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The Liquidity Risk Management Guide

From Policy to Pitfalls

GUDNI ADALSTEINSSON

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To my family

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Preface

For the past few years liquidity problems have taken centre stage for banking and economic policy. The first wave of the tsunami almost paralysed the funding markets and exposed considerable vulnerabilities within the banking liquidity management. In the absence of suitable solutions and improvements, banks started hoarding cash, which in turn has yet created other kinds of imbalances and liquidity complications. This response was in many cases orchestrated by the regulators.

Part of the problem with liquidity risk lies in its abstract nature. Unlike other types of risk embedded in banking, some of which banks deal with every day, liquidity risk losses are few and far between. Due to the dire consequences of running out of liquidity, both to the bank itself and the wider economy, liquidity failure or losses cannot be assumed to be part of the risk/reward business of banking. Therefore, liquidity risk management can become a world of hypothesis where risk professionals can go happily through their whole career of being the 'liquidity fire-brigade', without ever seeing fire or smelling smoke.

The initial idea for this book came after I worked for one of the Icelandic banks during the last financial crises. After spending years in the United Kingdom and Germany helping banks and funds investing and providing liquidity, I was now on the other side of the equation sourcing funds and liquidity. Having a first-hand experience of how the liquidity fire can go from a distant story on the news to an inferno in your own backyard makes one review and question the framework being used and assumptions applied. What previously were far-fetched scenarios and unlikely assumptions turned out to be the way reality

played out. After a brief period at the UK Financial Services Authority, where I had the opportunity to analyse a variety of bank liquidity frameworks across a number of jurisdictions, I noticed how difficult it seemed for some banks to approach this 'hypothetical' problem of liquidity risk in an organized manner. Most banks use the individual ingredients of a liquidity management framework, such as liquidity stress testing or a Contingency Funding Plan (CFP), but in far too many cases this is done separately from each other. Fewer seem to have put the individual pieces of the puzzle together into an integrated framework where the results of one part are used in the other.

All of this made me want to create an approach that puts all the various areas of liquidity risk management into a single overarching framework. After much deliberation a framework skeleton was born where the focus was on creating a general approach that could both alert and mitigate various kinds of liquidity risk, keeping in the back of my mind the lessons learnt from the past. The framework includes all the familiar pieces but the approach, which is of crucial importance, is different and new. The outcome and quality of a liquidity framework is largely dependent on how it is being built up and in which order. Liquidity risk management is to a certain extent based around a set of assumptions on which the outcome is reliant and thus the framework needs to be built up in a step-by-step approach. By doing so the methodology – and its shortcomings – are better known by stakeholders. Being able to recognize and understand the limitations of each of the parts as well as the framework as a whole is of vital importance. The only way to accomplish such a review properly is through an integrated framework. This method is in contrast to lining up all the individual parts in a 'to-do list' and referring to them as a methodology.

Liquidity risk management is a continually evolving field, where past mistakes are used to shape future methods. However, rather than trying to come up with a solution that would only have helped in the special circumstances during the last crises, the framework put forward in the book is focused on the general principles and underlying characteristics of liquidity risk. Recognizing that liquidity risk is not dead and that it is not known how or where it will present itself next time, the aim is to find the source of the problem instead of trying to cure the symptoms.

1

Introduction

Much has been written about what went wrong in banking prior to and during the financial crises. These are, however, in many cases two distinct elements, which both contributed to the unprecedented financial crises.

From the start of the new millennium banks and capital markets enjoyed almost extraordinary times of prosperity where almost every factor both external and internal helped to fuel the growth. Macroeconomic conditions were generally good in the Western world and globalization became more than a buzz word with the influx of Asia and the Eastern bloc. Banks and in fact many other industries were reaping the benefits of deregulation, which had taken place simultaneously in various corners of the world. Apart from a short breather around the dotcom bubble the markets were moving forward at a great pace.

Credit spreads dropped, which helped to fuel the real economy and mid-sized corporates were financing themselves at yields only available to quality sovereigns a few years earlier. The other side of the coin was the search for sufficient yields on investments, which became more and more challenging as time passed with the ever increasing inflows of cash. Technological advances both within actual systems and the field of financial engineering meant that banks met investor demand for 'unchanged' yields with increasingly complex derivatives products. There is no reward without risk and in spite of the strong ratings that most of these products were granted, a higher reward was gained by additional risk. Leverage became a key ingredient in the returns offered. The 'plain vanilla'

fixed income instruments were replaced by structured products and the emphasis of investment banks shifted accordingly. The team in which I had started in one of the investment banks shifted within a couple of years from being the distribution platform for new bond issuance from various companies to structuring and marketing different kinds of collateralized obligations and structured investments to the same investor base.

