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What Is Liquidity Risk?

All firms, particularly financial institutions, require access to borrowed funds to carry out their operations, from paying their near-term obligations to making long-term strategic investments. An inability to acquire such funding within a reasonable timeframe could place a firm at risk, as graphically shown by the recent demise of certain investment banks and other financial institutions. While such risks are endemic to financial institutions, increased financial globalization, the development of new financial instruments, and changing macroeconomic conditions have led to a renewed emphasis on the measurement and management of liquidity risk. In particular, the Basel Committee on Banking Supervision (BCBS) recently reviewed and expanded its survey of sound practices for liquidity risk management by both banking organizations and their supervisors. This *Economic Letter* reviews and highlights key elements of liquidity risk measurement and management.

Definition

Liquidity is generally defined as the ability of a financial firm to meet its debt obligations without incurring unacceptably large losses. An example is a firm preferring to repay its outstanding one-month commercial paper obligations by issuing new commercial paper instead of by selling assets. Thus, "funding liquidity risk" is the risk that a firm will not be able to meet its current and future cash flow and collateral needs, both expected and unexpected, without materially affecting its daily operations or overall financial condition. Financial firms are especially sensitive to funding liquidity risk since debt maturity transformation (for example, funding longer-term loans or asset purchases with shorter-term deposits or debt obligations) is one of their key business areas.

In response to this well-known risk, financial firms establish and maintain liquidity management systems to assess their prospective funding needs and ensure the funds are available at appropriate times. A key element of these systems is monitoring and assessing the firm's current and future debt obligations and planning for any unexpected funding needs, regardless of whether they arise from firm-specific factors, such as a drop in the firm's collateral value, or from systemic (economy-wide) factors. To balance its funding demand, both expected and unexpected, with available supply, a firm must also incorporate its costs and profitability targets.

Financial firms can meet their liquidity needs through several sources ranging from existing assets to debt obligations and equity. The most readily available is operating cash flows arising from interest and principal payments from existing assets, service fees, and the receipt of funds from various transactions. For example, active management of the timing and maturity of firms' asset and liability cash flows can enhance liquidity. In addition, firms may sell assets that are near-term cash equivalents, such as government securities. This is typically done on a contingency basis to meet unexpected cash needs, and such liquidity reserves must be actively managed, since the assets must be unencumbered (that is, not pledged as collateral for any other transaction) and easy to liquidate under potentially adverse market conditions.

An important alternative to an outright asset sale is entry into a repurchase agreement with a willing counterparty. In such a "repo" transaction, the owner of an asset sells it to the buyer but also enters into a separate agreement to buy the asset back at a specified time for a set price. From a funding perspective, the repo provides the seller with a short-term loan that is collaterized using the asset in question. The Federal Reserve's discount window is a venue for such repos based on specific asset types as collateral. Access to the discount window has historically been limited to depository institutions. However, in light of the ongoing liquidity challenges in the financial markets, the Federal Reserve has instituted a variety of additional collateralized lending facilities, such as the Term Auction Facility and the Primary Dealer Credit Facility, that extend its ability to provide liquidity to a broader set of financial institutions based on a broader set of collateral types for a greater variety of maturities.

Asset securitization is a form of liquidity management carried out using asset sales, but it is different from the use of liquidity reserves. Securitization refers to the transformation of portfolios of on-balance-sheet loans, such as mortgages or credit card debt, into securities that are sold to outside investors. Depending on the business model, securitization proceeds can be used for ongoing funding of a business line or as a way to meet future funding needs. For example, a firm may view the potential securitization of a pool of mortgages as a method for funding its origination of new mortgages or as a way to raise funds for the firm more generally. The sharp drop in investor demand for asset-backed securities since August 2007 has caused this potential source of funding to become more scarce and costly.

The next funding source is the issuance of debt obligations, which range from short-term repos or commercial paper to longer-term bank borrowing or bond issuance and which include access to central bank liquidity facilities. This funding source is highly dependent on the firm's perceived financial condition. Hence, a firm's public credit standing, whether measured via a credit rating or the credit default swap market, is a key component of the firm's liquidity management system. Finally, the issuance of equity or related capital instruments is an established funding source, but it is much more costly and longer-term than the others discussed.

Financial market events since mid-2007, particularly the contraction of liquidity in certain structured product and interbank markets, have strained the liquidity management systems of all financial firms. According to a BCBS survey of recent liquidity practices (BCBS 2008a), many financial firms have discovered that their liquidity management systems did not adequately account for the aggregate effect of differing liquidity risks across individual products and business lines. In response, the BCBS issued expanded guidance on liquidity management (BCBS 2008b) that focuses on several topics, particularly internal governance issues, liquidity measurement issues, and supervisory response.

