

Basel III: A Primer

What's New in Banking Risk Regulation?



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1. Executive Summary

The July 2013 introduction of the Basel III U.S. Final Rule has brought risk related regulatory and compliance issues to the forefront of the banking industry. As such, supervisory authorities are continuously reevaluating the efficacy of their regulations and periodically introducing refined standards for risk management. The financial crisis of 2008-2009 was due in part to inadequate capital levels and a lack of liquidity, which were not addressed in Basel II. Basel III is an attempt to fill these gaps, amongst other issues not addressed in earlier regulations.

Key aspects of Basel III include:

- A stronger capital base
 - Higher capital requirements, higher capital quality
 - Classifies Tier 1 capital into two components: CET1 and Additional Tier 1
- Additional risk coverage
 - Enhanced quantification of counterparty credit risk
 - Credit valuation adjustments
 - Wrong way risk
 - Changes to RWA calculation formulae
- Introduction of leverage ratios
 - Will penalize banks for taking on excessive debt by requiring them to hold extra capital
- Reducing procyclicality and promoting countercyclicality
 - Capital conservation buffers are intended to help banks absorb losses during times of economic stress
 - Countercyclical buffers are built during periods of economic expansion to ensure loss absorbency during economic downturns
- An updated standardized approach
 - Changes risk weights for certain assets and off-balance sheet exposures
- More stringent data requirements
 - More explicit for economic downturn data, identification/use of benchmarks and use of market data (CDS spreads and equity prices)
 - Increased frequency of data processing
- Introduction of standards for liquidity management and monitoring
 - Will mitigate insolvency under stress scenarios
 - Incorporation into USFR is forthcoming

Due to the breadth and intricacy of Basel III, significant time and capital must be dedicated to its implementation. However, despite the burden of fulfilling regulatory requirements, Basel compliance is imperative for promoting economic stability and reducing the impact of economic downturns on the financial sector.

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Fulfilling regulatory expectations can be an arduous task, especially when considering the new mandates introduced by Basel III. It involves the integration of numerous systems with potential incompatibilities, as well as the incorporation of complex mathematical models and sophisticated algorithms. However, our clients tell us that in order to gain a competitive edge, they need to go beyond meeting minimum requirements and exceeding expectations is the only way to gain shareholder, management and regulatory support. Capgemini provides the end-to-end holistic view, and both the domain and technical expertise to implement Basel III compliance programs successfully.

This paper introduces key aspects of Basel III regulations in the U.S. and is the first in a series of forthcoming Basel III Research papers.

2. Introduction

The new set of Basel regulations includes many enhancements to previous rules and will have both short and long term impacts on banking organizations



The Basel Committee on Banking Supervision (BCBS), which is housed at the Bank for International Settlements (BIS), is a group tasked with providing thought-leadership to the global banking industry (<http://www.bis.org/bcbs>). Over the years, the BCBS has released volumes of risk-related guidance in an effort to promote stability within the global financial sector. By effectively communicating best-practices, the Basel Committee has influenced financial regulations worldwide. Basel regulations are intended to help banks:

- More easily absorb shocks due to various forms of economic and financial stress by holding both enough capital and liquidity
- Improve enterprise risk management and its governance
- Enhance supervisory oversight, regulatory reporting, and transparency

In June 2011, the BCBS released “Basel III: A global regulatory framework for more resilient banks and banking systems.” This was followed by the issuance of a U.S. Basel III Final Rule in July 2013. The new set of Basel regulations includes many enhancements to previous rules and will have both short and long term impacts on the banking industry. Some of the key features of Basel III include:

- A stronger capital base
 - More stringent capital standards and higher capital requirements
- Additional risk coverage
 - Enhanced quantification of counterparty credit risk
 - Credit valuation adjustments
 - Wrong way risk
 - Asset Value Correlation Multiplier for large financial institutions
- Liquidity management and monitoring
- Introduction of the leverage ratio
- Introduction of capital buffers
- Even more rigorous data requirements when compared to Basel II

In light of the new regulations, banks are forced to address many difficult questions. For example, executives must consider how Basel III will play into their risk appetite, how new regulations will impact capital structure and distributions and how they will implement Basel III when they have not yet completed the implementation of Basel II.

The subsequent sections of this paper are organized as follows: Section 3 discusses new regulations introduced by Basel III; Section 4 covers the challenges faced by a banking institution when implementing a Basel program; Section 5 provides an overview of Capgemini’s Basel related capabilities and Section 6 provides conclusive remarks.

The scope of this paper is the Basel III U.S. Final Rule.

3. What's New in Basel III?



Basel III offers a variety of enhancements to the pre-existing Basel II regulatory framework. These include changes to the capital that is eligible to meet capital standards, the introduction of capital buffers as a conservative step to ensure capital adequacy, implementation of leverage ratios and improvements to credit risk quantification. Methods to reduce credit risk include more stringent modeling that will likely lead to higher Risk Weighted Assets (RWA), a new Credit Valuation Adjustment (CVA) charge, identification of Wrong Way Risk and more. Additionally, Liquidity Risk ratios have been introduced by the BCBS and have been proposed for inclusion in the USFR. These changes are intended to strengthen the banking sector's ability to withstand both economic downturns and idiosyncratic risks by understanding exposures and more effectively managing, mitigating, monitoring and reporting risks.