All pictures have cracks if looked at closely enough and the one painted above was no exception. The increased leverage in the overall system made it vulnerable to any market adjustments or even changes in assumptions on credit quality. The story of how effectively one product in one country (subprime housing loans in the United States) triggered global turmoil has been well covered.

This is the first part that went wrong. The second part was the inadequacy of banks and banking systems to withstand the external shocks, which led to the full-blown financial crises. The wave that hit the systems was of unprecedented magnitude but the walls and blocks in place to prevent the risk were in many cases inadequate. The biggest shortcomings were the lack of adequate liquidity systems, which is the area this book focuses on.

Much changed in the aftermath of the crises. The first response of regulators and supervisors was to apply measurements to prevent the same mistakes being repeated with the aim of restoring the banking system and promoting a more stable economy. Some of the risk measurements that have been put into law and are now being implemented, such as the Basel III framework, are a direct response to the specific factors that went astray. This holds especially true for the new inaugural liquidity ratios, the liquidity coverage ratio (LCR), which will come into effect in 2015, and the net stable funding ratio (NSFR),

which is destined to be met with more resistance and may well take a new decade before it becomes a standard. When the criterion for meeting the two ratios is assessed it becomes clear that their purpose is to prevent history from repeating itself, that is avoiding longer-dated assets being financed with short-term liabilities. Once the standards are being met, it will be difficult if not impossible to imagine the scenario from 2007 happening again, which is something all stakeholders will welcome. However, will it avoid other liquidity problems happening? The short answer is no. No single measurement can capture and control all aspects of liquidity risk, however useful it may be.

It is important to realize that there will be liquidity problems again in the future. The only certainty is that as long as liquidity risk is embedded in the banking systems, there is always a possibility that the risk will go out of control. The problem is we do not know what will go wrong, where or which type of risk it might be; the only thing we know is that it will happen again. This is not a 'the end is near' apocalypse forecast and neither is it implying that the magnitude of future problems will be equal to the last one. It is only a fair reminder that liquidity risk is not dead. On the contrary, liquidity problems are more common than most of us realize. As an example, during the savings and loan crises in the United States in the 1980s and 1990s some 1,200 savings and loan associations failed, costing the US taxpayer about \$150bn.¹ This shows that liquidity risk is not just something that has been happening over the last ten years.

If you do not expect the unexpected, you will not find it; for it is hard to be sought out and difficult.

Not knowing where the risk comes from or when it will happen, what is there to do? To make things even worse

the liquidity risk cannot easily be identified. It is not listed on any exchange. Nor can it be found on any financial institution's balance sheet. Nonetheless, we have established above that liquidity is a critical factor to the well-being and viability of every financial institution.

The approach in this book can be captured in the above 'expect the unexpected' phrase, which is believed to originate from the Greek philosopher Heraclitus of Ephesus.² Though not likely to have been discerning himself about liquidity risk management, Heraclitus did however make a point, which is still valid some 2,500 years later. Rather than trying to avoid the last mistakes from happening, which are well known, it is a better approach to prepare for the unexpected. That can be done by developing a system that can identify various unknown threats from different sources and mitigate them.

In the absence of having a sound methodology some regulators adopted the 'shot gun approach' during the last crises. Not knowing where to aim the best solution was to open fire on anything that moved and hoping the future threats would be amongst the victims. No deaths were reported but many banks have struggled to come to terms with the cost of the burden of maintaining large liquidity buffers, which in some instances do not reflect the risk profile of the firm. For the lack of a better solution, this might be called a pragmatic approach.

