McKinsey&Company

# The Silver Lining: Converting Stress-Test Tools to Strategic Assets

Financial Services Practice

# The Silver Lining: Converting Stress-Test Tools to Strategic Assets

# Contents

# Introduction

In response to regulatory mandates, banks in the United States and Europe have developed some of the most robust risk management and stress-testing capabilities in history. Today, banks can identify the unique risks of each of their businesses in detail. They can make accurate projections of their financial statements under a wide range of macroeconomic scenarios. They possess financial data at an unprecedented level of accuracy and detail. The next step is for banks to convert these capabilities into true strategic and business assets.

The broad goal of the regulatory mandates is to ensure that banks hold enough capital to maintain their strength and solvency in stress scenarios. However, they have also resulted in higher capital requirements and compliance costs, contributing to the fact that banking is barely earning its cost of capital, with return on equity holding steady at about 9.5 percent globally.

But there is a silver lining in the cloud of stress-testing. The tools and capabilities developed in response to the mandates can help banks make more informed business decisions and better longer-term strategic choices. Banks can leverage these tools in four broad areas:

- Maximizing returns on business portfolios, while maintaining capital regulatory requirements
- Strengthening the safety and soundness of the institution through better identification of risks and more informed risk appetite-setting and management
- Creating stronger strategic plans and more reliable budgets, and doing both more efficiently
- Estimating strategic constraints more accurately, and making the best use of scarce resources.

Given the major investment banks have made in stress-test tools, and the constant pressure on their profitability, many institutions are exploring how to apply these unanticipated assets in their business and strategic processes.

# Regulatory Mandates and Their Impact on Bank Earnings

The regulatory mandates imposed on financial institutions in the past 10 years have had a profound impact on how banking is conducted across the United States and Europe. In the U.S., the Federal Reserve's Comprehensive Capital Adequacy Review (CCAR) now covers the country's 33 largest banking institutions and will be extended to many foreign bank organizations (FBOs) during 2016. In the United Kingdom, the Prudential Regulatory Authority imposed similar tests, and the European Banking Authority will do so for more than 50 banks this year.

In the U.S., in particular, these mandates have prompted major investments of financial and managerial resources to develop new capabilities, processes and infrastructure. At JPMorgan Chase, for example, 5,000 employees are now dedicated to this effort.[1] Senior executives and boards of U.S. banks discuss their response to the mandates at least monthly. FBOs in the U.S. invested an average of $100 million to $150 million in 2015 to build up their capital planning and stress-testing capabilities.[2] While European institutions are still ramping up their investments, McKinsey estimates that on average their annual expenditures are around $25 million.

The broad goal of regulatory mandates was to require banks to hold enough capital to survive in a stress scenario similar to the 2008 financial crisis and to estimate required capital more accurately.

In their response to regulatory mandates, financial institutions have been developing significant capabilities that allow them to:

- Identify in detail the unique risks of each of their businesses and develop macroeconomic scenarios that reflect those risks. Enterprise-wide risk identification processes typically involve all lines of defense, including the businesses and the finance and risk functions.
- Make accurate projections of the bank's financial statements, risk-weighted assets, and capital under many macroeconomic scenarios. Banks have created quantitative models and expert judgment methodologies that allow them to project their credit, market and operational risk losses, as well as balances and revenues for each business segment.
- Collect detailed financial data with an almost unprecedented degree of accuracy. For instance, in all jurisdictions, regulators now require financial institutions to submit loan- or portfolio-level information about their exposures' balances, the risk characteristics of their portfolios, and current and projected financial information. To ensure accuracy, institutions have developed new data quality processes and upgraded their data technology infrastructure.

The broad goal of regulatory mandates was to require banks to hold enough capital to survive in a stress scenario similar to the 2008 financial crisis and to estimate required capital more accurately. Beyond raising capital requirements, the mandates have also raised regulatory compliance costs more than any other cost category in the industry.

