating within the legal entity of a bank holding company can expect the Federal Reserve to focus on wealth-management businesses, even if they fall outside the legal entity of the subsidiary bank. In addition, recent feedback from regulators indicates that firms will be expected to use all available data to identify issues (for instance, by performing extensive account-level analyses) and quickly determine whether they are one-off events or symptoms of broader problems.

As regulatory scrutiny increases in developed markets, customer protection has drawn particular focus. In Europe, the introduction of MiFID II (the second Markets in Financial Instruments Directive) has increased both the operational complexity of the investment-advisory business and the inherent

conduct risk for wealth managers. The new directive includes new requirements and processes concerning conflicts of interest, price transparency, product suitability, and best execution—the obligation that an investment firm obtains the best possible result when executing client instructions. In North America, regulators are shifting to a more data-driven approach. An examination might once have begun with a review of policies and procedures, followed by a random sampling of customer accounts to identify exceptions or violations. But regulators are now requesting comprehensive data sets up front, running analyses to identify unusual or anomalous accounts and adviser portfolios, and seeking to understand patterns, underlying causes, and management’s ability to identify and monitor corresponding risks. At the same time, the Financial Industry Regulatory Authority (FINRA) now provides a risk ranking for every financial adviser it regulates.

Apart from regulatory scrutiny, financial advisers also face rising expectations from their customers. One reason for this is the growth in competitive alternatives, ranging from robo-advisers and exchange-traded funds (ETFs) to the expansion of full-service regional private banks. Another factor is customers’ ability to communicate instantly and broadly via social media, creating a context in which a perceived lapse in conduct can rapidly translate into reputational damage.

Managing conduct risk

How should firms respond to the emergent perils of conduct risk? Unlike many other types of risk, conduct risk crosses functions and lines of business. An issue in one area can easily affect others. Actions must therefore be coordinated across disparate parts of the firm. This will create challenges for such activities as risk identification, assessment, monitoring, and remediation. Each responsible group must ensure that the affected parties have the information they need in order to act. Handoffs between legal and HR to frontline managers and executives in charge of risk oversight will need to be carried out smoothly and efficiently.

An improved customer experience—including enhanced avenues for customer feedback and fully digitized transactions—can reduce risk exposure while also stimulating revenue growth. Below, we offer four principles for organizing conduct-risk management, each based on the conviction that strong risk management and superior customer experience go hand in hand.

Maintaining a healthy skepticism

In practical terms, skepticism will mean probing below the surface, especially in areas where the news is always good or where returns never stray from the positive. While success is important, managers need to keep testing results, to affirm strengths but also to uncover weaknesses. Firms often find systemic issues arise in specific areas. In our experience, three areas stand out: those that are actually independent of the wider organization, those within the organization that operate in a siloed manner, and those whose activities

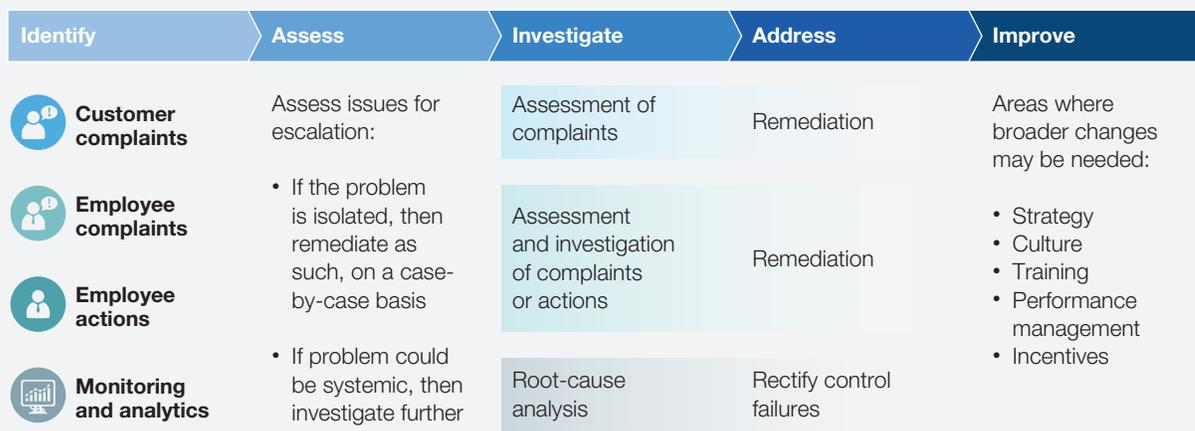
are not very transparent to the rest of the organization and whose leaders cannot easily describe the details of day-to-day operations.

A case in point from commercial banking is a regional bank that failed as a result of massive fraud in a subsidiary leasing company. This company did not use the bank’s own systems and had maintained separate auditors. In capital markets, the collapse of Barings Bank in 1995 followed speculative investments made by a single trader; in 2008, the insurance giant AIG was brought to the brink of failure by massive losses in credit default swaps incurred by activities in its financial products division.

Effective organizations maintain a clear and comprehensive view of the flow of conduct issues so that key responsibilities are identified, communicated, and understood throughout the organization (Exhibit 1).

Exhibit 1 Tracking issues as they flow through an organization, from identification to remediation, exposes gaps and supports improvements.

Flow of conduct issues



Conduct-risk oversight and audit

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> Reporting is conducted at each stage of the process for specific issues | <ul style="list-style-type: none"> Policies and standards linked to the risk framework are developed and maintained | <ul style="list-style-type: none"> Reporting standards for each component are set |
| <ul style="list-style-type: none"> Roles and responsibilities are clarified across the operating process | <ul style="list-style-type: none"> All activities, processes, and models are validated, tested, and credibly challenged | <ul style="list-style-type: none"> Risk exposures across the organization are identified and reported |

Understanding how culture shapes conduct risk

The prevailing cultural environment can either mitigate conduct risk or heighten exposure to it. By understanding the behavior favored by their culture, institutions can identify effective interventions for better managing conduct risk.

Leaders have found that the best way to begin is by articulating the behavioral characteristics and actions of the desired culture. By themselves modeling expected behavior, top management can ensure that everyone in the organization understands the cultural model. Exemplary conduct might include leaders' welcoming questions and dialogue, staff confidence in raising issues in a timely and appropriate way, and businesses working collaboratively with risk management and compliance instead of treating these functions as obstacles.

At the same time, institutions need vigorously to assess their risk culture, identifying strengths and weaknesses and marking outliers and cultural hot spots for more focused attention. Initiatives can then be developed to address the weaknesses while robust monitoring ensures that progress is being made.

In analyzing its risk culture, a large bank found that a business unit was performing poorly. It had recently undergone a change in management, so the bank assigned risk specialists to work with the new leadership. Together, they developed targeted interventions to improve communication and challenge the front line through training and coaching, role modeling, and formal problem-solving sessions. The next time this business unit was evaluated, the results showed that it was performing better than other parts of the bank and peer institutions.

Risk culture can be evaluated in a variety of ways, but most institutions use some form of employee survey. In our experience, signs that conduct risk may be elevated are negative survey responses concerning

openness, communication, level of insight, and speed of management reaction to issues (Exhibit 2). The negativity often arises from employee beliefs that their opinions are not valued, that management is not communicating a clear and consistent message, that risks in day-to-day business practices are poorly understood, and that little action is taken when issues are raised. A particularly strong predictor of underlying cultural problems has been the emergence of a steep decline in positive response rates between top executives and midlevel managers.

Mining data for insights and actions

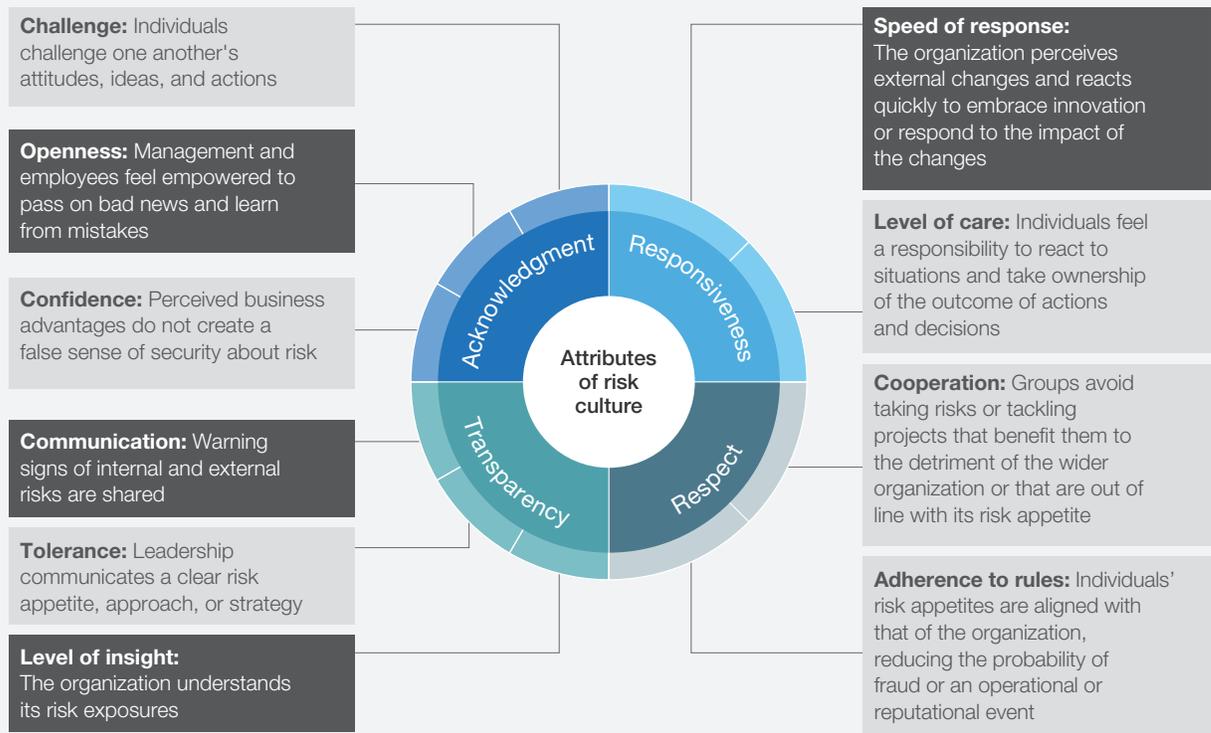
Many institutions have found that the effects, good and bad, of the prevailing risk culture on employee conduct (such as sales conduct and client interactions) can be determined through benchmarking performance against industry peers. An outside-in comparison of account-level risk and performance data can also add valuable context to compliance efforts. To develop such a view, firms can cooperate in a consortium that pools transaction data across peer institutions. The data must be detailed enough to allow users to detect anomalous behavior at the level of transactions and households as well as by financial adviser.

Another productive approach is to build an analytical engine and reporting tool that allows risk managers, compliance staff, and frontline supervisors to quickly identify any emerging behavior that may be inconsistent with the institution's culture and values. This involves the use of customer and employee data, which is regulated to various degrees, depending on location. Institutions must comply with all applicable regulations on data privacy and security.

When firms monitor transactions for suspicious activity, the programs they use are often insufficiently sensitive, given the investigative resources available. The common experience is that an enormous majority of flagged transactions turn out to be perfectly legitimate. Better algorithms and machine learning

Exhibit 2 A risk-culture survey can identify improvement opportunities.

Absence of shaded attributes very likely signals underlying risk issues



can greatly improve the efficiency and effectiveness of risk detection. Likewise, to improve conduct-risk programs, leading firms are adopting digital processes that link data sources with analytical engines all the way through to final reporting. They streamline risk-management and oversight processes by giving frontline employees analytical tools that spot anomalous behavior using outlier analysis. Findings are translated into an easy-to-read dashboard that allows financial advisers and managers to see at a glance how their client portfolios and transaction levels compare with those of peers. Any deviation can be quickly assessed and, if unintentional, quickly remedied. This not only helps advisers manage risk better but also reduces the number of cases that require detailed investigation and follow-up by the

oversight function. And as monitoring is conducted systematically, rather than sporadically, it picks up anomalous behavior that accumulates over time (see sidebar, "An end-to-end view of conduct risk through digital processes").

The next step is to combine these analyses with industry data to calibrate what is deemed normal not just within the firm but also across the sector. Automated tools generate reports, or dashboards, displaying performance by client segment, region, branch, and adviser. The dashboards allow executives to view activity at the level of individual households and accounts, enabling them to pinpoint areas of high risk for remedial action (Exhibit 3).

An end-to-end view of conduct risk through digital processes

Leading institutions can build analytics and reporting capabilities using digital processes that enable an end-to-end view of conduct risk, from the infrastructure platform to reporting and response.

Infrastructure. The infrastructure must provide information security that meets industry standards and complies with all applicable regulatory requirements. A central integrated platform can link data from disparate internal and external sources. This will provide secure storage for complex, rapidly changing data, with specific access controls. The platform should support system-neutral data collection (such as flat files and direct system calls). Analytical tools are used to help take in unstructured, scattered, and technically complex data.

Defining use cases. In this process, a set of hypotheses is developed about bad outcomes. Examples include unsuitable advice or asset allocation; charges that are high, of poor value, or opaque; poor treatment of vulnerable customers; poor handling of complaints; inappropriate bundling of products; overly complex products; and various forms of “insider” investing (such as “front running”).

Data support for hypotheses. Known bad outcomes for each hypothesis are identified, along with the available data that link to these outcomes. For hypotheses without an adequate number of known bad outcomes, indicators of possible bad outcomes can be selected, such as accounts overly concentrated in complex products, or spikes in communication volumes before large-value trades.

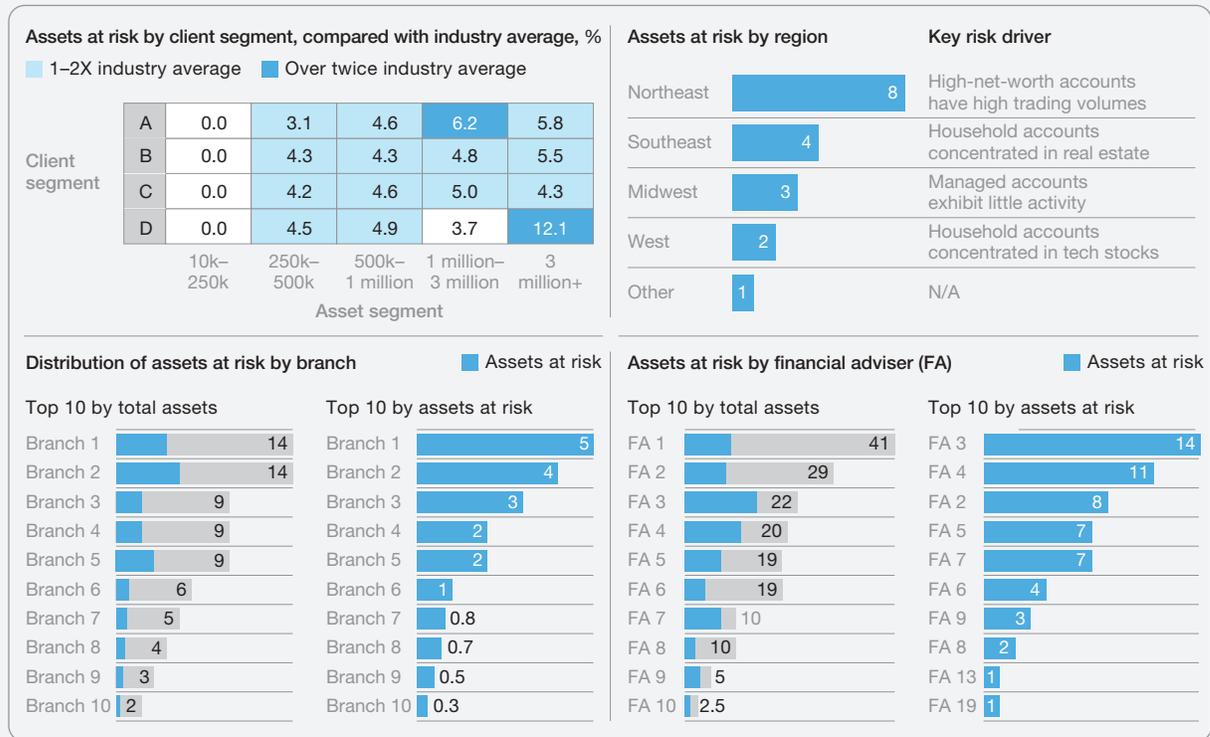
Capturing and aggregating new data. Data can be taken in from different channels, formats, and departments. Examples include complaints; sales data by product, customer, and employee; HR case reviews and exit interviews; performance management and compensation data; servicing calls; and customer surveys. Natural-language processing is used for the intake, structuring, processing, and storage of massive volumes of unstructured data.

