

A Liquid Bank is a Solid Bank

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Takeaways

This paper describes:

- Liquidity;
- Why liquidity flees;
- How the Dodd-Frank Act addresses bank funding panics; and
- The Liquidity Coverage Ratio—a new tool regulators will have to test a bank’s ability to survive a liquidity crisis.

Your bank statement may show that you have \$10,000 in your checking account but the money really isn’t there. Your bank loaned most of it to someone else. And now this complete stranger is using your money to buy a house or start a business.

Don’t panic. Deposits up to \$250,000 are insured by the Federal Deposit Insurance Corporation (FDIC). If your bank goes under you are guaranteed to get your \$10,000 back.

But, not all funds deposited or invested in a bank are insured. Uninsured bank depositors and investors are not guaranteed to get all their money back. Therefore, they are more likely to withdraw their money from a teetering bank—before it collapses.

When waves of investors yank their cash from a bank, a special type of bank crisis is triggered—a liquidity crisis.

What is Liquidity?

Liquidity is like the cash you have in your checking account. Every two weeks your paycheck is deposited. You use the funds in your checking account to pay your rent, cable bill, and electric bill—your short-term obligations.

To stay liquid, you need a cash balance large enough to meet your routine, anticipated financial obligations and you need cash in reserve for unforeseen incidents.

Banks need to constantly manage their funds to ensure that they have enough cash on hand to meet their obligations to customers and to make new loans.

According to the Bank for International Settlements (BIS), “Liquidity is the ability of a bank to fund increases in assets [make additional loans] and meet obligations as they come due, without incurring unacceptable losses.”¹

Bank obligations include supplying cash if a customer withdraws \$100 at an ATM or if a business draws down \$1,000,000 from a line of credit. Both of these actions are a drain on bank liquidity.

Lending and liquidity rely on a simple process with a complicated sounding name—“maturity transformation.” In this process, investors and depositors loan money to a bank for short periods of time and the bank *transforms* these short-term funds into long-term loans.

Voila! The economy hums along with banks playing their classic role as intermediary between savers and borrowers.

Bank funding comes from a variety of sources. Banks take deposits, issue certificates of deposit (CDs), stock, long-term debt, and short-term debt. The funds a bank takes in and owes to others are represented by bank liabilities. These funds are used to make new loans and to fulfill the bank’s obligations to others, like paying interest to investors.

Maturity transformation and liquidity both depend on the willingness of investors to continue to provide banks with low-cost, short-term funds. If sources of funding dry up, a bank may become illiquid—unable to make new loans and

struggling to meet their existing commitments to bank customers.

What Makes Liquidity Flee?

Think of the relationship you have with your bank. Do you give advance notice when you are going to withdraw \$200 at the ATM or to tap your home equity line of credit for \$1,000? No.

That's fine. Your bank thinks you are boring and predictable. They have plenty of cash on hand to handle the routine transactions that happen each day. You and your fellow customers can withdraw cash at the ATM and tap your loans.

Deposit insurance guarantees that depositors remain boring. If a banking crisis strikes, you don't need to rush to the bank to withdraw your money. But it has not always been so. You've seen grainy, black-and-white photos from the Depression that show lines of grave-looking bank customers shuffling along the sidewalk waiting to yank their money out of a bank.

Depression-era bank runs were classic liquidity crises. The economy was crashing, businesses were failing. Depositors stopped trusting the strength of their bank's balance sheet—especially its loan quality. FDIC deposit insurance did not exist yet so deposits were at risk.

Modern Bank Runs

1. Commercial Paper Lenders Flee

During the 2008 banking crisis, the old depositor flight risk was replaced by a new liquidity risk—commercial paper funding.

To raise cash, banks issue commercial paper—very short-term, unsecured bonds. Typically, banks and other corporations issue commercial paper with average maturities of about 30 days.² The funds raised by selling these very short-term bonds can be used to finance a bank's inventory of assets and meet its upcoming financial obligations. Money

market mutual funds are the primary buyers of commercial paper.

As Marcin Kacperczyk and Phillipp Schnabl note in their paper on the commercial-paper market during the crisis, “At the beginning of 2007, commercial paper was the largest U.S. short-term debt instrument with more than \$1.97 trillion outstanding. Most of the commercial paper was issued by the financial sector, which accounted for 92 percent of all commercial paper outstanding.”³

In 2007 and 2008, the riskiness of investing in banks exploded. Many investors who had parked cash in money market mutual funds became extremely uncomfortable with their funds exposure to struggling banks. Investors pulled their cash from money market funds. As a result, money market fund investments in bank debt fell because commercial paper lenders demanded their money back from banks.

