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Liquidity Risk Management

A Practitioner's Perspective

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CHAPTER 1

Introduction

Shyam Venkat and Stephen Baird[1]

The global financial crisis began as fears over credit losses and counterparty insolvency eroded market confidence and quickly led to a full-fledged liquidity crisis. As early as August 2007, institutions were seeing a fundamental shift in the liquidity of markets, well before the depth of the mortgage crisis was understood. Today, over eight years later, we stand in the midst of a risk management and regulatory transformation that is touching every aspect of how financial institutions manage their risks and is far from complete. Liquidity risk—one among a very long list of worries for banks, asset managers, regulators, and customers—nevertheless stands apart as it addresses the lifeblood of an institution and liquidity can dry up suddenly if not properly managed. While the credit profile of a loan portfolio can take months or even years to deteriorate, liquidity can disappear in a matter of hours. Liquidity is unpredictable, difficult to measure, and often opaque. In a crisis, market participants are more likely to rely on the media and the rumor mill rather than earnings releases to evaluate the risk of providing liquidity to a trading partner.

Despite these challenges, or perhaps because of them, and also due to the excess liquidity in the financial markets during much of the 1990s and early 2000s, liquidity risk has in many respects held a lower position on the risk management and regulatory agenda than many other key risk types—particularly credit, market, and overall capital adequacy. As described in the chapters that follow, we believe that industry and regulatory focus is shifting rapidly to liquidity risk, and that banks will need to significantly upgrade their capabilities over the next several years. These improvements will touch every aspect of liquidity risk management—framework design, process management and oversight, and technology capabilities all will need to be upgraded to meet both the demands of the marketplace as well as regulatory expectations. Meeting this

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challenge successfully will require an agenda, and the principal objective of this book is to suggest the details and approaches to meeting that agenda.

A PRACTITIONER'S PERSPECTIVE

The subtitle of this book is "A Practitioner's Perspective." What is a practitioner's perspective? In our view, practitioners—treasurers and risk managers charged with actually managing and monitoring the bank's liquidity risk—benefit most from information that:

- **Reflects industry practices:** The practitioners seek to understand how liquidity risk is managed outside of their institution. Where are other firms ahead of them? Where are they leading the pack?
- **Brings a regulatory perspective:** More than ever, the regulatory agenda is shaping the risk agenda. In this environment, understanding what regulators expect—both today and in the future—is an important aspect of building the most effective risk management framework. Arguably though, a well-conceived, robust, and effectively implemented set of liquidity risk management capabilities will generally align with, and even inform, supervisory expectations.
- **Is forward-looking:** The practitioner not only lives in the world of what is possible, but also understands the need to keep moving forward. Understanding emerging trends in liquidity risk management is an important aspect for practitioners.

We also note what this book is not—a theoretical view of how liquidity risk management should be performed in a world of costless analytics and unlimited access to real-time data across the enterprise. We leave that perspective to academia.

OUTLINE OF THE BOOK

This book is organized into three sections. The first section, "Measuring and Managing Liquidity Risk," lays out the building blocks of a liquidity risk program in a series of chapters dedicated to key topics. We begin with Chapter 2, "A New Era of Liquidity Risk Management," by outlining a set of leading practices that can be garnered from each of the chapters in this book. Our chapters—addressing stress testing, intraday liquidity risk management, collateral management, early warning indicators, contingency funding planning, liquidity risk information systems, and the liquidity implications of recovery and resolution planning—are designed to assist practitioners in honing their knowledge of these areas and creating a forward-looking improvement agenda.

The second section, "The Regulatory Environment of Liquidity Risk Supervision," describes recent and upcoming developments on the all-important regulatory front. This landscape includes a focus not only on recent standards in liquidity proposed by the Basel Committee of Banking Supervisors (referred to as Basel III) but other developments in the areas of stress testing and reporting.

