

# Basel Liquidity Regulation: Was It Improved with the 2013 Revisions?

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One of the surprises of the 2007-09 financial crisis was how quickly global funding markets for financial institutions broke down. Negative news stories about the U.S. housing market started to appear in February 2007. In August 2007, funding from the interbank loan and asset-backed commercial paper markets suddenly dried up, soon followed by a breakdown in secured money markets. In reaction, central banks across the world provided liquidity on an unprecedented scale. The global intervention calmed markets, but only until the fall of Lehman Brothers in September 2008. The collapse of Lehman Brothers was followed by a systemic crisis in financial markets and the most severe recession since the Great Depression.

The distress in funding markets was amplified by preceding changes in the liquidity management practices of financial institutions, changes that had accelerated in the decade leading up to the crisis. On the asset side of their balance sheets, financial institutions relied increasingly on securities that were liquid in good times but could become illiquid under market-wide stress. On the liability side, the largest financial institutions relied increasingly on short-term, wholesale money market funding, such as overnight repurchase agreements, to fund long-term

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assets. The financial crisis, during which liquidity shocks at individual institutions led to a systemic crisis in financial markets, suggested to global financial regulators the need for greater liquidity regulation to complement simultaneous changes in capital regulation.

In December 2010, the Basel Committee for Banking Supervision, consisting of senior representatives of bank supervisory authorities and central banks, reached the Basel III Accord (following Basel I in 1988 and Basel II in 2004). Basel III introduced several standards designed to reduce the probability of systemic crises caused by liquidity distress at individual financial institutions. The most prominent of these standards was a requirement that financial institutions maintain liquidity buffers: stocks of liquid assets sufficient to cover 30 days of cash outflow in a “stress event.”

The Accord was revised in January 2013, with new provisions regarding the size, composition and availability of liquidity buffers. This article finds that while the revised liquidity provisions of 2013 improved on the original 2010 provisions, there still are important shortcomings. Section I reviews liquidity management practices in the run-up to the recent financial crisis and their potential contribution to the crisis. Section II describes the rationale for liquidity buffers and the differences between the original and revised sets of provisions. Section III considers the importance of liquidity buffers’ size, composition, and availability and, along each of these three dimensions, evaluates the 2013 revisions of the Basel III Accord relative to its original provisions.

## **I. LIQUIDITY MANAGEMENT PRIOR TO THE 2007-09 FINANCIAL CRISIS**

Liquidity management is an everyday aspect of banking because banks finance long-term loans and other assets with short-term liabilities, such as deposits. Because deposits can be withdrawn at any time, banks must manage their liquidity to ensure they can satisfy deposit withdrawals without being forced to liquidate long-term, illiquid loans. To liquidate loans on short notice is usually costly or, in some cases, impossible. The most traditional liquidity management method applied by commercial banks is the use of interbank loans and highly liquid securities such as U.S. Treasuries to insure against liquidity shocks.<sup>1</sup>

Starting in the late 1990s and increasingly in the 2000s, liquidity management in commercial banks changed dramatically. These changes occurred particularly at the largest U.S. bank holding companies and European universal banks (which combine commercial and investment banking) and at the newly emerging “shadow banks” (financial institutions that perform bank-like activities but outside the scope of traditional banking regulation and supervision).<sup>2</sup> The changes involved new types of assets and heavier use of very short-term liabilities as sources of liquidity, which ultimately contributed to the crisis.

On the asset side of balance sheets, financial institutions invested in asset-backed securities (ABS). Although ABS are liquid during expansionary phases of the economy and even in mild recessions, they became illiquid during the financial crisis.<sup>3</sup> The cash flows of such securities are supported by a pool of loans. The pooling of individual, illiquid loans into tradable ABS was spurred by technological and scientific advances in finance. Although the ultimate purpose was to distribute these securities to other market participants, many financial institutions held positions in the securities for both investment and liquidity purposes, especially if the securities had high credit ratings.<sup>4</sup> The securities’ high credit ratings gave assurance that holders of the securities could either sell them or use them as collateral in repurchase agreements (transactions in which a security is sold for cash and the seller agrees at the same time to buy it back in the future). However, once default rates of the underlying assets (especially subprime mortgages) started to increase, these securities became illiquid as potential buyers shunned them because of their opacity. As a result, banks could no longer use them as a significant source of liquidity.

At the same time, on the liability side of their balance sheets, the largest financial institutions increased their reliance on short-term wholesale funding. The most significant sources of such funding were repurchase agreements (repos) and asset-backed commercial paper (ABCP), the latter consisting of short-term bonds backed by cash flow from underlying assets such as ABS.<sup>5</sup> In fact, the increased reliance on repos and ABCP was tied directly to the growth of ABS. The tradability of ABS created a growing stock of liquid assets that could be used as collateral for borrowing in the form of these short-term wholesale funding instruments. Financial institutions’ demand for wholesale funding

emerged because traditional retail deposits were insufficient to fund the expansion of credit that occurred before the crisis (Perotti and Suarez). This increased demand was satisfied by nonfinancial corporations and institutional investors that used repos and ABCP as places to park their growing cash reserves (Pozsar). Repos and ABCP were good short-term investments because they served as deposit-like instruments that could be redeemed at short notice, were liquid, were secured by highly-rated collateral, and offered a market return (Gorton).