When investors in commercial paper take their funds and flee, liquidity is drained from a bank—just like the old Depression-era bank runs.

For an in-depth look at money market mutual funds read The Capital Markets Initiative Report: *Money Market Mutual Funds: Are the Investments or Cash?*

2. Revolvers Can Be Harmful to Bank Liquidity

Another potential liquidity drain are revolving loan commitments—referred to in the markets as “revolvers” which are similar to a giant, corporate credit card. They are a resource that a bank customer can draw upon. It is a bank’s commitment to lend to a customer in the future upon the customer’s request, like a line of credit.

A revolver may be drawn upon when a company needs a little extra cash to bridge the gap until its next cash influx or when a company is struggling to re-finance its debt. This may sound similar to the last five days of the month when your

checking account balance gets low and you turn to your credit card to bridge the gap until pay day.

In 2007–2008, during the financial crisis, non–financial corporations started to worry that they didn’t hold sufficient cash to meet their obligations. Would they have enough cash on hand to pay employees and suppliers if the credit markets shut down and they lost access to affordable loans?

So, corporations began tapping their committed lines of credit with banks. This resulted in large outflows of cash from banks to corporations worried about fulfilling their obligations.

When a company calls its bank to draw down on its revolver, the bank is obligated to provide those funds. If credit markets are tight and new loans become expensive lots of companies may draw down on their commitments in order to ensure they have sufficient cash on hand.

For banks, “takedown risk” is the risk that an unanticipated wave of customers suddenly drawdown on their revolvers. When banks are unsure if customers will tap their lines of credit, they will slow the pace of new lending to preserve cash.

As Philip E. Strahan notes in a Federal Reserve Bank of San Francisco Economic Letter, “Banks began cutting back new lending in the middle of 2007.”⁴ But, because of the drawdown on credit commitments, “Loans held on bank balance sheets continued to rise until the end of 2008.”⁵

Asset Fire Sales

Remember, banks don’t have all your money. They loaned it to someone else. So, if a bank does not anticipate a wave of sudden customer or investor cash withdrawals, a bank may be forced to sell the assets it holds—loans and securities—in order to raise cash.

When a credit crisis strikes, multiple banks may seek to dump their assets simultaneously. The market prices for assets will decline sharply.

Funding Liquidity v. Market Liquidity

Liquidity is a term that market participants use frequently. And depending on the context it can mean quite different things. In the context of banking, funding liquidity describes the ability of a bank to borrow from investors and depositors in order to make loans and honor its debts to others.

In the context of markets, market liquidity describes conditions in which investors can buy or sell securities easily, without moving market prices significantly. The market for the S&P 500 index is a highly liquid market. If you own the index you can add to your position or sell your shares quickly. And large trades in the S&P 500 do not move market prices significantly.

Banks hold a wide variety of assets on their balance sheets. Most bank investments are much less liquid than shares of the S&P 500 index. This presents a problem. During a liquidity crisis, when lots of banks are dumping assets to raise cash, a bank may be unable to find a buyer willing to pay a fair price for its assets.

While the S&P index trades continuously, other investments that banks hold may trade infrequently—especially during a crisis.

Less-liquid bank assets may trade infrequently, and investors may be unfamiliar with them. Before buying, they will need time to analyze and price the assets. And, in a crisis, potential buyers may simply be unwilling to buy anything—why buy a security if panic selling will only force prices lower? It's a buyer's market.

Thus, in the midst of a liquidity crisis, a bank may be forced to sell assets at “fire sale” prices because it is desperate. Selling its assets may be the only way to raise the cash necessary to meet its short-term obligations.

Asset prices will also fall during a financial crisis due to the slowdown of economic activity. In other words, assets will actually be fundamentally less valuable than they were before the crisis hindered economic growth and increased economic uncertainty.

At this point, a vicious cycle is triggered. The liquidity crisis threatens to become a bank solvency crisis. To remain solvent a bank's assets need to be worth more than its debts. A bank whose asset values have fallen below the value of its liabilities is insolvent—it has a negative net worth.

A bank that continues to sell assets at deeply depressed prices drives down its net worth. Selling assets at depressed prices locks in losses on assets and decreases a bank's ability to raise cash in the future. The deeper the losses the bank accepts in any fire sale, the less liquid and closer to insolvency it becomes.

Addressing the Liquidity Problem

This worst-case scenario played out during the financial crisis. Commercial paper investors withdrew funds and bank customers tapped loan commitments. In order to raise cash, banks sold assets. Asset prices spiraled downwards.

Since the crisis, the Dodd-Frank Act and banking regulators have taken two specific steps to bolster the liquidity of the banking system.