Analytical techniques. To perform meaningful analysis, several techniques are used to ensure that the right questions are being asked of the data. Traditional statistical methods are applied to identify outliers and predict bad outcomes. Machine learning, automated algorithms, and feature engineering are used to detect complex patterns in data and expose underlying root causes. Geospatial and network analytical methods can link geographical risk exposures and identify bad actors or objects within a system.

Reporting and response. Comprehensive readouts and work flow–management tools help identify and correct issues more completely, accurately, and quickly. Employee, branch, and geographic data are available for deeper investigation. Hidden markers and structural linkages are identified by the combined analytical approaches, reducing the rate of false positives and better uncovering root causes of issues. Many of the processes for monitoring, identifying, routing, and reporting issues are automated using natural-language generation and artificial intelligence.

Exhibit 3 Reporting tools with executive dashboards can pinpoint conduct-risk areas for greater focus and remedial action.

Example dashboard



Conduct risk and the customer experience

Smart institutions use the feedback they collect via customer-experience programs not only to improve the experience itself but also to monitor for conduct risk—a step many firms miss. Well-designed customer-experience programs should provide helpful insights for both purposes. This type of monitoring will not substitute for layers of compliance controls, which remain crucially needed. But the best-practice approach to conduct-risk management will combine these controls with customer insights.

Firms can also harness some of the forces reshaping customer experience in financial services to reduce conduct risk. Examples include the following:

- **Automated advice.** Consumers are now able to make even wardrobe choices with the help of a robo-adviser. In financial services, automated advice in the form of an initial personalized algorithmic recommendation will become increasingly available. This recommendation may lead to added customization from a human adviser, but it will in any case provide a basis for reviewing conduct risk. For example, if large numbers of people contravene the model’s recommendations, then the model should be reviewed for bias and revised to ensure that it is not a source of conduct risk.
- **Customer affinity.** The difficulty some firms have in ensuring that customers understand

their products and services is one source of conduct risk. Some financial-technology firms (fintechs) are tackling this issue by offering targeted services to defined segments, such as Ellevest's wealth-management offering for young professional women. As technology becomes more modular, incumbent providers will find it easier to offer similar targeted services for such segments as new parents, parents of college-age youths, or people starting new businesses. Robo-advisers and other automated solutions can help firms enter previously uneconomical areas, supporting, for example, self-directed and managed options to lower-asset segments for lower fees. More diverse and targeted products and services that are more relevant to customer needs will reduce the likelihood of misunderstanding or misperception.

- **Digital-first sales and service.** One of the most powerful ways for firms to improve customer experience and reduce risk is to expand the role of digital sales and services. Conduct risk can arise from manual processes, creating poor customer experiences. Increasingly, customers are preferring the freedom and autonomy digital channels offer for researching and selecting products. Customers provide their own information to the bank and use sales employees as coaches when needed. This is how airline tickets and even cars are being sold today. For investment products, this approach brings the added advantages of educating customers about digital tools, improving data accuracy, and allowing employees to focus on customer needs rather than administrative tasks.
- **Complaints management.** Leading firms are finding that automating complaints management can effectively please customers, reduce conduct risk, and drive revenue growth (or prevent revenue erosion). By capturing customer feedback from all available sources and deploying machine learning

and natural-language processing to identify underlying themes and trends, top firms are now able to detect, in close to real time, operational deficiencies such as system outages or slow adviser responses. Addressing these glitches as quickly as possible has a direct and measurable impact on the customer experience, which in turn drives customer acquisition and retention.

Getting started

To address heightened supervisory expectations and put these four conduct-risk principles into practice, institutions can begin by reviewing the strength of their existing conduct-risk framework. Senior management can ensure that core elements are in place and working effectively. These elements begin with a groupwide definition of conduct risk and its relation to other risk types in the risk taxonomy. Business standards and a code of conduct should underlie all policies, guidelines, and procedures. Employee training on conduct risk and related matters, such as fair treatment of customers and financial-market integrity, should be mandatory.

Core processes such as the approval of new products should be subject to conduct-risk reviews, while responsible governance forums should review conduct-risk reporting and emerging conduct-risk themes. Conduct-risk identification should be robust. Whistleblowing protocols and complaints handling, backed up with an analysis of themes, will help identify issues requiring action. The potential drivers of conduct risk within the corporate strategy, business model, and compensation and incentive plans can be reviewed and changes introduced as needed. Peer conduct-risk events should be studied and an internal check for similar issues initiated if warranted. Employee surveys to identify specific issues in conduct, culture, and behavior can also be highly useful.

Finally, firms need to have in place dedicated reporting, analysis, and monitoring of conduct-risk metrics to identify concentrations of activity

in certain products, sectors, and regions and to detect likely signs of misconduct (such as business performance that is far out of alignment with targets and the wider market).



Most firms can significantly improve their management of conduct risk by reviewing and refining their approaches according to the four principles we have been discussing—probing successful results, understanding and improving risk culture, using data to gain insights and shape actions, and integrating conduct-risk management into the customer experience. Since the expectations of both regulators and customers for better conduct-risk management are rising, the business advantages of doing this are undeniable. ■

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The future of risk management in the digital era

Financial institutions are rapidly digitizing. But the risk function presents unique challenges and opportunities.

Rajdeep Dash, Holger Harreis, Luca Pancaldi, Kayvaun Rowshankish, and Hamid Samandari



The facts about the digital era are becoming familiar but remain astonishing. Computing power has doubled annually since the 1970s,¹ and costs have fallen at about the same rate. With every human activity now digitally recorded (even sleep, in Apple's new health app), more data have been generated over the past two years than in all of previous recorded history. The number of interactive devices is also increasing fast. Four billion smartphones were active in 2016,² with two billion more to come. And all those smartphones (and laptops, tablets, sensors, cameras, and so on) are busily creating torrents of yet more data—2.5 exabytes every day.

Data, analytics, and the digital tools to harness them are transforming all aspects of life, including business and industry.³ Banking is undergoing its own digital revolution, with significant implications for risk management. In our new survey on digital risk, conducted jointly with the Institute of International Finance, we find that 70 percent of banks have digital risk prominently on the radar. Further, 22 percent of banks—and nearly 30 percent in Europe and the rest of the world—have invested more than 25 percent of the annual risk budget to digitize risk management. These leaders have spotted a prize worth having. We estimate that a first-mover bank could earn a return on investment of 450 percent, worth roughly \$500 million to \$1 billion annually for a big bank.

Six main trends are propelling banks forward, either directly or because they build a case for change. In this article, we will briefly review these trends, and then look at the progress of digitization. We will offer a glimpse of what digital risk might look like, summarize our research on its value, and look at three banks that are already capturing some. Finally, we will review the building blocks of digital risk, and offer some guidelines on how to conduct the work needed to realize the vast potential.

Pressures to digitize

Front and center are customers and their ever-rising expectations. Today's consumers and businesses are

accustomed to personalization through social media and to rapid fulfillment through e-commerce. They expect the same kind of near-instantaneous service and customized products from their banks.

A second force is greater competitive pressure: aggressive fintechs, some prominent nonbank lenders, and early-adopting incumbents have enhanced their customer offerings, largely automated their processes, and made their risk models more precise. As a result, they can undercut traditional banks on price (our research has shown that digital attackers' cost/income ratio is 33 percent, compared with 55 percent at incumbent banks).

Third, cost pressures come from another direction, too: regulatory constraints and low interest rates have, in many cases, brought the average return on equity below or close to the cost of capital. While these cycles may turn, the pressure is likely to remain, especially as banks have added substantial staff to manage risk and enforce compliance.

The fourth trend is related to emerging and evolving risk types that arise from new business models. For instance, digital channels present new kinds of risk (including the greater exposure of digital assets). The rise of analytics requires risk managers to pay close attention to model risk, and the greater level of interconnectedness among businesses requires vigilance on contagion risk.

A fifth trend, regulation, may surprise some people who think that banking has reached "peak regulation." Thirty percent of the respondents in our survey say regulatory cost for risk increased by more than 50 percent over the last five years. Moreover, 46 percent predict costs will continue to increase somewhat over the next five years. Although regulations might be eased in some areas, on balance banks can expect more rules, on topics including supervision (for instance, the Targeted Review of Internal Models and the Supervisory Review and Evaluation Process), systemic risk (such as stress tests and Basel III), data

protection (such as the General Data Protection Regulation), and customer protection (for instance, Payment Service Directive II). Digitization can ease compliance with almost all of these.

Finally, a sixth trend concerns a banking-services ecosystem that is now springing up, offering new ways to undertake vital functions. For example, banks have used fintechs in credit-risk-underwriting partnerships, fraud detection, and (through industry utilities) regulatory compliance or supervisory reporting. Overall, 70 percent of survey respondents believe that fintechs will help to digitize the risk function. The most important topics here are mitigating losses from operational risk, managing asset-liability-management liquidity, risk stress-testing, identifying emerging risks, and monitoring and managing risk portfolios. Also, 30 percent of the respondents (60 percent in North America) plan to use utilities and partnerships to cope with regulation.

The digitization of risk

Digitization in banks has so far concentrated mostly on customer-facing “journeys” (such as online marketing) and the operations that support those journeys (customer onboarding, customer servicing). Only recently have banks expanded their transformations into other parts of the organization, including the risk function. Banks note the importance of digitizing risk. Seventy percent of respondents reported that senior managers are paying moderate attention to risk-digitization efforts; 10 percent say that senior managers have made these efforts a top priority. Risk digitization is clearly an established topic in the executive suite.

This is not yet reflected in banks’ investment, however. Only about 10 percent of risk groups have allocated more than half of their budget to digitization; another 15 percent have allocated between a quarter and a half of their budget. Risk teams in Europe are investing more in Europe than in North America.

Lagging investment is likely to catch up soon. Digital risk transformations are already a reality at the largest banks: 70 percent of global systemically important banks (G-SIBs) stated that a digital risk transformation is now in place. Moreover, many respondents have high ambitions to digitize 80 percent or more of the risk process in the next five years. Furthermore, senior management’s mandate is now to drive such transformations; only 9 percent of respondents view a lack of senior-management attention as a key challenge to digitizing risk.

Given the trends we have laid out, it is imperative for the risk function to accelerate its digitization efforts, since it will be increasingly hard to stay analog while customer-facing activities and operations race ahead into digital. As one risk executive noted, “The risk function should not be the bottleneck to a highly digital [bank].” Another said that “there is no way channels can be truly digital without working with risk.” However, only 39 percent of respondents considered their risk function to be a significant contributor to the bank’s overall transformation.

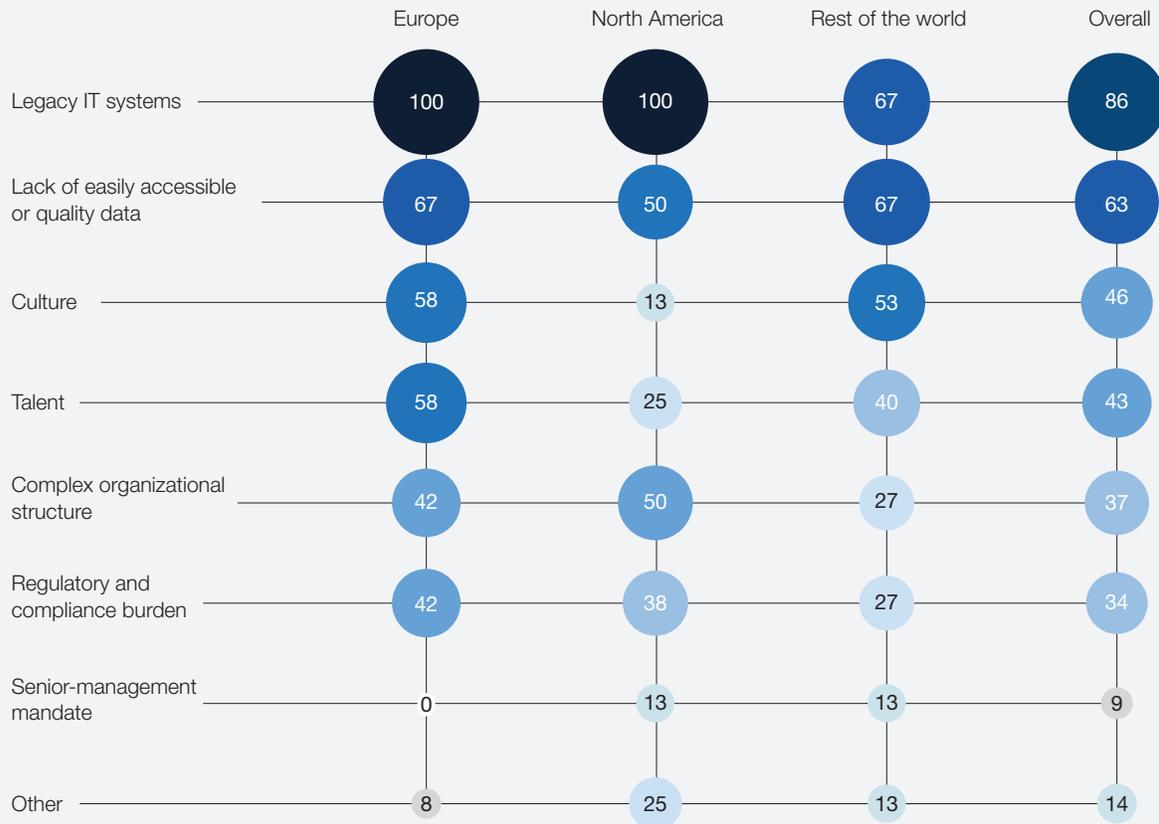
Banks that set out to digitize risk encounter a set of challenges (Exhibit 1). First, risk systems have significant IT and data constraints. IT systems are often patchworks, which means that data quality is often poor. Eighty-six percent and 63 percent of risk managers viewed legacy IT systems and a lack of easily accessible high-quality data, respectively, as the main challenges to digitizing risk. The working group noted the contradiction involved in encouraging people to seek additional and creative data sources while not mining fully trusted internal data as a result of the challenges of legacy IT systems.

Second, risk leaders are inherently and appropriately conservative, given their mandate. They will need to adopt and adapt concepts like iterative design, “fail fast,” and multivendor teams. Forty-six percent of risk managers viewed culture as a main challenge

Exhibit 1

Risk must overcome legacy IT and poor data, as well as conservative culture and lack of digital skills.

Main internal challenges for pushing digitization, % of respondents who selected option (n = 35)



Source: Survey on the future of risk management in the digital era, conducted jointly by McKinsey and the Institute of International Finance, 2017

in digitizing. Risk staff often lack the most up-to-date knowledge of analytics and next-generation technologies that will be needed in a more digital state. Forty-three percent of risk managers saw talent as a key challenge in digitizing. The working group actively debated how to attract and retain talent both proficient in risk and comfortable with digital technologies.