These factors have contributed to the fact that banking, overall, is barely earning its cost of capital. In some regions, such as Europe, and some businesses, such as rates, credit and cash equities, banks are earning significantly below the cost of capital. Large firms are retreating from historically strategic markets, for example fixed income. Long gone are the returns that banks achieved from 2004 to 2007.

As banking leaders focus on growth and profitability, they are seeking ways to op-

[1] *WSJ.com*, Sept. 12, 2013.

[2] McKinsey CCAR FBO Roundtable, January 2016.

erate more efficiently and digitally transforming their service models. Steps such as these are starting to have an impact. Operating and risk costs are down, profits are rising, and return on equity globally is steady at 9.5 percent.[3] However, in aggregate banks are struggling to find the keys to strong and sustained growth in the current macroeconomic environment, and it takes about $11 trillion in capital to generate $1 trillion in profits.

One major reason that performance remains below aspirations is that while many businesses are accretive in some aspects (e.g., comparatively higher return on equity and margins), they are dilutive in others (e.g., declining market size, liquidity requirements, losses in high-stress conditions). In addition, many businesses and products are highly interrelated (e.g., research and cash equities; lending and debt capital markets), making strategic portfolio allocations even more complex.

Some banking executives hope that capital and regulatory requirements will be relaxed in the medium term, but there is little evidence that this is likely to happen. It is in banks' best interests to move forward with the expectation that heightened regulation will continue to be part of the operating environment and to identify and act on strategies to outperform the industry.

[3] *The Fight for the Customer: McKinsey Global Banking Annual Review*, September 2015.

# Stress-Test Tools as Strategic Assets

Historically, banks have used significant data and analysis to inform important “microdecisions,” such as how to price products or where to open branches. Today, several U.S. banks are applying the capabilities and tools they created under crisis-inspired mandates to inform business decisions in certain functions and businesses. UK and European banks have begun similar efforts, anticipating that regulators will eventually require this, and that doing so will be important to compete effectively.

However, banks worldwide still base major decisions, such as which businesses to expand or contract, largely on management judgement and ad hoc analysis. They are still determining how to apply the new stress-testing capabilities and tools systematically to inform major business decisions and longer-term strategic choices.

Seventy-five percent of the executives of the largest FBOs have said they plan to use CCAR tools for their planning and business processes.[5] One executive gave an example: "Every quarter, we check the difference in results between actuals and budget, and actuals and CCAR projections. It has become a real management tool."

In an environment where stressed regulatory capital is often the binding constraint, stress-testing results help banks define capital absorption more precisely, along with the corresponding returns of each business and portfolio.

Regulatory mandates have spurred banks to develop analytical resources and management processes that will help them create strong, sustainable returns. Banks will need these tools to inform a variety of important decisions, such as whether to make an acquisition, launch new products or buy new business and asset portfolios; how to respond to competitor behaviors; and how much capital to distribute to shareholders.

It may take years to capture the full benefit of this new way of working, but banks that get ahead of the curve will have an important competitive advantage.

## Four strategic benefits of regulatory mandates

For banks, using the tools and capabilities developed to comply with regulatory mandates for business decision-making and strategic thinking is in its early stages. However, an examination of emerging industry practices shows that banks are already reaping benefits:

### 1. Maximizing returns on portfolios, within capital regulatory requirements

In an environment where stressed regulatory capital is often the binding constraint, stress-testing results help banks define capital absorption more precisely, along with the corresponding returns of each business and portfolio.

For example, some institutions are building analytical engines that use portfolio-level CCAR forecasting to improve their scenario planning. They perform trade-off analyses concerning which businesses to invest in, depending on different scenarios and business relationships. One bank analyzed the return on stress capital of its portfolios and realized that while they might be attractive in the current economy, they could lead to pressure on regulatory ratios under mixed economic scenarios. This analysis led the bank to significantly alter its strategic priorities for achieving growth and to alter its M&A activity.