The third and final section, "Optimizing Business Practices," considers how this transformation of liquidity risk management practices will impact business activities and how banks should respond. Clearly, with liquidity risk receiving more attention than ever before, sticky money will be more valuable than hot money. The question is: How will banks meet the challenges of aligning their business activities—through product design, funds transfer pricing, management incentives, and other mechanisms—to reflect this new priority?

CORE THEMES

Before we delve into the details, we highlight three core themes that you will see throughout the chapters in this book. These themes represent the fundamental characteristics of today's liquidity risk environment and where we see the future direction. As you read these chapters, please keep an eye out for:

- **The intertwining of the regulatory and management agendas.** The importance of the regulatory agenda in driving liquidity risk transformation is, and will continue to be, a key feature of liquidity risk management. While this agenda is driving banks to improve their practices, practitioners should remain mindful of the importance of an internal management-driven agenda aimed at continuous improvement of the firm's capabilities.
- **The challenge of automation.** In many respects, the challenge of raising the liquidity risk management bar will be less about measurement frameworks and policies and more about implementing a robust set of capabilities that will be underpinned both by effective governance and technology-enabled solutions. Building an infrastructure that captures, stores, and transforms data in an automated and controlled fashion may be the most daunting challenge.
- **The drive to integration.** Despite all of the advances in risk management since the financial crisis, banks' risk management frameworks

remain largely fragmented, with the management of various risks often being addressed in siloed fashion, and with risk management processes themselves often being delinked from other business activities such as strategic planning, incentives, and profitability measurement. Integrating liquidity considerations into how the bank is run will be a key priority.

ACKNOWLEDGMENTS

As this book is a practitioner's guide, we thought it useful to have our team of practitioners that specialize in the risk management arena share their perspectives and insights. We would like to acknowledge not only these contributors, but many dedicated current and former PwC professionals that worked behind the scenes to make this publication happen. They include: Vishal Arora, Lee Bachouros, Michelle Berman, Jon Borer, Rahul Dawra, Amiya Dharmadhikari, Jaime Garza, William Gibbons, Alison Gilmore, Mayur Java, Shahbaz Junani, Emily Lam, Fleur Meijs, Agatha Pontiki, Manan Shah, Dan Weiss, Jon Paul Wynne, Scott Yocum, and Yuanyuan (Tania) Yue.

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PART

One

Measuring and Managing Liquidity Risk

CHAPTER 2

A New Era of Liquidity Risk Management

Shyam Venkat[1]

INTRODUCTION

Liquidity risk management is a core competency for all types of financial institutions, from "sell-side" firms, like banks, to "buy-side" institutions such as insurance companies. Banks typically engage in maturity transformation by funding themselves with deposits and other short-term liabilities and investing in assets with longer-dated maturities, while continuing to meet liability obligations as they come due. Capital markets trading businesses provide market liquidity in various asset classes by facilitating order flow between buyers and sellers of financial assets and maintaining inventory through positions using their firms' own capital.

The period from the mid-1990s to the mid-2000s saw relatively few advancements in the discipline of liquidity risk management, even as approaches for measuring and managing credit, market, and operational risks were gaining in sophistication and infrastructure. The Asian currency contagion of the late 1990s, dotcom bust in early 2000, terrorist attacks of 9/11, and subsequent commencement of two major wars in Iraq and Afghanistan did little to heighten concerns outside of regulatory circles around liquidity risk management or spur significant advances in the risk management discipline. Robust global economic growth, fueled by easy credit, looked poised to remain the new normal as industry insiders, pundits, and regulators touted the benefits of the "great moderation," pushing concerns for liquidity risk into the background.