Third, risk has bankwide interdependencies. The risk function is highly involved in thousands of daily decisions across the entire bank. It requires considerable collaboration from others to deliver a digital risk solution. Thirty-seven percent of risk managers viewed a complex organizational structure as a main challenge in digitizing. As one risk manager stated, “Strategic alignment is needed between

different groups ahead of time [to drive the risk] digitization.”

Regulation is another challenge. As 34 percent of the respondents noted, regulatory requirements for transparency, auditability, and completeness could limit the depth and speed of the technology’s adoption. The working group consequently observed that “black box” machine-learning techniques have had a slow rate of adoption in regulatory-reviewed models. Finally, digital transformation in risk is a special case. Not unlike open-heart surgery, everyone must know the playbook to the last detail, and a range of safety measures and fallback options must be in place to safeguard the bank and its customers and keep operations running at the highest possible levels.

Nevertheless, it can be done. Many capabilities are in place, others can be amassed, and several banks have laid promising foundations. Further, there is a strong economic case for taking on these challenges and digitizing risk; 40 percent of respondents believe that credit-risk costs will fall by more than 25 percent (we explore the economic case in detail below). Leading banks and fintechs have proved that a number of oft-cited transformation barriers, such as a lack of digital talent and heavy regulatory requirements, can be overcome. In essence, the research that underpins this article makes a clear case for digitizing risk. Now the question is how far and how fast digitization can go.

A vision for digital risk

A fully digital risk group could be game changing for key stakeholders given the observed trends and impact at stake. Consider how their experiences would improve:

- *Risk executives* will focus on more strategic and high-value decisions as routine work is automated away and fewer exceptions require manual handling. They will use advanced-analytics capabilities to generate insights that are hard to produce today (such as complex correlation and trend analyses) to help the front line optimize

its decisions and offerings. Risk executives will deploy a centralized “nerve center” where newly powerful self-learning models will harness improved connectivity to set limits dynamically and to detect emergent risks (credit, market, and operational)—evaluating those risks immediately, setting cross-risk mitigation strategies in motion, and dynamically adjusting limits. This nerve center will thus improve forward-looking risk identification and management across different risk types. To access these nerve centers, risk leaders will consult self-service, highly customized dashboards that give them the ability to drill down into the headline figures and run self-defined analyses, mostly in real time. Risk executives will lead a smarter, nimbler, and smaller organization (60 to 70 percent of the current size in full-time equivalents, or FTEs) with a very different distribution of skills, including many more people with analytics and digital skills. Risk’s responsibilities will grow, however, in the view of more than 80 percent of respondents. Nearly two-thirds also think that more activities will move from the first line of defense into the risk group.

- *CEOs and heads of business* will receive automatically generated strategic advice on risk-oriented business decisions, such as identifying origination opportunities, shrinking unwanted exposures, managing investment portfolios, and allocating capital. Here, too, executives will rely on an intuitive visual tool to provide advice on demand at an appropriate level of detail (such as specific markets, portfolios, or products). This advice will be grounded in live analytical views of the bank’s projected performance. CEOs will come to rely on a tool that readily illustrates, say, the implications for risk appetite of taking on credit and market risk in a given country under various macroeconomic scenarios.
- *Retail and corporate customers* will have individualized banking experiences that meet their high expectations. Banks will be present at

key moments in people's lives, helping them make more informed decisions, adroitly anticipating their needs, and offering customized solutions. No longer will customers need to communicate over multiple channels or shuffle through reams of paper. Banks' advice might range from simple nudges to avoid overdrafts or late-payment fees to more sophisticated help managing account balances to optimize interest income. The advice will come in real time and will be fully embedded in the customer journey. For corporate customers, the bank will also be able to integrate into the supply chain, assessing risks and providing timely financing; here, too, advice and decisions would be fully embedded in the customer journey. CFOs could expect comprehensive financial advice (subject to regulatory constraints), including views on risk from, say, adverse market trends and benchmarks that might compare the company's customers with industry metrics. Customers could, moreover, confidently expect the bank to keep their data safe.

- **Regulators** will move from consuming reports to receiving near-live data. While our respondents were divided on whether regulators will have direct access, most think that the provision of data will be timely and painless. Regulators could swiftly perform ad hoc analyses (for instance, impromptu stress tests) and provide banks with enhanced guidance on systemic risks. They could flag potentially noncompliant actions, allowing banks to deal with and mitigate any related risks to prevent them from ballooning into material systemic issues. Regulators could also oversee nonbanks, including fintechs and corporates with financing arms, in the same digitally enabled ways.

The value at stake

Risk managers agree that considerable value is already at stake for banks in achieving this digital state in the near term (two to three years). This value would be derived mainly from efficiencies, reduced

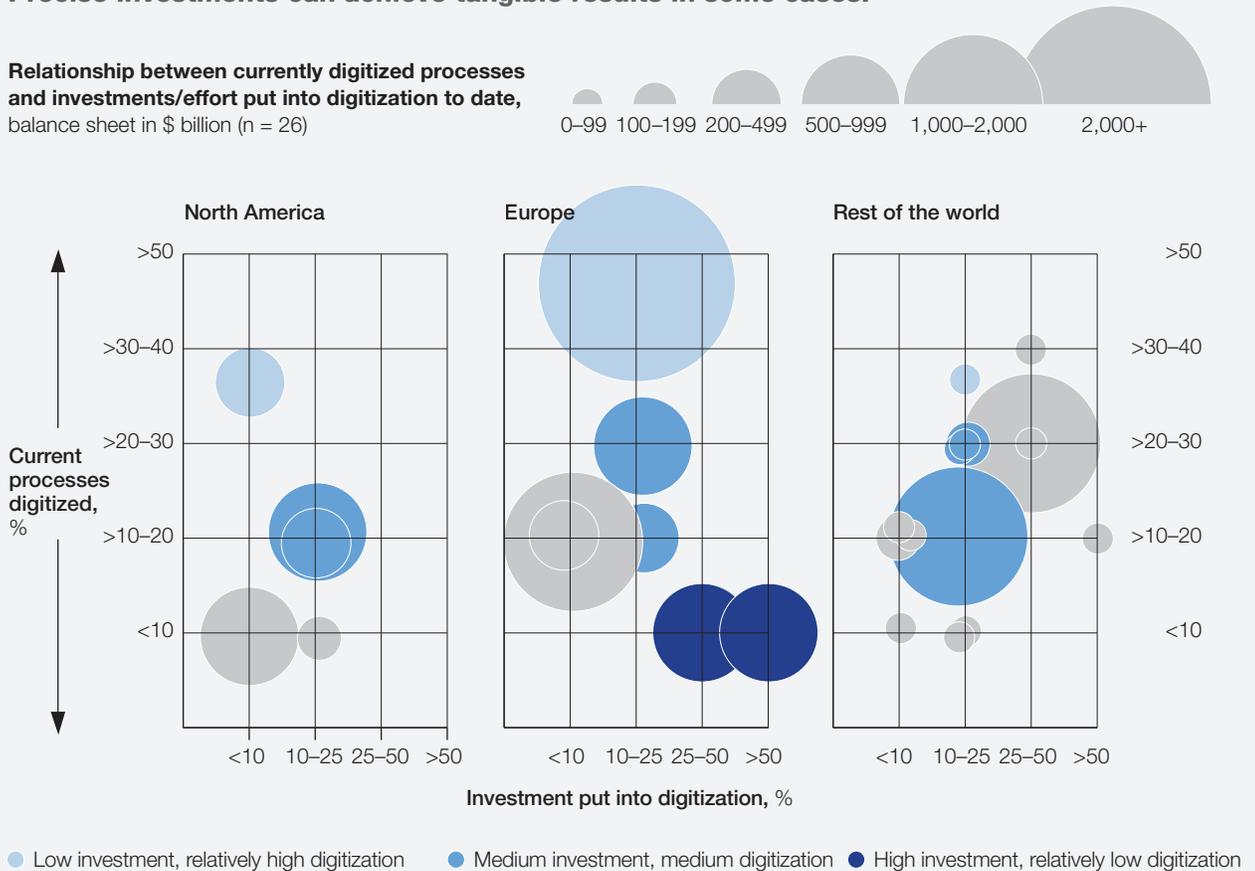
losses, and even indirectly through an enhanced customer experience and increased revenues. Twenty-eight percent of respondents expect automation to reduce costs by at least 30 percent (Exhibit 2). Nearly two-thirds think that a reduction of at least 15 percent is likely and that the time to make credit decisions will fall by at least 25 percent across portfolios. About 80 percent think that more timely decisions will be another benefit. Seventy percent expect higher productivity.

We estimate that the annual steady-state value from digitizing risk management (including revenue effects) will be approximately the same as the total investment over the first three years. This equates to a return on investment (ROI) of about 450 percent for a first-mover bank with a well-executed program. For a G-SIB, this would translate to about \$600 million to \$1.1 billion of annual, steady-state impact. A typical G-SIB with a \$1 trillion balance sheet would have to make a \$200 million investment annually for three years. Since digital transformations are much more modular than classic large-scale IT replatforming programs, higher-impact areas can be targeted first in a precise way. As a result, the ROI would be even greater in the short term, with early impact potentially funding later investments in an agile deployment of initiatives. These estimates are contingent on risk and the bank's successful execution of a large change-management program of many initiatives; it is possible or even probable that banks will not meet their expectations on all initiatives.

Our analysis considered several levers. Recent efforts with risk automation and robotics suggest that FTE productivity could rise by 10 to 20 percent. With machine learning and other technologies, risk models can become more predictive, which suggests that credit losses may fall by up to 10 percent. As automation and analytical tools reduce the number of human errors, and as new multichannel surveillance techniques detect inappropriate employee behavior more capably, the frequency and magnitude of

Exhibit 2 Precise investments can achieve tangible results in some cases.

Relationship between currently digitized processes and investments/effort put into digitization to date, balance sheet in \$ billion (n = 26)



Source: Survey on the future of risk management in the digital era, conducted jointly by McKinsey and the Institute of International Finance, 2017

operational and compliance losses and fines could decline by 10 percent. However, evolving risks (such as cyberrisk) might increase the potential for high operational losses, offsetting the gains to some extent.

IT costs for risk could decrease by 10 to 20 percent as the function optimizes its application-development and -maintenance capabilities and simplifies its data and application environments. Finally, there is also the potential for a capital reduction of up to 8 percent—depending, of course, on regulatory restrictions. As data quality and processes improve, and as analytics supplies greater precision, banks will be able to

deploy capital more efficiently, lowering their risk-weighted assets.

We also see the potential for a revenue uplift of up to 4 percent for a first-mover bank that overlays risk models onto marketing models to develop a view of risk-adjusted returns from prospecting for new revenue sources, and from providing excellent risk-based decision tools to customers, in or near real time. Over time, we estimate that most of these benefits would expand, as more advanced technologies, better algorithms, and more automated processes come online.

Real-world progress

Parts of this future vision are already taking shape as various banks show strong progress in key applications of digital risk. Of numerous examples we encountered, two stand out. A midsize European bank implemented a digital-risk “engine” in its mortgage business to combat imminent competitive pressures. The bank retooled the process, removing a number of breaks. It kept most of its previous risk models but upgraded its pricing model and optimized its credit policies and decision-making criteria, replacing a complex and overlapping set of rules. In six months, the bank transitioned from nearly 95 percent manual decision making (two weeks of approval time) to 60 percent straight-through processing (less than one minute of approval time) with a completely paperless process. It reduced the customers’ burden of data provision by 75 percent thanks to reusing information it already had or could easily find. The decision process integrates seamlessly into the advisory process, allowing for instant credit approval by the relationship manager.

The second example comes from a US universal bank that is currently digitizing its Comprehensive Capital Analysis and Review process. Production time is slated to decrease by 30 to 50 percent, freeing up experts to focus on review and challenge before submission. The bank also anticipates FTE productivity gains of approximately 20 percent. Risk is collaborating with finance and business units to reengineer the process; critically, several steps that used to be done sequentially now take place in parallel. The bank is automating work flows, including the production and review of documentation, and applying advanced analytics and automation to enhance controls, thereby making the output more reliable and reducing the need for rework.

These are just two specific examples of high-impact use cases that could serve as parts of a broader digital risk transformation, which could include initiatives such as rapid limit setting across the portfolio, automated early-warning and collection systems, and automated compliance controls. Many participants

and interviewees spoke of similar experiences, demonstrating that the capabilities to digitize risk safely are already in place, and that techniques like the agile organization allow risk to focus closely on high-impact areas in a modular way, building a transformation quickly.

The seven building blocks of digital risk

Banks can harness the seven building blocks of a digital transformation to construct a successful digital risk program. It is not necessary to excel in each category; rather, risk should prioritize those that enable the strategy of the bank and capture its unique opportunities. Research shows that banks need not spend a fortune; by targeting investment precisely, considerable swaths of risk can be digitized (Exhibit 3).

1. Data management. Enhanced data governance and operating models will improve the quality of the data, make risk and business decisions more consistent, and ensure responsiveness to risk’s data needs. One important enhancement is the need to consider data risk as a key element of the risk taxonomy, linked to a specific risk-appetite statement and data-control framework. Another is to accommodate far more varieties of data. Approximately 30 percent of the respondents say that new data sources will probably have a high impact on their work. And of course, risk must prepare for a lot more data.

2. Process and work-flow automation. As risk automates tasks such as collateral data entry, often through robotic process automation, it can combine several of them into smart work flows: an integrated sequence performed by groups of humans and machines across an entire journey (for instance, credit-extension fulfillment). In addition to greater efficiency, smart work flows create a more seamless and timely experience for customers. About a quarter of respondents believe that more than 15 percent of costs can be cut across different risk disciplines, except in credit, where the number is a bit above 60 percent. Around 30 to 45 percent of respondents see 5 to 15 percent cost-reduction potential from

Exhibit 3

Credit and operational risk present the highest opportunity for cost reduction through automation.

Cost-reduction potential of automation and robotics participants, ■ >30% ■ 15-<30% ■ 5-<15% ■ <5%
% share (n = 29)



Note: Figures may not sum to 100%, because of rounding.

Source: Survey on the future of risk management in the digital era, conducted jointly by McKinsey and the Institute of International Finance, 2017

automation, depending on risk type. Ninety percent see benefits from increased precision, and 55 percent believe automation will improve compliance with regulation. As a knock-on effect, risk people will focus more on the value-adding activities they have been trained for. And 84 percent of respondents expect an increase in customer and employee satisfaction.

