Deloitte’s risk and capital services
## Contents

<table>
<thead>
<tr>
<th>Service</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deloitte’s risk and capital services</td>
<td>3</td>
</tr>
<tr>
<td>Enterprise risk management (ERM) and risk governance services</td>
<td>5</td>
</tr>
<tr>
<td>Capital strategy and structure, capital management, and target operating model management services</td>
<td>8</td>
</tr>
<tr>
<td>Basel implementation services</td>
<td>11</td>
</tr>
<tr>
<td>Credit, market, liquidity, and operational risk services</td>
<td>13</td>
</tr>
<tr>
<td>Risk measurement and analytics services</td>
<td>18</td>
</tr>
<tr>
<td>Risk data management and risk technology services</td>
<td>20</td>
</tr>
<tr>
<td>Model risk management and validation services</td>
<td>22</td>
</tr>
<tr>
<td>The Deloitte difference</td>
<td>24</td>
</tr>
</tbody>
</table>

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Deloitte’s risk and capital services

Deloitte can assist financial services industry (FSI) companies in meeting their risk management, risk governance, and regulatory-risk related goals. These services have been developed in response to the ever increasing expectations of stakeholders, investors, and regulators regarding an organization’s ability to comprehensively manage their risks and capital positions.

This brochure, prepared for chief risk officers, chief compliance officers, other senior executives, as well as business/functional unit leaders, explains these services, the forces driving the need for them, and the risk management and regulatory requirements they help organizations to address.

Higher risk, regulation, and expectations

In recent years, regulatory changes have accelerated, business conditions have remained unsettled, and pressures on executive teams and risk and compliance managers have increased. As a result, financial companies have grappled with the impact of new regulations, while struggling to maintain growth and to enhance their risk and capital management practices and processes.

These forces have created an unprecedented need for a robust, sophisticated risk and capital management and governance infrastructure. Regulations have become staggeringly complex, demanding new data, calculations, and reports, many of which may require substantial time, effort, and experience to understand and appropriately implement and execute.

Getting regulatory compliance and risk and capital management right

Deloitte has aligned its resources to provide risk and capital services to specifically meet client needs. Our Risk & Capital Services help clients address the areas in which we have found banking institutions, bank holding companies (BHCs), securities firms, and insurance companies facing the need for assistance:

• ERM and risk governance services
• Capital strategy and structure, capital management, and target operating model management services
• Basel implementation services
• Credit, market, liquidity, and operational risk services
• Risk measurement and analytics services
• Risk data management and risk technology services
• Model risk management and validation services

Deloitte provides these services to help financial institutions address needs they may have throughout the risk infrastructure lifecycle; this lifecycle typically includes assessment, design, development, implementation, and maintenance.

These services are intended to meet the need for targeted experience, objective third-party assistance, and support required on a specific project or ongoing basis. In addition to Deloitte’s overall approach to risk and capital related efforts as embodied in the Risk & Capital Management Framework (see sidebar), these services rest upon three guiding principles:

• Potential responses to regulatory change may vary widely, and the interests of financial institutions and their stakeholders are best served by optimal responses to regulatory change
• Optimal responses should be integrated, rationalized, and documented, and enhancements should build on existing processes and models, while avoiding costly “infrastructure overkill”
• Enhancements undertaken in response to regulatory change often present opportunities for cost reduction and other operational improvements through increased visibility into, and control over, operational and risk-management processes

1 As used in this document, the terms “model validation” or “validation” refer to one or more model assessment activities described in regulatory and industry literature, such as, for example, OCC 2011-12/SR 11-7, “Supervisory Guidance on Model Risk Management” 2011.
Why these capabilities now?

Our risk, capital, and regulatory work incorporates Deloitte’s deep experience in assisting FSI companies in specific phases of risk and capital management, governance, and compliance, under various regulatory regimes and across the risk infrastructure lifecycle. These services assist FSI executives, risk managers, and business unit leaders, who face the need to:

- Understand the applicability of regulations to their organization and the potential impact on the business, its processes, and systems
- Assess risk and capital management, compliance, and reporting needs and priorities resulting from regulatory changes
- Analyze a range of potential management and compliance solutions, including projected upfront and ongoing costs, resource allocations, timelines, and outcomes
- Develop approaches to integrate new risk and capital management and compliance requirements into existing infrastructure
- Build and implement infrastructure and governance components in cost-effective ways, and ascertain their accuracy, reliability, security, and integrity

These services assist FSI companies at a practical level by providing experience, guidance, and resources that senior executives, risk managers, and business unit leaders require to carry out their responsibilities in the prevailing business and regulatory environment.
Background
Regulators, investors, and other stakeholders have sharpened their focus on the specific mechanisms of risk management and governance. This has, as intended, prompted executives and boards to take a closer look at the full range of risks posed to the company and ways of addressing them. As a result, many organizations are interested in exploring opportunities to review and refine their risk functions facilitating more holistic management and reporting of risks and risk mitigation activities to senior executives and board members.

However, many companies have found that implementing risk management and governance policies can be more challenging than developing them. Others find existing practices and infrastructure inadequate, when they diversify into related or unrelated lines of business internally or through a merger or acquisition. Meanwhile, evolving regulations continually add to risk management and oversight workloads, and place new pressures on resources.

Challenges in risk management and governance
Maintaining sound risk management, risk governance, and regulatory compliance presents ongoing challenges. Many companies have found that:

• Comprehending and responding to regulatory requirements is an ongoing process
• Responding to regulatory and stakeholder expectations calls for specific functional and industry experience
• Adjusting risk management and governance after a merger, acquisition, or similar event requires intensive, time-consuming management

In addition, a number of regulatory agencies and advisory groups have issued relevant guidance, with the following among the more significant:

• Section 165 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) included enhanced prudential standards, such as risk management requirements (i.e., requiring a board-level risk committee and chief risk officer), risk-based capital and leverage requirements, liquidity standards, single-counterparty credit limits, stress test requirements, as well as early remediation requirements.
• Securities and Exchange Commission amendments to proxy disclosure rules aimed to enhance disclosure to investors and other stakeholders regarding governance including the board’s role in risk oversight.
• The 2014 Basel Committee Consultation Paper on “Corporate governance principles for banks” covered proposed guidelines to strengthen risk governance, the role of the board of directors in overseeing risk management, the importance of board competence, guidance for bank supervisors and the role of compensation in governance and incentives.
• The Senior Supervisors Group Report titled, “Risk Management Lessons from the Global Banking Crisis of 2008,” issued in October 2009, concluded that “despite firms’ recent progress in improving risk management practices, underlying weaknesses in governance, incentive structures, information technology, and internal controls require substantial work to address.”
Description of services
ERM and Risk Governance Services assist institutions with the overall risk management program including its workings, implementation, effectiveness, and oversight.