The global financial crisis began in mid-2007, spurred on by the onset of several liquidity events, and brought on dramatic and rapid change. The dramatic increase in systemic risk made almost all financial institutions—even

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those few leading firms that had upgraded their liquidity risk management practices and infrastructure over the preceding decade and made some astute market calls—unprepared for the crisis. Company treasurers and their treasury functions, tasked with managing enterprise funding and liquidity, were now immediately center stage under the spotlight, and worked feverishly to help keep their institutions afloat even as financial markets and peer institutions faltered around them. Suddenly, client cash and secured financing, long considered safe sources of funding, were evaporating; deposits, even those guaranteed by the Federal Deposit Insurance Corporation (FDIC), were being withdrawn, giving rise to concerns of runs on banks. Previously liquid asset markets with readily transactable quotes experienced significant disruptions as market makers and buy-side customers were unsure how far the contagion would spread and became risk adverse. Consequently, the ensuing erosion of balance sheet strength and earnings power among financial services firms brought forth a renewed focus on the importance of liquidity risk management. The raft of new rules and regulations that shortly followed the financial crisis also prompted financial firms, particularly banks and capital markets institutions, to significantly enhance their capital and liquidity positions and related risk management capabilities. Much of the market scrutiny in the United States, United Kingdom, and Europe directed banks and other financial services firms to concentrate on de-risking balance sheets and enhancing capital management capabilities with respect to risk governance, stress testing, capital planning, and capital actions.

In the aftermath of the crisis, liquidity risk management practices have continued to evolve and the pace of that change has quickened as regulatory guidance continues to raise the standards on what are considered "strong" capabilities. Given the relatively early stage and continuing evolution of capabilities in this area, some of these practices may even be viewed as "leading" in nature. The discussion in this chapter on leading practices for liquidity risk management is, by no means, exhaustive; we acknowledge preemptively the contrary to be true. Moreover, there are several additional sources of excellent guidance on this topic that have been issued by various experts, industry practitioners, supervisory agencies, and other regulatory regimes around the world.

The focus of the compendium of fundamental and leading practices summarized in this chapter is more methodological and practical, rather than the principles-based guidance that is often offered by supervisors and regulators. Accordingly, we offer these views on such leading practices in the hope of giving liquidity risk managers and architects additional insights and considerations that may be helpful in their continued efforts to build best-in-class liquidity risk management capabilities. Such considerations of these leading practices should be made within the context of an institution's business model, size, scale, and complexity, as well as tailored appropriately to fit within the organization's structure, cultural and social norms, operating processes, and supporting infrastructure.

We have organized our views on leading practices along the following areas: (i) Governance and organization, (ii) measuring and managing liquidity risk, and (iii) optimizing business practices. Each of these areas is further discussed in greater detail in the individual chapters of this book. We conclude this chapter by summarizing additional considerations for institutions to ponder as they chart their paths forward and advance their capabilities in this critical risk management discipline.

GOVERNANCE AND ORGANIZATION

Liquidity Risk Management Oversight and Accountability

Strengthen Board Knowledge, Capabilities, and Reporting The events leading up to and stemming from the financial crisis highlighted the need for improved awareness and reporting of liquidity risk at the board of directors and executive management levels within financial institutions. Strong governance is critical in effectively managing all aspects of an enterprise, and liquidity risk management is no exception.

The board of directors of a financial services institution has the ultimate authority and responsibility for approving, overseeing, and monitoring its overall risk appetite and various individual components of its risk profile including liquidity risk. This overall risk appetite and profile, including the liquidity risk component, should be approved by the board to ensure alignment with the broader business strategy of the enterprise, and supported by relevant policies, procedures, roles, and responsibilities. As a practical matter, the board often delegates its authority for establishing liquidity risk appetite to company management in the form of committees, officers, and departments including the asset-liability committee (ALCO), enterprise risk management committee, corporate treasurer, and Chief Risk Officer (CRO).

Leading institutions are expanding board oversight of liquidity risk management to ensure the board has both a broad understanding of liquidity risk management concepts as well as sufficient knowledge of underlying technical details. Further, board reporting has improved to show greater depth and frequency of liquidity risk information and integration between business performance, financial, and other risk metrics to give boards greater clarity and integrated view into the changing business and risk profiles of their institutions.