3. Advanced analytics and decision automation.

Sophisticated risk models (for instance, those built on machine-learning algorithms) can find complex patterns (such as sets of transactions indicative of

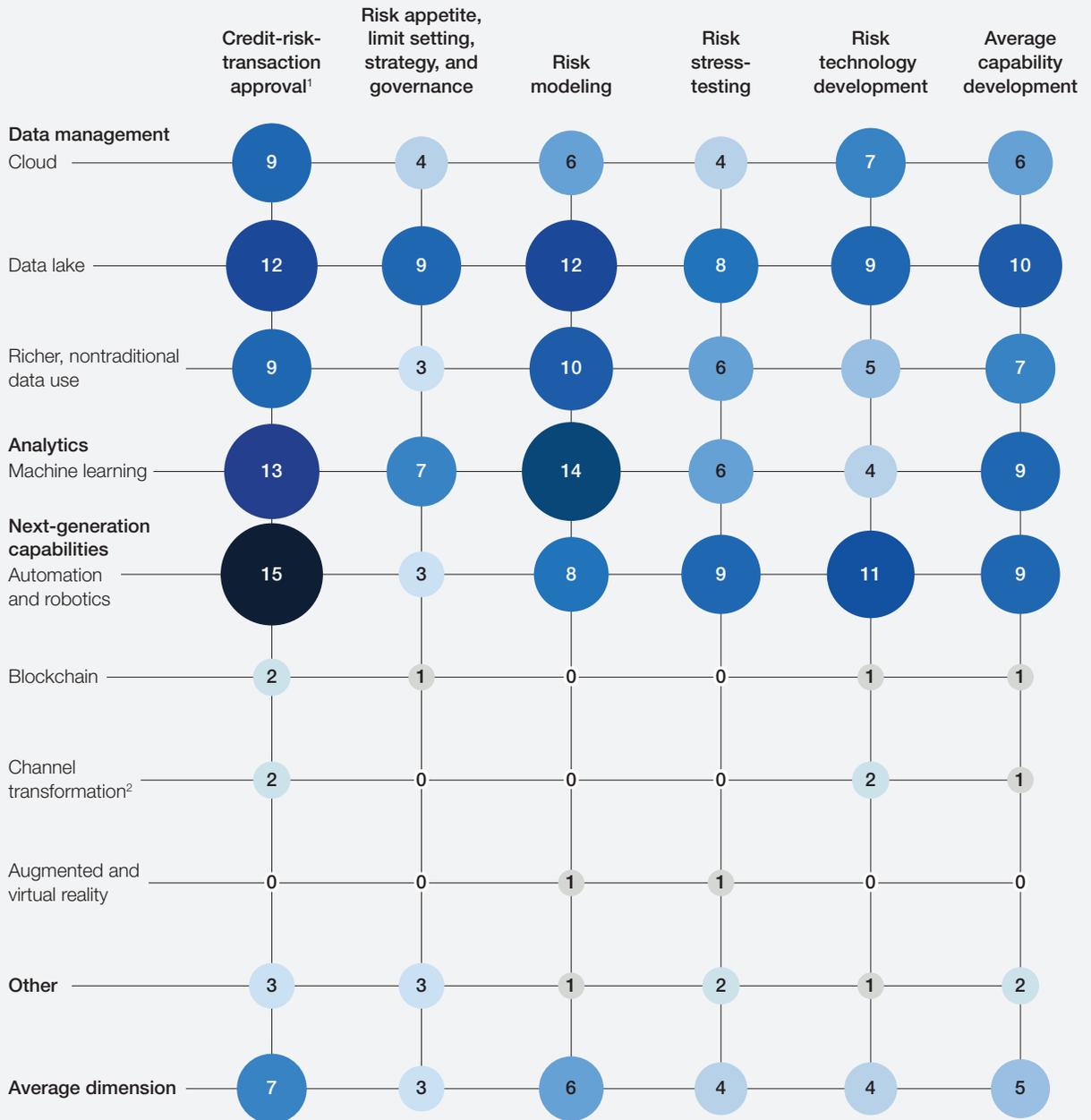
invoice fraud) and make more accurate predictions of default and other risk events. Nearly three-quarters of risk managers surveyed expect advanced analytics to have a significant impact on their work. Fifty percent say credit decision times will fall by 25 to 50 percent. A few respondents even believe that times could fall by 75 to 100 percent. This building block was singled out by risk managers as the most significant (Exhibit 4).

4. A cohesive, timely, and flexible infrastructure.

The risk infrastructure will evolve to support several other building blocks: innovative data-storage

Exhibit 4 Advanced analytics and automation are seen as key capabilities for digitization.

Usage of digital capabilities by discipline, frequency of responses (n = 24)



¹Including analysis and underwriting.

²For example, Internet of Things.

Source: Survey on the future of risk management in the digital era, conducted jointly by McKinsey and the Institute of International Finance, 2017

solutions, new interfaces, easier access to the vendor ecosystem, and so on. It will use techniques like application as a service, obtained from application service providers (even on open banking platforms). Approximately 45 percent of the respondents see innovative technologies as a high-impact building block. “No code” and “low code” solutions will put control further in the hands of risk executives and reduce the number of end-user computing tools. Nearly 60 percent of the respondents expect innovative data-storage structures to have a significant impact on risk management.

5. Smart visualization and interfaces. Risk will deliver its insights in more intuitive, interactive, and personalized ways through risk dashboards, augmented-reality platforms for customers, and other interfaces. Nearly 20 percent of risk managers expect nascent technologies, such as augmented reality, to have a high impact.

6. External ecosystem. Risk will partner with external providers to vastly improve customer onboarding, credit underwriting, fraud detection, regulatory reporting, and many other activities. Two-thirds of respondents see fintechs more as enablers than disruptors, while 63 percent of North American respondents plan to use industry utilities to deal with regulatory burdens.

7. Talent and culture. Risk will have a far greater share of digital-savvy personnel with fluency in the language of both risk and the business, operating within an agile culture that values innovation and experimentation. The new profiles seen as most critical in a digitized risk function include data scientists and modeling experts. Many risk leaders think that their teams will need to develop these skills rather than hire nonrisk professionals and expect them to learn risk.

A road map for success

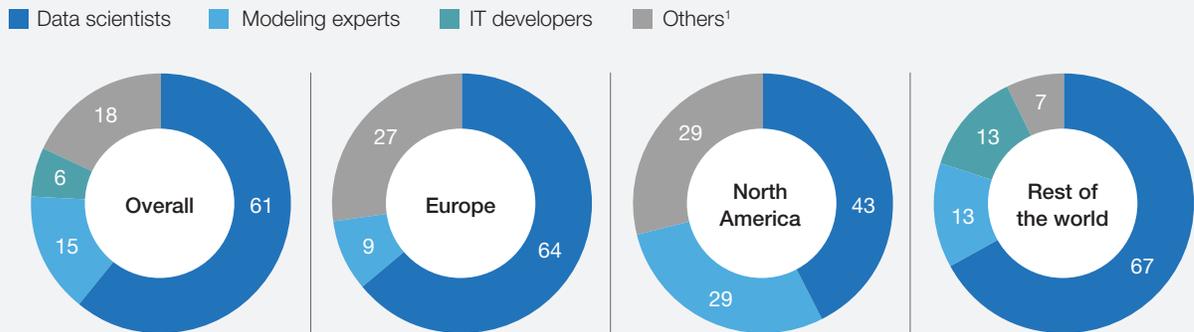
A digital risk transformation is complex and potentially confusing. It includes all the tasks of digitization efforts elsewhere in the bank, such as getting alignment among top executives, prioritizing specific high-ROI and time-bound initiatives, and changing the culture. But the digitization of risk must be handled with even greater care than the bank uses elsewhere. “Move fast and break things” is not the right motto for digital risk. Risk is the bank’s watchdog, and no digital improvement is worthwhile if it keeps risk from its appointed rounds.

While difficult, digital risk transformations are not impossible, and more banks are taking them on. As noted, 43 percent of the interviewed respondents (and 70 percent of those at G-SIBs) currently have a digital-risk transformation in place. Our discussions with survey participants and others revealed the secrets of making digital risk a reality. A basic requirement is to add new skills (Exhibit 5). Beyond that, risk teams should take heed of the following, in each of the three main thrusts of a transformation:

- **Defining a vision for digital risk**, including a view on the key activities risk will perform in the future, and in what way; the corresponding mandate and role of risk; and the metrics that will be used to determine success. Critical insights here include understanding the ways that risk’s role will evolve, to include activities such as providing strategic counsel to the top of the house.
- **Determining the opportunities for digitization**, through a bottom-up assessment of risk processes, a plan for applying digital tools to the most promising activities, and a business case that estimates the total impact. One key insight: banks should not wait for perfect starting conditions before getting started; often, they can take significant steps even while they are building vital assets and skills, which can be added later.

Exhibit 5 Risk will require deeper analytical skills.

Most critical skill required in a digitized risk function, share of participants, % (n = 33)



Note: Figures may not sum to 100%, because of rounding.

¹Includes chief data officer, risk expert with technical background, core risk-management skills, and emotional intelligence.

Source: Survey on the future of risk management in the digital era, conducted jointly by McKinsey and the Institute of International Finance, 2017

- **Running a swarm of initiatives** that meets the strategic goals and captures the defined opportunities, through a considered approach to governance and the operating model, and new techniques such as agile sprints and digital factories. One important finding from the research: even as it moves to agile development, risk must put in place hard measures to ensure safety, such as running old and new processes in parallel for a while, and conducting more back-testing on new analytical approaches.



To exploit the significant opportunities presented by digital technology and innovative approaches, the risk function will need to move deliberately toward digital transformation. We hope that risk leaders find the thinking outlined in this article useful as they transform risk from its current state into the next, fully digital level. ■

¹ "After Moore's law," *Economist*, March 12, 2016, economist.com.

² Ian Fogg, *Smartphone market worth \$355 billion, with 6 billion devices in circulation by 2020: Report*, IHS Markit, January 17, 2017, technology.ihs.com.

³ For more information, see "Harnessing automation for a future that works," McKinsey Global Institute, January 2017, on McKinsey.com.

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Next-generation collections: More revenue, less cost

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Next-generation collections: More revenue, less cost

The world of consumer collections is changing, fast. Once focused on containing costs while not totally alienating customers, collections managers now face additional challenges: tighter regulation and compliance demands, aggressive third-party debt-solution providers, less accessible customers using smartphones instead of land lines, and the need to improve both customer and employee satisfaction.

Market dynamics have also complicated the picture. In some markets, loss rates were historically low for a decade. In the accompanying low-interest environment, institutions were tempted to relax acquisition requirements and lend to riskier customers in search of better returns. They adjusted the size of their collections shops to the low loss rates, so when delinquencies began to climb again, collections managers had to do more with fewer resources.

Fortunately, very powerful new tools and strategies are being developed to help lending institutions cope with these new demands. Among the innovations that will define next-generation collections are advanced analytics and artificial intelligence, insights from behavioral psychology, and agile digital development. All offer great promise for transforming collections operations to achieve better revenue generation at lower cost. But executives are recognizing that designing and implementing the right solution are difficult and complex undertakings. In this special collections section of *McKinsey on Risk*, our experts and practitioners reflect on the tough challenges, discussing the next-generation collections solutions that leaders can deploy now.

Our three articles profile best-in-class collections operations, giving particular attention to advanced analytics and the use of behavioral insights to create more productive customer segmentation:

1. “The seven pillars of (collections) wisdom,” by Matt Higginson, Frédéric Jacques, and Roger Rudisuli, describes the full spectrum of integrated skills, technology, and strategies that collections shops need to meet new challenges. Against the status quo reliance on high-volume dialing and unsophisticated risk, balance, and delinquency segmentation, the authors point to a new world of smarter and more effective collections operations—one where customers are segmented more accurately, by value at risk. Collectors are more autonomous and contact more customers using better information through a variety of channels, which leads to more tailored solutions. The approaches presented here do not necessarily need major IT investment to be successful, but they do require a well-trained frontline staff whose performance is actively managed.
2. In “The analytics-enabled collections model,” Ignacio Crespo and Arvind Govindarajan discuss development pathways to the new technologies and approaches that lenders need to cope with rising losses more efficiently. Advanced analytics and machine learning are enabling lenders to identify and treat customers more individually by supporting segmentation—even to a “segment of one” level, which translates into more effective prevention and management of bad debt.

Smarter use of data and analytics can help lenders maximize the volume of customers most likely to self-cure, which allows more time to be spent better assisting those customers who need help the most. These higher-risk customers can be treated sooner with treatments determined by a more accurate assessment of their ability and willingness to pay, with solutions priced according to the needs of both customer and lender. Analytics models built upon extensive streams of enterprise-wide data can support contact strategies that are rescored in near real-time. Digital capabilities are being tested to bring such offers to customers through varied channels, at a time and format to suit them.

3. In “Behavioral insights and innovative treatments in collections,” Tobias Baer explores how insights from the disciplines of behavioral psychology and behavioral economics can enrich collections operations and improve success rates. Innovative and tailored treatments can be based on behavioral segmentation, a form of statistical analysis that uses psychological insights to build a differentiated profile of subgroups of customers in the same risk segment. Behavioral solutions lean upon the desires of many challenged payers to honor their commitments and rebuild access to credit. These solutions can depart from the established norm of minimum monthly payments to better reflect the circumstances of at-risk customers, opening well-functioning self-service channels to satisfy their need for “agency” in their lives. Other efforts to recognize customer and collector biases can help lenders avoid business practices that frequently lead to nonpayment. A more thoughtful use of incentives might be just the creative “nudge” that more marginal customers need to develop good habits and help get them back on track.



We hope that this special collections section helps today’s collections managers set their visions of the future state of operations. To implement the new collections model successfully, with its focus on advanced analytics, customer behavior, and value at risk, managers will need a selected and trained front line and close collaborators in departments such as strategy, risk, and products. The transformation can take place step by step, with a series of prioritized, interlocking initiatives—but the contours of next-generation collections are already visible. ■

Matt Higginson
Frédéric Jacques
Roger Rudisuli

Ignacio Crespo
Arvind Govindarajan

Tobias Baer

The seven pillars of (collections) wisdom

Collections managers in some markets face rising delinquencies and leaned-out shops; in others, costs are becoming a burden. Here are the new approaches to best-in-class operations.

Matt Higginson, Frédéric Jacques, and Roger Rudisuli



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In the past decade, collections shops globally have faced different challenges depending on the markets they operate in. In many markets, historically low loss rates led lenders to reduce the size of their collections operations. Their shops are now running lean, focused on efficiency and minimizing costs. The low losses also led to relaxed acquisition criteria and offers of riskier products to customers with low credit scores or little credit history. As consumer spending—and revolving balances—rose, so too did delinquencies. With loss rates mounting, lenders suddenly find themselves without adequate tools or staff to address their at-risk accounts effectively. The new approaches discussed here can help all lenders achieve best-in-class collections operations, improving revenues and lowering costs.

Toward distinctive collections operations

The return of higher loss rates in North America over the past six quarters has not been accompanied by a commensurate rise in the sophistication of collections operations (Exhibit 1). Many shops are still organized by stage of delinquency, and many still rely mainly on the phone channel to contact customers. While risk segmentation may be used in the first few weeks of delinquency, as a means of identifying customers to whom a live agent will be assigned, thereafter additional segmentation is rarely applied. Contact channels and treatments, furthermore, are adopted without the necessary evaluation. Brute-force dialing is the norm, leading many customers actively to ignore phone calls. To a lack of sophistication, other challenges can be added—including consumer-protection regulations and the prevalence of debt-settlement companies determined to enlist long-term delinquent customers. Clearly, lenders need to invest in smarter and more effective collections operations.

Although major issuers in every market face the same macroeconomic pressures, they exhibit widely varying levels of collections performance. Many abandon (charge off) a high proportion of delinquent

customers without ever directly contacting the account holder (making a right-party contact). Obviously, these lenders need to improve their strategies with, for example, better “skiptracing”—the process of locating good contact information for making right-party contacts.

The more advanced collections shops are deploying machine learning, advanced analytics, and value-at-risk segmentation. These powerful new tools can support lenders in prioritizing at-risk customers for closer and more productive attention. The value-at-risk approach, furthermore, is changing the way successful collections shops operate. Based on this approach, they are applying a variety of contact methods and more collector autonomy to offer tailored solutions—including more generous settlements. To be successful, the approach does not necessarily require major IT investment, but it does need a well-trained frontline staff that actively manages performance, utilizing daily data and reporting.