These services can assist companies throughout the risk management and governance program lifecycle, on a continual or as-needed basis, the latter basis often in response to various triggers (see sidebar, “Potential triggers for ERM and risk governance services”):

• **ERM and governance program assessment:**
  ERM and governance programs benefit from periodic, independent assessment of company risks and organizational capabilities for managing and governing those risks. Such assessments can identify gaps in ERM and risk oversight, potential cost savings, adequacy of monitoring and mitigation capabilities, and areas that may benefit from enhancements to infrastructure. Deloitte has extensive experience conducting assessments on existing programs as well as in program development and enhancement.

• **ERM and governance program development:**
  Deloitte has worked with companies to develop ERM frameworks, risk management and governance infrastructures and practices, develop risk committee charters, assess risks on enterprise wide and product and business unit bases, and evaluate ERM programs. Deloitte risk management and governance frameworks provide integrated coverage of and guidance regarding ERM and risk governance, from policy development to operating and compliance procedures.

• **ERM and governance program implementation:**
  Moving the organization from the “drawing board” of policies to the realities of procedures and decisions requires operational discipline, strong IT support, and, usually, cultural change. From the board to the business units, from the culture to the controls, Deloitte assists companies so that people and processes, and reporting and compliance systems, are equipped to meet regulatory demands and stakeholder expectations.

• **Services to enhance risk governance:**
  Enterprise oversight structures, comprising the chief risk officer, board and management risk committees, and individual risk committees (such as the credit risk, market risk, and asset-liability committees) often benefit from reviews, briefings, third-party evaluations, and other services to provide periodic program enhancement and alignment with current industry practices. Services could also include the establishment of relevant charters and committee structures. Periodic reviews and initiatives can assist the board and management in maintaining alignment among the business units, risk management, and oversight functions. These services can also address specific issues such as setting or adjusting risk appetite and limits, measuring exposures, and assessing and adjusting mitigation strategies. We also assist in board education and provide benchmarking to improve risk governance.
Potential triggers for ERM and risk governance services
Across the risk management and governance lifecycle, various decisions or events may trigger the need for an assessment of risks or capabilities or a build-out of new or existing infrastructure.

Common triggers include:
• New regulations, changes to existing regulations, or new interpretations of existing regulations
• Regulatory actions targeting the specific institution or one of its business units
• New product launches, entry into new business lines, or expansion into foreign locations (including, significantly, foreign banks doing business in the United States)
• Increased risk management or governance expectations by customers, counterparties, investors, or other stakeholders, and increased public scrutiny of risk capabilities
• Merger or acquisition activity which exposes the organization to new risks or regulations

An example of the latter may be the acquisition of a new business, such as credit cards, or a merger which reclassifies the organization as a systemically important financial institution (SIFI).

These triggers, as well as changes to the organization’s risk profile arising in the course of business, for example, due to deteriorating economic conditions or to difficulties at a counterparty, might prompt management or the board to review its ERM and governance infrastructure.

Client case in point
ERM and risk governance services

Background
A financial services company acquired a number of regional banks, which created new risk management and governance needs, including the need to:
• Assess risk management and governance regulatory demands and infrastructure needs
• Understand regulatory compliance demands and how to efficiently meet them
• Establish a program to manage new risks and expand the oversight program

Assistance provided
Given the need to establish a new risk management and governance program, Deloitte’s work covered multiple phases of the ERM and risk governance lifecycle, with highlights including:
• Assessing the full range of risks the organization now faced, which included strategic, credit, operational, market, liquidity, and IT risks
• Assisting in specifying a risk management and governance program and the required control, reporting, and risk infrastructure
• Providing guidance on assessing capital needs and on capital management
• Reviewing existing risk monitoring and decision support mechanisms and recommending enhancements, including loan review procedures
• Assisting in operationalizing the governance model at the level of decisions and procedures
Background
Regulators have intensified their focus on capital adequacy in recent years, with a strong emphasis on stress testing and capital planning. At large, complex banking organizations, stress testing is no longer undertaken purely as an internal activity. It is now mandated by recent regulations, which empower federal regulators to more tactically define certain stress testing activities. Additionally, federal regulators can use the outcome of stress tests to influence an organization’s capital planning activities, such as capital distributions (e.g., dividends).

The capital planning and stress testing regulations impact US BHCs and insured depository institutions with $10 billion or more in assets by formulating certain minimums that must be met in terms of ensuring capital adequacy. Those with $50 billion or more must perform stress testing and formally submit the results semiannually and submit an annual capital plan for approval at the BHC level before capital actions can take place. Institutions with $10 billion to $50 billion in assets need not file a capital plan, but must perform stress testing and submit results annually. If results reveal potential inadequacy of capital levels, previously anticipated capital actions may not be viewed favorably by regulators. Thus, all US banks with $10 billion or more in assets must conduct stress testing, report the results, understand their forward-looking capital positions, and address any capital inadequacies in order to avoid punitive restrictions on their capital management activities.

Drivers and challenges in capital management
Given the scope of the requirements, affected institutions often require external assistance, objective viewpoints, broader experience and specialized resources. Specific needs include the following:

- **Stress testing focus:** Although Basel requirements remain important, regulators now view stress testing and capital planning as the primary focus. For example, within Basel’s Internal Capital Adequacy Assessment Process (ICAAP), stress testing was a tool for understanding vulnerabilities, but it was neither prescriptive nor central to capital planning.

- **More prescriptive approach:** The requirements, ushered in with the 2009 Supervisory Capital Assessment Program (SCAP) and now codified within the Dodd-Frank Act, link operational and risk management elements of stress testing and capital management – and do so prescriptively. They discuss stress testing procedures, governance aspects and conditions for capital actions including dividend payments (through the Federal Reserve Capital Plan Final Rule issued in 2011).

  - **Capital requirements:** In 2012, the Federal Reserve issued the Comprehensive Capital Analysis and Review (CCAR) as well as the Capital Plan Review (CapPR) as mechanisms for developing supervisory assessments of capital adequacy at large banks and BHCs. The Federal Reserve expects that under stressful conditions, a BHC will be able to maintain sufficient capital to continue its operations by maintaining ready access to funding, meeting its obligations to creditors and other counterparties and continuing to serve as a credit intermediary.

These regulatory developments, in turn, present challenges, including:

- Stress testing must consider all material risks rather than only scenarios based on selected risks. Thus, institutions must identify and measure the full range of risks, and relationships with macroeconomic variables must be reflected in stress testing models.

- Estimates of risks and forward-looking capital must be aligned with product lines and business units, and across the institution. Measuring the impact of risk on capital requires a well-developed capital planning methodology, which many affected institutions do not yet have in place.

- The capital plan must relate risk to capital and explain actions that may affect capital with the requirements for the $50 billion and greater institutions being more prescriptive and requiring regulatory approval. For governance purposes, management and the board should understand how stress testing, risks, business and strategic objectives, and the capital plan relate to one another. This calls for repeatable, well-documented processes, and clear articulation of the organization’s risk appetite and tolerance.

- Affected institutions must meet monthly, quarterly, and annual reporting requirements, with stress testing reports that fulfill regulatory requirements.