As was demonstrated in the recent financial crisis, relying on short-term wholesale funding sources to finance long-term investments can be very risky.<sup>6</sup> Rising default rates in the subprime mortgage market in the first half of 2007 made investors uncertain about the value of subprime mortgage-backed securities (MBS). The uncertainty reached a tipping point in August 2007 when investors stopped buying ABCP and thus effectively stopped financing financial institutions' stocks of MBS. These financial institutions, in turn, quickly began to suffer from severe liquidity shortages and were forced to seek a substitute for the vanishing ABCP market. Moreover, they faced greater uncertainty about their future liquidity needs, and their counterparties became uncertain about these institutions' exposure to subprime mortgages. The result was a collapse in interbank funding markets. The Federal Reserve and other central banks responded with action to provide more liquidity to the financial system.<sup>7</sup>

As losses on subprime mortgages increased and the housing market collapsed in late 2007, even secured funding markets such as the repo market came under stress, and MBS could be sold only at large discounts. Stress in the repo market contributed to Bear Stearns' demise in March 2008. Finally, the fall of Lehman Brothers in September 2008 sparked a full-blown systemic crisis, during which other large U.S. institutions such as Wachovia and Washington Mutual collapsed after suffering runs by their creditors. A systemic crisis in financial markets was soon followed by the Great Recession in the United States and a global economic downturn.

## **II. THE RATIONALE FOR LIQUIDITY BUFFERS AND THE BASEL III ACCORD**

The recent crisis and recession suggested the need for improved liquidity regulation. The crisis showed how liquidity risk in a relatively

small segment of the financial system, in this case related to the sub-prime mortgage market, could lead to a widespread liquidity freeze across the financial system, an ensuing credit crunch, and finally a severe recession.

### *The rationale for liquidity buffers*

One prominent approach to regulating liquidity in the financial industry is to require a buffer of liquid assets that financial institutions can use in a liquidity crisis. Because holding buffers of liquid but low-yielding assets is costly, and because institutions do not take into account the systemic costs of widespread financial instability, institutions may maintain a stock of liquid assets insufficient to ensure an adequately low risk of systemic crisis.

The collapse of Lehman Brothers illustrates how a financial institution's view of its own liquidity needs can differ starkly from a societal view in which systemic financial stability is a paramount goal. Lehman Brothers claimed to have a "liquidity fortress" of roughly \$40 billion in cash and liquid assets on a balance sheet of roughly \$700 billion (Valukas). However, Lehman's liquidity holdings were quickly depleted as it repaid creditors who had become increasingly uncertain about the company's ability to service its obligations. Without its own liquid assets, and unable to obtain additional liquidity from outside investors, Lehman Brothers became unable to service its outstanding debt obligations and declared bankruptcy. What Lehman Brothers had called a "liquidity fortress" was insufficient to prevent its own collapse, and the costs of its collapse extended around the world through the systemic financial crisis that followed.

Liquidity buffers may reduce the risk of systemic crises in four ways. First, substantial liquidity buffers may make institutions less vulnerable to runs by their creditors because the buffers increase the creditors' confidence in the institutions' ability to service their obligations.

Second, large stocks of liquid assets can decrease institutions' reliance on asset sales as a means to obtain liquidity, or on suddenly withdrawing the financing they provide to other financial institutions, a move known as "liquidity hoarding." Both asset sales and liquidity hoarding create negative externalities for other financial institutions and are therefore detrimental to the stability of the financial system.

Liquidity hoarding is detrimental because when one institution stops providing liquidity to others, the other institutions also may be forced to hoard liquidity or sell assets, leading to a chain effect that spreads throughout the system (Acharya and Merrouche; Heider, Hoerova and Holthausen). Selling assets on an immediate basis, especially less liquid assets, may lead to huge price decreases, either because potential buyers are uncertain about the value of the assets or because they need liquidity themselves. Such price declines can have adverse effects on other institutions holding similar assets because accounting and regulatory rules would require them to mark down the value of their holdings. With their own holdings marked down and regulatory rules requiring the institutions to come up with more capital against marked-down assets, these institutions may be forced to sell assets as well, fueling a cycle of falling prices—and raising concerns about the institutions' liquidity and solvency (Brunnermeier and Pedersen).