However, in the long run the solution is not simply to ask banks to increase their liquidity buffer. Just as investors' most common reaction to increased risk is a 'flight to quality' the regulatory and management approach response to risk failures is sometimes to do more of the same, sometimes much more. This goes on until participants feel the threat has passed or is forgotten. Then these risk measures fall out of favour and are considered as an

unnecessary burden for a healthy business. The situation is similar to one we all know while driving. After being through something we felt was a close call we slow down and become more cautious. Nevertheless, it is not long until the experience has worn off and we are back to our usual speed as if nothing had happened. This happens in risk management as well. We are even seeing the same supervisors easing their liquidity requirement again but without a risk justification, effectively admitting to being too conservative the first time around. This does not send the right message to businesses, which need to accept that the liquidity requirements set by the regulators are adequate and for their own good. A lack of support to the regime is not good for anyone. Therefore, the solution is not simply to lock everything down that will be abandoned sooner or later, knowingly or unknowingly, but to introduce tangible improvements.

1.1 THE IMPORTANCE OF AN OVERARCHING LIQUIDITY RISK MANAGEMENT FRAMEWORK

1995	Mexican crises
1998	Russia default
2001	Argentina sovereign default and banking crises
2008	Global financial crises
2012	Greece banking and sovereign crises

Above is a list of a few selected liquidity crises that have taken place over the past two decades. In reviewing them it is difficult to find one single common thread apart from the fact that financial institutions and sovereigns had problems servicing their liabilities when they fell due and payable, which is the very definition of liquidity risk. The history

does, however, help in a more general manner as it provides a good understanding of the correlation between liquidity sources and their interplay. An example could be the asset-backed commercial paper (ABCP) (the CP issued by special purpose vehicles with collateralized obligations as its sole assets). ABCP might not cause problems again, but the wider experience of asset contagion is something that has been added to the toolbox of every risk specialist.

In the aftermath of the financial crises, liquidity risk management became the centre of attention. The emphasis on improved liquidity risk management did not only come from the individual bank level and their stakeholders. It was even to a larger extent an ultimatum from central banks and governments on behalf of the taxpayers, to demand that banks should recognize the large implications to the economy should they fail to control liquidity risk properly.

However, there are additional reasons for liquidity risk becoming critical to modern banking. The following fundamental but interlinked reasons can be named: a change in the traditional banking intermediation model and amplified competition. Historically, banks relied on stable and low-cost core deposits (demand, savings and time deposits) as the primary source of funding to generate a portfolio of (rather illiquid) loans held to maturity. This is a fundamental risk, as banks are in general structurally illiquid. However, as long as there was an easy access to stable core deposits banks would in normal circumstances be fine. More recently the availability of alternative investments and savings products offered by a wider variety of financial institutions has resulted in a decline in traditional deposit markets from which banks had funded themselves. Secondly, the technological advancement of customer benefits, where depositors can instantly choose between multiple banks, has changed the competitive

landscape of traditional banking and decreased what can be generally called 'core deposits'. Both of these factors call for an improved liquidity management framework, which can be aligned to changing external conditions.

The question then is how well banks are doing in having an adequate liquidity framework in place. Surveys indicate that apart from holding more liquidity than before, liquidity risk frameworks and governance are still not as well developed as other parts of their risk structure and can still be seen as the weakest link.

1.2 THE '6 STEP FRAMEWORK'

The book proposes a new risk management framework to deal with fundamentals of liquidity risk, in any shape or form in which they may arise. Rather than trying to aim at the symptoms of liquidity risk, which are always changing, the focus is set on the fundamental causes, which do not change over time or are different between banks or banking systems.

The book is not a magic pill against all diseases but emphasizes the elements all banks have in common, which can be seen as the core to risk management. By applying a top-down approach when orchestrating the framework the bank will build up a system that is suited to its individual needs and characteristics, rather than trying to mix together various solutions to individual problems. Only by applying the top-down method can the bank be sure that all the risk elements are accounted for and that they come together as individual wheels in a larger machine.

The '6 Step Framework' provides the step-by-step guide to build up the necessary framework and the essential details of each of the subpieces. Most of the mistakes in the past were due to changes in assumptions or the assumptions

generally agreed upon simply turned out to be wrong or outdated. Without the adequate assumptions and the way to arrive at the adequate assumptions, even the best models can fail or build up a false confidence.

Consequently, the focus within the '6 Step Framework' is on the assumptions and on interlinking each of the pieces together with the others rather than trying to play out each scenario.

Liquidity management is a vast subject and the more complex and sophisticated banks will have to expand on the depth of each of the 6 Steps. The book sets out the critical pieces each part needs to have, such as the layout for liquidity scenario stress testing and the adequate approach. It does, however, leave it up to the risk managers to build up more details if needed for the specific risk to that individual bank. The '6 Step Framework' is a framework into which other methods can be linked as they meet the necessary criteria and comply with the other parts of the framework. The framework is therefore applicable to both small and large banks.