These challenges create demands for measurement, modeling, monitoring, analytics, reporting, and compliance resources, and the need for high quality data and effective controls.
Deloitte’s Capital Strategy and Structure, Capital Management, and Target Operating Model Management Services assist organizations in meeting regulatory stress testing and capital planning requirements by augmenting, supporting, or replacing in-house resources in ways that not only meet regulatory expectations, but also add value to existing business activities. Specifically, these services include:

- **Stress testing services:** We assist in developing a stress testing plan and methodology appropriate for the size and complexity of the institution, designing models and scenarios, selecting macro factors, gauging sensitivities, and developing forward-looking views of capital positions and needs. This entails understanding stress testing requirements, defining a methodology for meeting them, mapping the related work streams, and identifying controls and limitations. It also calls for specifying the governance framework around stress testing, and related executive and board responsibilities.

- **ICAAP framework services:** Services related to the management and assessment of regulatory and economic capital in line with regulatory requirements as defined under Basel and other requirements.

- **Capital plan preparation services:** A good number of institutions are likely to need help understanding how stress testing, risks and risk management, strategic and business objectives, and the capital plan fit together. Many more institutions may benefit from assistance in preparing and writing the actual plan. Deloitte has worked with a wide range of organizations in both activities.

### Client case in point

**Capital management services**

**Background**

A large regional BHC with portfolios in retail, commercial, and real estate lending, and in the investment business, sought assistance to conduct a gap analysis and improve its capital planning and ICAAP process.

**Assistance provided**

**Modeling**

- Developed and advised on multiple stress-test models for pre-provision net revenue (PPNR), credit, and operational risk
- Enhanced model methodology and documentation to address regulatory expectations
- Assisted in developing the client’s own BHC idiosyncratic scenarios

**ICAAP advisory/capital planning**

- Assessed existing processes, policies and procedures and provided feedback to strengthen capital plan methodology and documentation
- Advised the client on structuring and writing its capital plans and capital policy
- Provided project management oversight, gap analysis and advice

**Model operations assessment and remediation**

- Developed model infrastructure assessment approach and outline for commercial and consumer models
- Identified existing process & controls, performed gap analysis and suggested new controls across the stress testing infrastructure
- Assisted in developing requirements and system for new model operations environment for significant portfolios including Commercial Real Estate (CRE), Commercial and Industrial (C&I), Pre-Provision Net Revenue, etc.
A stress testing and capital planning program goes beyond running models and reporting the results. The requirements aim to lead enterprise leaders to understand the risks their institutions face and the capital required to absorb losses resulting from those risks. Deloitte’s services in this area are customized based upon our regulatory and institution knowledge to the needs of the client to focus resources on the proper priorities, and enhance value as regulatory requirements are met.

In addition to the various capabilities related to Capital Management detailed in this section, there are related services described in other sections of this brochure, including the sections for risk data management and risk technology services, Basel implementation, risk services, risk quantification, and analytics and model validation services.
Background
Bank regulatory capital requirements have evolved over the past few decades, beginning with the initial Basel accord in the late 1980s. In 2006, Basel II aimed to improve the risk sensitivity of minimum regulatory capital requirements and to create incentives for banks to adopt certain risk management practices. When banks were in the midst of multi-year Basel II implementation efforts, the financial downturn triggered widespread reconsideration of capital adequacy.

With Basel III, international regulators reached broad agreement on revised minimum capital and liquidity standards for financial institutions with a focus on quality of capital. Although it specifies a long transition period to more stringent standards, Basel III is expected to transform the banking industry and will require strategic decisions regarding capital, liquidity, and funding.

Challenges in Basel implementation
As banks have been enhancing their risk and capital management processes in response to the evolving Basel framework, many have found that they:
• Underestimated the complexity and cost of implementation
• Lacked a holistic and “traceable” view of capital, liquidity, and funding requirements
• Encountered data challenges, including absent or inadequate data standards, lack of data governance, and fragmented information systems
• Lacked sufficient focus on the reconciliation of risk exposures to general ledger until late in the process
• Failed to allocate enough time and resources to end-to-end testing, leading to significant delays and added costs for remediation
• Failed to establish the integration and maintenance of controls, processes, and infrastructure needed for ongoing compliance

These challenges arise from data structures, business processes, and IT systems being designed primarily to fulfill business and operational needs and outmoded compliance requirements. While that is understandable, these challenges can increase costs, delay implementation, interfere with business activities, and increase likelihood of errors, rework, and future system inadequacies.

Given the potential impact of Basel regulations on the finance, risk, treasury, technology, and compliance functions, FSI executives have a vested interest in properly implementing, managing, and executing processes and controls related to their organization’s Basel implementation.

Description of services
In a Basel implementation initiative, a bank faces a complex, unfamiliar, highly technical set of tasks. Thus, organizations often spend considerable time and resources simply understanding the applicable requirements and assessing the need to capture and clean data, structure controls, and configure reports.

Deloitte’s Basel implementation capabilities include, but are not limited to, the following advisory and support services:

• **Basel program implementation planning and management:** Deloitte has assisted in implementing effective Basel programs at some of the largest US banks. This experience includes project development, gap assessments, implementation plans, compliance approach narratives, balance sheet decomposition, and program-wide testing. Our experience includes workstream-specific planning and implementation across risk, treasury, finance, IT, and other functions responsible for program deliverables.

• **Requirements development and management:** Holistic management of requirements entails assessing current capabilities and developing business requirements and technical specifications with end-to-end vision and perspective. Deloitte has worked with advance systems banks to interpret, develop, and deliver integrated requirements for Basel implementations. This includes developing business, functional, data, and technical requirements for Pillar I risk-weighted asset (RWA) calculations, Federal Financial Institutions Examination Council (FFIEC) 101 Reports, Pillar III disclosures, and Pillar II ICAAP.

• **Basel data delivery and data validation:** Regardless of the stage of a bank’s Basel implementation, delivery of quality data is an ongoing effort and a critical foundational component. Deloitte has supported the delivery of comprehensive datasets for RWA calculations from disparate source systems and through various transformations and pre-processing steps. In addition, Deloitte has executed a number of data quality assessments and developed ongoing data validation frameworks to assist clients in meeting Basel data quality requirements.
• **Risk-weighted asset optimization:** With the increased focus on capital levels as part of Basel, capital strategy and optimization of RWA has increased in importance. Banks are scrutinizing their Basel implementations with respect to methodology choices and assumptions, risk parameters and models, data quality issues resulting in punitive capital treatment, and portfolio composition. Many banks seek advanced approaches to optimizing their capital requirements and improving the risk-sensitivity of their RWA calculations. Deloitte has supported large institutions with identification, prioritization, and implementation of RWA optimization and enhancements to their credit, operational, equity, and market-risk calculation processes.