In another example, a leading U.S. investment bank is feeding detailed CCAR stress scenario data into its front-office pricing models for corporate banking and capital markets activities. This approach was

[5] McKinsey CCAR FBO Roundtable, January 2016.

driven by a strategic review of the implications of CCAR and by the resulting conclusion that the only way to set the additional capital buffer required for CCAR accurately was to embed CCAR capital requirements into the daily decision-making of front-office staff. This approach is even more important for global systemically important banks (GSIBs), which will soon need to maintain a capital buffer to cover their GSIB surcharge.

**2. Strengthening safety and soundness through better risk appetite and identification processes**

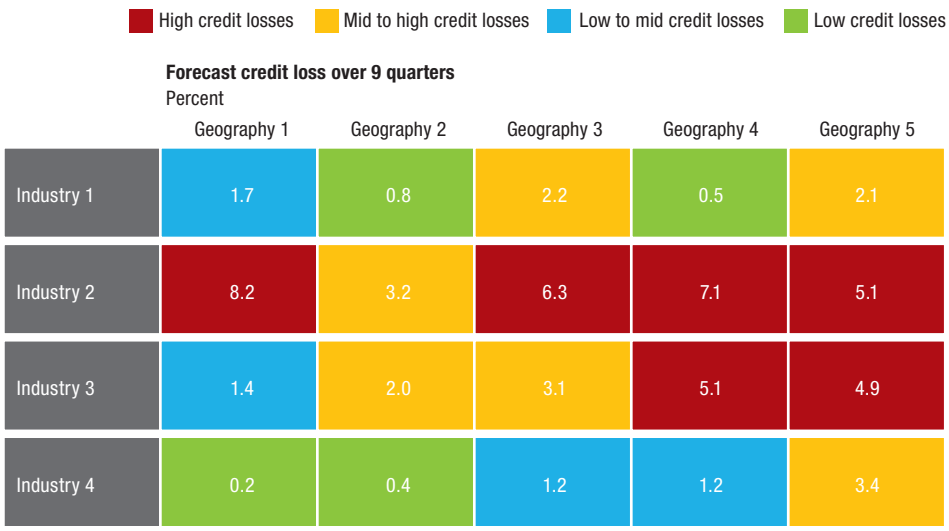
As part of their capital planning requirements, banks have developed a more detailed risk identification process, with more involvement of all lines of defense. They can also use this process to enhance the safety and soundness of the institution. Some banks have begun using their improved risk identification output to inform the limits and triggers of their risk appetite. Others are finding and applying methods to mitigate a wide range of risks, including interest rate risk and credit risk.

For example, for credit risk, the risk identification process, together with the CCAR models, provides perspectives into customer behavior; for example, losses on commercial and industrial loans in different industries, and utilization rates for credit lines and credit cards. Banks have started using these perspectives to improve underwriting by including stressed capital behaviors and costs. In addition, they are developing a view of the risks that may be developing in their businesses due to changes in macroeconomic scenarios. This improves forward-looking risk mitigation, such as line management and collections.

One bank determined that forecasts of credit losses were relatively high in certain industries and geographies (Exhibit 1), and was able to take immediate mitigating actions, such as reducing credit limits and increasing collateral and

Exhibit 1

A heat map of credit losses and other stress-testing metrics can help banks manage risk




Source: McKinsey & Company

insurance in these segments, while upping exposures in negatively correlated industries and geographies. At the same time, areas with relatively low credit losses represent opportunities to adjust credit limits and pricing.

The models created under regulatory mandates make forecasting and budgeting more transparent, automated, flexible and fact-based.

**3. Creating more reliable budgets and stronger strategic plans, and doing both more efficiently**

The models created under regulatory mandates make forecasting and budgeting more transparent, automated, flexible and fact-based. As the head of stress testing at a large European bank put it, "There is a culture of models in credit. We might even overdo it there. But finance needs to step up their game and become more sophisticated, and use models like PPNR (pre-provision net revenue)."

