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# Some Key Principles of Bank Liquidity Regulation

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## Summary

The recent severe financial crisis demonstrated yet again that banks need to maintain conservative levels of liquidity in order to protect themselves against large, unexpected calls for cash. Prior to the last crisis, many financial institutions acted on the assumption, supported by the experience of a number of years, that liquidity would always be readily available in the markets. When that liquidity dried up, they ran into serious trouble, including outright failure.

This Policy Brief outlines my views on the key policy issues surrounding bank liquidity requirements. It complements a lengthy primer on liquidity requirements (see <http://www.brookings.edu/research/papers/2014/06/23-bank-liquidity-requirements-intro-overview-elliott>). This brief makes the following points:

- Quantitative regulatory bank liquidity requirements are necessary
- The Basel Committee's approach is broadly appropriate
- The Liquidity Coverage Ratio is a quite useful test
- The Net Stable Funding Ratio can also be useful if focused on avoiding extreme mismatches
- Stress testing is a necessary complement to the Basel ratios
- Capital and liquidity requirements should be coordinated
- The responsibility for liquidity management must be divided sensibly between banks and central banks
- Good cost/benefit analysis is necessary when setting the rules
- Banks must be allowed to dip into liquidity in a stress period
- Liquidity rules will have important incentive effects
- Global comparability must be balanced with national circumstances
- Supervisory discretion will be need to be used appropriately
- Counter-cyclical liquidity requirements should be considered eventually

*Quantitative regulatory bank liquidity requirements are necessary.* For many years, bank regulators mandated formal liquidity requirements, such as minimum levels of deposits at the Federal Reserve as a percentage of bank liabilities. However, these fell away in the last decades of the 1900's in the advanced economies. Bank supervisors retained discretion to intervene if they were uncomfortable with the liquidity management strategies of the banks, but the recent global financial crisis showed a clear failure to ensure adequate liquidity. Some supervisors assumed that banks would manage their liquidity appropriately out of their own self-interest, while most were apparently lulled into a false sense of security by the same easy liquidity access upon which banks themselves placed excessive reliance.

This was a mistaken policy for at least two reasons. First, there are "externalities" to bank liquidity management, meaning that there are some costs to society from insufficient bank liquidity that are not borne by the banks themselves. Therefore, the socially optimal level of bank liquidity is generally higher than banks would choose on their own. Second, banks and financial markets have a history of getting caught up in occasional periods of excessive optimism, including about the availability of liquidity, as was certainly true in the run-up to the Crisis. Regulators and bank supervisors may be caught up in the same myopia, but formal regulatory processes and quantitative requirements provide some protection against accepting lax liquidity management.

*The Basel Committee's approach is broadly appropriate.* The Basel Committee on Banking Supervision is a global coordinating body of banking regulators. It operates by consensus and peer pressure, rather than treaty powers, but its standards for capital regulation have strongly influenced national bank regulations. The G-20 leaders have given the Committee additional clout by mandating it to revise the global capital standards and to set global liquidity standards.

Pursuant to this, it created several pillars of liquidity regulations. The first is the Liquidity Coverage Ratio (LCR), a kind of stylized stress test to ensure banks can survive a severely stressed liquidity environment lasting 30 days. The second is the Net Stable Funding Ratio (NSFR) which tests whether longer-term commitments, such as loans, are adequately supported by longer-term, or otherwise stable, sources of funds, such as a stable deposit base or a long-term bond. The third is the strong encouragement of annual stress tests established and run by national regulators. These three pillars are

complemented by the discretionary role of national bank supervisors, using other quantitative measures and qualitative judgments. (See the primer for substantially more detail.)

This overall approach is a good one, as long as the various ratios and tests are calibrated appropriately, which is difficult. It would be especially easy to get the NSFR wrong.

*The Liquidity Coverage Ratio is a quite useful test.*

The LCR is of particular value because it is a fairly transparent and relatively simple way of gauging the ability of a bank to survive a crisis period, using an approach that is fairly comparable across banks and jurisdictions. There are legitimate concerns about whether the specific values of key parameters are optimal, but the overall approach and resulting levels of required liquidity seem good.