• **Ongoing compliance and sustainability:** As reporting of regulatory capital under the advanced rules proceeds, institutions will be expected to maintain ongoing compliance and to manage their calculations and reporting in a sustainable manner. Deloitte has extensive experience supporting institutions’ controls, processes, and infrastructure needed to substantiate ongoing compliance.

• **Evolving capital standards (Basel 2.5 and Basel III):** Banks are continually working to anticipate evolving regulatory capital requirements. Deloitte has worked intensively with the existing requirements, critical areas of change, and approaches to delivering reliable calculations of Basel 2.5 and III capital requirements. Deloitte is equipped to support gap assessments, requirements definition, pro-forma estimations, and full-scale assessments, as well as execution of required calculations and ratios in areas such as leverage, liquidity, and net stable funding.

Deloitte’s Basel implementation services have been developed to meet the common and pressing needs banks face in addressing the challenges of Basel. However, Deloitte also assists organizations in addressing Basel implementation challenges above and beyond these specific areas.

In addition to the various capabilities related to Basel implementation detailed in this section, there are other related services described in other sections of this brochure, including the sections for capital management, risk services, risk quantification, and analytics and model validation services.

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**Client case in point**

**Basel implementation services**

**Background**

The client bank had established a Basel program as a multi-year, enterprise wide initiative covering specific domestic and international legal entities, business lines, and key support functions such as risk, finance, technology, operations, and data quality.

**Assistance provided**

The bank engaged Deloitte to assist with various aspects of their enterprise wide program to achieve sustained compliance within the stipulated timeframes for Basel. This assistance focused on several specific components of the Basel implementation, including:

- Developing the Basel implementation plan
- Developing an international compliance strategy and integrated implementation approach, and defining a technical solution for international implementation
- Conducting gap assessments for credit and operational risk analytics and modeling initiatives (i.e., Probability of default (PD), Loss given default (LGD), Exposure at default (EAD), estimations and operational risk modeling) and developing detailed project plans
- Developing an exposure-identification process, project plan, and detailed business requirements for securitizations and other structured products
- Facilitating training workshops on topics such as retail guidance, securitizations, and retail versus wholesale exposures
- Developing a data validation framework for assessing the quality of data sourced for Basel and for tracking and supporting remediation activities to close data gaps
- Defining business, functional, technical, and data requirements for the bank’s custom Basel RWA calculator
- Designing the production process and operational calendar for the regulatory reporting cycle
- Supporting Pillar 3 reporting requirements definition
- Documenting data lineage and traceability for key Basel data attributes
- Identifying and prioritizing RWA optimization opportunities
- Documenting RWA forecasting process
- Supporting end-to-end testing, model validation, and ongoing compliance monitoring programs

Deloitte’s Basel implementation services, i.e., design, planning, resourcing, and implementation, served the client’s operational and ERM goals, while meeting Basel compliance and reporting requirements with needed efficiency.
Credit, market, liquidity, and operational risk services

Background
Credit and lending are the core business drivers of banks, credit unions, asset-based financing and leasing organizations, and mortgage Real Estate Investment Trust (REITS). Therefore, evaluating, monitoring, and managing credit risk are requisite core capabilities for these organizations. Deloitte provides assistance and support across the credit lifecycle, from origination to collection of charge-off, to assist FSI organizations in addressing these challenges and managing these pressures.

Processing transactions underlies the lending process as well as many businesses areas that financial institutions operate in and expose these institutions to operational risk. Deloitte provides assistance to many areas of operational risk, from governance and policy to internal controls and risk mitigation to risk data and operational risk models.

Financial markets continue to expose financial institutions to a variety of risks from asset and liability management for banking book portfolios to market risk for trading portfolios. Deloitte provides assistance across these issues from risk limits and risk reporting to model validations. Unlimited on these capacities have never been greater. Evolving regulations, difficult business conditions, rising operating costs, and heightened stakeholder expectations have created a challenging environment. In addition, risk management and governance capabilities have been placed under increasing pressure.

Challenges in risk management
It has been widely recognized that risk management processes for many lending institutions have at times failed to meet regulatory expectations and address the full range of risk-related issues. Even when processes are effective, the costs of managing risk continue to mount.

Under these circumstances, many financial institutions have discovered that:
- Misaligned risk management strategies across business lines and risk classes do not serve organizations or their stakeholders effectively.
- Regulatory demands and stakeholder expectations related to risk should be addressed in an integrated manner to minimize costs and optimize allocation of resources.
- Risk management and governance policies and procedures should be developed and implemented in a holistic manner that also considers other, seemingly unrelated risks, such as strategic and reputational risks.
- Risk frameworks should contain embedded validation and assurance.
- Managing components of credit risk, through hedging, collateral, and other strategies, can create new costs and new risks such as operational and legal risks.
- Today’s credit markets demand periodic quantification of credit risk at portfolio, product, and relationship levels with automated reporting in real or nearly real time.
- Geopolitical and monetary fiscal policies create potential for market moving impacts requiring close attention to managing market risk and asset liability management risks.
- Cybercrime including tactics, such as phishing schemes, social engineering, hacking and state sponsored disruptions, have shown that operational risk remains a high concern requiring continuous attention.
- The increase in interconnectivity between firms and markets and the significant automation in some firms’ execution mechanisms have illustrated how technology can both create business opportunity as well as new kinds of operational risks.

The industry has come a long way from the days when the business of accepting deposits, assessing creditworthiness, making loans, and managing interest-rate spreads was a fairly straightforward matter. Purchased assets, aggressive product development, capital markets activities, regulatory proliferation, and stakeholder demands have transformed banking and financial services into a complex, ever-evolving, and increasingly competitive business.

Description of services
Deloitte provides risk services to assist financial institutions in assessing, measuring, and managing a range of risks, and in addressing specific issues for credit risk in credit administration, loan portfolio management, problem loan management, and loss mitigation; for market risk and asset liability management in risk measurement, limit management, treasury management, and middle office; and for operational risk in the corporate operational risk function, control units, and in business unit operational risk functions.
Available on an ongoing or as-needed basis, these services apply to the full range of financial products including credit facilities (including residential and commercial real estate), secured and unsecured retail and commercial loans, corporate and government debt of specific maturities, and the full range of capital markets activities including over-the-counter (OTC) derivatives and repo-style transactions. These services also apply across the lending lifecycle and at specific points along that lifecycle. The lending lifecycle broadly includes originating loans or accepting exposures, monitoring and managing ongoing credit risk (including default, liquidity, and interest-rate risk), distribution and sharing of credit risk, and when necessary, workout, wind-down, and write-off of exposures.

Deloitte’s risk services include:
- **Credit risk management services**: Although policies and procedures are generally aligned along product and business lines, they are better developed and implemented within an enterprise-wide risk management framework. Then, origination and administration procedures and credit risk-rating systems can operate, so that exposures align with management’s and the board’s risk management and governance policies. Credit risk management services assist organizations in achieving that alignment, and in validating risk-rating systems and evaluating underwriting and administration practices. They also include assistance in developing credit risk management systems and infrastructure.