Third, if institutions experience a liquidity stress event, liquidity buffers may give their management and supervisors time to find solutions to their liquidity needs (Basel Committee for Banking Supervision 2010a). The experiences of Bear Stearns, Lehman Brothers, Wachovia, and Washington Mutual showed that once a severe liquidity stress event starts, an institution's management has little time to convince markets that the institution is solvent. In such cases it is difficult for supervisors to resolve a failing institution in an orderly manner through a merger or resolution scheme.<sup>8</sup> Instead, under such acute stress, supervisors often face a trade-off between two imperfect solutions, one of which contributes to financial instability in the near term while the other contributes in the more distant future. Supervisors can either force the institution into bankruptcy, risking immediate, adverse, systemic consequences, or they can proceed with a bailout, creating moral hazard in the future (DeYoung, Kowalik, and Reidhill). A substantial liquidity buffer that provides sufficient time to find other, less extreme solutions can reduce the likelihood that supervisors will face that trade-off between a disruptive bankruptcy and a bailout.

Fourth, liquidity buffers reduce institutions' dependence on central banks as providers of liquidity in times of stress. Such reliance on central banks is a source of moral hazard. When institutions anticipate that a central bank will provide liquidity in times of crisis, they have less

incentive to hold their own liquidity buffers. Normally, lender-of-last-resort support from a central bank is provided only to solvent institutions against good collateral. However, in times of acute stress, a central bank might be willing to provide such assistance to any institution against a wide range of collateral. This decreases institutions' incentives to manage their own liquidity prudently in good times, which in turn increases the likelihood of severe liquidity crises and contributes to financial instability (Farhi and Tirole).

### *The original Basel III provisions*

When the Basel Committee for Banking Supervision (BCBS) issued the Basel III Accord in December 2010, it required financial institutions to hold liquidity buffers of a size that would be set for each institution according to a measure called the Liquidity Coverage Ratio (LCR).<sup>9</sup> The LCR is the ratio of the value of an institution's stock of high-quality liquid assets to an estimated value of the total, net cash outflow from the institution, in a hypothetical stress scenario lasting 30 calendar days (BCBS 2010a). The LCR thus was calibrated to ensure that an institution would have sufficient liquid assets to meet its liquidity needs in a 30-day stress scenario during which the BCBS assumed the institution would be allowed to use its liquidity buffer. Such a stress scenario was to be defined as a case in which an institution suffers an institution-specific shock and a market-wide shock at the same time. The scenario encompassed a range of shocks that financial institutions had been exposed to in the recent crisis.<sup>10</sup> Within 30 days from a buffer's release for use in a liquidity crisis, an institution's management or supervisors would need to find a solution to the institution's liquidity problem. Otherwise, the institution would be resolved or the central bank would provide additional support. Although the provisions stipulated that the buffer could be released in the stress scenario, they also required that the institutions would have to maintain their LCRs at levels equal to or greater than 1 at all times. As a result, institutions would have been able to use the buffer only if their LCR had been greater than 1.

Assets that institutions could use as part of the buffer were required to be liquid even in times of stress and, ideally (though not necessarily), eligible as collateral accepted by central banks.<sup>11</sup> The assets were to be divided into two categories. Level 1 assets—such as cash, central

bank reserves that could be drawn during crises, and low-risk sovereign debt—could be included in the buffer without limit and would be counted at their market value. Level 2 assets would include riskier sovereign debt, highly rated corporate bonds, and covered bonds. They could comprise up to 40 percent of the buffer, after discounting their market value by 15 percent—a so-called “haircut”—to reflect that during a market-wide crisis, an institution might be able to sell these assets only at a discount.

The “net cash outflows” used to calculate an institution’s LCR were defined as the difference between cash outflows and inflows. Cash outflows were to be those resulting from a financial institution’s liabilities, such as deposits and other forms of debt obligation, as well as off-balance-sheet commitments such as lines of credit. For each category of liability or commitment that could compel a cash outflow, the amount to be held by the institution was to be multiplied by an estimated rate at which the BSCS assumed the given category of liability or commitment would tend to “run off,” or be drawn down, over 30 days in a stress scenario. The estimates of run-off rates depended on the BSCS’s assumptions about the relative stability of each liability or commitment and thus its expected outflow. For example, insured retail deposits were accorded the lowest run-off rate, 5 percent. Insured depositors have little incentive to withdraw their funds even in a crisis. Lines of credit to financial and nonfinancial institutions were accorded drawdown rates of 100 percent. When such institutions deem their credit provider fragile during a crisis, they usually quickly draw down their lines of credit to avoid losing financing if the provider fails.

Inflows were to be derived from on-balance sheet items and multiplied by a factor representing the rate at which cash would return to a given institution.<sup>12</sup> For example, nonperforming assets were accorded a rate of zero, whereas performing loans to other financial institutions without established relationships were accorded a rate of 100 percent. (Without an established relationship between two institutions, a loan from one to the other is easier to call because the lender is not concerned about damaging an existing relationship.)

### *The revised Basel III provisions*

When Basel III was issued in 2010, the BCBS committed to evaluating the use of the LCR over an observational period and reviewing its

effects on credit and financial markets and on economic growth. The BCBS further “committed to address unintended consequences as necessary” (BCBS, 2013). The banking industry and banking experts directed a significant flow of comments to the BCBS over the next two years and, in January 2013, the BCBS issued a major revision of its provisions.