Models offer three distinct advantages:

**Budgeting more in line with macroeconomic forecasts.** Stress-testing tools help senior leaders challenge proposed budgets and targets, ensuring that they are in line with macroeconomic forecasts. Used in combination with traditional bottom-up budgeting methods, the CCAR internal champion models (primary models developed with banks' internal data) and industry-based challenger models offer insights into the potential impact of macroeconomic shifts on a bank's businesses and those of its competitors. "Several of our trading desks have been using PPNR models for budgeting and resource planning for 2016," noted the head of CCAR at a large bank. Some banks are now using models as input to their business plans, combining them with competitive insights, new growth initiatives, regulatory changes and expected customer behaviors. Others are using stress-testing tools for capacity planning, such as increasing mortgage servicing capacity in expectation of an increase in the refinance rate. Finally, some banks have begun to structure their IT contracts flexibly to ensure that management can make budget cuts based on macroeconomic triggers.

**More efficient budget forecasting processes.** Models also allow banks to be more efficient in their forecasting and to exert greater control over it. One leading investment bank had historically used a manual process for its sales and trading budget, involving 500-plus non-controlled spreadsheets, and more than 50 people, full-time for several months. Applying CCAR models and processes, the bank has revamped its budget approach. Today, it is based on approximately 75 validated models used to challenge the traditional bottom-up approach. Through increased automation, improved transparency, and fewer errors, the cost of the budgeting process has been reduced by 10 percent.

**More accurate assessment of strategic positioning relative to peers.** Banks can use capital management champion and challenger models to assess their strategic positioning relative to

that of their peers under different scenarios. These tools, due to their direct link to macroeconomic variables, can provide an assessment of revenues and losses under a variety of situations. Based on these results, banks can develop a through-the-cycle evaluation of their strategic decisions, such as business diversification or concentration of portfolios, products or geographies. In addition, banks can get a more nuanced view of key concentration risk in their portfolios. For example, they can see both the direct and indirect impact of oil price fluctuations—direct impact from exposures to oil companies; indirect impact from increased unemployment in geographies related to the oil industry. One board member at a leading U.S. bank said, "I expect that every institution is using key elements of the CCAR toolbox to assess implications of the slowdown in China and the drop in oil prices. Regulators also clearly expect this."

Stress-testing tools can help banks dynamically identify strategic, institution-level constraints, such as the supplemental leverage ratio, spot risk-weighted assets, and capital under regulatory stress scenarios.

Similarly, a profitable, leading U.S. bank discovered that it would suffer credit losses significantly higher than its peers under a mild stress scenario, resulting in a plummeting return on equity (Exhibit 2). By contrast, the analysis showed that competitors such as Bank 3, whose credit loss rate would not rise as much under this particular scenario, could focus on selective growth of its portfolio in more resilient segments.