*The Net Stable Funding Ratio can also be useful if focused on avoiding extreme mismatches.* I have more concerns about the NSFR, since it could become too prescriptive in constraining bank business models, without a sufficient analytical basis. There are two levels of concern here. First, it may be too punitive in how it treats maturity transformation - taking in shorter-term funding and using it to support longer-term investments. Since the Crisis underlined what can go wrong with maturity transformation, it is only natural that there has been a strong focus on reducing it. However, I do believe there is substantial economic value to this activity, so it is important not to overshoot. Longer-term investments are often more useful for society than shorter-term ones and there are already considerable disincentives for such longer-term investments. Adding an excessive bias against it through the NSFR would be a mistake. Where to draw the line, of course, is a difficult judgment call. There are encouraging signs that the overall levels of stable funding required by the NSFR may not overshoot very far, if at all. The Basel Committee is running a Quantitative Impact Study to see where banks stand today on their NSFR levels and this may help us to assess the appropriateness of the current parameters embodied in the NSFR calculations.

However, the second concern is that the specific weightings applied to different sources and uses of stable funding may create the wrong incentives, even if the overall levels are broadly right. Bank CEO's do not sit down and make all the decisions about which loans and investments to make and what funding sources to use. Instead, large banks set up pricing formulas and other

quantitative guidelines for their units and sub-units to use to make detailed decisions. Thus, these banks can be viewed as internal markets for capital and liquidity, with prices set by the senior executives for the use of that capital and liquidity. The LCR and NSFR help establish the price for liquidity by determining whether it is a scarce resource within the bank and how much is needed for each type of transaction. For example, repurchase agreements (repos) that are conducted with non-financial counterparties are given a 50% stable funding requirement in the NSFR, meaning that they effectively require half the funding to come from one-year or longer borrowings or from otherwise very stable sources, such as retail deposits. In practice, this is likely to translate into a liquidity charge for such repos that assumes half the funding of these very short-term assets comes from longer-term debt. Since debt of greater than one year in maturity generally costs substantially more than the yield generated by such a very short, safe asset, this creates a real incentive to stop doing such repos or to sharply increase their price, which may not be competitively feasible. A series of parameter choices such as these can effectively define the business models that will work for banks going forward.

This second effect interacts with the first, in that the tighter the overall requirements the more strongly the incentive effects will operate, since there will not be margin for error from extra liquidity elsewhere in the bank's operations. At the extreme, if the 100% NSFR level were easy to reach without altering a bank's business model, then there would be margin for error that would allow these repo transactions to be conducted without creating a problem for the bank as a whole.

Constraining, or even changing, the business models of banks is an explicit intention of the NSFR. We have collectively concluded that some banks or their affiliates were conducting too much maturity transformation or doing it in too dangerous a way. So, my concern is not one of principle, but of pragmatics. In addition to my overall fear that we may overshoot in discouraging maturity transformation, I also worry that we do not understand the effects of the proposed liquidity requirements well enough to be forcing changes in business models as severe as may be the case in certain instances.

*Stress testing is a necessary complement to the Basel ratios.* The LCR and NSFR are simple tests compared to the complexity of large banks in a complicated financial system that varies across countries. Therefore, the Basel Committee was wise to also strongly encourage each national regulator to have a rigorous regime of liquidity stress testing for its largest and most complex

banks. These are detailed exercises in which one or more specific stress scenarios are modeled, using the specific asset/liability and business mix profiles of the banks. Once again, the devil is in the details, but such tests have the potential to provide a more nuanced view of the liquidity situations and to catch vulnerabilities that might not be apparent in the ratio tests. They should also be less prescriptive about business models because they can reflect more accurately the relationships between assets and liabilities and their related cash inflows and outflows.

One might then ask why the two ratio tests are even necessary. The ratio tests bring improved comparability and greater transparency, while providing a safety net in case the sophisticated stress test models diverge too far from reality. Additionally, as was demonstrated in the Crisis, models can fail to anticipate when established patterns of behavior will break down. So, even if one has great faith in stress testing in general, there are real advantages to combining the techniques. Further, the ratios can be computed quarterly or monthly, whereas the stress tests are generally most suitable for annual use, with perhaps an occasional "emergency" test thrown in during uncertain times.

*Capital and liquidity requirements should be coordinated.* Bank capital and liquidity requirements share the common goal of trying to ensure that banks have adequate safety buffers to avoid or survive a crisis. They also both affect the incentives banks have to conduct different types of business and the prices they need to charge to earn an adequate return on those businesses. In light of these commonalities, it makes sense to coordinate them, both in terms of setting their levels and in examining their impacts.

Most basically, banks with strong capital bases are less likely to suffer a loss of confidence that leads to liquidity problems. Similarly, banks with strong liquidity are less likely to suffer capital losses brought on by fire sales of assets necessary to deal with liquidity runs. This overlap has led Governor Tarullo and others at the Federal Reserve to suggest that banks with an over-reliance on short-term funding sources should have higher capital requirements. Logically, banks with strong liquidity could have reduced capital requirements, although almost all the pressures currently are for higher capital requirements.