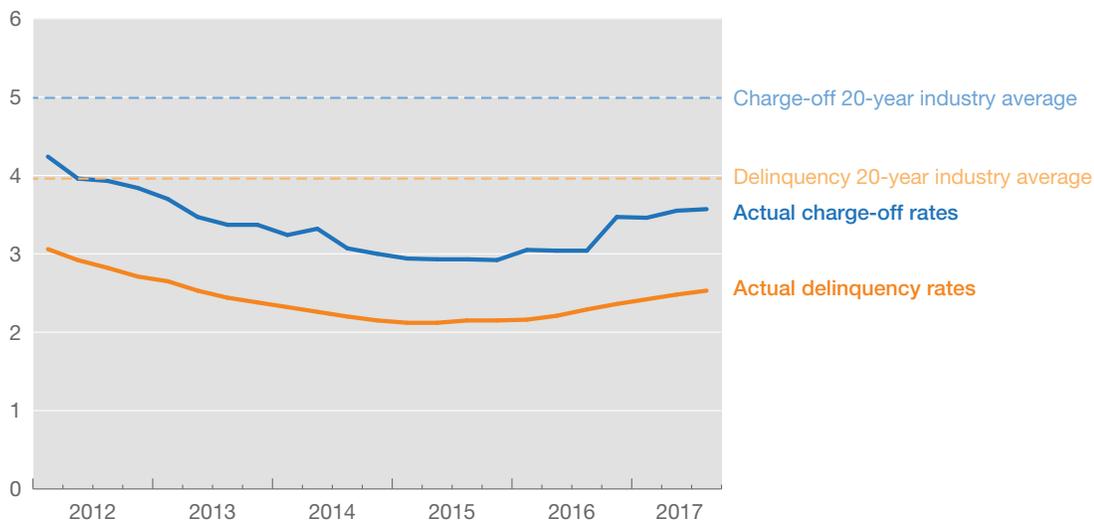
The seven pillars supporting best-in-class collections operations

1. Segmentation

In organizations where collector capacity is limited, effective segmentation is of vital importance. While all organizations keep track of the number of days accounts are delinquent, more effective collections operations prioritize customers by value at risk. This is a score calculated from the product of outstanding balances and some measure of collections risk (Exhibit 2). Lenders have long assessed collections risk by using models resembling those used for underwriting consumer credit. Increasingly, however, collections-specific models are being developed and employed. The models are designed to predict the probability of customers’ defaulting or remaining longer in delinquency (rolling through 30, 60, and 90 days of delinquency). Some models even venture to predict customer receptivity to contact. Developers

Exhibit 1 Credit losses began to climb again in late 2015 in an environment of easier terms, higher consumer spending, and leaner collections shops.

Consumer credit-card charge-off and delinquency rates for US banks, %, quarterly



- 1 Historically low loss rates emboldening banks to lend to riskier customers
- 2 Cost-cutting in a low-loss environment leading to scarce collections resources
- 3 Increasing levels of personal consumption, expenditure, and revolving balances

Source: US Board of Governors of the Federal Reserve System

are increasingly incorporating machine-learning approaches into the models to better assimilate customer behavior and improve predictive power. Better enterprise data warehousing has allowed developers to incorporate into models the nightly recalibration of collections-risk scores and the combined values of a customer’s accounts.

The purpose of all segmentation in collections is to distinguish delinquent customers requiring human contact from those who will respond to automated messaging or require no contact at all. Lenders naturally want to reserve valuable live-agent capacity for medium- and high-value accounts at risk. It is in their interest, therefore, to identify as many

delinquent customers responsive to automated prompts as possible.

Behavioral segmentation, discussed in another article, can be the perfect complement to value-at-risk (VAR) segmentation, identifying the behavioral clues to customer receptivity (or aversion) toward particular contact approaches and treatments. Once the segmentation is established, collectors can determine the contact and treatment strategies. Well-executed VAR segmentation will align efforts with the needs of the customer to find the most suitable ways to collect from all types of at-risk accounts.

Exhibit 2 Successful collections strategies focus on the value at risk to the bank.

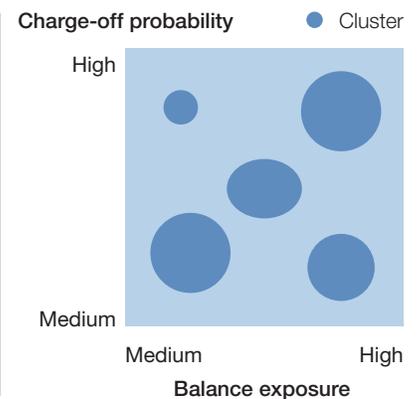
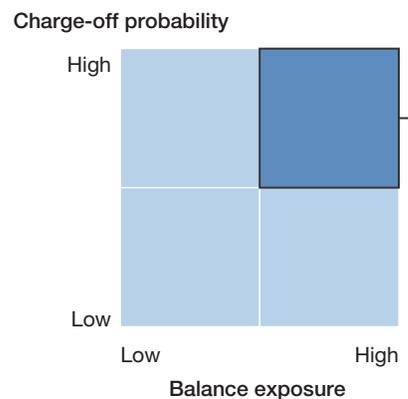
Identify accounts likely to self-cure vs become write-offs and treat them separately

Segment based on charge-off probability and expected amount of value at risk¹

Group medium- and high-value-at-risk customers into behavioral clusters

Likely to self-cure:
Account resolution within 24 weeks with little or no collector contact

Unlikely to self-cure:
Accounts entering pre-charge-off period with a specific product within a defined period of time



¹ Value at risk is defined as the product of the customer's probability of being charged off and the total outstanding balance.

Compared with more traditional delinquency segmentation, the VAR approach has several advantages. It helps lenders identify larger numbers of customers who can be routed to automated channels, including interactive voice response (IVR), with no detrimental impact. With fewer customers routed to live agents, collections shops ensure that longer, more effective conversations can take place where needed. Another advantage is that the VAR approach permits early redirection of high-balance, high-risk customers away from low-skill early-stage teams to better-performing collectors. The approach also more quickly routes low-balance customers in the later stages of delinquency to less frequent contact by less skilled collectors.

Yet another advantage of VAR segmentation is that it favors contact intensity over accounts per collector. Traditionally, collections departments call accounts in early-stage delinquency most frequently, steadily deprioritizing as the accounts move closer to the charge-off date. This usual approach is based on the assumption that all customers are less likely to pay the longer they remain in delinquency. Staffing is consequently geared toward managing the early-stage calling load, with accounts per collector an important measure of efficiency.

VAR segmentation reverses this emphasis. Customers representing high value at risk are assigned to a dedicated high-VAR team, which seeks to maximize

the intensity of contact. Each agent spends the time needed to work out a tailored repayment plan. Medium-VAR customers are assigned to teams with targets of less contact intensity, while remaining customers are assigned to low-VAR agents or automated outreach. Dialing penetration and saturation targets are achieved and maintained by regularly reviewing the volume of accounts assigned to the high-, medium-, and low-VAR teams and adjusting thresholds as needed. Even in collections shops with severely constrained capacity, customers with the highest value at risk remain the top priority, while low-VAR customers can be deprioritized or left alone to self-cure.

An added tool to the VAR model is an account-ownership team for the highest-VAR customers. Analogous to the classic recoveries model, this team comprises collectors who are each assigned a portfolio of accounts. It is an expensive tool, designed to address the accounts with the greatest value at risk to the bank. Team members treat their own lists as would true account managers. They are responsible for finding customers, building rapport, and providing permanent solutions. Given the low account-to-collector ratios, ownership teams can emphasize cures over taking payment. The primary goal is to eliminate accounts from delinquency, either by bringing them current or assigning them for an early exit. Collectors are encouraged to show initiative, sorting their portfolios not just by risk and balance but time since last contact, frequency of right-party contact, or even most recent payment activity.

2. Skiptracing

Banks need to design skiptracing practices in compliance with all applicable privacy restrictions, which can vary significantly from one geographical jurisdiction to another. Where permitted in the United States, for example, three levels of activity are usually pursued, depending on account importance and the interval since a successful contact. For accounts without any contact details or without a successful contact over the first 30 days or so, the use

of semiautomated batch skiptracing is common. Files containing customer identifiers are submitted to credit bureaus overnight, and the contents of the returned file (with any additional contact information) are loaded onto the dialer in time for the next morning's calling campaigns. Automation creates a routine process that is also cost effective, with reported successful location rates in excess of 10 percent.

Collections shops can look to the wider enterprise as a source of customer-contact details. Siloed operations at many financial institutions prevent the routine sharing of details obtained through customer-service channels. A collections team can often locate at-risk customers simply by assembling these details from across the enterprise. Specialized skiptracing using recovery agencies can also contribute to the effort, as these agencies often find customers quickly that the bank cannot. Given the cost, however, this solution is usually reserved for customers representing the highest value at risk.

Frequently, banks fail to make successful contact with half of the accounts that are charged off. A portion of these may be linked to fraudulent activity or belong to customers declaring bankruptcy, but many are charged off simply because collectors were unable to make contact. Some customers in this group were not actively avoiding contact; rather they were not contacted due to poor onboarding or faulty skiptracing. It is worth the effort to contact these customers properly, since once located, they may be as willing to pay (or not) as the group with good contact details.

3. Contact strategy

The means to make contact include email, text messaging, posted letters, and telephone calls. In recent years, successful collectors have been using a range of newer digital channels as well; younger customers may be especially responsive to mobile apps (including chat) and social-media sites. When it comes to calling, mobile phones rather than

land lines are today's norm. Collectors recognize that many customers now screen live voice calls, making brute-force dialing at all hours less effective for making contact. Research indicates that varying call intensity can help, along with the use of self-serve and voiceless options that create a more engaging experience. Collectors have found that customers gain a sense of empowerment when they can choose the contact channel, their own delinquency solutions, and the timing and pace of repayment.

4. Treatment choices

Rising delinquency rates strongly correlate to the rising proportion of customers who are unable to make full past-due payments and who may ultimately default. For lenders, it is essential to identify these customers early and offer them a range of treatment solutions. Many issuers reduce interest or extend the term of a delinquent debt to make monthly payments more affordable. More advanced collections operations will offer customers the opportunity to "name their own price." This approach allows customers to set truly affordable terms and helps to extricate them early from delinquency. Some issuers have been able to develop advanced behavioral models, enabling the early identification of customers with the highest likelihood of rolling straight to charge off. These can be presented with settlement options, often at levels well below traditional 70 to 80 percent targets.

5. Frontline capabilities

A skilled, well-informed, and motivated workforce is always at the heart of successful collections operations. Frontline collections is a difficult work environment, much more challenging than ordinary call centers. Collections staff need a financial education as well as skill in negotiating with distressed customers in a highly regulated calling environment. These parameters define the complexity of employee selection, training, and motivation and indicate that assembling an exceptional staff is a challenging process.

Collections shops are under constant pressure to lower operating costs, and best practices are hard to come by. Collections service centers are often moved to low-cost locations where the pool of skilled candidates is usually more limited and competition for their services can be stiff. In such locations, successful collectors can be hard to find. The desired social skill set, furthermore, is elusive. An ability to connect on a human level is important, but some outgoing and gregarious candidates will not be the most successful. The ideal collector is calm, methodical, and self-starting, with a propensity to solve problems and an ability to engage and empathize with different kinds of people.

Successful onboarding involves training in the technical side of operations but also in the art and science of negotiation. Collections centers with low attrition and solid early-tenure performance will usually provide new collectors with an extended "nesting" period for integration. Trainee graduating classes are supported by their own dedicated coaches providing side-by-side instruction and monitoring.

Once on the job, many collectors come to think that they have little control over the frequency with which they are able to speak with the true account holder (make right-party contact). Experience suggests, however, that the most skillful collectors find a way: collectors achieving the highest right-party-contact (RPC) rates consistently perform in the top quartile among peers month after month. Top performers are the most persistent and best able rapidly to locate the right party in order to begin fruitful discussions. They also tend to approach customers in a familiar, congenial way, building rapport. Their techniques can be taught and can lead to rapid and dramatic increases in RPC rates.

Empowering collectors to have intelligent, self-guided discussions with customers will yield performance improvements, more promises to pay, and better customer experiences. In a world focused on

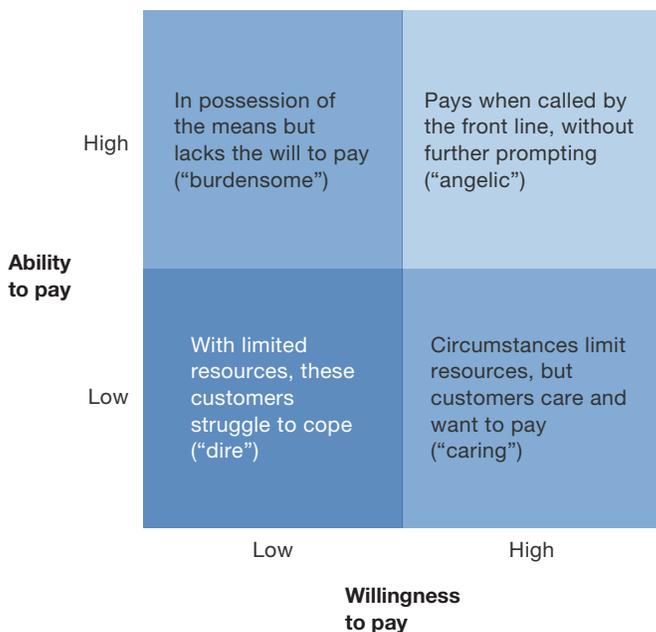
compliance and efficiency, many collections shops have resorted to tight scripting for calls. A boilerplate approach is followed for virtually all customer interactions, and collectors are trained to abandon conversations the moment customers do not agree to resolve their debt with such an approach. Yet a one-size-fits-all tactic can leave a lot of value on the table.

Collections shops improve effectiveness and customer and employee satisfaction by training collectors to rapidly assess a customer’s situation and empowering them to use that information to guide customers to better resolutions. Ability and willingness to pay are the most important parameters, and within that context, collectors

can be trained to recognize four groups of at-risk customers, based on their willingness and ability to pay: able and willing (“angelic”), able but not very willing (“burdensome”), willing but barely able (“caring”), and little able, whether willing or not (“dire”). This segmentation focuses collections strategies and helps prepare collectors to overcome typical objections (Exhibit 3).

Finally, collectors should protect customers’ promises to pay by taking immediate payment when possible. Maximum value to the bank is secured when collectors set up automated payments and recurring payment plans. At some institutions, however, immediate payments are not accepted for some accounts. In these

Exhibit 3 Collectors can recognize four groups of at-risk customers, based on ability and willingness to pay, and focus strategies accordingly.



Willingness to pay—what to look for

- How long has the account holder had the product?
- How many payments has he or she made?
- How many times has the account holder been contacted by collections?
- How many promises has the account holder broken?
- Does the account holder ask for an agreement?
- Is the account holder keen to keep the product?
- Is the account holder making an inbound call?

cases, collectors can reinforce promises to pay, in a brief dialogue about the payments process—when, how, and where customers will pay. This tends to instill a strong sense of obligation.

6. Performance management

The work of a collector can be monotonous and mentally draining. Repeatedly speaking with customers in dire financial circumstances can take an emotional toll, while shifting aims to align with frequent policy and strategy changes can tax the skills of even the most talented new collectors. Collections shops can best ensure the success of their frontline staff by providing effective, ongoing coaching. This needs to be backed up by performance metrics to reward successful collectors and identify those who are struggling, so that they may receive focused and timely support.

With all good intentions, companies often promote their best collectors to supervisory roles. They should be aware, however, that those whom they promote might not be well suited for the burdens of administration. To get the most out of these promotions, companies should refit the role of collections supervisor, relieving it of many administrative tasks. Activities that are not essential to daily shop operations can be assigned instead to administrative professionals. Collections supervisors can then be assigned to spend the time they need to share their collections skills, wisdom, and enthusiasm with their teams. At least half a supervisor's time should in practice be spent in one-on-one coaching sessions with team members. Teams

should be small enough, furthermore, for supervisors to have meaningful personal interactions with each individual on a weekly basis.

The work of an effective supervisor is greatly aided by daily reporting of team-member performance metrics. Depending on the prevailing culture, supervisors can make performance details available for all to see (and compare), or share them with individual collectors each day. In this age of routine digital communications, performance reporting is sometimes relegated to a passive email push. This method misses a vital opportunity. Effective performance management really begins with pull from the collectors, eager to know how they have performed (relative to peers) and how to improve to meet challenging monthly goals. The performance data should be the basis for regular performance dialogues, which are most effective when performed in stand-up huddles, with colleagues encouraged to suggest performance-enhancing improvements.