The introduction of Basel III is not only intended to promote increased capital levels, but also to encourage the retention of higher quality capital

3.1. Higher Capital Standards

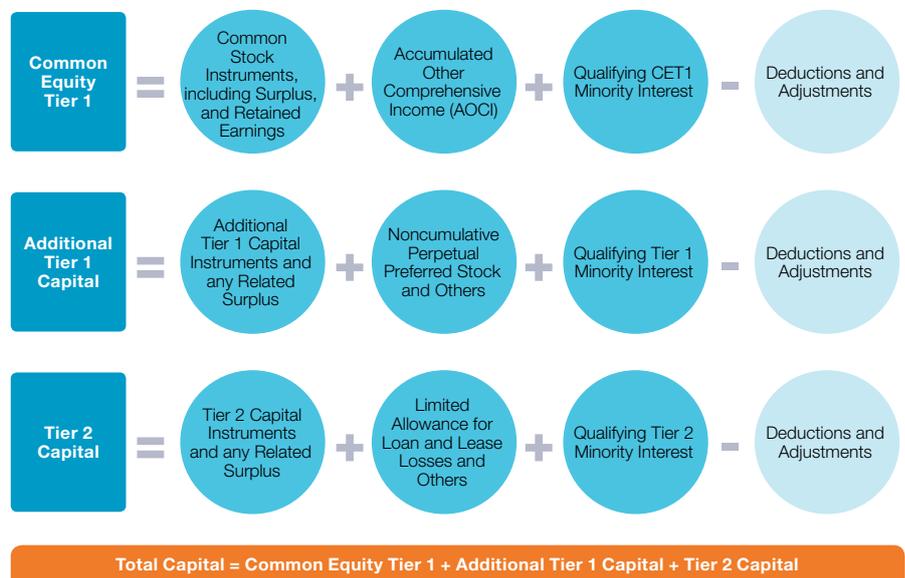
Basel III necessitates that banks hold more capital than Basel II, with a particular emphasis on capital quality. Under Basel II, banks were required to maintain a Core Tier 1 (highest quality) capital ratio of 2%. However, under Basel III, this is replaced by a Common Equity Tier 1 (CET1—higher quality) ratio of 4.5%. Additionally, Basel III requires that banks maintain a Tier 1 capital ratio of 6% and a Total Capital Ratio of 8%.

The introduction of Basel III is not only intended to promote increased capital levels, but also to encourage the retention of higher quality capital. As part of the effort to promote banking industry stability, the Basel III U.S. Final Rule (USFR) changes the components of capital used for capital adequacy purposes.

Basel III splits Tier 1 capital into 2 components—Common Equity Tier 1 (CET1) and Additional Tier 1—and a variety of new deductions are now required. Additionally, innovative instruments are no longer included in Tier 1 equity and hybrid instruments are being phased out from Tier 2. Furthermore, Basel III eliminates Tier 3 capital completely.

The chart below displays the Basel III subcomponents comprising each element of a bank's capital:

Exhibit 1: Basel III subcomponents comprising each element of a bank's capital



Increased conservatism built into the definition of capital is a sign from regulators that they want banking institutions to retain the most liquid capital.

During the 'great recession' of 2008-2009, some banks continued to make dividend payments and issue executive bonuses despite their deteriorating financial condition

3.2. Introduction of Capital Buffers

During the 'great recession' of 2008-2009, some banks continued to make dividend payments and issue executive bonuses despite their deteriorating financial condition. These capital distributions contributed to the weakness in the financial industry. In order to promote greater capital conservation within the banking sector, capital buffers are introduced by Basel III as a tool to ensure that banks are adequately capitalized prior to the distribution of payments to shareholders and in the process maintain liquidity during economic downturns. Banks that fail to meet capital buffer requirements will be penalized through the restriction of capital disbursements.

Capital Conservation Buffer

The Capital Conservation Buffer is a new requirement that calls for the retention of additional Common Equity Tier 1 (CET1). It is intended to serve as an added layer of financial cushioning in the event of an economic downturn. A bank's Capital Conservation Buffer must be greater than 2.5% and is calculated as follows:

Exhibit 2: Capital Conservation Buffer Calculation



Penalties for failure to comply with the Capital Conservation Buffer requirement include restrictions to: dividend disbursement, stock buybacks, discretionary payments and executive bonuses. As banks dip deeper into their Capital Conservation Buffers, they will be subject to increasingly severe penalties.

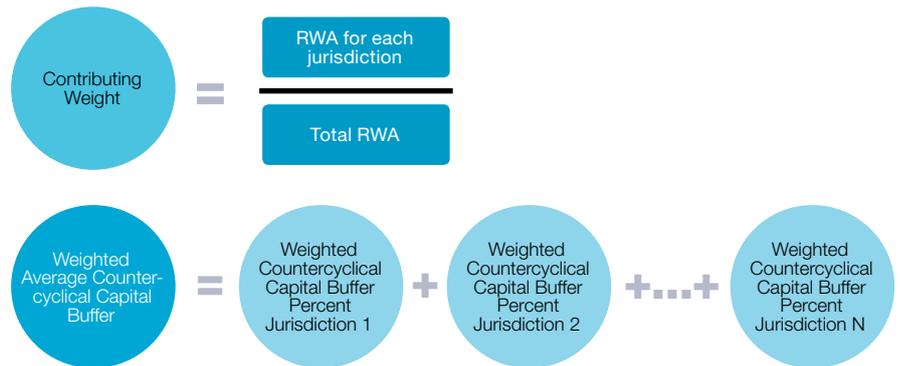
Countercyclical Capital Buffer

The Countercyclical Capital Buffer is a new requirement that can be seen as an extension of the Capital Conservation Buffer. It is intended to shield banking institutions from the risks associated with excessive credit growth that typically accompany periods of economic expansion. The purpose of the Countercyclical Capital Buffer is two fold:

- Accumulation of capital during expansionary periods: this is intended to improve the resilience of the banking system to the losses associated with periods of economic deterioration. For example, if a downturn period were to follow a period of excessive credit growth, the Conservative Capital Buffer would help absorb the greater than average losses that a bank might endure.
- Insulation of the banking system from excessive credit growth: by forcing banking institutions to hold more capital, less capital is available for lending.