1. Dodd-Frank Liquidity Management Standards

Dodd-Frank, for the first time ever, puts in place specific liquidity risk management standards that financial institutions must follow. In the past, regulators oversaw liquidity risk management by providing guidance.⁶

The new Dodd-Frank standards apply to banks in the U.S. with greater than \$50 billion in assets. Amongst the

requirements are monthly company-run liquidity stress tests and contingency funding plans (CFPs).

The Dodd-Frank company-run liquidity stress test requirements force banks to assess how they will survive a liquidity crisis. The bank has to estimate to what extent liquidity will be drained from its balance sheet, during a liquidity crisis, when sources of funding dry up and customers tap their loan commitments.

Each bank is required to run three unique liquidity stress tests. The test scenarios must incorporate bank specific liquidity risks, like a loss of funding, and market liquidity risks, like the inability to sell assets at fair value during a crisis.

As part of a bank's internal liquidity assessment, it will be required to identify a "liquidity buffer"—a supply of liquid assets it holds and could sell to raise cash during a liquidity crisis. The value of the assets the bank identifies needs to be sufficient to cover the loss of funds that the bank estimates will occur during their liquidity stress tests.

A contingency funding plan is a roadmap that a bank will use to plan for responding to a future liquidity crisis. A CFP will work in conjunction with the monthly liquidity stress testing requirement.

A comprehensive CFP should include an identification of alternative funding sources that a bank could tap if their standard sources of funding dry up and how the bank will respond if customers rapidly begin to withdraw funds from the bank. The purpose of requiring a CFP is to ensure that banks have an emergency plan in place if a liquidity crisis takes place.

2. Liquidity Coverage Ratio

U.S. banking regulators have also proposed a "Liquidity Coverage Ratio" (LCR) for certain U.S. banks with greater than \$250 billion in assets or \$10 billion in foreign exposures.⁷ The LCR will require banks to hold a stock of

highly-liquid assets that could be sold to raise cash during a liquidity crisis.⁸

Regulators will test the sufficiency of a bank's lockbox of assets by subjecting a bank to a simulated 30-day liquidity crisis. This is similar to the Dodd-Frank liquidity stress testing requirement. But, in this case, bank regulators—as opposed to the bank itself—devise the stressed liquidity scenarios and test the sufficiency of the liquid assets a bank has identified.

The regulatory simulation assumes that, during a liquidity crisis, bank investors will flee, loan commitments will be tapped, and funds will flow out of a bank. The value of the required stock of liquid assets must be large enough to cover the outflows that are assumed to take place during the 30-day liquidity crisis.

This is intended to increase bank safety and allow a bank to be better able to lend throughout a liquidity crisis. As Philip E. Strahan notes, during the crisis, “Banks holding securities with low liquidity, such as [non-agency] mortgage-backed securities, expanded their cash buffers during the crisis and decreased new lending.”⁹

Under the Federal Reserve's proposed LCR standard, a bank's stock of assets must be large enough to cover 100% of the net amount of stressed outflows—depositor withdrawals, lenders halting loans to banks, or companies drawing down on credit lines—that regulators assume will take place during the worst day of a 30-day liquidity crisis.

For example, to simulate crisis conditions, regulators will assume, that if a bank has a \$10 million undrawn revolving liquidity commitment to a corporate client—a liquidity commitment is a commitment that a company can draw upon if they are unable to borrow in the debt markets—that 30% of the \$10 million will be drawn upon during a liquidity crunch. This means a \$3 million cash outflow is assumed and added to the total stressed outflows a bank must account for in computing its LCR.

The LCR can be represented as a fraction with a bank's net outflows—outflows versus inflows—in the denominator. The stock of High Quality Liquid Assets (HQLA) is the numerator. A bank must maintain a stock of assets that is, at a minimum, equal in value to their biggest single day of outflows assumed during a 30-day-liquidity crisis.

The ratio needs to be reported to the institutions primary regulator daily.

HQLA > 100%

Net Stressed Outflows

What Makes an Asset Eligible for the Liquidity Coverage Ratio?

As the Federal Reserve notes, High Quality Liquid Assets share some common traits. These assets are lower risk; and the markets for these assets are expected to remain active and liquid during a crisis.

The bid-ask spread—the differential between the price a buyer is willing to pay and the price at which a seller is willing to sell—should be narrow. A tight bid-ask spread is an indication that investors roughly agree on fair value.

In the realm of liquid assets, cash is king. The quality of other assets is based on how quickly they can be turned into cash at the asset's fair value. The high quality assets include U.S. Treasury bonds, excess bank reserves, debt issued by the Government Sponsored Enterprises (GSEs), agency mortgage-backed securities, borrowings from the Federal Reserve, plus certain higher-quality corporate stocks and bonds.