*The responsibility for liquidity management must be divided sensibly between banks and central banks.* Ensuring that there is sufficient liquidity in the banking system and at individual banks must be the joint responsibility of the banks themselves and of the Federal Reserve or other relevant central bank. A key

reason for the existence of central banks is their lender of last resort function, providing liquidity in extremis when markets fail to operate as they should. Short of those infrequent and extreme circumstances, banks themselves must be responsible for their own liquidity and should suffer the consequences of failing in this task, including losing money on fire sales, or even being forced into insolvency proceedings. (This discussion excludes traditional “discount window” and other similar programs where the central bank increases the efficiency of the system by providing liquidity against very high quality collateral when banks need cash unexpectedly, but not desperately. This also excludes liquidity injections conducted by central banks in direct pursuit of monetary policy objectives.)

There is no bright line as to when a stress scenario warrants central bank lender of last resort activity and when it should remain the responsibility of the individual banks. This is one of the judgment calls that must be made: how severe must a crisis be to trigger this step? The less frequently a central bank is willing to engage in such actions, the greater the liquidity requirements should be for the banks. Thus, there needs to be solid integration of central bank liquidity provision strategies with the regulatory requirements for bank liquidity management. With too weak a set of rules for banks, central banks may find themselves forced to intervene more often than should be necessary. Too onerous a set of rules and the efficiency of finance and of the economy will be impaired by forcing banks to hold liquidity to protect against situations where liquidity will be provided by the central bank anyway. Put another way, central banks provide a form of liquidity insurance for banks, for the benefit of society. There would be inefficiency if banks were required to over-insure by hoarding liquidity to protect against situations covered by the public insurance. Helpfully, many central banks have brought greater clarity to the circumstances under which they will supply liquidity, including discussion of the terms and extent of such liquidity support.

This principle of coordinating central bank policies and bank liquidity requirements carries over to more detailed issues. For example, it seems inappropriate to allow substantial liquidity credit for assets owned by banks that are simultaneously not viewed as acceptable collateral by central banks. If central banks are not comfortable with lending against that asset, even at a very substantial haircut, then it gives one pause about assuming it can serve as a source of liquidity in a crisis.

*Good cost/benefit analysis is necessary when setting the rules.* The insurance analogy is one example of a more general principle, which is that greater safety in the

area of liquidity management usually comes at a cost<sup>1</sup>. Stronger liquidity is generally achieved through one of three methods, each of which raises bank expenses or lowers their revenues:

Asset maturities are decreased. Banks can reduce the maturity of their loans and investments in order to help ensure that cash becomes available quickly enough to cover unexpected cash outflows, either through return of principal or a sale of the asset. The problem is that borrowers generally pay less for shorter-term funding than they do for longer-term, so banks sacrifice revenue.

Liability maturities are increased. Outflows from liability maturities are less pressing when they are longer-term. But, this suffers from the equivalent problem as lengthening assets: investors demand higher returns when providing longer-term funding, so bank expenses rise.

Safer or more liquid assets are held. Banks can shift towards holding assets that are easier to sell when needed without taking an excessive haircut. Of course, banks and other investors usually cannot demand as high a return on such assets, since there is competition to hold them.

These private costs for banks translate to the societal level as well. First, if banks' profitability is impaired they will generally seek over time to recover this by raising the price of their services. This matters, since they are important intermediaries, providing funding to large swathes of the economy. Second, the costs of higher liquidity correspond to underlying economic value. Longer-term funding of borrowers is generally of greater value than shorter term and funding provided to riskier entities is important for entrepreneurial activity.

Therefore, it matters that liquidity requirements not be set so stringently that they bring greater societal costs than the benefit of increased financial stability. It is often not easy to find the right balance, but legislator and regulators should always seek it.

As a non-lawyer, I will not opine on the question of the legal standards for cost-benefit analyses. In principle, regulators should have a positive obligation to consider the balance of costs and benefits, but it is also important to avoid a legalistic approach that makes it too difficult to make regulations without excessive litigation.

It is also important to recognize that cost-benefit analyses are difficult to do and our understanding of the financial system and its effects on the real economy needs considerable improvement. As a result, there is a

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1. There are exceptions. Requiring basic, intelligent liquidity management may be costless or may even improve the effectiveness of a badly run bank.

substantial element of necessary subjectivity in comparing the costs and benefits to society of these rules. Further, the best analyses will take into account the likely reactions of banks to the new rules, not merely an extrapolation of past behavior.