Leverage the Three Lines of Defense to Align and Integrate Management of Liquidity Risk The three lines of defense depict the institution's internal risk management posture. Each line—the business, the independent risk management function, and the internal audit function—has specific responsibilities with respect to the end-to-end liquidity risk management process, from overall governance, strategic planning, risk appetite setting, risk identification, assessment, and management, through reporting, as well as internal controls.

In the context of liquidity risk management, corporate treasury, and/or ALCO typically serve as the first line and establish the firm's liquidity risk appetite with input and approval from the CRO and the independent risk oversight function. The CRO's independent risk oversight team provides the second-line defense, informing the setting of liquidity risk appetite and monitoring the institution's risk profile with a holistic view across different types of risk (e.g., credit, market, operational, liquidity) under changing market conditions. The third-line function, carried out by internal audit, is responsible for providing an independent, periodic assessment of the firm's internal control systems, including risk management, to the board.

While the corporate treasury function and ALCO bring both a business orientation and a risk management mind-set to their respective roles, it is important for an institution that follows an organization model comprising three lines of defense to empower its second-line risk managers to perform their own independent liquidity risk monitoring, review the assumptions and processes for decision making used by the first line, and challenge those views held by the first line that may prove vulnerable under evolving market conditions and thereby subject the firm to unintended risks. It is critical that institutions overcome legacy organizational silos to ensure that each line of defense effectively carries out its respective role with appropriate oversight and also achieves effective coordination and communication across the organization. A key ingredient to ensuring the effectiveness of second-line oversight is investing in the appropriate staff resources and training on new developments on supervisory guidance and industry practices to ensure continuous and well-informed effective challenge rather than periodic "check the box" reviews.

Overall Risk Culture

Lead and Inspire by having the Right Tone at the Top Effective risk management increasingly depends on the corporate culture to motivate, promote, and support prudent risk taking along with appropriate risk management policies and procedures. While risk policies and procedures might be in place, organizational leaders who do not lead by example jeopardize gaining the buy-in and confidence from their teams.

In setting and reinforcing the institution's risk culture, leaders must instill the risk management mind-set into employees. Leading institutions use rewards and consequences to demonstrate that risk management is everyone's responsibility. These firms maintain a rigorous recruiting process that embeds desired risk culture characteristics into hiring requirements and puts mechanisms in place to encourage escalation, rapid response, investigation, and attention by all employees. In instances where risk management raises concerns and objections to the actions or exposures taken by the business, executive management will need to review the relevant information and make decisions in accordance with the institution's risk strategy and appetite.

See the Independent Risk Function as a True Advisor and Partner to the Business Risks can be more effectively managed when they are controlled at the point of initiation—typically, by the business unit. Despite an increase in board-level support driven by a heightened regulatory environment, there remain additional opportunities for collaboration between the corporate risk and front office functions. Incentives, objectives, and level of influence are often mismatched, straining the corporate risk and front office relationship and making collaboration and actual risk management more challenging.

At leading institutions, there has been a fundamental shift in the firm's overall risk culture, with independent risk groups moving toward acting as risk advisors and business partners. Such institutions have strong risk cultures and improved collaboration in the organization by ensuring the risk management function has a seat and voice at the table. In this respect, institutions have implemented organizational and communication changes that support stronger partnership and collaboration between the independent risk function and business units by defining how risk groups are involved in key business decisions up front, and assigning key risk-related business decisions to those groups and individuals best equipped for execution.

MEASURING AND MANAGING LIQUIDITY RISK

Liquidity Stress Testing (LST)

Align Liquidity, Capital, Risk, Financial, and Performance Approaches and Methodologies Historically, the implementation of liquidity, capital, risk, and financial performance frameworks and tools have typically followed different time frames and paths, leading to variations and fragmentation in an institution's approaches, processes, and infrastructure/support systems.

Leading institutions are taking a more integrated approach to the management of liquidity risk by recognizing the complex interplay of liquidity