There are a few rules that need to be observed when applying the '6 Step Framework'. The first one is to acknowledge that the framework is not like a recipe book. Every step in the '6 Step Framework' builds on the previous one, which in the end leads to a thought-through system. Starting with the desserts first and then moving to the appetizers will not give the desired results and the risk management chef will find that some of the necessary ingredients will be missing.

Secondly, financial institutions should be aware that liquidity risk management is and should remain a cost centre – but a vital cost centre for the bank's operation and continuity as a going concern. The chapter on the various functions of the ALM (asset-liability management) covers

the increased mandate they and the treasury can have and how it can sometimes cross over into capital markets and trading, but the fundamental function of ALM needs to be clearly segregated from profit taking activity, even though they take place close to each other.

Last but not least, the approach is intended to be practical and fill the void in the market place between general high-level policies and some of the advanced technics. As mentioned above, there is a space in the framework for advanced technics as every bank sees fit, but the models should not replace the assumption stage and have a life of their own. The book therefore does not attempt to describe or promote the various detailed methods currently applied but provides the necessary fundamentals they all need to be based on.

1.3 THE STRUCTURE OF THE BOOK

This book makes no special distinction in application to banks or bank holding companies and unless explicitly noted the term 'bank' generally refers to the regulated entity that has both the strategic and operational responsibilities for management of assets and liabilities.

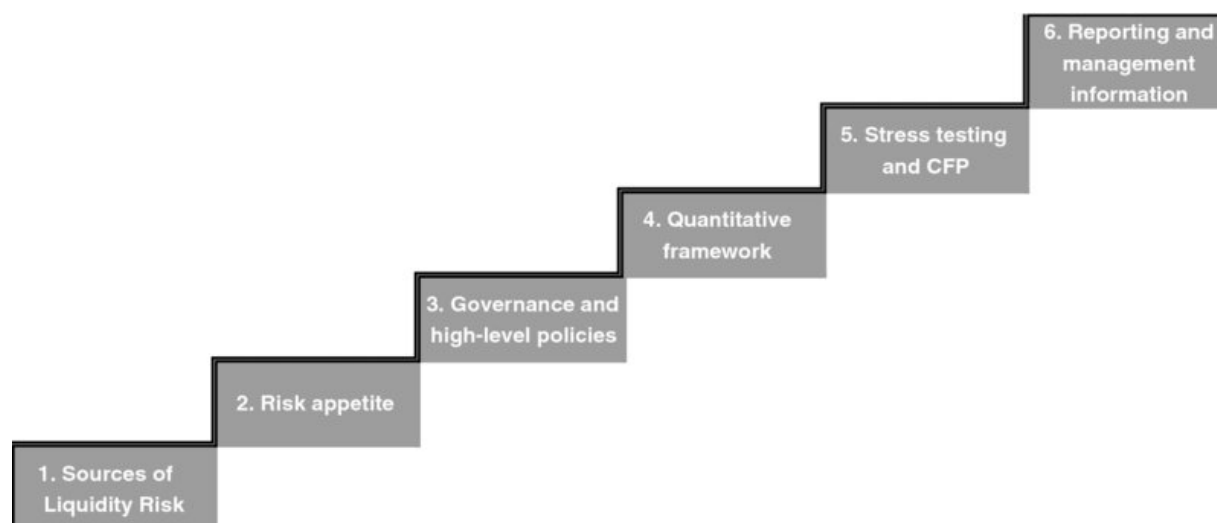
Leading organizations view liquidity risk management as an integral part of the long-term enterprise strategy, not simply a short-term operational undertaking. The '6 Step Framework' can be used to set out the high-level needs of the banks and is not prescriptive in nature. On the contrary, it realizes that the design of liquidity risk management should be tailored to the size, degree of internationalization and the strategy and complexity of the institution's business model.

The book's presentation of liquidity management follows a top-down approach. To make sure liquidity management

fits into the overall risk structure the book starts at the very basic elements of banking and sets out the fundamental roles that banks play in the real economy and how this role is one of risk taking, which is embedded in the fabric of banking. When the essential factors of risk versus returns have been explained the book takes a look at the role of the unit that deals with liquidity risk, the asset-liability management unit and the ALCO (Asset-Liability Committee).