**Client case in point**

**Credit risk services**

**Background**
A mid-sized regional bank, a subsidiary of an international bank, requested Deloitte to perform assessments of its commercial, real estate, consumer and Small Business Administration (SBA) portfolio on an ongoing basis.

**Assistance provided**
Deloitte put together a team with knowledge of the regional markets to perform the assessments by using a comprehensive approach including: risk-based sampling procedures, assessment of risk according to the bank’s nine-grade risk rating definitions, appropriateness of loan documentation, effectiveness of internal underwriting and documentation, and compliance with credit-related laws and regulations.

**Key results achieved**
Deloitte provided ongoing reports documenting our procedures, risk rating variances and recommendations for enhancement according to regulatory expectations and industry practices.
- **Credit analytics**: These services can help lenders to aggregate and combine data and information on loans and other credit exposures to evaluate segments of the portfolio, while relating the risks to business strategies and objectives, and to risk appetite. Credit analytics also relate enterprise or regulatory standards to actual credit approval and monitoring processes. Deloitte applies quantitative models to analyze data on credit policies and procedures, for example, in terms of risk scores for consumer loans or sensitivity of business loans to stress conditions. Credit analytics also help assess the fit between a portfolio and the organization’s objectives and risk framework.

- **Loan review services**: These services assist lenders in monitoring loans on an ongoing basis to ascertain, for example, that credit risk ratings reflect the financial condition of a borrower and that performance conforms to loan requirements and collateral value. Outsourcing or co-sourcing of assessment of individual loans or portfolios of existing loans or, as part of due diligence of portfolios under consideration for acquisition, lessens the burden on internal review resources. It also provides an objective assessment of credit risk and asset quality.

- **Allowance for Loan and Lease Losses services**: These services assist organizations in maintaining appropriate processes and methodologies for calculating and reporting Allowance for Loan and Lease Loss (ALLL) estimates. This includes assistance in developing robust ALLL models that forecast losses in accordance with Accounting Standards Codification (ASC) 450 and ASC 310; performing ALLL methodology assessments to identify gaps that may result in ALLL misstatement; and performing model validations to evaluate the reasonableness of assumptions, completeness of data inputs, accuracy of model formulas and code, and model performance based on actual loss experience. In addition, Deloitte can assist in developing a qualitative framework to apply in each financial reporting period to quantify and support qualitative adjustments made to the ALLL.

- **Default management**: These services assist lenders and servicers in assessing opportunities for improvement in their consumer and commercial loan default management processes. We bring subject matter experience in the full default lifecycle, from early stage collections and loss mitigation efforts to late stage default and liquidation processes, as well as the outsourcing and servicing transfer strategies that align with each. Deloitte assists organizations not only in the assessment of gaps, but also in the identification of industry accepted solutions and execution of the transformation process. This includes not only line of business (LOB) transformation, but also assessments of risk and compliance functions. In addition, Deloitte can assist in the evaluation of testing programs leveraged by the organization’s quality assurance and quality control teams as well as internal audit’s framework as it pertains to default management processes.

- **Counterparty risk and other related services**: Other services include counterparty exposure and credit risk assessment, monitoring, reporting, and management. These services (some of which may incorporate other capabilities described in this brochure) assist in assessing and managing the risk that a counterparty to an OTC derivative or repo-style transaction will not make the payments required by the contract or default prior to contract expiration. These services also relate to Basel requirements, stress-testing capabilities, and default management.

- **Market risk and asset liability management services**: These services assist organizations in a range of market risk and asset liability management issues from helping with risk appetite and limit definition to risk policy establishment, risk reporting, and model validation. Some market risk challenges are better managed within individual trading or capital markets units and some through the central market risk function. In some cases, we may leverage our related analytical services specialists for elements of risk quantification and model validation.

- **Operational risk management services**: These services assist financial institutions with establishing operational risk programs, frameworks, and functions, as well as enhancing existing operational risk efforts. From a regulatory perspective, the key operational risk driver over the last several decades has been Sarbanes-Oxley which established financial accounting controls
and certification requirements, and Basel II which established operational risk measurement requirements. Despite these advances, there continues to be a need for financial institutions to strengthen their operational risk controls and risk management capabilities. Some firms are studying their application of the three lines of defense and business unit operational risk controls with a view to enhancing their risk program; we are helping them to strengthen their operational risk framework. We are also assisting firms with a range of different operational risk program capabilities such as risk assessments, key risk indicators (KRIs), operational risk reporting, operational risk policies, and other areas.

Essentially, risk services help organizations to bridge the common gaps between risk management, governance frameworks, and applicable risk policies and procedures. These services also help organizations monitor and adjust to shifting requirements throughout the risk management lifecycle.

In addition to the various capabilities related to risk management detailed in this section, there are other related services described in other sections of this brochure, including the sections for capital management, Basel implementation, risk quantification, and analytics and model validation services.

**Client case in point**

**Counterparty credit risk services**

**Client need**
A large global bank needed to perform an assessment of its counterparty credit risk infrastructure and estimate Basel III pro-forma capital requirements for their OTC derivatives portfolio.

**The Deloitte approach**
Deloitte supported the bank by putting together a team of professionals with experience in applicable processes, data requirements, and regulatory expectations, capable of performing the assessment and providing deep insight into the bank’s needs.

**Key results achieved**
As a result of our work, we documented specific gaps in data requirements, business processes, analytics, validation and reporting for counterparty exposures in relation to Basel III rules, and regulatory expectations. We conducted a reconciliation of OTC derivatives portfolio balances to the company’s financial reports. We also developed a calculation tool and the analysis to estimate pro-forma counterparty credit risk capital requirements under both Basel II / III rules and assumptions.

**Client case in point**

**Credit risk services**

**Background**
A regional bank had to respond to Federal Reserve demands for more rigorous credit risk management in areas such as credit policies, credit risk rating systems, loan monitoring procedures, and loan review.

**Assistance provided**
Deloitte was engaged to assist the bank in responding to these regulatory concerns and improving overall credit risk management and specific credit risk management activities. This assistance included:

- Helping the bank to understand the substance and specifics of concerns cited by the Federal Reserve
- Assessing credit risk policies from strategic and business perspectives
- Developing an action plan to remediate the issues cited by the Federal Reserve and to improve credit risk policies and procedures
- Assisting in implementation of the action plan

The bank was able to remediate and address the regulatory concerns cited by the Federal Reserve and improve its credit risk management policies, procedures, and infrastructure.
Client case in point
Market risk services

Background
In response to the market risk rule changes, a bank was actively preparing to be in compliance with the requirements and engaged Deloitte to perform a gap assessment to identify areas that may need remediation.