7. Organization

For some collections shops, VAR segmentation is a brave new world, requiring wholesale organizational restructuring. Others will need only to route their customers to dedicated low-, medium-, high-, and ultrahigh-VAR-collections teams. One cautionary note: experience suggests that in operations with high dialing intensities, routing early-stage accounts to medium- or high-VAR teams (with lower daily penetration rates) can lead to lower performance of such accounts, even if the resultant excessive account rolls are cured in later delinquency. Instead,

Collections shops can best ensure the success of their frontline staff by providing effective, ongoing coaching.

a more traditional early-stage collections strategy will be more effective. This consists of large teams of collectors engaging in high-intensity dialing, followed by VAR segmentation applied to those accounts that enter mid-stage delinquency. In this approach, medium- and high-value collectors are free to focus on accounts most likely to roll to charge-off, capturing incremental value from lower default rates.

Within collections approaches, emphasis tends to oscillate between aiming to collect fees and interest from delinquent customers (as their risk of default rises) and seeking payments to bring accounts current, which reduces the delinquent population and shrinks collections operations. In times of historically low losses, ever-richer card rewards programs demanded a larger revenue stream from fees and interest. Now with delinquencies rising, greater liquidation rates enable collections shops to limit risk as well as operations costs.

In a changing economic environment, shifts in collections strategy will become necessary. Success depends on a well-informed frontline staff, well trained in new approaches and behaviors. Change is always difficult, but the chances of new strategies succeeding are far greater when collectors understand their purpose and share a sense of ownership in the results.

Where is collections going?

Consumer-lending delinquency began to rise in mid-2015, with collections operations expanding in its wake. Economic conditions globally were mostly positive during this time, and prevailing wisdom suggests that much of the increase was the result of shifts in bank-lending policies. Especially consequential was the relaxation of lending criteria, as financial institutions competed for more customers and more revenue. To avoid a sting from the tail of such expansive policies, collections shops need to adapt operations. This will involve more than simply scaling up capacity to align with new demand. Collections needs to get ahead of future losses

by employing next-generation techniques, which include VAR segmentation, strategies informed by behavioral economics, and advanced digital collections tools.

Collections-management teams commonly find it difficult to reduce losses. Many initiatives lose lift before completion; others fail even to get off the ground. The decisive obstacles are many and particular, but three general issues can be called out. First, experienced managers sometimes persist with solutions that worked through the last cycle, despite getting poorer results in the present one. At the same time, they seem not to recognize the value of new techniques like machine learning. Second, an emphasis on trivial measures, such as cosmetic changes to the desktop, can sometimes be prioritized ahead of major initiatives like hiring staff. Finally, at many institutions, senior management continues to view collections as a cost center rather than a value generator, and minimize new investment.

A practical approach to creating effective collections solutions

Experience indicates that the development of newly effective collections solutions is best approached in the following practically oriented three-stage process:

- **Assess capabilities.** Start by identifying strengths and opportunities. Compare current performance with historical performance and competitor benchmarks; normalize performance for monthly delinquent dollars. Paydown rates can be indicative of overall collections effectiveness, and gap analysis against competitors will reveal the biggest opportunities for improvement.
- **Create project teams.** Assign team members to work on specific design elements for the new solutions; assign project managers to keep projects on track. Remove bottlenecks quickly with agile decision making.

- *Implement solutions in test mode, revise as needed, and go live.* Quickly identify successful initiatives, improve as needed, and scale up. Speed is important in implementation, but so is sustainability over the intended life of the initiative.

This approach will help whether the goal is to hire and train new talent, shift to a value-based strategy, or incorporate behavioral insights and machine learning into collections operations.



To respond to the changing demands of today's credit environment, collections shops need to pursue a small number of substantive initiatives that will ultimately transform operations in digital and value-based directions. There is no passive formula for success. Within collections, leaders must be committed advocates of the new solutions if employees are to take ownership and succeed. The role of business

leaders is to ensure success by creating the compelling business case for collections to operate as a center of value. With the needed investment in the seven pillars, collections can generate positive returns ahead of market competitors. ■

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The analytics-enabled collections model

How leading institutions are using the power of advanced analytics and machine learning to transform collections and generate real value quickly.

Ignacio Crespo and Arvind Govindarajan



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The global credit environment absorbed the effects of the financial crisis at varying speeds from market to market. In some places, loss rates have remained relatively high since 2008–09; in others, the past decade has been one of steady improvement, with tapering losses that have only recently begun to climb again. In the expanding markets, lenders increased their risk exposure, issuing new products designed around easier underwriting guidelines. Little attention was paid to maintaining or improving collections capabilities. As debt loads rise, however, institutions in these markets are beginning to rebuild collections staff and skills that eroded in the previous period. Meanwhile, in the more stressed markets, the need for more efficient and effective collections operations is likewise becoming a priority.

The need to renew collections operations provides lenders with an ideal occasion to build in new technologies and approaches that were unavailable when the financial crisis hit. The most important advances in collections are being enabled by advanced analytics and machine learning. These powerful digital innovations are transforming collections operations, helping to improve performance at a lower cost. Better criteria for customer segmentation and more effective contact strategies are being developed. Individual collector performance is being improved with better credit-management information and other tools. Contact can be managed through an array of channels, some allowing customers a greater sense of control over their finances. Loss-forecasting strategies can also be made more accurate and predefault outreach made more effective with enhanced financial tools and mobile apps.

Some of the most significant advances brought about by advanced analytics and machine learning are in customer segmentation, which is becoming much more sophisticated and productive. Better segmentation—including innovative behavioral segmentation, discussed in detail in an accompanying article—is providing the basis for more

effective collections processes and strategy. The improvements affect the complete collections agenda, beginning with the prevention and management of bad debt and extending through to internal and external account resolution.

A next-generation collections model

In traditional collections processes, banks segregate customers into a few simple risk categories, based either on delinquency buckets or on simple analytics, and assign customer-service teams accordingly. Low-risk customers are usually given to newer collections agents based on availability; the agents follow standardized scripts without being asked to evaluate customer behavior. Agents with moderate experience, training, and skills are assigned, again based on availability, to medium-risk customers. These agents also follow a standardized script but are trained to assess customer behavior based on ability and willingness to pay. High-risk customers are assigned to the most skilled agents, who own their accounts and use less standardized approaches to develop assessments of customer behavior. Contact strategies and treatment offerings are fairly varied across the risk categories.

By using advanced analytics and applying machine-learning algorithms, banks can move to a deeper, more nuanced understanding of their at-risk customers. With this more complex picture, customers can be classified into microsegments and more targeted—and effective—interventions can be designed for them (Exhibit 1).

Using analytics in the new model

Analytics-based customer segmentation is at the center of the next-generation collections model. The transformed collections model will allow lenders to move away from decision making based on static classifications, whether these are standard delinquency stages or simple risk scores. Early identification of self-cure customers will be one benefit. Another will be an approach based on value at

Exhibit 1

Advanced analytics and machine learning can classify customers into microsegments for more targeted interventions.



Customer type	True low risk	Absentminded	Dialer based	True high touch	Unable to cure
Targeted intervention	Use least-experienced agents; provide with set scripts	Ignore, or use interactive voice message (segment will probably self-cure)	Match agents to customers and live prompts to agents to modify scripts	Focus on customers able to pay and at high risk of not paying	Offer debt-restructuring settlements early for those truly underwater
Impact	Agent–client conversation guided by on-screen prompts based on probability of breaking promises	10% time savings allows agents to be reassigned to more difficult customers and specific campaigns	Can lead to increased “connection” and higher likelihood of paying	Added focus addresses higher probability of default rates in this segment	Significant increase in restructuring and settlements enhances chance of collecting at least part of debt

risk, rather than blanket decisions based on standardized criteria. The aspiration is to have every customer as a “segment of one” with customized treatments.

Leaders taking the analytics-based actions that define the new model have already begun to realize gains in efficiency and effectiveness. One European bank automated 90 percent of communications with clients by developing two advanced-analytics models using machine-learning algorithms. A binary model identifies self-curers and non-self-curers, and a multiclass model recommends collections strategies for the non-self-curers, including soft measures, restructuring, or workouts. The models use around 800 variables, including client demographics and information on overdrafts, client transactions, contracts, and collaterals. The bank has realized more than 30 percent in savings with no loss in operational performance.

Another European bank set out to develop a top-notch recovery process using advanced analytics. The goals were to minimize the number of clients falling 90 or more days’ past due while maximizing the economic impact of exits, focusing on retail and small-and-medium enterprise portfolios. As the bank gained a deeper understanding of its nonperforming loans, it was able immediately to address certain borrowers (such as recurring defaulting clients) with effective initiatives. Other groups of clients were identified, and exit strategies based on economic value were developed for each group. The results are compelling. The bank reduced its 90-day-or-more portfolio by more than €100 million, with €50 million in fewer past-due entries and the remainder in exit acceleration. Moreover, a reduction of 10 percent in past-due volumes was achieved across the board, worth around €300 million less in past-due exposure.

A leading North American bank has rolled out a number of machine-learning models that improve the estimation of customer risk, identifying customers with a high propensity to self-cure as well as those suitable for early offers. These models have so far enabled the bank to save \$25 million on a \$1 billion portfolio.

Most banks can achieve results of this magnitude by introducing an analytics-based solution quickly and then making needed improvements as they go. Value can be gained in almost all of the key areas in the collections environment.

- **Early self-cure identification.** Some banks use rudimentary heuristics (rules of thumb) or simple models to identify self-cure customers, while others have adopted simple self-cure models with limited variables. The new self-cure model based on machine learning and big data can save collectors a lot of time. By using many variables to better identify self-cure accounts, banks can increase collector capacity by 5 to 10 percent, allowing agents to be reassigned to more complex collections cases.
- **Value-at-risk assessment.** While many banks use time in delinquency as the primary measure of default risk, some lenders are taking a more sophisticated approach, building a risk model to determine value at risk. Many of these are simple trees and logistic regressions, however, with limited data. Leaders are moving to a future state in which models project conditional probability rather than assign customers single risk scores. The conditional score is dependent on a range of tailored approaches to customer contact and engagement: every borrower has several scores depending on the contact strategy and offer. Lenders would then use the strategy and offer that optimizes recoveries. The approach better calibrates the intensity of contact with each account, thus optimizing resources. A next-generation value-at-risk assessment can further reduce charge-offs by 5 to 15 percent depending

on maturity of current operations, analytics, and availability of data.

- **Cure assessment versus pre-charge-off offers.** At most banks, agents determine whether a customer will cure or will need an offer of some sort; some banks have heuristic rules for agents to follow. The new approach is to use models that ascertain a customer's ability and willingness to pay and gauge whether the better path is a cure or an offer. Banks can resegment delinquent accounts to improve their decisions to offer early settlement, an approach that increases the uptake of offers while reducing charge-offs by 10 to 20 percent.
- **Optimizing pre-charge-off offers.** Banks are currently using rules or simple analytics to create offers for customers, often without determining the likelihood that they will accept. Models will predict the best offer, optimized for the needs of the bank and the customer. Banks can change the prompt, adjusting loan characteristics and offerings to those most likely to reduce charge-offs, including reamortizing the term or interest rate, consolidating loans, or settling. Making the right offer early, before accounts enter late-stage delinquency, can improve acceptance rates.
- **Post-charge-off decision.** Most banks use simple models or heuristics to determine which agencies to send accounts to and at what price. To refine these decisions, models will determine the best agency for each account and tailor prices accordingly. The model will also determine the optimal pricing segmentation for third-party agencies and identify the accounts to retain in-house longer (based on products retained with the bank, for example). The strategic use of third parties can help with accounts that cannot be cured internally.

Integrated analytics models

Lenders at the forefront of the analytics transformation are assembling masses of data from many kinds of

sources and developing different models to serve collections goals. The data sources can include customer demographics, collections and account activity, and risk ratings. The most sophisticated lenders are creating “synthetic” variables from the raw data to further enrich their data. Machine learning helps identify markers for high-risk accounts from such variables as cash-flow status, ownership of banking products, collections history, and banking and investment balances. By using so many inputs from many different systems, lenders can dramatically improve model accuracy, lower charge-off losses, and increase recovered amounts. Two separate institutions recently adopted similar approaches using more than 100 variables to support numerous machine-learning models. These

issuers used machine learning to identify the optimal treatment and contact strategy for each delinquent account, deployed the solution inside the existing collections work-flow environment, and trained collectors to use the system and collect additional data to improve model performance. The initiatives were up and running in about four months (Exhibit 2).

Contact strategies and treatment approaches

Institutions adopting the most analytics-forward approaches have been intensifying the development of new treatment and contact strategies, expanding the limits of digital capabilities. By applying advanced analytics and machine learning, banks can identify the most promising contact channels while also developing digital channels to define innovative and

Exhibit 2

Two major issuers used machine learning and more than 100 variables to accelerate development of treatment and contact strategies.

Integrated data sources on client behavior

-  Customer demographics
-  Collections activity
-  Account activity
-  Payments
-  Risk ratings

- 140 inputs across 15 systems describe profiles of each client on each day in collections

Multiple machine-learning models used to identify features of high-risk accounts

-  Low cash flow
-  More banking products
-  Previously in collections
-  High total balance across products
-  Low investment balance

- 30–40% improvement in model accuracy vs previously existing models

Implemented in the existing collections environment

-  Contact-center interface
-  Banking machine (automated touchpoint)
-  Customer contacted via call or text (automated touchpoint)
-  Interactive voice response (automated touchpoint)

- Implemented in 12–16 weeks

Impact: 4–5% lower net charge-off losses

regulatory-compliant contact strategies. The same digital channels can be used to build awareness of payment options.

- **Websites.** Display messages and repayment options as soon as customers log in, increasing awareness and providing opportunities for early delinquency reduction.
- **Messenger and chat.** Where legally permissible, collectors can contact customers and negotiate payment options with chat functionality and free messenger applications (such as WhatsApp).
- **Mobile apps.** Build collections functionality into the mobile app, reminding customers in early delinquency stages to pay and offering payment options.
- **Virtual agent.** Create capacity by developing virtual agent functionality to call customers in early delinquency stages.
- **Voice-response unit.** Enhance current voice-response capability, offering basic repayment options when customers call, which frees collector capacity.

Most banks use heuristics to establish the best times to call. Usually, however, agents are inadequately supported on questions of which channel to use, when to use it, and what the message should be. Advanced models can project a full channel strategy, including channel usage, timing, and messaging. Banks will be able to control contact down to the hour and minute, as well as the sequence of communications—including voice, text, email, letter, and interactive voice message. The approach is developed to maximize the right-party-contact rate and influence customer behavior to prioritize payment. Such optimal contact sequencing can increase success in early stages of delinquency.

The analytics focus on the front line

Leading companies in many sectors—digital giants, healthcare providers, retailers, and manufacturers—are using data and analytics to develop a workforce optimized to business goals. Analytics is now the source of improved performance in realizing talent strategies as well as a means for linking talent strategy to business needs. Presently, recruiting and retention are often based on legacy processes, including résumé screening and interviews; retention is based solely on performance. Analytics can improve hiring, finding agents with affinities to the most valuable at-risk segments, as well as help identify collectors at risk of leaving. Companies are using machine-learning algorithms to screen résumés and to determine the value of external hiring compared with internal promotion. One global digital company used analytics to create a checklist that boosted onboarding speed by 15 percent. The algorithms, it should be stressed, are not replacing human judgment but are rather providing a deeper fact base for the exercise of informed judgment.

Companies are also using algorithms to uncover the bottom-line impact of employee engagement and to drive deeper engagement across the organization. In collections, where retention of talent is a recurring issue, people analytics can be used to find the drivers of performance, including personality profiles and risk factors for low performance and engagement. By identifying individuals most at risk of leaving, for example, banks can take responsive measures to optimize their talent pool for sustained performance improvement.