Critics of the original 2010 liquidity provisions had argued they risked a number of unintended consequences and needed to be revised. Their view was that the original provisions were too stringent and would force some financial institutions to cut lending to businesses and retail customers. Other experts said the original provisions rendered the buffers useless by requiring that the LCR be kept above 1 at all times. Although release of the regulatory buffer was mentioned, the requirement to keep the LCR above 1 at all times meant that the institutions could use the buffer only to the extent that the LCR did not fall below 1.

The new liquidity provisions introduce several important changes to the 2010 provisions, affecting buffers’ size, composition, and availability (BCBS, 2013).<sup>13</sup> First, the new provisions lowered the run-off rates of important bank liabilities affecting the size of the buffer. Run-off rates of deposits were lowered from 5 percent to 3 percent. Run-off rates of corporate liquidity facilities were lowered from 100 percent to 30 percent. And run-off rates of interbank liquidity facilities were lowered from 100 percent to 40 percent. These shifts, which directly lowered the size of the required liquidity buffers, apparently reflected an assessment that the initial estimates of run-off rates were unduly high.

Second, the provisions change the composition of the buffer by expanding the definition of high-quality liquid assets by adding a new category—Level 2B assets—to the Level 1 and Level 2 assets specified in the 2010 provisions. Level 2B assets can comprise no more than 15 percent of the total stock of high-quality liquid assets. They include lower-rated corporate debt and common equity shares, both discounted from their market value by 50 percent, and certain residential MBS, discounted by 25 percent. The decision to broaden the definition of high-quality liquid assets acknowledged a key concern about the initial definition. Critics had argued the original, narrower definition would significantly increase demand for the safest, most liquid assets. Because only limited quantities of such assets are in circulation, the increased demand for holding those assets potentially could lead to an excessive

reduction in the supply of credit to the real economy, a reduction in the liquidity of these assets, distorted pricing, and a concentration of risk.

Finally, the new provisions affect the availability of liquidity buffers, proposing specific guidelines for how and when the buffers may be used. This change recognizes that the former requirement always to maintain an LCR of 1 or higher would force the financial institutions to hold substantial liquidity buffers on top of the regulatory buffer.

### III. EVALUATING THE NEW PROVISIONS

The effectiveness of the LCR in regulating liquidity buffers depends on at least three factors: (1) the size of the buffers, derived from estimates of net cash outflows in a crisis, (2) the composition of the buffers, determined by regulators' decisions about what assets are sufficiently liquid, and (3) the availability of the buffers in crises. This section compares the effectiveness of the original and new BCBS provisions based on these three factors and evaluates whether the revisions constitute an improvement.

#### *Liquidity buffer size*

For a liquidity buffer to be effective, its size, as determined by predicted net cash outflows, should reflect an institution's liquidity needs in a crisis. However, determining these liquidity needs for the purpose of the regulatory liquidity buffer is difficult for two reasons. First, policymakers face considerable uncertainty about institutions' future liquidity needs. The policymakers' task is complicated further because institutions and their counterparties may adapt their behavior after liquidity regulation is in place in a way that is inconsistent with current assumptions. Because policymakers do not yet have information about institutions' liquidity needs in an environment with liquidity regulation, the estimation of liquidity needs is extremely difficult. Second, the liquidity needs of individual institutions depend on the institutions' own characteristics, such as the structure of their liabilities and capital, their risk profile, their size, their business activities, and the supervisory and political environments in which they operate.

The BCBS based its estimates for run-off and return rates on an analysis of historical data, industry stress scenarios, and existing regulatory and supervisory standards (BCBS, 2010b). Under both the

original and new liquidity provisions, all institutions are subject to the same run-off rates for liabilities and return rates for assets, which differ only with respect to the perceived stability of the funding and revenue sources.<sup>14</sup> The BCBS uses this one-size-fits-all approach to implement the standard consistently across the world and to avoid a situation in which national supervisors might set lower standards themselves.

However, such an inflexible treatment of run-off and return rates is problematic for two reasons. First, estimates that are based on historical data may fail to predict potential changes in the behavior of institutions and their counterparties in reaction to the regulations. For example, some institutions may take on greater risk to compensate for the cost of having to hold larger liquidity buffers (IMF, 2010). Greater risk might increase institutions' susceptibility to liquidity shocks and, in turn, increase their liquidity needs beyond what the BCBS assumed. Thus, estimates of liquidity needs based only on historical data, which cannot capture institutions' reactions to future liquidity regulation, may be unreliable.

Second, estimates of both run-off and return rates are set without accounting for the fact that, in the event of a liquidity crisis, the actual rates will be determined by the individual characteristics of a given institution and the particular market environment in which it functions. For example, the Basel III approach requires that, all else equal, an institution with diversified assets must maintain the same size of liquidity buffer as an institution with assets concentrated only in one area. Such an approach does not account for the fact that the well-diversified institution will likely have higher cash inflows during a crisis and thus potentially will be less susceptible to severe liquidity problems.<sup>15</sup> Hence under the Basel III approach, a well-diversified institution bears the same cost of insuring against liquidity shocks as a less-diversified institution, even though the less-diversified institution is more vulnerable to liquidity shocks. Such an approach might have further adverse consequences. For example, it might encourage well-diversified institutions to take on greater risk to compensate for the fact that their diversification is not rewarded with a lower liquidity buffer.