**4. Estimating strategic constraints more accurately and making the best use of scarce resources**

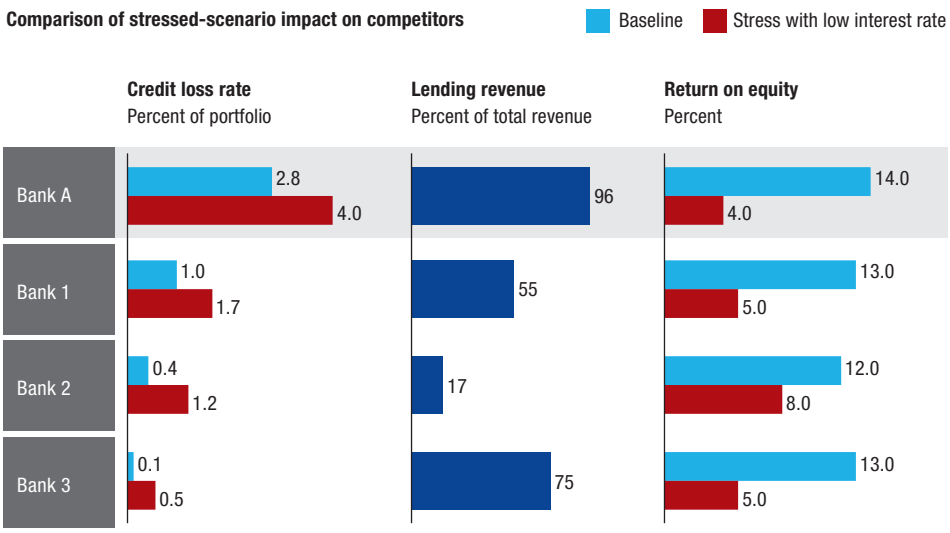
Stress-testing tools can help banks dynamically identify strategic, institution-level constraints, such as the supplemental leverage ratio (SLR), spot risk-weighted assets (RWA), and capital under regulatory stress scenarios. They can help banks estimate the impact of M&A or growth strategies on these constraints. Additionally, the tools can help banks identify the relative competitive advantages held by other players in their industry.

For example, some banks are building analytical optimization models that combine CCAR scenario-planning capabilities with all other regulatory constraints (e.g., SLR, GSIB, liquidity coverage ratio [LCR]). These models allow senior executives in capital markets businesses to understand the trade-offs of their businesses in a systematic and detailed way. Some incorporate inputs for every business, allowing the banks to optimize their balance sheet mix to maximize ROE, or to improve a specific regulatory or business constraint (e.g., build LCR capacity, reduce SLR, or improve the external rating of the bank). CCAR balances, revenues and credit models become inputs to an engine that helps banks optimize a chosen function.

In an example output (Exhibit 3), it is clear that none of the bank's businesses is strong across all dimensions. For instance:

Exhibit 2

## Banks can model credit losses in specific scenarios against those of peers and take action when needed




Source: McKinsey & Company

Exhibit 3

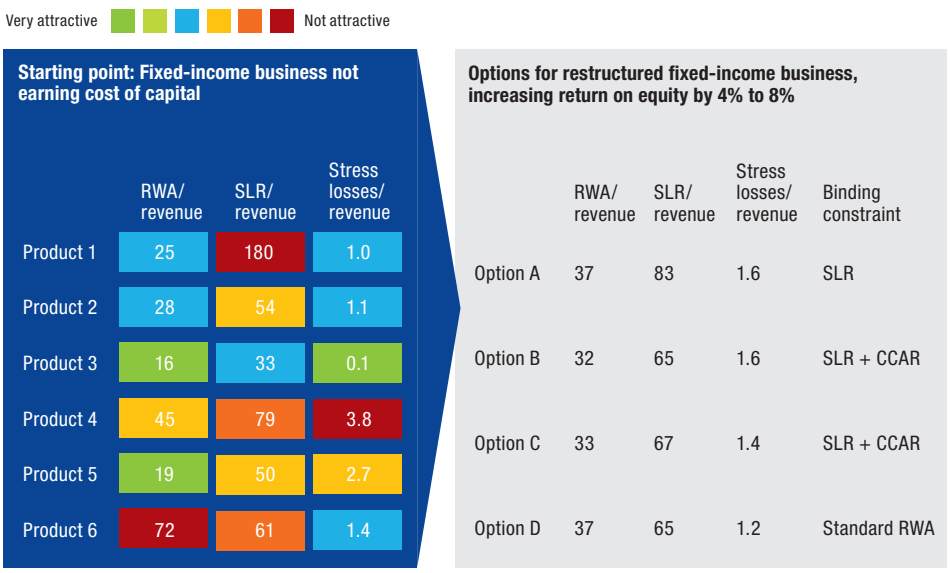
## Example output of an analytical engine for balance sheet optimization


[1] Statutory liquidity ratio
[2] Return on risk-weighted assets
[3] Return on statutory liquidity ratio equity
[4] High quality liquid assets

Source: McKinsey & Company

Exhibit 4

## A leading bank used stress-testing tools to make strategic portfolio decisions in fixed income




Source: McKinsey & Company

- Foreign exchange businesses have good returns and low stress losses, but consume liquidity.
- Securitized products perform well across all "real time" metrics, but show very high stress losses, raising the potential for dangerous ROE metrics.
- Other businesses, such as cash equities, have medium-to-low performance in metrics across the board, but are regarded as necessary to have a successful capital markets franchise in many other areas.