A bank's Countercyclical Capital Buffer is set by authorities in the various national banking jurisdictions in which it operates and must be between 0% and 2.5% in the United States. A bank's Countercyclical Capital Buffer amount is calculated as follows:

Exhibit 3: Countercyclical Capital Buffer Calculation



Leverage ratios are intended to improve the resilience of the banking system worldwide by requiring banks to maintain adequate capital for debt repayment

3.3. Leverage Ratios

Leverage ratios are intended to improve the resilience of the banking system worldwide by requiring banks to maintain adequate capital for debt repayment. U.S. regulators have introduced three leverage ratios: the leverage ratio, the supplementary leverage ratio and the enhanced supplementary leverage ratio. The leverage ratio and supplementary leverage ratio are included in the final rule. The enhanced supplementary leverage ratio has been proposed, but has not yet been implemented.

Leverage Ratio

The Leverage Ratio acts as a straight-forward regulatory standard that prevents banking institutions from overly leveraging their capital base. The leverage ratio is calculated as:

$$\text{Leverage Ratio} = \frac{\text{Tier 1 Capital}}{\text{Total Consolidated Assets}}$$

The Leverage Ratio must be greater than or equal to 4%.

Supplementary Leverage Ratio

The Supplementary Leverage Ratio applies only to Advanced Approaches banking institutions and serves as a backstop to regulatory capital requirements. Similar to the Leverage Ratio, it limits the amount of leverage that a banking organization may incur. However, the Supplementary Leverage Ratio compares Tier 1 capital to a combination of on and off-balance sheet exposures. This means that banks with significant off-balance sheet positions could be subject to increased Tier 1 capital retention.

The Supplementary Leverage Ratio is calculated as follows:

$$\text{Supplementary Leverage Ratio} = \frac{\text{Tier 1 Capital}}{\text{Total Leverage Exposure}}$$

The Supplementary Leverage Ratio must be greater than 3%.

Enhanced Supplementary Leverage Ratio

The Enhanced Supplementary Leverage Ratio, which has been proposed by U.S. regulators, is intended to serve as an extension of the Supplementary Leverage Ratio. Under the proposal, the Enhanced Supplementary Leverage would apply to any bank holding company with over \$700 billion in consolidated total assets or \$10 trillion in assets under custody and any insured bank subsidiary of these BHCs. According to these thresholds, the proposed rule would apply to the eight largest U.S. banking institutions. If adopted as proposed, the Enhanced Supplementary Leverage Ratio would require these banks to maintain a Supplementary Leverage Ratio at least 2% higher than the current requirement. In other words, the Enhanced Supplementary Leverage Ratio transforms the 3% Supplementary Leverage Ratio requirement into a 5% requirement for the largest U.S. BHCs.

If adopted, the Enhanced Supplementary Leverage Ratio would take effect concurrently to the Supplementary Leverage Ratio.

Failure to maintain capital adequacy can result in PCA in the form of capital disbursement restrictions, asset growth limitations, executive bonus withholdings and other penalties

Prompt Corrective Action

Leverage ratio requirements mandate that banks hold adequate capital to compensate for their leverage exposures; they penalize banks for taking on excessive debt by requiring them to hold extra capital. A bank's failure to comply with these requirements will result in Prompt Corrective Action (PCA) from regulators. PCA levels for insured depository institutions are:

Exhibit 4: Prompt Corrective Action levels for insured depository institutions

	Well Capitalized	Adequately Capitalized	Under-capitalized	Significantly Under-capitalized	Critically Under-capitalized
Leverage Ratio	≥ 5%	≥ 4%	< 4%	< 4%	≤ 2%
Supplementary Leverage Ratio	N/A	≥ 3%	< 3%	N/A	N/A

Failure to maintain capital adequacy can result in PCA in the form of capital disbursement restrictions, asset growth limitations, executive bonus withholdings and other penalties.

The above PCA levels are subject to change depending on future decisions regarding the Enhanced Supplementary Leverage Ratio.

3.4. Enhanced Risk Quantification

Basel III introduces a number of modifications to risk-based capital calculations. Most of these enhancements apply to securitizations, OTC derivatives, repo-style transactions and eligible margin loans. However, relevant enhancements have also been made to the credit risk quantifications for loan exposures as well. Section 3.4 discusses the key changes to risk quantification introduced by Basel III and explains why they were introduced to the banking industry.

Credit Valuation Adjustment

U.S. regulators define Credit Valuation Adjustment (CVA) as the fair value adjustment to reflect counterparty credit risk in the valuation of OTC derivative contracts. Under Basel II, banks were subject to a capital requirement to cover losses primarily arising from the default of a OTC counterparty. Under Basel III, the CVA capital requirement is introduced to cover losses arising from the fact that as a counterparty's financial position worsens, the mark-to-market value of the counterparty's derivative obligations declines.

The introduction of the CVA capital requirement under Basel III will significantly increase the total capital requirement for financial institutions that engage in OTC derivative transactions

There are two approaches to calculating the CVA: Simple and Advanced. Banks without approval to calculate Advanced CVA must follow the Simple CVA approach.