Finally, an inflexible approach to run-off and inflows rates opens the possibility that financial institutions may seek to exploit loopholes in the regulation, engaging in "regulatory arbitrage" to lower the cost of

holding liquidity buffers. The same problem may arise from an inflexible approach to the classification of liabilities that are subject to the LCR standard—namely liabilities with maturities of less than 30 days. Some commentators have asserted that financial institutions are already devising strategies to avoid having certain liabilities classified as subject to the LCR standard (Alloway and Bullock). One strategy is to devise a liability, or a commitment instrument, that theoretically would never reach a maturity of less than 30 days. An example of such an instrument could be a repurchase agreement with an initial maturity greater than 30 days that is rolled over 31 days prior to its becoming due. From a supervisory point of view, such an instrument is problematic because it creates a risk that the instrument will not be rolled over as intended during a severe liquidity crisis, thus creating a liability with maturity shorter than 30 days that was not covered by the LCR standard.

#### *Liquidity buffer composition*

For liquidity buffers to fulfill their function, the assets that comprise the buffers have to be sufficiently liquid at the time the institution needs them. When choosing which assets may be included in liquidity buffers, policymakers therefore must strike a balance between a definition of eligible assets that is too broad and a definition that is too narrow. On one hand, if the definition is too broad, a portion of the liquidity buffer might not be liquid when needed. Examples include the AAA-rated securities backed by U.S. subprime mortgages in recent years and the sovereign bonds of some European countries. In the pre-crisis period, institutions regarded these securities as liquid based on their credit ratings. However, as their quality deteriorated, the assets became illiquid precisely when they were most needed.

On the other hand, if the definition of eligible assets is too narrow, financial institutions may face a limited supply of such assets, resulting in several unintended consequences. First, institutions may respond by reducing their lending excessively. With fewer assets defined as eligible, the institutions would have to reduce their short-term liabilities to meet the LCR requirements. Because these liabilities are the main source of funding for loans, defining the eligible assets too narrowly could limit the overall supply of credit.

Second, a definition that is too narrow could reduce the liquidity of those assets that are defined as eligible. The critical feature of the eligible assets—their liquidity—might be impaired because institutions that are forced by the regulation to hold them would accumulate them rather than trade them (IMF, 2012).

Third, a narrow definition of eligible assets could lead to an increase in concentration risk in institutions subject to the liquidity buffers. Increased concentration risk could lead these institutions into sudden breaches of liquidity regulation and, therefore, into increased vulnerability to liquidity shocks. These consequences could occur if any of the assets that were held as part of the buffers were to suddenly lose the features that had made them eligible. An example could be a sovereign debt that suddenly becomes at risk of default (ECB).

Fourth, increased demand from institutions for eligible assets, given a limited supply of such assets under a narrow definition of eligibility, might affect pricing patterns. Some eligible assets might have permanently lower yields due to increased demand fueled by liquidity regulation. Moreover, demand for other assets, such as AAA-rated asset-backed securities, might fall because they would not be eligible for liquidity buffers. The decreased demand for such assets might increase their yields, resulting in a higher cost of lending to the real economy.<sup>16</sup> Although some of the decreased demand might be justified by a decline in credit and leverage to more sustainable levels relative to the pre-crisis years, too narrow a definition might decrease this demand further and, therefore, restrict credit supply excessively.

To reduce the scope for some of these problems, the new Basel provisions broadened the definition of eligible assets. The IMF (2012) estimated that to satisfy the original provisions of the LCR, institutions would have needed \$2 trillion to \$4 trillion in qualifying assets, mostly consisting of sovereign debt. This estimate constituted 15 to 30 percent of all sovereign debt currently held by financial institutions worldwide, implying there would have been very high demand for high-quality liquid assets under the original provisions. The new provisions not only reduce the required total of liquid assets for regulatory purposes by lowering some of the run-off rates but also allow financial institutions to use more classes of assets.

Although the broader definition of eligible assets does reduce the scope for unintended consequences, the new Basel provisions still apply the same inflexible approach to determining the allowed composition of the buffer. Limits are imposed on the inclusion of less-liquid assets in the buffer by (1) setting a fixed limit on their share of the buffer and (2) discounting (imposing haircuts on) their market value. These haircuts are assumed to mimic the price discount that institutions would have to accept when selling these assets during a crisis.