In another example, a top 10 global investment bank was able to assess strategic options for its fixed-income business, which was not earning the cost of capital. The bank discovered that it could reposition the business and increase ROE by 4 to 8 percent by 1) significantly reducing RWA and leverage, and 2) changing its product mix and reducing its exposure to changes in the macro environment without increasing the volatility of the business mix (Exhibit 4).

The For

# The Path Forward

For banks, incorporating stress-testing tools into business and strategic decision-making will take time and effort. One important step will be adapting tools designed for regulatory purposes, so they can be used to support businesses and strategy. There are five key challenges:

**1. Lack of insightful scenarios for strategic decision-making**

Scenarios used for regulatory stress-testing are too extreme to be used for strategic decision-making. For example, the severely adverse scenarios defined in CCAR are dramatic (e.g., only happen once every 50 to 100 years). So while they are useful for safety and soundness considerations, they are not practical for business and strategic decisions. Five- and ten-year scenarios would be more useful for these purposes.

**2. Lack of integrated and balanced model landscape**

Most banks have developed their model landscapes in silos, with a lack of integration, especially across PPNR and credit risk. Further, many models (e.g., operational risk) that significantly contribute to capital requirements have much more detail than others. Moreover, attribution of capital to more granular levels (e.g., portfolios) is at a nascent stage of evolution. Banks will need to address these inconsistencies.

**3. Lack of flexible execution infrastructure to run models quickly**

At many leading banks, it can take up to 10 days to run models end-to-end. There are three fundamental reasons for this lack of speed:

- The execution architecture is designed to run a fully comprehensive, controlled process.
- Execution platforms for scenario design, PPNR, credit loss, market risk and RWA platforms are not integrated, requiring significant manual handovers.
- Many models require interventions in the form of overlays, which are typically defined and incorporated manually.

Many bank executives agree that stress-testing tools have potential strategic value. However, most banks have only a limited number of resources to devote to fully leveraging these tools.

To improve the process, a number of banks are developing integrated systems that can conduct quick, targeted analyses. These systems, in addition to supporting traditional regulatory stress-testing, must allow banks to rapidly and flexibly perform specific "what-if" analyses; for example, analyses of targeted portfolios, automatic integration within the data architecture, and clear insights.

**4. Poor data quality and insufficient historical data**

In order to forecast for regulatory stress-testing, most institutions must perform long and expensive manual data-sourcing exercises to review and clean jump-off data in the execution architecture. High-quality loan-level data attributes such as maturity, amortization, payment information and borrower characteristics are often required to perform the projections of credit loss as well as net interest income for the existing portfolio.

Additionally, gathering the historical data required for model development is a labor-intensive process (e.g., sometimes requiring the review of non-electronic data files) requiring weeks of cleansing and reconciliation across different systems for each data set. The key here is to ensure laser focus on key data elements to avoid "boiling the ocean" and wasting scarce resources. Some institutions are using modern data tools (typically Hadoop-based) that allow rapid availability of data—as long as the data exists originally.

To improve the process in the long run, institutions are ensuring they capture and process high-quality data end-to-end, starting from the front-office systems, by defining clear data management roles along the three lines of defense. They establish explicit ownership and accountability for business, finance, risk and audit areas, and clearly define metrics to measure data quality. In addition, banks are increasing integration across systems and automation of controls to increase the speed and accuracy of execution (i.e., by making jump-off data available more rapidly).