- Under the Advanced CVA approach, banks use a VaR model to calculate the CVA capital requirement for all applicable derivatives. The model must consider the impact of changes in counterparty credit spreads and hedges
- Under the Simple CVA approach, banks use an approximation derived from a general CVA VaR formulation under a set of simplifying assumptions

The introduction of the CVA capital requirement under Basel III will significantly increase the total capital requirement for financial institutions that engage in OTC derivative transactions.

Internal Models Methodology

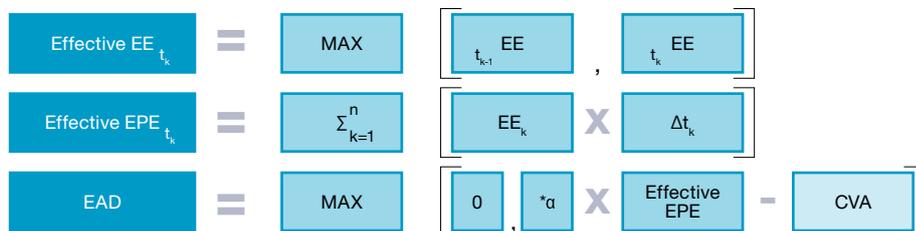
The Internal Models Methodology (IMM) is a technique for estimating the Exposure at Default (EAD) of eligible margin loans, repo style transactions and OTC derivatives. The IMM enables banks to calculate EAD with great sensitivity to risk, allowing for a broad range of risk diversification affects to be recognized when calculating risk based capital requirements.

The IMM involves calculation of EADs and Expected Exposures (EE) under both normal and stressed economic conditions with the larger of stressed and unstressed values used in RWA calculation. EE refers to the expected value of a bank’s credit risk exposure to a counterparty at any specified future date within the life of a netting set.

When implementing the IMM, a bank must use it consistently for all transactions that fit a single category. Additionally, the model must at least annually be subject to a review that is inclusive of backtesting.

Under the IMM approach, EAD is calculated as follows:

Exhibit 5: EAD calculation



*α = 1.4 unless regulators approve a different figure

Once a bank starts calculating EAD by using the IMM, it must seek regulatory approval before discontinuing the IMM or making a material change to its model.

Wrong-Way risk or Wrong-Way exposure occurs when a bank's exposure to a counterparty is adversely correlated with the credit quality of that counterparty

Wrong-Way Risk

The recent financial crisis highlighted the interconnectedness of large financial institutions and the lack of liquidity in the markets in which they operate. In recognition of this risk and in order to address it, Basel III includes enhanced requirements under the IMM for the identification and management of Wrong-Way risk. Wrong-Way risk or Wrong-Way exposure occurs when a bank's exposure to a counterparty is adversely correlated with the credit quality of that counterparty. It arises when default risk and credit exposure increase together. Under the IMM, banks' risk-management functions must identify, monitor, and control wrong-way risk throughout the life of an exposure.

Ordinarily in trading book credit risk measurement, the creditworthiness of the counterparty and the exposure of a transaction are measured and modeled independently. However, this approach ignores the potential effects of wrong-way risk and can lead to an underestimation of potential losses.

Specific wrong-way risk is a category of wrong-way risk that occurs when either the counterparty and collateral issuer, or the counterparty and the reference asset of the transaction, are affiliates or are the same entity. Regulators have prescribed a capital requirement to account for Specific Wrong-way risk.

Increased Asset Value Correlation Multiplier

In order to recognize the correlation between financial institutions' credit risk drivers, Basel III introduces a punitive multiplier of 1.25 to the correlation factor used in a bank's risk based capital calculations for exposures to:

- Regulated financial institutions with over \$100 billion in assets; and
- Unregulated financial institutions

The formula for the financial institution correlation multiplier is:

$$R = 1.25 \times 0.12 + (0.12 \times e^{-50 \times PD})$$

During the recent 'Great Recession,' many banks—despite adequate capital levels—were subject to strains on liquidity

In order to properly implement this new Basel III requirement, banks with the corresponding exposures must create flagging mechanisms for the identification of the appropriate financial institution exposures. These mechanisms must adhere to the new definitions of Regulated Financial Institution and Unregulated Financial Institution that are introduced in the Basel III USFR.

Introducing the Definition of Eligible Guarantor

Basel III introduces a definition for "Eligible Guarantor," the only entities from which a bank can recognize an Eligible Guarantee or Eligible Credit Derivative for PD Substitution or LGD Adjustment purposes. This new definition decreases the number of entities that are able to issue Eligible Guarantees, thereby diminishing a bank's ability to reduce RWA through PD Substitution or LGD Adjustment. Additionally, the definition of Eligible Guarantor will mandate the reevaluation of bank policies associated with risk rating assignment and credit pricing.

3.5. Liquidity Risk

Fulfillment of capital ratio requirements is imperative for ensuring banking industry stability. However, capital requirements alone are not enough. During the recent 'Great Recession,' many banks—despite adequate capital levels—were subject to strains on liquidity. The expedient reversal of economic conditions showed the swiftness with which liquidity can disappear and that illiquidity can persist for extended periods of time. This reinforced the concept that maintaining adequate liquidity is mandatory to ensure the long-term viability of banks.

Liquidity Risk is the risk that a bank will become insolvent due to its inability to meet a demand for cash, or fund its obligations, as they come due

Liquidity Risk is the risk that a bank will become insolvent due to its inability to meet a demand for cash, or fund its obligations, as they come due. In order to address liquidity risk, Basel III (as released by the BCBS) introduces liquidity risk ratios such as the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) and also a variety of liquidity monitoring tools. The LCR has been proposed for incorporation in U.S. regulations and Cargemini expects an LCR final rule to be released in the summer of 2014 with little changes to the proposal. Although liquidity risk rules have not yet been incorporated into U.S. regulations, banks are advised to begin preparing for their implementation in order to maintain competitiveness. The following subsections describe the liquidity risk rules proposed by the BCBS and explain how they are useful for liquidity risk management.