As the ALCO is a critical organization for the build-up of a liquidity management framework, the book puts this responsibility into perspective along with the other duties of the committee, which should help in understanding the governance and policy part of the framework better.

After the stage has been set with the overall risk chapters, the book continues narrowing its focus, concentrating on liquidity risk management. The illustration in [Figure 1.1](#), which shows the '6 Step Framework', is also a guide though the liquidity management chapter of the book.



[Figure 1.1](#) The '6 Step Framework'

The starting point of the '6 Step Framework' is the bank's analysis of its Sources of Liquidity Risk. This step is an

essential prerequisite for the higher steps and jumping steps will increase the risk of falling. It realizes that no two banks have the same Sources of Liquidity Risk. A traditional retail bank funded with client deposit accounts has a materially different funding profile to a securities trading house. The step sets out a mechanism to identify the material sources and gives a list of ten different risk factors banks can assess for their franchise. The outcome of the source of liquidity risk assessment is used in various parts of the '6 Step Framework', including stress testing and contingency funding planning.

After analysing the various risk factors the framework starts to build up. Starting by defining and setting out the risk appetite the bank shows that it is willing to accept it as part of its business and decides how that risk can be most appropriately defined and expressed.

The third step of the framework is dedicated to the governance structure the bank needs to have in place to manage its liquidity risk, including defining roles and responsibilities of the various parties and the chain of command and information. This step includes a guide to set out two of the most important policies within the overall framework, the liquidity policy and the funding policy. It also includes the arrangement of fund transfer pricing – a very hot topic within the field, as banks are required to have a system in place to allocate funding cost appropriately to businesses. This item is now commonly on the top of the to-do lists in the banking community.

Under the policy and governance level of the framework lies the quantitative framework, which is the fourth step. This step provides the necessary framework to measure and project the bank's balance sheet. It provides the necessary understanding of the difference between the balance sheet approach and cash flow projections and sets

out the different yardsticks used under the various methods.

The fifth step of the framework is dedicated to stress testing and contingency funding planning, both of which are vital parts of the risk mechanism. As this is the penultimate step it builds on the findings of all the previous steps, which all contribute to the bank having an appropriate stress testing based on the bank's risk profile and the contingency plans reflect the individuality of the operations.

The sixth and final step sets out how the information and findings of the previous steps are best communicated within the organization in order to create the best understanding possible at each level within the firm to facilitate better decision making.

Basel III is the topic of the final chapter of the book. This new set of global standards will shape liquidity risk management for years to come and banks across the globe are currently preparing to meet its first measurement deadline. The chapter looks at how to access the Basel III liquidity requirements and what adjustments banks need to make on their suite of assumptions to align them with the global standard. This should help banks access their need to adopt the Basel lens on seeing the universe or whether two separate but parallel systems would be better suited to the bank's needs.

ENDNOTES

- [1.](#) See Eisenbeis, R. and Kaufman, G. (2009) Lessons from the demise of the UK's Northern Rock and the US's Countrywide and Indymac, from The failure of Northern Rock, A Multi-dimensional Case Study, SUERF – The

European Money and Finance Forum, Vienna, 2009, p. 87.

[2.](#) Heraclitus (c.535 BC–475 BC).

2

Primer in Banking

Although this book focuses on liquidity management and liquidity risk it is useful before embarking on that tour to take a top-down look at the role banks play in the real economy and the risk associated with being a service provider of funds. This will provide a better understanding of the embedded risk in banking.

The central role of a bank is one of being a financial intermediary. As other intermediaries it buys goods and services from producers and sells them to the final user (consumer). This analogy might seem alien to banking, but a clear example would be the trading and brokering services banks provide and where their role is one of being the middleman. As further expanded later, a retail bank is also an intermediary when it takes deposits from depositors and lends onwards. Here the flow of services or products might be the opposite from the usual definitions; that is in retail banking we have the consumer providing the products (deposits) and the final user or beneficiary can be a producer (a firm).

Why does the economy need a middleman? The answer has certainly changed over the centuries as banks have evolved from a place of safekeeping to more active business partners and risk takers. In today's technologically advanced economy, there are surely markets that could link the fund provider with the user, but apart from the obvious transaction cost and the difficulty of matching the two interested parties, there are other fundamental reasons why banking exists and where liquidity risk plays an important role.¹ Freixas and Rochet, amongst others, have