Machine learning and nontraditional data have become the new frontier in collections-decision support. Audio analytics, for example, is now an important tool for understanding frontline effectiveness. By allowing algorithms to work through thousands of conversations, banks can discover the most productive and engaging approaches. With hypotheses informed by insights from the field of behavioral science, banks are also using machine

learning to diagnose and neutralize the biases that affect collector and customer decision making. At the same time, the machine-learning approach is enabling automation of larger classes of decisions. By giving agents more prescriptive decision support in certain situations, including a wider range of set script elements and narrower parameters for negotiations, banks can free capacity and redirect resources toward the most valuable accounts. In this vein, one card issuer achieved dramatic improvements in the rate of promises kept in its high-risk segment by using an approach enabled by data and analytics to script elements, including behavioral insights (Exhibit 3).

Behavioral pairing and agent coaching

Many banks do not apply agent–customer pairing uniformly or deliberately. When it is applied, high-risk customers are usually given to experienced, high-

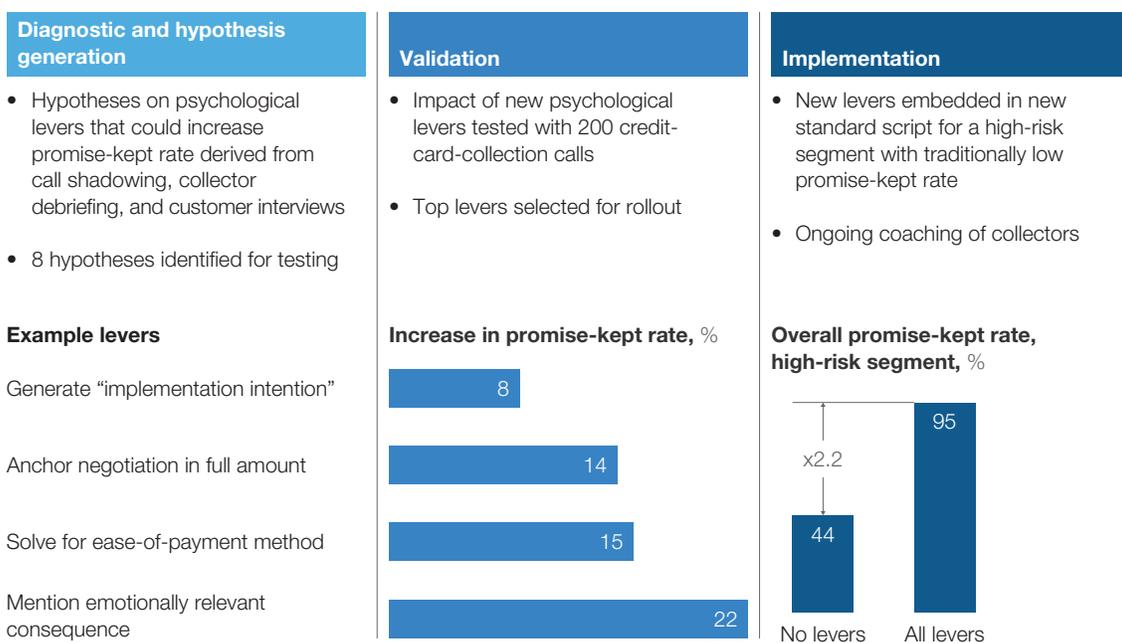
performing collectors, while low-risk customers are assigned to new collectors. Analytics-aided pairing helps match collectors and customers who have similar personal profiles. By smarter pairing—matching delinquent clients with the agent expected to be most effective—outcomes can be improved and call times reduced. As for coaching, this has often occurred in training sessions, huddles, and call monitoring by managers. Analytics-aided coaching permits real-time feedback and analysis in live phone calls.

Breaking through artificial barriers to transformation

Most banks understand that analytics and digital automation will transform their collections operations. Some have been reluctant to get started, however, due to the following persisting myths about the new technologies.

Exhibit 3

One card issuer systematically identified and implemented ‘assertive’ script elements, doubling its promise-kept rate to 95 percent.



- **“Sophisticated data infrastructure is a prerequisite.”** While this is an advantage, it can be developed over time. The truth is that banks can build value-enhancing collections models with available data. As the data are improved, the models can be updated accordingly.
- **“Both the collections front line and the digital infrastructure need to be in place before analytics models can be implemented.”** Actually, models can be implemented using legacy infrastructure, and the value they generate can be used to invest in the needed infrastructure improvements.
- **“The development and implementation of models take a long time.”** Banks can get started using agile model development with minimum viable products subject to continuous improvement. Without rapid iteration and deployment of models, value is left unrealized.
- **“Given compliance and regulatory issues, models are too opaque to use.”** Banks can select among a range of modeling techniques with different levels of transparency. They can balance demands for transparency and performance by choosing the most appropriate algorithms.
- **“Success depends on nontraditional data.”** For most collections applications, banks’ internal data can provide the majority of the gains from advanced analytics. Banks can begin by utilizing all internal data and supplement with external data subsequently as needed.
- **“Regulations and compliance negate many of the benefits of advanced analytics and machine learning.”** A number of banks in highly regulated jurisdictions have already successfully deployed machine learning. Indeed, machine learning can improve compliance by better matching the right treatment with the right customer and avoiding biases.

None of these myths should prevent banks from beginning the analytics-enabled transformation of their collections operations. There is no perfect way to start a transformation—some of the implementation might even be messy at first. The essentials of the analytics transformation in collections are clear, however. First, set a long-term vision but also a path toward it that generates value continuously. Second, work in an agile manner, with teams from all dimensions of the transformation. Focus on implementing working models from day one, avoiding an overly complex academic approach. Use synthetic variables to enhance model performance, and continuously experiment with strategies to generate additional data for the next generation of models.



The next-generation collections environment will be built around advanced analytics and machine learning. These approaches will help lending institutions meet the new delinquency challenges that market analysts predict are on the horizon. The transformation of collections has in fact already begun, as leading institutions assemble the data and develop algorithms to attain improvements in their existing collections context within a few months’ time. These leaders are showing the way by applying the new approaches and making improvements as they go. And they are already generating bottom-line results. ■

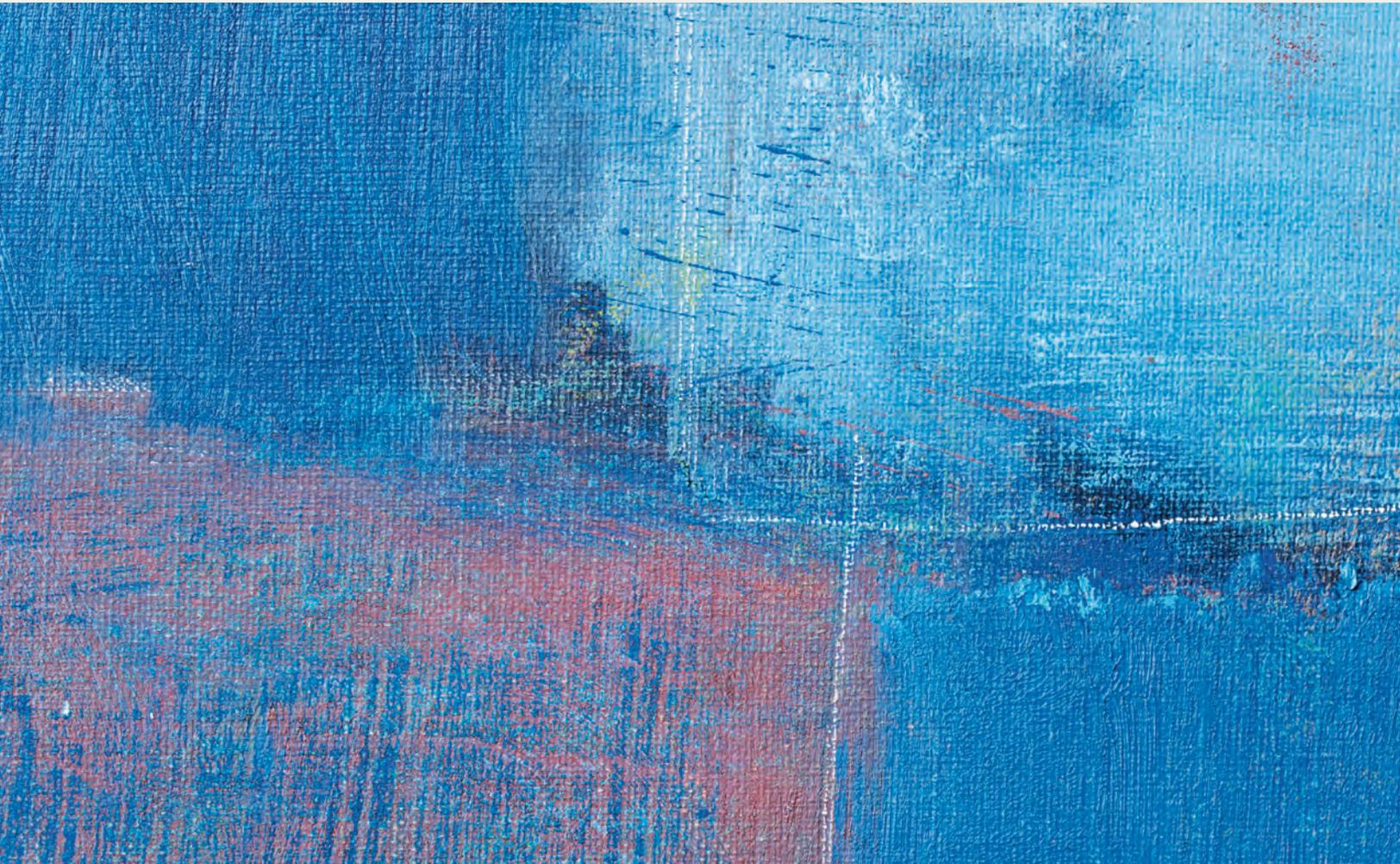
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Behavioral insights and innovative treatments in collections

Lending institutions can significantly improve collections success by applying innovative treatments based on behavioral segmentation.

Tobias Baer



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Lending institutions know that risk-based segmentation of their outstanding loans does not in itself help get their money back. At-risk customer segments, once identified, need to be approached with the most effective collections strategies. But lenders find that their approaches won't work for some customers—often enough a lender cannot even get these customers on the phone, let alone convince them to repay their debt. Many, even those who owe money to more than one bank or business, should be able to pay at least a part of their debts. But this group is no more *likely* to pay than those who are not able to pay due to unemployment or other misfortunes. Clearly, new and innovative treatments are needed. The place to begin is behavioral segmentation, an analysis that uses psychological insights and advanced analytics to build a closer profile of customers within the same risk segment. Based on that profile, new and innovative treatments can be tailored that can improve success rates.

The approach applies a variety of techniques, as by definition, there is no one-size-fits-all solution. Some of the techniques are exclusively applicable to early-stage collections, while others may be more effective in mid- or late-stage efforts. In some situations, a particular technique may achieve full repayment; in others, the same technique will provide incremental improvement. However, the approach costs little to implement and can reap significant rewards. In select collections segments, leading banks using behavioral segmentation have demonstrated improvements of 20 to 30 percent in the amounts collected and the number of loans written off.

Behavioral segmentation

With the readily available data, banks can apply advanced analytics to group at-risk customers into categories that systematically reflect the customers' subjective experiences and the reasons that they have failed to pay. Nonpayment has a range of causes and motivations, stretching across fuzzy boundaries from material hardship to behavioral dysfunction.

Behavioral segmentation, while not an exhaustive framework, is a useful method for mapping subgroups within the larger at-risk segment according to their reasons for not paying.

A recent McKinsey survey of 420 US consumers with credit delinquencies shed light on the various causes of nonpayment. One prominent cause is difficulty in managing money through a monthly cycle. One-third of those surveyed expressed a preference for a weekly or semimonthly repayment schedule. Some respondents said that such rhythms would better conform to their pay days; many said they could better manage smaller, more frequent payments than monthly bills (smaller payments also hurt less). Motivations to pay also varied among respondents. Many overdue customers said that they wanted to maintain a good credit record and easy future access to credit. Others gave more values-based answers, such as a fundamental belief in keeping their commitments. By understanding motivations like these, lending institutions can better encourage payment from their at-risk customers.

Motivations can be particularly important when a customer owes money to several lenders. One-third of survey respondents prioritized payments rationally—for example, by tackling debts with the highest interest rate first or to secure another benefit, such as the retention of their most useful credit card. Payments by the remaining two-thirds followed less rational patterns. These respondents adopted a variety of approaches: they apportioned payments equally or by loyalty to a particular bank; some set up intrinsic milestones, such as paying off the largest or smallest balances first. By discovering particular motivations, banks can either reinforce them with tailored payment plans or help customers adjust their rationales (Exhibit 1).

A need for 'agency'

The need to exert control or agency in one's life is a recognized psychological need. To feel in control,

Exhibit 1

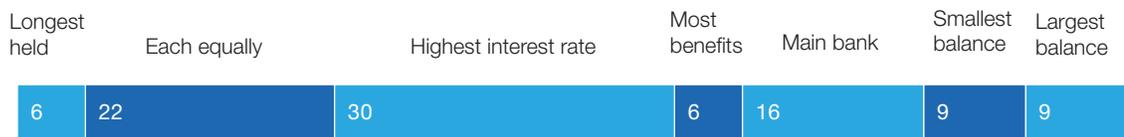
Valuable behavioral insights emerged from a survey of 420 US consumers who have been at least one month overdue.

What payment frequency do you prefer?, %



“I always prefer to make smaller payments more frequently because it takes the sting out of making a payment. Making a large payment always feels like a punch.”

When several accounts are overdue, which do you pay first?, %



20% of respondents said they have withheld a planned payment because they had an **upsetting call from a collector.**

38% of respondents had a very positive experience with at least 1 collector who **was empathetic and genuinely helpful.**

Note: Figures may not sum to 100%, because of rounding.

Source: McKinsey survey of US consumers who have been at least 30 days past due on a payment

many overdue customers refuse to speak to collectors (making effective use of caller ID). At the same time, they also intend to make a payment as soon as they have the money. To serve these customers most effectively, banks should have well-functioning self-service channels allowing partial payments to be made online or with a smartphone. Websites should be offered to permit late-stage delinquent customers to explore and commit to flexible payment plans.

Violating a customer’s need for agency can trigger counterproductive reactions, which psychologists call “reactance.” A customer might refuse to pay simply to assert control. In the McKinsey survey, 20 percent of respondents said that they withheld a planned payment at least once after receiving an

upsetting call from a collector. At the same time, 80 percent of respondents were not unduly disturbed by collections calls, yet clearly many of these would not have made payments without firm prodding.

Behavioral segmentation helps collections managers find the best approaches by customer profile and avoid fatally mismatched ones. Some historically high-risk customers, for example, need to be treated as late-stage delinquent when they are barely two weeks past due. Other customers are so low risk that they can be treated as “self-curing” and only given a gentle service call (a classic early-stage treatment) after several nonresponsive months. Many collectors nonetheless take a simplistic, stereotyped view of their customers—especially late-stage customers.

Such ingoing biases can act as self-fulfilling assessments, as the collector's (behaviorally mismatched) approach triggers an expected (uncooperative) response.

As these observations illustrate, collections strategies and actions will influence customers, positively or negatively, in their complex decisions on whom to pay and when. Customer decisions, like all decisions, are subject to bias and other psychological effects. A 2017 McKinsey article, "The business logic in debiasing," discussed the effect of biases on business decisions. Many of the same biases affect customers and some can keep them from paying. Banks that understand this dynamic can develop interventions to change it. The approach involves offering inducements to help customers resolve their financial troubles and pay down their debts. It is aligned with a growing field of research into irrational human behaviors that surround financial decisions. In October 2017, Richard Thaler, a behavioral economist at the University of Chicago, won the Nobel Prize for his contributions, which analyze the effects of human behavior on financial outcomes. Thaler popularized the term "nudge"—a benign and often small adjustment that counters irrational impulses.