Liquidity Coverage Ratio

The LCR aims to ensure that banks maintain adequate levels of high-quality liquid assets to remain solvent for a 30 day time horizon under a significantly severe stress scenario. The formula for calculating LCR is presented below:

$$\text{Liquidity Coverage Ratio} = \frac{\text{Stock of high quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}}$$

The Liquidity Coverage Ratio must be greater than 100%.

In order to be considered high enough quality for inclusion in the numerator of the LCR formula, an asset must meet the following criteria:

- Cash or easily converted into cash at little or no loss of value
- Low credit and market risk
- Ease and certainty of valuation
- Low correlation with risky assets
- Listed on a well-established exchange
- Active and sizable market
- Presence of committed market makers
- Low market concentration
- Historical use as a “safe haven” asset

Additionally, the stress scenario used when calculating the LCR must incorporate the following conditions:

- Run-off of retail deposits
- Partial loss of unsecured wholesale funding
- Partial loss of secured short-term financing
- Downgrade in credit rating
- Increase in market volatilities which lead to higher risk-based capital requirements
- Unscheduled draws on committed, but unused lines of credit
- Potential need for the bank to buy back debt or honor non-contractual obligations in the interest of mitigating reputational risk

Net Stable Funding Ratio

The NSFR establishes a minimum acceptable amount of stable funding based on the liquidity characteristics of an institution's assets and activities over a one year horizon. "Stable funding" is defined as the portion of those types and amounts of equity and liability financing expected to be reliable sources of funds over a one-year time horizon under conditions of extended stress. The formula for calculating NSFR is presented below:

$$\text{Net Stable Funding Ratio} = \frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}}$$

The Net Stable Funding Ratio must be greater than 100%.

The following sources may be considered as Available Stable Funding for inclusion in the NSFR numerator:

- Cash
- Preferred stock with maturity of one year or greater
- Liabilities with effective maturity of one year or greater
- Non-maturity deposits and/or term deposits with maturity of less than one year
- Wholesale funding with maturities of less than one year

Required Stable Funding includes the following components:

- The value of assets held and funded by the institution
- The amount of off-balance sheet activity (or potential liquidity exposure)

The stress scenario used when calculating the NSFR must incorporate the following conditions:

- A significant decline in profitability or solvency arising from heightened risk exposures
- A potential downgrade in a debt, counterparty credit or deposit rating
- A material event that calls into question the reputation or credit quality of the institution

Liquidity Monitoring Tools

In addition to the calculation of liquidity risk ratios, a number of monitoring tools are available to help banks track their exposure to liquidity risk. These tools are useful for identifying liquidity risk under both normal and stressed financial conditions.

Contractual Maturity Mismatch

The contractual maturity mismatch profile identifies the gaps between the contractual inflows and outflows of liquidity for defined time bands, which indicate how much liquidity a bank would potentially need to raise in each of these time bands if all outflows occurred at the earliest date possible. This metric provides insight into the extent to which the bank relies on maturity transformation under its current contracts.

Concentration of Funding

These metrics are meant to identify the sources of wholesale funding that are of such significance that removal of them could trigger liquidity problems. These metrics thereby encourage the diversification of funding sources. Three primary metrics are used to monitor a bank's concentration of funding.

- 1**
$$\frac{\text{Funding liabilities sourced from each significant counterparty}}{\text{The bank's balance sheet total}}$$
- 2**
$$\frac{\text{Funding liabilities sourced from each significant product/instrument}}{\text{The bank's balance sheet total}}$$
- 3** List of assets and liability amounts by significant currency

Available Unencumbered Assets

Available unencumbered assets provide supervisors with data on the quantity and key characteristics, including currency denomination and location, of a bank's available unencumbered assets. These assets may be used to gain access to additional sources of funding and can therefore be seen as a source of liquidity for banks. Available unencumbered assets include all assets that are marketable as collateral in secondary markets and/or eligible for central banks' standing facilities.

LCR by Significant Currency

Similar to the Liquidity Coverage Ratio described above, LCR by significant currency compares the stock of high-quality liquid assets in each currency on a bank's books with the bank's total net cash outflows in that currency over a 30 day time period. LCR by significant currency is useful for identifying potential currency mismatches in a bank's cash flows.

Market Related Monitoring Tools

Market related monitoring tools, which are commonly employed as leading indicators, are useful for providing instantaneous information to risk managers. Three primary market indicators are used for monitoring liquidity risk. These include:

1. Market-wide information such as the level and direction of major markets
2. Financial sector information such as equity and debt prices for financial sector indices
3. Bank-specific information such as stock prices, credit default swap spreads and debt yields

4. Implementation Challenges



Implementation of a successful Basel program not only necessitates the accurate interpretation of supervisory rules, but also requires the integration of many systems, databases, mathematical formulas and sophisticated algorithms

Basel III is a complex set of regulations covering all aspects of a banking organization. Implementation of a successful Basel program not only necessitates the accurate interpretation of supervisory rules, but also requires the integration of many systems, databases, mathematical formulas and sophisticated algorithms. As such, Basel III presents a variety of implementation challenges. Most of the difficulties that banking institutions face when implementing Basel III can be categorized as Compliance challenges, Data challenges and Modeling challenges.