Assistance provided
Deloitte was engaged to assist the bank in responding addressing to these regulatory concerns and improving overall credit risk management and specific credit risk management activities. This assistance included:
• Reviewing the current rule and proposed rulemaking
• Assessing current state of bank practices
• Performing gap analysis
• Developing recommendations
• Presenting a report and discussed recommendations

Results
• Identified gaps for management’s attention
• Grouped gaps into five functional business unit aligned workstreams for management’s attention
• Developed work plans for each workstream
• Performed follow up reviews of remediation activities

Client case in point
Operational risk services

Background
A large global insurance and financial services company engaged Deloitte to perform a high-level independent assessment of the framework and design of their corporate ERM organization with an emphasis on operational risk management (ORM).

Assistance provided
We developed assessment criteria, which became the defined scope for the assessment. The criteria included a review of the governance and operating model over corporate risk management, resources and skills, policy and procedures, risk identification and assessment, reporting and monitoring, and communication and training. We provided the client with recommendations related to their ORM program to be implemented by senior management. The recommendations included the following: governance and operating model, resources and skills, policy and procedures, and risk identification and assessment.
Risk measurement and analytics services

Background
Risk measurement and analytics have come a long way since the relatively rudimentary tools of market risk and portfolio analysis became available twenty to thirty years ago. However, with increasing sophistication has come increasing complexity, and complexity itself poses risks to decision makers. (Indeed, “model risk” has joined the catalogue of risks to be managed.) Complexity also arises from the data requirements of analytical tools, the structure of the tools, and the range of risks they should analyze.

Risk measurement and analytics provides critical information on which decision makers and regulators rely. Maintaining and increasing the accuracy and quality of this information depends upon effective design, development, implementation, validation, and maintenance of risk models and of the risk quantification and analytical methodologies that underlie them.

Drivers of the need for risk measurement and analytics
Key drivers have increased the importance of risk quantification and analytics:

- Financial companies face a wider range of risks than ever. These risks arise not only from the business environment, which has arguably been challenging, but also from the proliferation of products, the complexity of financial instruments, and the variety of risks, including counterparty, IT, reputational, compliance, and model risk.
- Regulators demand greater diligence and transparency in risk management and governance. For example, the Dodd-Frank Act called for increased board involvement in risk governance, and amended SEC rules for risk-related proxy disclosures called for increased disclosure of board-level risk oversight practices.
- Risk models are only as good as the understanding of methodologies and assumptions that underlie them, as the financial crisis revealed.
- Operational efficiency in lending, capital management, controls, compliance, and reporting depends on efficient risk quantification, analysis, and reporting. Efficient risk management and governance also requires tools that properly detect, measure, track, and report escalating risks.

A robust and effective approach to risk quantification and analytics can create opportunities for improved transparency about an institution’s risk environment, more accurate product pricing, smoother regulatory compliance, and greater profitability.

Description of services
Deloitte’s risk measurement and analytics services support financial institutions’ risk management and governance efforts in a range of ways, on an outsourced or co-sourced basis, in an advisory capacity, or in a hybrid arrangement:

- **Risk measurement services** include design, development, documentation, validation, maintenance, and governance of risk models.
  - **Model development**: Deloitte assists organizations across the modeling lifecycle from model creation to maintenance to the intervening activities. We assist in data definition and sourcing, data quality, and data structures, including the attributes of the data required to support risk quantification and the design and implementation of models. Requirements depend on the model and its uses and may subject the data to statistical techniques acceptable to regulators. For example, data requirements for robust models may be more complex and stringent than those for reporting. We also document, validate, and back-test models.
  - **Model documentation and cataloging**: Deloitte develops and provides documentation for models in development, for existing models, and for models requiring updates or revision. We also assist organizations in categorizing and cataloging models to meet internal needs (for example, to identify linkages, gaps, and overlaps) and regulatory requirements.
  - **Model governance**: Deloitte assists organizations in meeting internal governance needs and external regulatory reporting requirements, Deloitte assists in establishing the governance process around a specific model, or a set of models. We help organizations to develop governance policies and procedures around models and to understand, monitor, and mitigate model risk.
- **Integrated risk analytics and visualization**: Market pressures for improved risk-adjusted performance demand effective use of analytics, as do Dodd-Frank and the Federal Reserve’s CCAR. Goals include measuring risks in specific businesses and
products, identifying exposures across counterparties, determining concentrations and defining metrics for enterprise wide risk-adjusted performance and risk profile, and effectively visualizing the information for rapid decision-making. Specific areas which benefit include:

- **Regulatory compliance and reporting:** Regulatory compliance and reporting can be addressed through profiling to select risk-based samples and exceptions/anomalies for testing. Automating the process of transaction-level testing across regulatory reports improves compliance and reduces risk.

- **On-demand risk:** Near real time analytics provide capabilities such as near real time value at risk (VaR) calculations, pre-deal limit checks, and exposure drill downs. These capabilities facilitate incorporating risk considerations in business processes to improve returns.

- **Lending risk analytics:** Credit scores and conventional measures may not fully measure default risk. Additional macroeconomic, product, and borrower data can enhance these measures, and analytics can evaluate loan default propensity and help determine resource allocations, pricing, and risk mitigation strategies such as collateralization.

- **Stress-testing analytics:** Stress-testing models and aggregation processes can generate a lot of information that can be used to analyze the strengths and weaknesses of a bank’s portfolio under adverse conditions. Analytics and visualization techniques can be used to provide rapid feedback on bank performance under various scenarios.

- **Risk sensing services:** Deloitte’s risk sensing services apply to unstructured data from news services and social media and in websites, analysts’ reports, and blogs, among other sources. Using natural language processing, this service monitors unstructured data to identify emerging risks in predetermined categories and to monitor trends. Combining human and machine logic, big data, and risk ontologies, this service provides early warnings of emerging risks such as reputational risks, to the enterprise or its customers, in social media.

Deloitte can also help clients address situations in which an institution has modeling needs but lacks the required data. We can typically overcome data limitations through independent analysis, benchmarking, and statistical techniques to develop model, and data, at desired or required levels of sophistication.

In sum, Deloitte provides a full range of services to support risk quantification and analytics, from data and model development through risk governance.

In addition to the various capabilities related to risk quantification and analytics detailed in this section, there are other related services described in other sections of this brochure, including the sections for capital management, Basel implementation, risk services, and model validation services.

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**Client case in point**

**Model development support**

**Background**

A major US bank required assistance in:

- Understanding and reconciling the needs of both US and home country regulators
- Recognizing and calculating various types of risk in specific models
- Documenting and validating its models

**Assistance provided**

A Deloitte risk quantification and model development team performed the following activities:

- Assessed sources and developed measures of credit, liquidity, market, operating, and other risk in and across multiple business and product lines
- Assisted the bank in interpreting regulatory and compliance requirements of the US and home country regulators as they apply to the overall bank and its affected businesses
- Enhanced and developed models, as needed, to address and reconcile the risk management and regulatory needs
- Developed and validated documentation for existing, newly enhanced, and developed models
- Provided recommendations regarding model and risk governance
Risk data management and risk technology services

**Background**
Given the central role of information in risk management, FSI companies should work continually so that their IT and data-related capabilities keep pace with risk management and governance requirements. As enablers of the risk and capital infrastructure, risk-related IT and data-management capabilities require attention and periodic updating in key areas such as data collection, processing, analysis, and communication.