Better carrots and effective nudges

Traditionally, banks motivate high-risk customers with a narrow range of carrots and sticks. In the carrot department, banks offer financial incentives, such as an extra amount taken off the balance in return for a payment made by a certain date. Sticks begin with warnings and move on to administrative penalties, such as blocked cards, bad credit reports, and legal actions.

In motivating customers to make payments, however, banks can more effectively offer a wider range of incentives. Many customers even show enthusiasm when creative inducements are offered. Certain biases can be used constructively, as the

basis for nudges. Loss aversion is one such bias. A psychological effect discussed in the field of decision theory, loss aversion is the widely held preference for avoiding certain loss over making potential gains. A variant of this effect would come into play if, for example, a bank presented high-risk customers with a late-fee waiver or a gift card from a favorite shop—*that they would lose by not making a payment*. Framing the offer in this way, as a loss for a foregone payment, can be twice as effective as offering it as a reward for making a payment.

'Appify' your nudge

An example from the healthcare field illustrates the potential to "appify the nudge"—to reach certain groups of at-risk customers through mobile apps. In the survey cited above, consumers were asked whether they had achieved a challenging goal other than paying outstanding debts. Among those responding positively, weight loss was the most commonly cited achievement. When asked what incentives they used to promote their diet and exercise regimens, 63 percent said they used small rewards as incentives, while 27 percent said that they tracked their weight.

Health apps have been designed to formalize such incentives, tracking the user's desired behavior and aligning it with a system of rewards—whether symbolic, such as badges for reaching milestones, or monetary, such as partial rebates for gym membership. Such apps could become models for financial institutions. These incentives would be most useful in approaching the "frequent travelers" of collections shops. These medium-risk customers are frequently behind in payment and often at risk of "falling off the cliff." However, with the right prodding, they should be able to make mostly regular, partial payments to at least some of their creditors. Nudges are low-cost incentives presented creatively. To develop apps as nudges, researchers need to understand the complex psychology that causes those able to pay to refrain from paying. But they must also test their designs, modify them according to

results, and test again. McKinsey researchers testing innovative ideas found that the test group responded most favorably to the concept of an app offering customers a choice of rewards, each worth perhaps \$5, at the beginning of a payment cycle. An e-voucher for the chosen reward, visible in the app, is activated when payment is received on time; it disappears when the payment is missed. The sight of the voucher activates loss aversion, thereby doubling efficacy; letting the customer choose the reward (ideally from a set of three options) promotes autonomy, which further increases the intrinsic motivation. The selection of offers can be optimized for emotional relevance based on customer shopping profiles, while the value of the reward can be adjusted based on the loan value at risk. In line with the idea of the nudge, smaller values are often the most cost effective for triggering intrinsic motivation.

A word of caution: the effects of such apps need to be monitored to avoid unintended consequences. Some banks already offer apps that monitor customer spending and, when triggered, send reminders to spend less. The results have been disappointing, mainly because the apps were deployed indiscriminately, without the guidance of behavioral segmentation. Such reminders are not needed by customers actively struggling to meet their obligations, while they have little effect on irresponsible spenders. Furthermore, they tend to curtail responsible spending by good customers, which banks want to encourage.

Creating habits

By understanding customer motivations and behavior, banks can identify the causes behind some delinquent accounts. Highly indebted customers prone to shopping sprees are likely exhibiting poor self-control and an inability to manage their financial affairs. In such instances, banks can approach the problem by helping customers change their behavior. One proven technique for building self-control is to form a habit around a desired behavior. With certain

customers, strict weekly payment schedules are preferred and more effectively habit forming than monthly cycles. This approach is consonant with insights from addiction treatment and therapies for other behavior-related disorders, where the establishment of routines can be a crucial factor in a patient's success.

A decision process in four moments

Four moments can be distinguished within a collections episode. At each point, customers make decisions on whether or not to cooperate with the lender. The lender, meanwhile, can use each point to understand customer behavior and identify opportunities to increase the likelihood of repayment—through psychological interventions carefully calibrated to the customer's profile.

- 1. Opening.** When the phone rings, customers must first decide whether to engage with the bank at all. Once they minimally engage by answering, they then decide whether to collaborate with the bank in problem solving (such as by disclosing financial difficulties) or take a defensive or evasive stance.
- 2. Commitment.** Once some collaboration has been established, the collector needs to move the customer toward a promise to pay.
- 3. Negotiation.** A major part of the conversation will be a negotiation over the customer's financial limitations and the payment amount to which he or she is willing to commit.
- 4. Follow-through.** Finally, the customer needs to keep the promise to pay. This is a complex decision with plenty of opportunities for derailment.

Appropriately reaching out: Interventions based on behavioral segmentation

To increase the likelihood of success in each of these four collections moments, targeted interventions can be made, based on behavioral segmentation. In

the opening moment, for example, collectors would do well to understand the psychological concept called “affect.” The term is used to describe the conscious, subjective experience of emotions, apart from physical reactions. By putting the customer in the right mood—a condition of positive affect—the collector will have enhanced customer receptivity. The customer will consequently be open to exploring solutions and become more confident in his or her ability to resolve the situation.

The opposite, negative affect, will impede resolution, so it is important to put the customer at ease. A good approach is to use collectors with profiles similar to the customers’, matching regional dialect, gender, and age. To reach customers who are unwilling to speak on the phone at all (out of shame or anxiety), the use of social media might be a good choice for engagement. Personalized advertisements from credit-card companies offering to help customers through difficult times (“call us at 1-800-000-0000 now”) can put the customer back in control of the time to engage with collections. Of course, if the collector ultimately determines that the customer is not susceptible to engagement using softer approaches, then administrative measures can be initiated.

To achieve commitment, customers must be engaged. Collectors can use a number of approaches to encourage engagement, including telling a customer that the solution being offered has been very popular with other clients. This may trigger the so-called herd effect—a sense of belonging to a group and not wanting to deviate from its norms.

Ensuring that customers keep their promises to pay is arguably the hardest part of the collections episode. In our experience, perceived hassles act as strong disincentives for payment. Banks should always seek to eliminate excuses for breaking promises to pay (and to avoid delinquencies to begin with). This is best accomplished by understanding the preferences of the different behavioral segments and ensuring

that the payment methods they most prefer are always available. For example, nearly one-quarter of respondents in one survey said that making payments was needlessly difficult but that they would be more likely to pay if the lender offered more convenient payment methods, such as online or mobile channels (Exhibit 2).

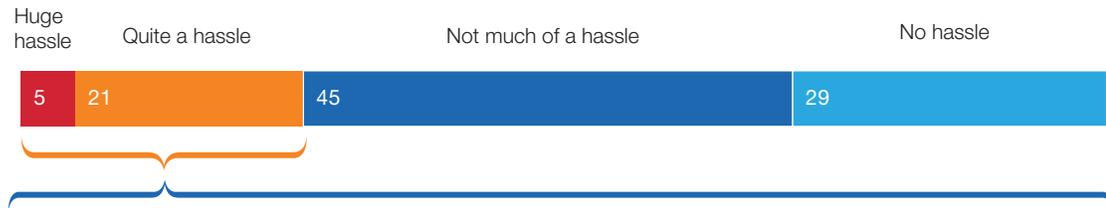
While not much seen in the collections industry, a psychological concept known as “implementation intention” could prove helpful. Developed in the 1990s by cognitive psychologist Peter Gollwitzer, the concept begins with the recognition that people mostly have good intentions when they commit to a goal, even if they do not follow through.¹ The formation of implementation intentions explicitly links intentions to their fulfillment. Some institutions have gotten good results by initiating explicit discussions with customers about when, where, and how payments will be made. A typical outcome might be a promise to make a payment at the bank on Friday morning when the customer goes to work. At one bank, this technique increased the rate of fulfilled promises by eight percentage points. The formula may seem simple, but the explicit linkage of intentions to actions can help those who have trouble following through.

Countering bias and fatigue—in collectors

Collectors too experience psychological effects, just as customers do, and these must be taken into account in the collections episode. The collector is faced with several decisions in each of the four moments we have described. The choices are often made subconsciously, on the fly, based on exceedingly simple heuristics. Collector decision making is thus exposed to harmful biases, which can become more pronounced as the day wears on. This effect, brought on by mental fatigue, is called ego depletion. It has been observed in many professions, from law and medicine to journalism and scientific research. At one company we observed the success ratio in collections calls fall by half during the course of a day.

Exhibit 2 Not all lenders offer hassle-free payment options.

How difficult is it to execute a payment?, %



With more convenient payment methods, would you be more likely to make payments?, %



What payment method is easiest for you?, %



“An option to use a prepaid card or something like that would help—9 times out of 10, if the money gets put in the bank account, it will be taken out by another bill.”

“I wish there were an easier way to send payments from my debit account.... I hate finding out all the account numbers.”

Note: Figures may not sum to 100%, because of rounding.

Source: McKinsey survey of US consumers who have been at least 30 days past due on a payment

Leading banks have been employing conscious countermeasures to support their collectors through these decision points. Some examples will help illustrate the challenges and how they are being addressed. Given the operating environment created by today’s highly efficient power dialers connecting call center staff with delinquent customers, collectors have little time to familiarize themselves with the customers who actually pick up. For this opening moment, collectors need to be able to scan in seconds the one or two crucial insights about the customer

answering a call. We have seen situations where a spouse answers and the collector politely requests a callback from the cardholder, not knowing that this has happened a dozen times already. If the system instantly alerts collectors about this crucial fact, they can push beyond the routine evasiveness.

For the commitment phase, an important consideration for the collector is when to give up and move to the next account. Efficiency is important, as collectors must optimize their pay. We have

often seen collectors abandon high-risk, high-value accounts too quickly. Incentive systems can help, by reflecting the difficulty of collecting from a particularly intractable account. Yet these systems are often complicated and rather than following them carefully, collectors take heuristic shortcuts inconsistent with the elaborate logic. Nudges can keep things on track. Banks can label accounts with obvious hints about the amount of effort that collectors will find is worthwhile to invest in them.

For negotiation, many banks give collectors plenty of flexibility in setting payment parameters and offering financial incentives. Not surprisingly, some collectors overuse incentives and too often default to the most generous terms. Advanced predictive models can help support collectors in making better decisions, determining the offer that maximizes value within a narrow set of statistically calibrated options. Voice analytics is now fast and sophisticated enough to enable decision-support systems to make these calculations in real time, based on customer responses.

For the follow-through stage, collectors can make use of insights emerging from advanced analytics, including the most effective “talk-offs” to keep the conversation on track. Banks can use nudges to encourage collectors to invest the time needed to win over customers with a particularly low probability of fulfilling commitments. One lever is to establish implementation intentions with these customers; another is to eliminate perceived barriers.

Getting started

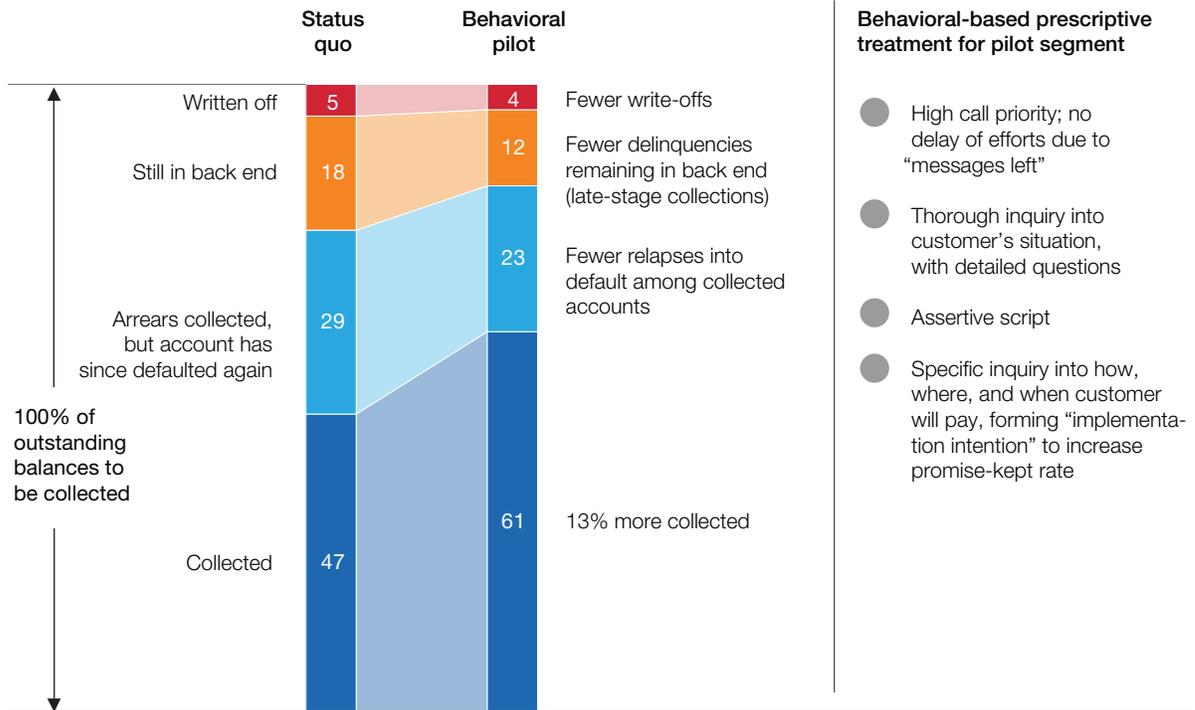
How can institutions introduce these approaches and techniques into their collections operations? While ultimately a comprehensive program of innovation and continuous improvement will emerge, the following steps can be taken now:

- *Make an initial assessment based on four or five behavioral clusters.* A pragmatic assessment of behavioral clusters complements the bank’s risk-based segmentation. The primary objective is to divide the at-risk population into several subsegments with distinct behaviors, requiring different treatments. Note that behavioral segmentation can be very powerful for low-risk as well as high-risk groups, enabling the design of different low-cost treatments for each group. Often we use statistical techniques for an initial segmentation, but the most important insights will come from market research with actual delinquent customers, including psychometric surveys and structured interviews.
- *Select and design innovative treatments.* The treatments will be based on the rich and growing body of psychological research as well as real-life experience with nudges and behavioral insights (Exhibit 3). Given how little experience most banks have with these techniques, most of the innovations are drawn from other industries, such as healthcare and insurance-claims management, and from the public sector (government).

Advanced predictive models can help support collectors in making better decisions.

Exhibit 3 Innovative treatments based on behavioral segmentation deliver results.

Collection comparison of status quo approach to behavioral approach, case example, %



Note: Figures may not sum to 100%, because of rounding.

Source: McKinsey survey of US consumers who have been at least 30 days past due on a payment

Implementing these psychological levers requires continuous piloting and testing, which in turn enables the calibration of dedicated predictive models that continuously optimize the segmentation and choice of intervention for a particular customer.



The application of behavioral segmentation and innovative treatments in collections has its roots in psychological research and advanced statistical-segmentation models. The approach, however, is highly pragmatic and designed to be up and running in three months’ time. It uses existing infrastructure and creative workarounds, especially with respect to IT implementation. The impact on collections success rates can be significant. In a typical case,

the use of a behavioral approach achieved a twofold benefit at one bank. Losses were reduced by 20 percent overall, and fewer cured customers relapsed into a further delinquency. As lasting results such as these are achieved, collections managers can then go to work to ensure that the most effective innovative treatments become the new norm. ■

¹ Peter M. Gollwitzer and Veronica Brandstätter, “Implementation intentions and effective goal pursuit,” *Journal of Personality and Social Psychology*, 1997, Volume 73, pp. 186–99. Since this original article, Peter Gollwitzer has contributed dozens of articles on implementation intentions to psychological literature.

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