Basel III requires that banks rely on automated data procedures to the fullest extent possible and that banks are capable of aggregating risk data at varying levels of granularity

4.1. Compliance Challenges

Rules Interpretation

Some Basel III requirements leave room for more than one interpretation; others are clear, but also complex. Any misinterpretation of regulations can lead to delays in Basel compliance and undesired reprimands from supervisory authorities. As such, care must be taken to ensure that all regulatory requirements are interpreted with precision. In some cases, consultation from subject matter experts may be necessary. In all cases, a thorough understanding of relevant requirements by bank employees is essential.

Gap Identification and Remediation

Banks must establish processes for the identification and remediation of deficiencies in their Basel programs. Internal identification and remediation of gaps ensures smoother Basel compliance and audit processes. Development of a healthy dialog with regulators is also recommended for maintaining a clear understanding of supervisory expectations

Qualification Readiness

It takes years of consistent effort in order for a bank to receive regulatory approval to use the advanced approach to Basel compliance. This entails a lengthy application process, followed by a prolonged monitoring period designed to ensure consistent application of supervisory rules. Demonstration of Basel compliance requires the collection and organization of robust sets of evidence that demonstrate adherence to regulations; the periodic resubmission of which can be a laborious task. Additionally, business lines are challenged by the competing priorities which arise from regulatory compliance and routine duties to generate revenues and remain profitable.

4.2. Data Challenges

Data requirements have become more stringent in Basel III when compared to Basel II. Supervisory expectations for banking industry data governance programs have also increased. Basel III requires that banks rely on automated data procedures to the fullest extent possible and that banks are capable of aggregating risk data at varying levels of granularity. Additionally, all material aspects of a bank's data governance program must be documented. These requirements present challenges related to data quality, data lineage, data dictionaries, data integrity and data coverage, all of which are discussed below.

Data Quality

All dimensions of data quality must be documented, defined and demonstrated. This includes standards around valid ranges of values, acceptable error rates and metadata management. Manual approaches to data quality management are now considered too cumbersome and automation has become the norm.

Data Lineage

Data lineage includes recording the flow and transformation of all critical data elements as they are transferred from systems of entry into regulatory reporting. Data lineage must be established, documented and proven. Creation of data flow charts is a supervisory expectation. When creating data lineage documentation, banks should keep in mind that the manual approach (such as through spreadsheets) to data lineage is being replaced by metadata tools. Data lineage has become dynamic due to a variety of factors, making static (not automated) documentation out-dated quickly.

Data Dictionaries

A strong and clean business glossary is needed to provide data transparency to management and to regulators. A standard data dictionary will provide the business logic behind each data element, identify business owner for each data element, determine valid ranges of values for quantitative elements, provide succinct definition for qualitative elements, present data quality thresholds and display acceptable data formats. Compilation of a complete data dictionary usually requires coordination by a bank's data governance organization.

Data Integrity

Data integrity requires the accurate transference of data through a bank's systems. This requires banks to perform business checks at a series of control points to ensure that data remains uncompromised. A strong, scalable architecture with work flow tools helps demonstrate data integrity. Manual touch points should be minimized.

Data Relevance & Coverage

Banks use data to perform a broad array of risk management functions from modeling to reporting. Data is required at varying levels of granularity for a myriad of timeframes and data sources. Data stored must be relevant to all portfolios and storage devices must allow for sufficient data retention. Coverage of both on- and off-balance sheet exposures as well as economic downturn conditions is critical.

4.3. Modeling Challenges

Model Development

Model development requires highly trained resources with both quantitative and subject matter expertise. Additionally, model developers must have the skills necessary to clearly record and communicate all aspects of model development and the inferences drawn from modeling results.

Model Validation

All Basel models need to be validated. This requires additional resources with skills that may not be readily available in the bank or the marketplace. Model validation involves an evaluation of a model's conceptual soundness as well as backtesting and benchmarking model outputs. This process must be performed at model inception and repeated on a periodic basis.

Model Documentation

All models need to be adequately documented. Although this can be a demanding process, it is required in order to receive regulatory approval. Creation of document templates and model development procedures is critical. Model documentation must cover all material aspects of a bank's risk management quantifications.

Risk and Finance Integration

Integration of Risk and Finance data and processes is necessary for Basel as the Allowance for Loan and Lease Losses (ALLL) is calculated by Finance, yet Expected Loss (EL) is calculated by Risk Management and the two figures are supposed to "magically" align with each other. This is tricky at best from an implementation perspective. Banks have to make a concerted effort in developing clear communication channels between the two functions.