Not all assets are solid enough to be included in a bank's stock of HQLA. The Federal Reserve separates the highest quality assets—those that are allowed to be included in a

bank's HQLA pool into three classes: Level 1, Level 2A, and Level 2B.

Level 1 Assets

Level 1 assets are the highest quality and most liquid. They are cash and cash equivalents, like U.S. Treasury bonds.

Level 1 assets are included in the stock of liquid assets at their full-fair value with no "haircut." A "haircut" is a term that is used in the markets and it essentially means discount.

If you pledge \$1 million of assets to a lender that demands a 20% haircut you will get credit for \$800,000. Haircuts are used to provide a margin of safety for a lender who holds your assets as collateral—much like a down payment.

Level 2 Assets

Level 2 assets are split into two groups—2A and 2B assets.

2A includes debt guaranteed by the Government Sponsored Enterprises (GSEs), Fannie Mae and Freddie Mac, and debt issued by certain sovereign governments. A 15% haircut applies to these assets. If a bank includes \$1 million worth of GSE debt in its stock of liquid assets, it will get credit for \$850,000 in liquid assets.

Level 2B assets include liquid, publicly-traded corporate bonds and stocks of non-financial companies. 2B assets may be 15% of the total stock of highly-liquid assets and are subject to a 50% haircut. For a stock to be included it must be included in the S&P 500 or another liquid index. This ensures that an active market for the stock exists. In total, only 40% of the entire LCR may consist of Level 2A and 2B assets.

The stock of HQLA is in place to ensure that if funds begin to flow out of a bank at an unexpected rate, it will have a stock of very high-quality assets that it can reliably turn into cash. This prevents fire sales, and the potential for illiquidity to become insolvency. These safe assets, regulators hope, will allow banks to focus on their core function—lending.

Conclusion

Fear is the emotion that made Depression-era depositors line up to get their money back.

But, as Robert E. Lucas and Nancy L. Stokey point out in their Federal Reserve Bank of Minnesota study of liquidity crises, “There were no runs on commercial banks during the financial crisis of 2008. Deposit insurance through the Federal Deposit Insurance Corporation (FDIC) was effective in eliminating the incentive for depositors to withdraw funds.”¹⁰

But deposit insurance didn’t outlaw fear. In 2007 and 2008, fear caused investors to stop investing in short-term bank debt. Investors were afraid that if they left their money invested in a bank they may not get it back.

The new Dodd-Frank planning requirements and the Liquidity Coverage Ratio attempt to counterbalance fear. Instead of dumping illiquid assets in a crisis—causing increased insolvency risk and market panic—banks will plan ahead and have assets that they can quickly turn to cash to satisfy customer demands for cash.

This increases the safety of the banking system and causes banks to be boring and predictable—just like their customers.

END NOTES

1. The Federal Reserve has also proposed a less-stringent LCR “Light” for banks with greater than \$50 billion in assets.

- 2.** The Basel Committee on Banking Supervision (BCBS) released a Liquidity Coverage Ratio in January 2013. The U.S. LCR is substantially similar to the Basel LCR. In some respects, the U.S. standard is even tougher. The BCBS LCR can be accessed here:

<http://www.bis.org/publ/bcbs238.htm>.

- 3.** Bank for International Settlements, "Principles for Sound Liquidity Risk Management and Supervision," Report, September 2008, p. 1. Accessed on December 2, 2013. Available at: <http://www.bis.org/publ/bcbs138.htm>.

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- 4.** Marcin Kacperczyc and Phillipp Schnabl, "When Safe Proved Risky: Commercial Paper During the Financial Crisis of 2007-2009," Report, National Bureau of Economic Research, November 2009, p.5. Accessed on January 10, 2014. Available at:

http://www.nber.org/papers/w15538.pdf?new_window=1.

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- 5.** Kacperczyc and Schnabl, 4p.1. 4

- 6.** Philip E. Strahan, "Liquidity Risk and Credit in the Financial Crisis," Report, Federal Reserve Bank of San Francisco, May 14, 2012, p. 2. Accessed December 11, 2013. Available at: <http://www.frbsf.org/economic-research/publications/economic-letter/2012/may/liquidity-risk-credit-financial-crisis/>.

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- 7.** Strahan, p. 2.

- 8.** Federal Register, Vol. 77, No. 3, January 5, 2012. Proposed rule Dodd-Frank 165, p. 605.

9. Strahan, p.3.

10. Robert E. Lucas, Nancy L. Stokey, "Liquidity Crises Understanding Sources and Limiting Consequences: A Theoretical Framework," Report, Federal Reserve Bank of Minneapolis, May 2011, p.12. Accessed on December 2, 2013. Available at:
http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=4661.