**5. Limited resources and talent**

Many bank executives agree that stress-testing tools have strategic value. However, most banks have only a limited number of resources to devote to fully leveraging these tools. Many organizations are short-staffed and heavily reliant on external parties to conduct their regulatory exercises. Attracting the right talent is one of the biggest challenges, as this is considered "a regulatory" exercise. As a result, most institutions are still struggling to hire enough stress-testing and regulatory experts (technical modelling resources in particular). Institutions must go beyond hiring skilled people; they should invest in tools and capabilities that will enable their professionals to do less manual work, and focus instead on analyzing the business implications of stress-test results. Banks should also establish formal training programs and ensure recognition and professional advancement to avoid attrition of these critical human resources and to shift the culture of the organization (especially the front office) to one that operates by the new standards that result from stress-testing.

Banks should develop capabilities and refine business processes to include the insights from stress-testing analytics in senior management decision-making.

## Integrating stress-testing assets

Despite these challenges and the fact that some lagging institutions need to strengthen their stress-testing analytics, several leading U.S. banks are entering a stable phase as a result of the work they have done over the past two to three years. For these institutions, there are four steps to integrating these "unanticipated assets" into business decision-making.

1. **Create a platform to integrate models, instruments and tools.** This platform should integrate analytics across different stress-testing functions to generate forecasts rapidly (e.g., within hours or days). Analytics typically included are balance sheet and net interest income/non-interest revenues simulation engines, credit-loss models, operational risk models and RWA models. The result is an end-to-end view of balance sheet, income statement, liquidity positions and capital requirements. The platform must automate and integrate the most important jump-off data in the supporting database frequently and at regular cadence so the bank and its business lines can perform scenario analyses with the most current and granular information.
2. **Define the strategic problems against which stress-testing analytics will be applied.** Bank executives should define which applications are relevant to their institution, based on a prioritization of their key strategic issues, for example, enhancing budgeting, refining business mix, or maximizing profits under regulatory constraints.
3. **Integrate analytical insights into strategic and business processes.** Banks should develop capabilities and refine business processes to include the insights from stress-testing analyt-

ics in senior management decision-making; for example, budgeting, quarterly management information systems on critical macroeconomic risks, and rapid what-if analyses for likely future events. The implementation should also define the roles and responsibilities necessary for sustained institutionalization.

4. **Drive cultural change.** To turn stress-testing tools into strategic assets, a bank's management must play a lead role in getting the whole organization to buy in to the approach. Employees should understand clearly that these efforts are about more than compliance and that they will be implementing planning practices and business tools that will make the institution more profitable and improve risk management. Putting talented individuals in charge of stress-testing programs will be one key to success, which makes the recruiting challenge for banks even bigger. A number of banks are demanding that front-office and business leaders endorse stress-testing outcomes and leverage them for business and strategic decisions.

■ ■ ■

Banks around the globe continue to seek new ways to reignite growth and achieve a competitive edge. Capitalizing on the stress-testing capabilities and tools they have already developed is an important step forward. Banks can maximize returns on their portfolio, within capital requirements; strengthen their safety and soundness through better risk management; create stronger strategic plans and more reliable budgets; estimate strategic constraints better; and make the best use of scarce resources. Achieving these benefits will take time and require overcoming a host of challenges. Banks that commit early to converting stress-test tools into true business and strategic assets and sustain that commitment over time will see the benefits reflected in their bottom lines.

## Contact

For more information about this report, please contact:

**Roger Rudisuli**
Partner, New York
roger_rudisuli@mckinsey.com

**Lorenzo Serino**
Associate Partner, New York
lorenzo_serino@mckinsey.com

**Joaquin Alemany**
Associate Partner, New York
joaquin_alemany@mckinsey.com

**Abhishek Anand**
Engagement Manager, New York
abhishek_anand@mckinsey.com

Financial Services Practice
August 2016

www.mckinsey.com/clientservice/financial_services