This inflexible approach—imposing fixed limits and haircuts—undermines the purpose of liquidity buffers in the same way as the inflexible approach to determining the size of buffers. Fixed limits and haircuts are calibrated using historical data under considerable uncertainty about future changes in asset liquidity. Moreover, fixed limits and haircuts invite financial institutions to look for loopholes in the regulations. For example, institutions might provide Level 1 assets for the LCR through securities financing transactions, by swapping their Level 2 assets for Level 1 assets—effectively borrowing the Level 1 assets for use in their buffers without actually owning them. Such activity would reduce the quality of the regulatory buffers because effectively they would be composed solely of assets that are less liquid than Level 1 assets (ECB).<sup>17</sup>

### *Liquidity buffer availability*

Another key prerequisite for well-functioning liquidity buffers is that they must be *available* to institutions when they need them. A liquidity buffer should be usable. Otherwise, institutions will have to maintain—on top of the regulatory buffer—an additional liquidity buffer for managing their regular, day-to-day liquidity needs. Maintaining the regulatory buffer would come at a high cost. Moreover, institutions not allowed to use the regulatory buffer would have to resort to the same means of obtaining liquidity as if they had no regulatory buffer. They would have to hoard liquidity and sell illiquid assets.<sup>18</sup>

At the same time, if supervisors were to allow institutions to use buffers too often, the main purpose of these liquidity buffers could be undermined. Because liquidity buffers may be costly to maintain due to their composition of assets with typically lower yields, institutions would be tempted to hold little additional liquidity and dip into their buffers *any*

*time* they experienced increases in liquidity needs. Such frequent draw-downs might endanger the integrity of the buffers. The risk is that institutions might not be able to restore their liquidity buffers in a timely manner, especially when costly to do so in times of market stress.<sup>19</sup>

The original Basel III provisions stated that institutions would have to maintain the LCR above 1 continuously. However, in its 2013 revisions, the BCBS acknowledged that such a requirement had to be dropped because otherwise the buffer could not serve its purpose of being a source of liquidity during severe liquidity shocks. The new provisions allow banks to use the buffer in periods of stress.

In its new provisions, the BCBS proposed that national supervisors have discretion about the use of buffers and about how they would respond to banks' use of their buffers. The provisions offer several guidelines on how this discretion should be used. First, the supervisory response to the institution's drawdown of the buffer (i.e. the LCR's falling below 1) should depend on the reasons for the drawdown, and the magnitude, duration, and frequency of the drawdown. For example, the response should differentiate between an institution-specific and market-wide shock and between an institution that is unable to roll over funding and one that faces unexpected draws on contingent obligations such as lines of credit. Second, supervisors should have a range of tools to address the drawdown of the buffer. For example, they should have the ability to increase the monitoring of an institution drawing on the buffer or to demand from such an institution certain actions that enhance its liquidity position. These tools could be similar to the ones proposed for the breach of capital conservation buffer in the Basel III framework where financial institutions that breach the buffer requirements face restrictions on their payouts of dividends, share buybacks, and bonuses.

Such guidelines are a positive development because they reduce the cost of maintaining the LCR above 1 at all times. Specifically, the institutions can use the regulatory liquidity buffer during the stress scenario defined in the Accord, and they do not need to hold a substantial additional buffer for everyday liquidity management. This article's Appendix offers a more detailed framework for how national supervisory authorities could set regulations that would make liquidity buffers available but would be consistent with the new liquidity provisions.

#### IV. CONCLUSION

Rules governing the availability of liquidity buffers, their size, and their composition are all crucial factors that affect whether the buffers can serve their purpose successfully as regulated sources of liquidity in crises. While the Basel III revisions of 2013 improve on some aspects of the original 2010 provisions, there are still important shortcomings.

The new Basel provisions improve the rules governing the availability of the liquidity buffers required by regulation. In contrast to the original provisions, the new provisions allow financial institutions to use regulatory buffers and specify guidelines for using the buffers. Such an approach lowers the cost of the buffers for financial institutions, relieving them from having to hold substantial, additional liquidity buffers for day-to-day liquidity management. Also, allowing financial institutions to use their buffers when liquidity is scarce and costly will help reduce pressures on funding markets.

However, important shortcomings remain. The new Basel provisions, like the original ones, still determine liquidity buffer size and composition without taking into account the nature of an individual financial institution's risk profile, capital, and business activity—all factors that determine the institution's ability to withstand liquidity shocks. One reason the BCBS opted not to pursue a more flexible, individualized approach is that such an approach would be hard to apply consistently across national borders and the comparability of liquidity positions among financial institutions would not be guaranteed. The inflexible approach, however, raises concerns that some financial institutions may be required to hold buffers larger or smaller than necessary given the nature of their own operations. Moreover, an inflexible approach to determining buffer size and composition can invite "regulatory arbitrage." Financial institutions may devise strategies that exploit loopholes in the Basel provisions, undermining the integrity of the liquidity buffers.

It is therefore important for both the BCBS and national regulators to monitor whether the current buffer requirements are in fact sufficient for individual institutions' specific business models and risk profiles. Regulators must also determine whether the current approach allows institutions to compromise their buffers by finding loopholes in the provisions. If regulators conclude the buffers are too small or are compromised too often, they should consider a serious revision of the current provisions.