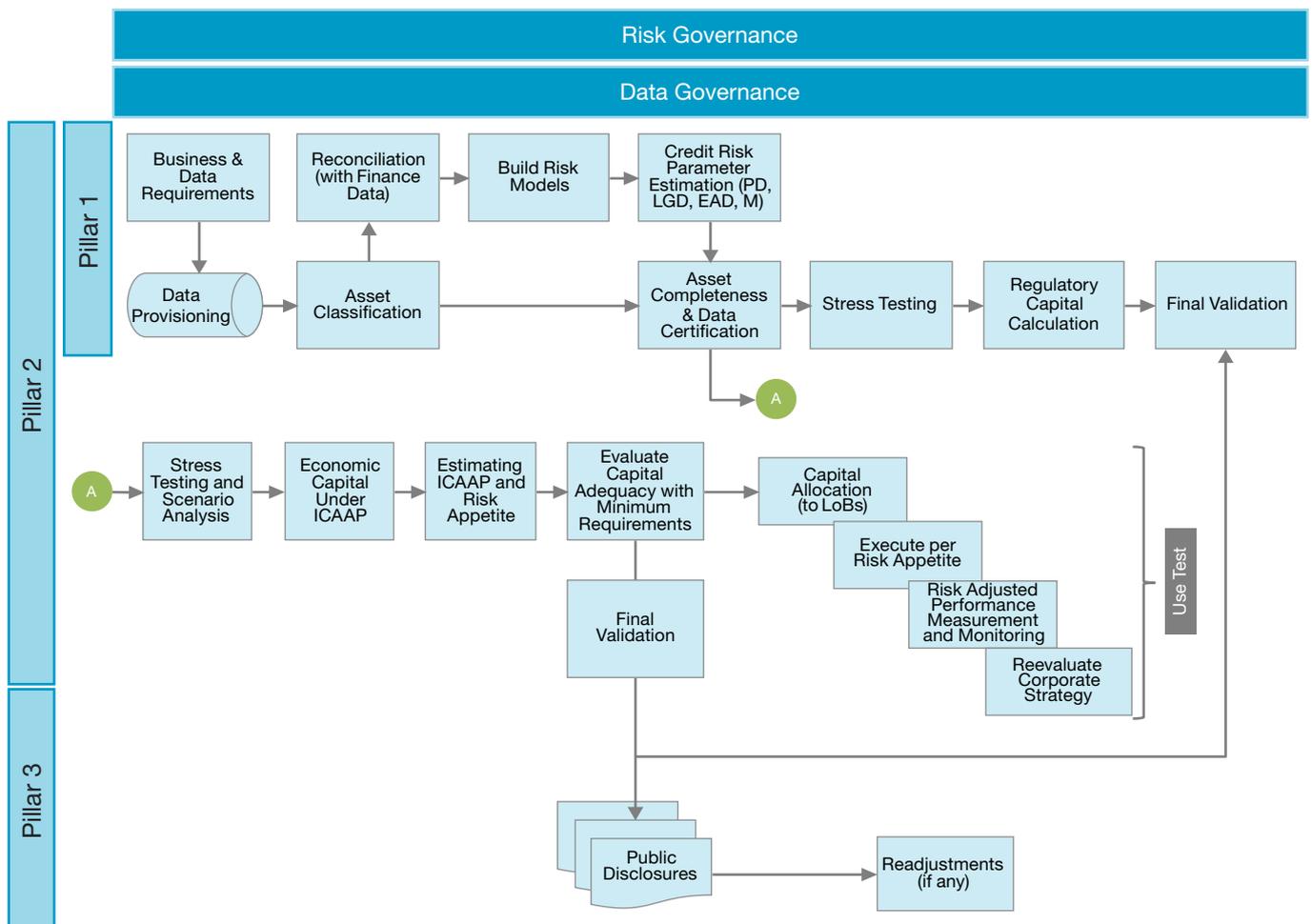


5. Accelerating Your Basel Implementation

With global experience on over one hundred Basel program implementations, Capgemini can help you avoid mistakes that cost both time and money. We leverage proprietary intellectual property, tools and accelerators to reduce the timeline for achieving compliance.

Beyond pure compliance, Capgemini takes a business view of Basel III, working collaboratively with banks and financial institutions to improve business processes and ensure Basel III programs deliver business value. The design of our approach spans all pillars of the Basel regulations and can be found in the end-to-end implementation diagram presented below.

Exhibit 6: Basel III End-to-End implementation diagram



Capgemini engagements are built on a commitment to helping our clients achieve success in reaching critical program milestones through a partnership framework. In order to successfully implement a Basel III program, a bank needs to identify all required program elements and the various processes that connect them.

A Basel III program begins with the development of a strong risk governance framework in which the responsibilities of various stakeholders (including approval authorities of various committees and individuals) are well documented. This requirement holds for a data governance framework as well, given its heightened importance under Basel III.

Capgemini's deep business knowledge of Basel III and experience with numerous Basel implementations has allowed us to build proprietary tools, accelerators and templates that can help financial institutions jump start their Basel initiatives

5.1. Implementation Requirements

Pillar 1

For a successful Pillar 1 implementation, which is a prerequisite for successfully implementing Pillar 2, a bank must:

- Document all business requirements applicable to its portfolio
- Provision data from appropriate data sources
- Classify assets into retail, wholesale, equity and securitization categories for credit risk quantification purposes
- Build scoring and other models; estimate credit risk parameters—PD, LGD, EAD and M; calculate RWA for credit, market and operational risk
- Certify that all assets are accounted for
- Perform stress testing on models
- Calculate various regulatory capital levels needed for a sustained existence
- Validate all processes

Pillars 2 and 3

For a successful Pillar 2 implementation, in addition to following all Pillar 1 steps listed above, a bank must develop a comprehensive ICAAP (Internal Capital Adequacy Assessment Process), including the calculation of economic capital, and ensure that it operates within its specified risk tolerance and risk appetite levels. As a result, the bank will fulfill the requirements of a Use Test—i.e. it actually uses the Basel III processes in its day to day risk management activities.

For a successful Pillar 3 implementation, a bank must submit various reports in a timely manner in order to provide accurate and detailed descriptions of its Basel program to both regulators and the public.

5.2. Proprietary Tools & Accelerators

Capgemini's deep business knowledge of Basel III and experience with numerous Basel implementations has allowed us to build proprietary tools, accelerators and templates that can help financial institutions jump start their Basel initiatives. Additionally, through multiple Basel engagements, we have built valuable relationships with banking regulators both in and outside the U.S. This uniquely positions Capgemini to guide clients through the supervisory examination process.