FSI companies have invested much and worked hard to meet these challenges. However, given the dynamic nature of the industry, initiatives have too often resulted in fragmented systems and patchwork solutions leading to gaps, overlaps, redundancies, and other inadequacies. This in turn presents problems in monitoring and reporting risk exposures against risk appetite and tolerances.

Regulatory guidance, including the “Principles for Effective Data Aggregation and Risk Reporting,” released by the Basel Committee for Banking Supervision (BCBS 239) in early 2013, has put technology and data squarely in the sights of regulators. While it’s true that the output of a system is only as good as the data going into it, the output also depends on the system processing data. Effective risk management and reporting depends more than ever on the quality of risk technology and data capabilities.

**Challenges in risk technology and data capabilities**
Several major regulatory, risk, and business drivers continue to impact risk technology and data management capabilities. Chief among these drivers are the following:

- New regulatory demands and reporting requirements for capital, risk assessment, and risk disclosure, keep risk technology and data capabilities in flux. Regulators are increasingly focusing not only on the contents of risk-related reporting, but also on the systems that produce them.
- Better risk identification and assessment are required for better risk management from a competitive standpoint, and to meet the expectations of customers, investors, joint venture partners, and other stakeholders.
- Technological change repeatedly redefines the state-of-the-art of risk infrastructure, leaving organizations to distinguish important from trivial developments and to understand which applications are worth adopting or developing.
- Market forces and cost pressures continually push IT managers and management teams to do more with less.

Rarely has there been a greater need for organizations to provide IT support for risk intelligence, while at the same time having to cope with operational, financial reporting, and cost-related pressures. Dealing with these drivers requires experience that even the largest FSI organizations struggle with.

Without careful assessment and analysis of needs, proper planning and resourcing, and solid execution, FSI companies may encounter a number of problems, including the following:

- Incompatible platforms, for example between data warehousing and analysis capabilities, which require system modifications or special calculations to reconcile
- Inadequate upstream attention to data quality, which can undermine risk-calculation accuracy and lead to cumbersome manual adjustments
- Business rules implemented downstream in operating and risk-reporting modules, which often generate system maintenance and transparency issues
- Siloed, product-based capabilities resulting in limited traceability from aggregated results to underlying risk exposures, and limited cross-product reporting capabilities
- Faulty implementations, for example “big bang” rather than phased releases, resulting in severe operational challenges and unforeseen resource constraints

However, given the increasing availability of new methods and cost-effective technologies, FSI companies can meet their regulatory goals while realizing significant operational cost savings. Indeed, Deloitte has identified cost-reduction as a key driver of risk management (after compliance and upgrading risk management systems). Many excess costs are associated with inefficient, resource-intensive business processes in risk management. Many of these inefficiencies can be reduced through automation. However, automation requires experience, and capabilities in business processes, technology, and risk management that few organizations possess in-house in the appropriate mix and scale.
**Description of services**

Deloitte’s risk data management and risk technology services focus on the IT and data management systems that support data collection and risk monitoring, modeling, analytical, control, and business and reporting capabilities. Specifically, these services include:

- **Risk architecture assessment and design services**: Developing requirements and mapping the system architecture and the transformation set the stage for an effective project. The required experience includes knowledge of the organization’s IT systems and business operations as well as management and governance infrastructure and regulatory environment. These should be combined with compliance and reporting demands, data and analytical requirements, leading practices, financial impact, and systems alternatives in order to determine requirements and develop the future-state functional architecture and roadmap to realization.

- **Risk data-processing enhancement services**: Companies should continually respond to external regulatory demands and internal risk management needs with enhancements, updates, and occasional overhauls of IT systems. When doing so, they can benefit by optimizing data processing resources. This may occur through process reengineering and automation of manual activities, as well as tactical solutions to improve performance and controllability.

- **Risk data warehouse implementation services**: For cost, quality, and usability reasons, FSI companies are increasingly turning to centralized risk-data warehouses for enrichment, extension, and quality assurance of risk data. To these ends, Deloitte provides program management, data requirement definition, process optimization, and testing services to support risk data warehousing.

- **Data management services**: Proper data management begins with a design process for data governance in the organization. For example, data management policies and procedures establish authoritative sources of reference data and data-quality business rules to promote quality and consistency at the source. Metadata management includes development of a taxonomy of risk and risk data, an enterprise data dictionary, and methods and rules for system implementation.

Deloitte takes a holistic approach to risk technology and data services, specifically related to the systems, their architecture, data requirements, intended uses, and related interfaces. This approach is important in avoiding gaps, redundancies, excessive costs, and risk-management or regulatory compliance inadequacies.

Deloitte’s breadth of capabilities across business and technology areas is rare among professional services firms in that we work equally well with IT, business, and risk managers to address their needs. This high level of integration and balance, at both strategic and tactical levels, is key to the efficient enhancement of data management capabilities.

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**Client case in point**  
**Risk technology and data services**

**Background**

As part of their Basel implementation Program, a major financial institution recognized the need for support in:

- Performing an assessment of the end-to-end systems and processes related to Basel calculation and reporting to assist in readiness for Basel II Internal Parallel Run
- Assessing the impact of Basel 2.5 and Basel III on the calculation and reporting infrastructure and processes

**Assistance provided**

The Deloitte team was brought in to assist with the Basel implementation program and perform the following activities:

- Design and execution of an end-to-end functional testing initiative to support the Basel II implementation program, in Pillar 1 (using engineered data), Pillar 2/ICAAP (using production data), and Pillar 3 (using production data)
- Provide assistance around rules interpretation issues and the impact on data sourcing and transformation
- Bridge gaps in documentation of Basel data and process flows
- Assess impact of Basel 2.5 and Basel III regulations on the bank’s infrastructure and governance framework
- Assist with planning the end-to-end functional testing effort to support the Basel III implementation
Model risk management and validation services

Background
In recent years, FSI companies have increased their reliance on models in activities such as risk measurement, capital allocation, asset-liability management, valuation, financial reporting, and regulatory disclosure. As a result, proper design, operation, and maintenance of models have become central to risk management efforts. The key to maintaining models, their proper design and operation is rigorous, sophisticated, independent model validation.

Model validation is a critical phase of the overall model life-cycle. Some models fail to function as designed, and even those which apparently do often contain flaws or become outdated as market conditions change. This, as well as faulty design, can pose model risk — the risk of adverse consequences from decisions based on incorrect, misused, or misinterpreted model outputs and reports. Broadly defined, model risk arises from incorrect or misused model outputs and reports.

To ascertain and maintain the reliability of quantitative models and to reinforce proper use, organizations should not only allocate sufficient resources to model validation, but also place high priority on this essential activity.