## APPENDIX

A FRAMEWORK FOR MAKING LIQUIDITY  
BUFFERS USABLE

National authorities now face the task of setting domestic regulations that are fully compatible with the new Basel III guidelines. A key challenge is to set appropriate rules governing how and when liquidity buffers may be used. This Appendix addresses issues that regulators should consider when setting rules on the use of buffers in response to idiosyncratic and systemic liquidity shocks.

Although the primary purpose of the Basel III liquidity buffers is to reduce the systemic impact of liquidity shocks, the framework proposed here would allow banks to use the buffers also to cope with liquidity shocks that do not endanger the whole financial system. The purpose would be to lower the cost of the buffers. Banks would be allowed to use regulatory buffers when their liquidity needs are exceptionally high due to exogenous events, such as the failure of a counterparty or a technological issue. Banks could use the buffers as a cheaper source of liquidity because in such cases the access to the market liquidity might be very costly.

Use of the buffer in cases of idiosyncratic shocks could occur under two conditions that would maintain the buffer's integrity. First, supervisors could make it costly for institutions to dip into their buffers simply because they perceive it as a cheap way to obtain liquidity. The cost structure would be set in such a way that institutions would only want to use the buffer when market access is exceptionally expensive (for example, when their extraordinary liquidity need is very high and thus drives up the market price). Second, supervisors also could encourage institutions to restore their buffers quickly by making it costly to maintain a gap between the actual and required liquidity amounts. Such a cost could amount to imposing sanctions (such as limits on investments, closer monitoring of bank activities, or a pecuniary cost imposed on the amount that is needed to restore the buffer) until the buffers were restored. If the cost structure for using the buffer and sanctions for maintaining the gap were credible and costly enough, institutions would have the incentive to hold—or restore quickly—a cushion of liquidity above the regulatory buffer to prevent their needing to use the buffer too often. Such a cushion would not be excessively high if

institutions knew that they always had the possibility to dip into their regulatory buffers in case of high, unexpected liquidity needs.

In contrast to an idiosyncratic liquidity shock, sanctions should be relaxed for using liquidity buffers during a systemic liquidity shock. The primary purpose of liquidity buffers is to reduce systemic risk due to liquidity shocks. For that reason, during any liquidity distress that poses a clear threat to financial stability—such as when several institutions simultaneously face severe liquidity shocks—these institutions should be encouraged to use their buffers. Sanctions for doing so should not be severe.<sup>20</sup>

In the case of a systemic liquidity shock affecting a single institution, a decision on how to sanction the use of the buffer, and whether to allow its use at all, is more complicated. On one hand, the failure of individual institutions due to liquidity problems might be highly disruptive as the Lehman Brothers case showed.<sup>21</sup> On the other hand, a liquidity crisis at only one institution is usually due to serious doubts about its solvency. Hence supervisors face a trade-off. Use of the buffer might give time to find a solution to the crisis, but it also depletes valuable resources that could be used in the resolution of the institution if it is indeed insolvent.<sup>22</sup> Therefore it is crucial that supervisors possess timely information on an institution's liquidity and solvency position. Such timely information would allow either quick reassurance of the markets of the institution's solvency or a prompt start of the resolution process, preventing further depletion of liquid assets if the institution is insolvent. An institution using the buffer might need to be subject to heightened supervisory attention, to allow supervisors to assess its situation more closely.

Supervisors could encourage institutions that survive a systemic liquidity crisis using their buffers to quickly rebuild the buffers in order to prepare for potential future problems. Such encouragement might involve requesting institutions' management to prepare restoration plans and to implement them in a certain time period. Supervisors also might want to take into account that rebuilding buffers can be very costly in a period of market-wide distress that accompanies a systemic liquidity shock. Efforts to rebuild the buffers could be accompanied by liquidity assistance for rebuilding institutions. Such a solution should

not be controversial, especially if an institution's survival of a given crisis indicates that it was indeed solvent.

Lower costs for using buffers during systemic liquidity shocks and the availability of credible liquidity assistance for rebuilding buffers are important. Otherwise, even if institutions are allowed to use their buffers, they might be reluctant to do so. Instead they might choose to hoard liquidity and sell other assets, contributing to a deepening systemic liquidity crisis.

Two factors increase the costs of buffer use for institutions during a crisis and can make institutions reluctant to use their buffers. First, a financial crisis such as the recent one typically involves several periods of extreme stress. An institution allowed to use its buffer will anticipate that it might need the buffer more than once and that rebuilding a buffer is very costly during a crisis. Second, the market might view the use of a liquidity buffer in a distress period as a sign of weakness. Liquidity problems might become a self-fulfilling prophecy if the market decides to refuse funding once the institution starts to use its buffer. Such funding losses would be most likely when an institution's counterparties have little information about its liquidity position and when the liquidity buffer is not strong enough to deter these runs. Lowering the cost for using the buffer and offering assistance in rebuilding it may serve as countervailing forces for the costs to an institution of using the buffer.