Capgemini's unique approach to Basel III provides a clear, quantifiable understanding of the impact of risk sensitive capital on business management. This helps banks quantify and prioritize gaps and ensures the sound alignment of project plans with regulatory needs.

Basel Business Requirements

Some aspects of Basel III leave room for interpretation. To avoid unwanted subjectivity, Capgemini has created a proprietary set of Basel III business requirements intended to help our clients translate complex risk regulations into actionable items for their work streams.

Basel II vs. Basel III U.S. Final Rule Text Comparison

Capgemini's Basel II vs. Basel III U.S. Final Rule text comparison can be leveraged for business requirement refinement, test case creation and gap identification. this valuable asset is a must-have tool for banks wishing to accelerate their Basel III implementation.

Basel III Reference Architecture

Our Basel III Reference Architecture provides a template to identify, design and implement all of the tenets of a Basel III solution. This encompasses data collection, aggregation and integration, as well as customer management, product management and enterprise services.

Data Quality and Data Governance Frameworks

Capgemini's Data Quality Framework for risk and data governance provide clients with a proven data quality scoring methodology to measure and evaluate key risk indicators. This enables clients to manage the different aspects of risk data across their organizations.

Additionally, our proprietary metadata framework is helpful for gaining data consistency and transparency from source systems to final reporting.

Model Development

Capgemini's model development services leverage our profound knowledge of risk analytics and modeling techniques to help financial institutions quantify their risk exposures, meet risk management goals and better differentiate between the risks associated with portfolio subcategories.

Model Validation

Capgemini employs a 5-step solution to model validation. This consists of input data analysis, a review of the model's theoretical foundation, a detailed inspection of model code, statistical testing and results interpretation. Capgemini's model validation services include guidelines and algorithms designed to help our clients maintain their credit scoring tools at an affordable cost and also standardized documentation that provides continuity and transparency for third parties such as external auditors and regulators.

Stress Testing

Capgemini's stress testing solution encompasses both Pillar 1 and Pillar 2 requirements by ensuring the adequacy of models across market conditions and allowing clients to identify problematic areas in their portfolios through the analysis of volatile market conditions across exposure categories.

Reporting and Analytics Templates

Capgemini's repository of reporting & analytics templates gives clients access to real world reports from many other implementations so they can pick those that best meet their needs.

5.3. Accelerated Solutions Environment

Capgemini's patented Accelerated Solutions Environment (ASE) aligns the right people to solve complex problems and cultivate change within your organization. The ASE fuses our deep financial services consulting and technology expertise and provides the most powerful approach for rapidly building a transformation map to convert Basel compliance into competitive advantage.

Capgemini's patented Accelerated Solutions Environment (ASE) aligns the right people to solve complex problems and cultivate change within your organization

6. Conclusion

Basel III brings new standards around both the quality and adequacy of capital, liquidity risk, leverage ratios, data governance, and overall risk management practices. In addition, there are significant changes related to credit risk quantification. These changes are intended to strengthen the banking sector's ability to survive significant downturns by managing risk, understanding exposures and minimizing the impact of negative events.

Basel III will be costly for banks due to a variety of factors. For starters, more conservative capital requirements necessitate increased capital retention. Additionally, substantial investment is needed to implement new regulations. The complexity and number of IT systems, data stores and mathematical formulas, coupled with deployment across multiple lines of business, make the task of architecting a successful Basel III program a significant challenge. Key areas of difficulty while pursuing a Basel initiative include rules interpretation, model risk management and systems/data management.

Banks are required by regulators to measure and report on various aspects of Basel III. However, Basel III implementations should not focus exclusively on meeting regulatory requirements. Rather, leading institutions will use Basel III as a catalyst for change. It provides banks with a chance to gain competitive advantage through the enhancement of internal systems and the promotion of industry leading practices.

Although new regulations sometimes lead to diminished short-term profitability, they also help ensure that banks focus on investment opportunities whose risk is well managed, thereby promoting premium growth. Additionally, through the issuance of sound regulations, supervisors support the stability needed to spur economic expansion. A strong economy increases consumer confidence, contributes to a liquid marketplace and promotes healthy competition. Thus, a strong regulatory environment strengthens the banking industry.

Stability is intended to bring long-term growth and profitability to banks. Therefore, it is important that every banking institution takes the steps necessary to properly manage, monitor and disclose its risks. Due to its complexity, establishment of a comprehensive Basel III risk management program can be a daunting task. After all, Basel forces bank management to re-evaluate their growth strategy, the integration of finance with risk management and capital contingency plans. However, when banks are in need of assistance, Capgemini is available to provide the tools and expertise required to transform challenges into steps on the path to success.

Appendix: U.S. Timeline for Basel III Implementation

Exhibit 7: U.S. timeline for Basel III implementation

	2014	2015	2016	2017	2018	2019
Standardized-approach		Effective date				
Advanced-approach	Effective date					
Market Risk final rule		Effective date				
Minimum CET1 ratio	*4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Minimum Tier 1 Capital ratio	*5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Minimum Total Capital Ratio		8.0%	8.0%	8.0%	8.0%	8.0%
Conservation and maximum potential countercyclical buffer			0.625%	1.25%	1.875%	2.5%
Required adjustments and deductions to CET1 capital	20%	40%	60%	80%	100%	
AOCI adjustment to common equity tier 1 capital	80%	60%	40%	20%	0%	
Supplementary Leverage Ratio		Disclosure of ratio begins			Effective date for compliance	

*Applies to advanced approach institutions only

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