Drivers of model validation
Regulatory, operational, and risk management needs at banks and other FSI companies are driving the need for more and more rigorous model validation. The following events and factors are among the key drivers:


- While focusing on model validation, this new guidance takes a broad view of model risk management, incorporating model development, implementation, and use, as well as governance and controls related to models.

- The guidance goes beyond pure model validation to encompass applying limits on model use, monitoring model performance, adjusting or revising models, and supplementing model results with other information and analysis.

- This guidance also cited the need for “effective challenge” in managing model risk, which incorporates the competence of, incentives for, and influence of those who review models.

- Model misspecification, inaccuracy, or ineffectiveness can negatively impact risk measurement and, thus, financial performance and reputation. Model errors can also lead to inefficient pricing of risk, deteriorating asset quality, and inappropriate capital allocation.

- A narrow, quantitatively focused approach to model validation may fail to view models in the context of the enterprise’s risk management and governance framework. Such a context is needed to assess who is using the output for which decisions, and for model governance — an area of increasing interest to regulators.

Description of services
Deloitte can assist institutions in meeting regulatory mandates for their model risk management needs including setting up or enhancing model risk management program, providing program/project management support, and performing model validation across a variety of models types (e.g., credit, market, Asset Liability Management (ALM), risk, valuation, stress testing, economic capital, etc.)

Our services around model risk management frameworks and programs are broad and include:

- Governance, policies, and procedures: Definition of model risk management framework and processes, including model risk identification, measurement and reporting, committee structures, roles and responsibilities, model development, validation and controls standards and policies, etc.

- Model inventory: Design, development, and management of enterprise-wide model inventory including organization of models into risk tiers and integration into overall model risk management process.

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2 As used in this document, the terms “model validation” or “validation” refer to one of more model assessment activities described in regulatory and industry literature, such as, for example, OCC 2011-12/SR 11-7, “Supervisory Guidance on Model Risk Management” 2011. http://www.occ.treas.gov/news-issuances/bulletins/2011/bulletin-2011-12a.pdf

3 Ibid.

• **Documentation**: Definition of documentation standards and templates and development of effective and full documentation in support of model lifecycle and risk management activities, including model development, implementation, validation, and use.

• **Program management**: Establish PMO structure, governance, routines, milestones, deliverables, review progress against plans, manage, and facilitate working group discussions and communication, escalate, and report model risk, etc.

Model validation services can be provided on a co-sourcing basis, working hand in hand with the institution’s model validation team or more independently driving the full validation process and encompass the following activities:

• **Assessing model theory and design**: This includes assessing the conceptual and theoretical soundness of models, and the underlying mathematics and code. Activities here include documentation analysis, interviews with key personnel, model walkthroughs, and consideration of the academic literature, alternative models, and industry practices.

• **Assessing inputs and assumptions**: This involves assessing the suitability of the data from internal sources and external sources (such as market prices), and assessing key assumptions underlying the model, information from feeder models, and opportunities for human error, such as data entry mistakes. For unobservable inputs, Deloitte assesses the process for developing the assumptions and evaluates their consistency.

• **Assessing implementation and benchmarking**: These activities assess whether the model has been implemented as designed based on independent recalculations of agreed-upon sample outputs. Recalculations employ client inputs and assumptions, independent methods, and replication. If the client does not conduct back-testing, Deloitte can provide observations and recommendations based on industry practices.

• **Assessing outputs and reports**: These activities assess the accuracy of model outputs (including backtesting) and the reporting context, based on relevance to, and usability by, management. In addition, model outputs are compared with reports presented to management, and considered in light of interpretation of outputs and their use in downstream models or reports.

• **Assessing the control environment**: These activities assess key aspects of the model control environment, including policies and procedures, roles and responsibilities, description of the model in the inventory, change management controls for the model and its inputs and assumptions, model access controls, and the client’s back-testing.

Our demonstrated methodologies and approaches are aligned with our understanding of leading industry practices and regulatory expectations and include tools, techniques, and accelerators specific to certain types of models, which add further rigor, sophistication, and efficiency to these activities.

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**Case in point**

**Model validation services**

The following are only several examples of Deloitte’s work in model risk management with financial institutions:

• Large US bank: Assessed consumer and commercial credit loss forecasting/stress testing models used for CCAR capital plan submission

• Top-tier mortgage originator: Assessed an asset-liability model for a range of products and applications

• Large US bank: Performed liquidity risk model assessment and provided observations and recommendations

• Large US bank: Assessed a vendor-based vendor-based VAR model, including recalculations across a wide range of product types

• Large US bank: Assessed anti-money laundering model platform and rules including data, risk definitions, methodology, and implementation

• Large European financial institution: Assessed exotic equity-derivatives pricing models used in trading operations

• Large financial institution: Assessed a proprietary auction-rate securities model against market practices

• Government-sponsored enterprise: Assessed impairment models and provided observations and recommendations
Our combination of business process, risk management, compliance, regulatory, and financial services industry experience makes the difference. Deloitte brings deep experience to the challenges that FSI companies face in developing policies, processes, and infrastructure needed to achieve business goals while maintaining internal and regulatory compliance.

Independent research firms have rated Deloitte the leader in end-to-end risk management services. Analysts cite, and our clients rely on, our advice and experience, our experienced team of governance, regulatory, and risk specialists, and our ability to provide services wherever and whenever required. Clients also benefit from Deloitte’s:

- Dedicated and specialized practice areas and teams, such as the Center for Regulatory Strategies, the Center for Corporate Governance, and the Center for Financial Services, which provide cutting-edge research and thought leadership on governance, regulatory, and risk management methodologies
- Deep technical experience across disciplines, enabling Deloitte professionals to view each situation objectively, identify its specific opportunities and challenges, and devise an approach that can efficiently help clients address those opportunities and challenges
- Industry- and sector-specific knowledge and understanding, as well as established risk methodologies and tools, developed according to relevant industry standards and in consultation with appropriate authorities
- Risk intelligent approaches to identifying, assessing, selecting, and implementing strategies and initiatives
- Integrated capabilities to address operational, financial, risk management, IT, regulatory, and legal issues
- Practical understanding of internal controls and regulatory compliance processes at industry, national, and global levels with a deep bench of experienced professionals including former regulatory officials of the key financial regulatory agencies
- High-quality, analytical capabilities and a deep repository of project management tools and accelerators
- Current knowledge of marketplace trends, competitive issues, and emerging technologies

Gartner has named Deloitte a Leader, based on completeness of vision and ability to execute in its 2014 Magic Quadrant for Global Risk Management Consulting Services. According to Gartner “Leaders demonstrate strong performance, gaining traction and mind share in the market with a clear vision and direction of market-building competencies to sustain their leadership position in this space. The consultants in this quadrant generally have global accounts and are globally interlinked, and they share superior market understanding, vision, holistic approaches, and comprehensive and consistent methodologies and road maps. They have extensive geographic reach to support their on-site clients and have globally well-communicated, coherent and well-marketed sales offerings. They are also in the position to advise risk regulators. Furthermore, they are well-supported by tools and methodologies.”

Leadership

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