## ENDNOTES

<sup>1</sup>Banks also use other instruments to reduce their liquidity risk such as long-term borrowing from Federal Home Loan Banks (in the case of U.S. banks), time deposit funding, interest rate swaps, and securitization. Moreover, U.S. banks are provided with deposit insurance and access to the discount window.

<sup>2</sup>See Pozsar and others for a description of the shadow banking system.

<sup>3</sup>Such securities were developed in the late 1980s, but they gained significance in the early 2000s.

<sup>4</sup>Alternatively, many large financial institutions set up off-balance-sheet vehicles and transferred (sold) some of their ABS to those vehicles. These vehicles financed the purchase of the ABS using very short-term commercial paper. As argued in Acharya and others, the incentive to do so might have been to arbitrage the lower regulatory capital requirements for holding ABS off-balance sheet than on-balance sheet.

<sup>5</sup>European universal banks relied on wholesale funding to a much greater extent than U.S. bank holding companies.

<sup>6</sup>See also Allen and Carletti, Brunnermeier, Gorton, Federal Reserve, and IMF (2010) for descriptions of the financial crisis.

<sup>7</sup>The Federal Reserve provided banks with reserves through overnight repos, eased access to the discount window, lowered its target for the federal funds rate, and opened several liquidity facilities to institutions such as investment banks. Fleming offers an overview of actions taken by the Federal Reserve during the crisis.

<sup>8</sup>In all four cases, the parties involved had less than five days to undertake remedial actions.

<sup>9</sup>The Basel III provisions also set standards relating to a measure called the Net Stable Funding Ratio aimed at promoting the stability of banks' medium- and long-term funding.

<sup>10</sup>The scenario under which the LCR is calibrated assumes that all banks' liquidity channels, such as deposits, unsecured and secured financing, obligations from credit lines, and off-balance sheet transactions, are under stress as was common during the recent financial crisis.

<sup>11</sup>The most important features of such assets are that they can be converted into cash immediately with little or no loss of value, have little credit risk or market risk, are easy to value and transparent, and are not correlated with risky assets. Also, these assets need to be traded in deep and well-functioning markets, and they have to be regarded by investors as "flight-to-quality" assets (assets that are regarded as safe during a financial crisis). Moreover, buffer assets should not be pledged as collateral in any transactions because pledged assets are not readily available as source of liquidity.

<sup>12</sup>To be more precise, the provisions require that cash inflows entering the calculation of total cash net outflows are equal to the smaller of two figures – the

estimated cash inflows and 75 percent of cash outflows. For example, in a situation where cash inflows are equal to cash outflows, an institution would not be allowed to claim that its total net cash outflows in a crisis are zero, and, therefore, that it does not need a regulatory buffer. According to the provisions, its total net cash outflows would be 25 percent of cash outflows. Such a provision can be interpreted as a security valve given that estimates of cash outflows and inflows in a crisis are derived under considerable uncertainty about the actual future needs.

<sup>13</sup>The new provisions also extended the deadline for full implementation from 2015 to 2019.

<sup>14</sup>Basel III allows for a small number of exceptions where national supervisors are free to set the run-off rates for liabilities.

<sup>15</sup>Liquidity crises at Bear Stearns, Lehman Brothers, Washington Mutual, and Wachovia were precipitated by heavy exposure to real estate lending.

<sup>16</sup>The full economic impact is hard to estimate because prices of securitized products might have been distorted by their favorable treatment in bank capital regulation in the first place (Acharya, Schnabl, and Suarez).

<sup>17</sup>During a crisis, the institutions might be called upon by their counterparties in these securities financing transactions to return the Level 1 assets. Thus precisely in times when the institutions would need their buffer, they might be left solely with less-liquid Level 2 assets.

<sup>18</sup>Even before institutions are hit by a liquidity shock, their regulatory buffers may have a pro-cyclical effect of making things worse if funding markets are under severe stress. Maturities of secured and unsecured wholesale funding usually decrease sharply during a crisis. This implies that the institutions' shares of short-term financing increase, forcing them to hold more liquid assets. Hence, institutions might hoard cash and sell illiquid assets to satisfy liquidity requirements.

<sup>19</sup>Rebuilding a liquidity buffer in a liquidity crisis is costly for two reasons. First, the prices of the liquid assets rise because all market participants increase their demand for flight-to-quality assets. Second, the maturities of wholesale financing tend to shorten below 30 days, increasing the need for additional liquid assets.

<sup>20</sup>Similarly, Goodhart (1999) argues that Bagehot advocated that emergency lending by a central bank should occur at a market rate. He argues that it is a misconception that Bagehot argued for penalty rates, that is, rates that are higher than the market rate.

<sup>21</sup>In the case of liquidity shocks affecting individual institutions, the systemic implications of such events can be extremely difficult to judge.

<sup>22</sup>This issue is similar to the so-called "jumping the running queue" in repos, in which the repo buyers obtain collateral and other creditors wait years to obtain some of their funds after bankruptcy (Perotti). It is possible that realization by the creditors that the buffer is not sufficient might accelerate the bank's demise because they run faster in order to be get repaid before the buffer is gone.

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