Internal governance issues

A central objective of a liquidity risk management system should be to ensure with a high degree of confidence that the firm is in a position both to address its daily liquidity obligations and to withstand a period of liquidity stress, whether firm-specific or marketwide. A key component of this system is a firm's liquidity risk tolerance, which is the level of liquidity risk that the bank is willing to assume. There are several ways to express this risk tolerance, such as the percentage of total debt obligations not fully funded at a point in time. The tolerance should be appropriate for the firm's business strategy, strategic direction, and overall risk appetite. The firm's board of directors should be responsible for setting and monitoring the firm's liquidity risk tolerance.

Correspondingly, the firm's senior management is responsible for developing and implementing a liquidity risk management strategy. The strategy should include specific policies on such issues as the composition of assets and liabilities, especially regarding maturity, and the diversity and stability of funding sources. The strategy should take account of liquidity needs under normal conditions as well as during periods of liquidity stress. The strategy must be communicated to all business units that have an impact on the firm's liquidity position. In particular, liquidity costs and risks should be incorporated into both on- and off-balance-sheet product pricing. This approach should align the risk-taking incentives of individual business units with the liquidity risk their activities create for the entire firm.

Measurement and management issues

The goal of liquidity risk management is to identify potential future funding problems. To do so, a firm must assess the expected value of its net cash flows and the fungibility of its assets. Thus, a firm must be able to measure and forecast the prospective cash flows for its assets, liabilities, off-balance-sheet commitments, and derivative positions. The firm should have a detailed understanding of its contingent liquidity risk exposure and event triggers arising from any contractual, and probably even noncontractual, relationships with special purpose funding vehicles. This assessment must be made over several time horizons, under both normal conditions and a range of stress scenarios. The time horizons should range from intraday to daily, as well as to longer-term, fundamental liquidity needs over more than one year.

Since no single tool can comprehensively quantify liquidity risk, a firm should use several measurement tools to assess its current balance sheet and provide forward-looking analysis of its liquidity exposures. Given the critical role of assumptions in projecting future cash flows, a firm should take steps to ensure that its assumptions are reasonable, up-to-date, documented, and periodically reviewed and approved.

In addition to quantitative methods, more common qualitative tools are needed. One standard tool is to set limits on business activities by simply bounding the firm's risk exposures below a certain level. Another tool is the establishment of early warning indicators to identify the emergence of vulnerabilities in a firm's potential funding needs. Examples of such indicators are rapid asset growth in a business line, decreasing weighted average maturity of liabilities, and additional counterparty requests for collateral. Negative changes in these indicators should lead to an assessment and potential response by management to address the emerging risk.

Another key qualitative tool is stress testing; for a broader discussion, see Lopez (2005). Stress tests should be conducted regularly for several firm-specific and market-wide stress scenarios with the goal of identifying sources of potential liquidity strain. Stress test outcomes can be used for adjusting business exposures, liquidity buffers, and possibly even the firm's risk tolerance. The results of stress tests should also play a key role in shaping the bank's contingency funding plan (CFP), which is the firm's policies and procedures for responding to liquidity disruptions. A CFP should outline how the firm intends to manage a range of stress environments, including clear lines of management responsibility.

Supervisory response

The BCBS guidance very clearly suggests that financial firms should regularly and publicly disclose information that enables market participants to make an informed judgment about the firm's ability to meet its liquidity needs. However, since financial supervisors play an important role in monitoring individual firms and the financial system as a whole, the BCBS guidance also makes recommendations for supervisory oversight of firms' liquidity risks.

The goal of liquidity supervision and regulation is to reduce the frequency and severity of firm-specific liquidity problems and hence lower their potential impact on the financial system. Supervisors should require that firms have a robust liquidity risk management strategy that measures and controls liquidity risk. Supervisors need to assess the effectiveness of the methods and assumptions used to estimate future net funding requirements under expected and alternative stress scenarios. Supervisors should also assess the adequacy of the size and composition of a firm's liquidity positions and the assumptions about their marketability in a range of stress scenarios.

Such assessments may be conducted through on-site inspections and off-site monitoring and should include regular communication with a bank's senior management and/or the board of directors. In addition, supervisors should consider the risk a firm poses to the smooth functioning of the financial system given its size, its role in payment and settlement systems, or other relevant factors. Firms that pose the largest risks to the financial system need more careful scrutiny and should be held to higher standards.

Conclusion

Financial market events since August 2007 have highlighted the prevalence and importance of liquidity risk for all types of financial firms. Liquidity risk management is a necessary component of a firm-wide risk management system. Even though the challenges in establishing and maintaining such a system are substantial, serious efforts by firms, their counterparties, and their supervisors in addressing these issues are critical.

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