*Banks must be allowed to dip into liquidity in a stress period.* It would be a mistake to wall off the main sources of liquidity and make it difficult for banks to avail themselves of them in a time of stress. This is sometimes referred to as the “last taxi at the station” problem, analogizing to a rule which requires that there always be one taxi remaining at the train station, which effectively just means that one taxi is always wasted.

Fortunately, the Basel and US liquidity rules generally use ratios whereby the use of a cash inflow to pay out a cash outflow roughly counterbalances. For example, if a bank has \$100 of cash sources and \$100 of potential cash outflows and then had to use \$1 to pay out a depositor, it would now have \$99 of cash sources and \$99 of potential cash outflows, for the same 100% ratio of sources to outflows<sup>2</sup>. Problems therefore would generally arise only in situations where a cash source yielded less money than expected or a potential outflow needed more cash than expected. There is general agreement among regulators that if such a situation develops as a result of systemic liquidity issues, then there should be a tolerance for a liquidity ratio of less than 100%, on a temporary basis. The devil then is in the details. Regulators must decide when to invoke this leniency and to what extent. Further, market participants may still quite reasonably pull their money from banks with bad liquidity ratios, even if the authorities treat the low ratio as a temporary problem.

*Liquidity rules will have important incentive effects.* There is a tendency sometimes for policy analysts and policymakers to judge liquidity requirements by the extent to which they show sufficient liquidity at each bank, taken as a whole. However, banks are not passive participants. They will decide to move away from, or charge more for, business where liquidity requirements seem onerous and move towards activities where the liquidity requirements are light or felt to be appropriate. For example, as noted above, many in the industry argue that the Net Stable Funding Ratio has been set so as to discourage repo business with non-financial institutions. The NSFR “requires” that 50% of the funding for such activity come from long-term liabilities or other stable funding sources. Looked at on a stand-alone basis, it would be very difficult to do this activity profitably, since customers

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2. This simplistic example ignores the weightings that the LCR and NSFR give to different asset and liability categories. Please see the primer for a more detailed explanation.

would not be willing to pay a spread on very low risk activity, such as short-term repurchase agreements for government securities, that would be sufficient to cover the cost of funding if that funding included a substantial amount of long-term funds. (In practice, cheaper stable sources of funding, such as retail deposits, are generally already allocated to other uses, and often may not be legally available to the subsidiaries involved in the repo transactions.)

This argument is a compelling one if meeting liquidity requirements is difficult for banks, or at least not easy. If the overall ratios are set so that banks easily meet the aggregate requirements, then it will be easy to draw on excess liquidity from other business lines to support the activities with onerous requirements on a stand-alone basis.

It is sometimes argued that businesses such as repo will continue as before, without a substantial price increase or major reductions in availability, since customers who do profitable business in aggregate with the banks will demand them. There is likely considerable truth to this, but it must be understood that, over time, banks will demand that customers pay one way or the other, meaning that the price or availability of other bank services to these customers may be affected adversely.

A related argument is that banks will absorb the higher costs either through accepting lower returns or by reducing compensation or other expenses. There may be room for this, although return targets are set in the long run by investors, not bank managements. Further, there are limits to how far expenses can be cut and there are many other pressures on banks that reduce their profitability that also need to be offset in one manner or another. In other words, expense cuts are already largely spoken for.

*Global comparability must be balanced with national circumstances.* The Basel Committee places a high value on global comparability in its liquidity measures and requirements. This is appropriate for a banking sector that is substantially global in nature. Lack of comparability would reduce economic efficiency by making it harder to hold to common standards or for investors and funders to judge banks against each other. In particular, it would be unhealthy if regulatory arbitrage occurred where banking activity became disproportionately centered in jurisdictions with weaker safety requirements.

At the same time, it must be recognized that banks operate in national markets and different countries can have quite different economic, legal, and financial systems that call for varying treatment. For example, the Basel rules effectively assume a large and liquid market for

government bonds and/or other highly creditworthy bonds. Some countries have fairly small levels of government debt, and therefore small quantities of bonds. Even aside from this, some countries have much less liquid and active capital markets than others. The Basel Committee has recognized this particular issue and has been receptive to national solutions, which often involve the central banks providing a guaranteed source of liquidity based on pre-positioned collateral from the banks.

*Supervisory discretion will need to be used appropriately.* Formal quantitative liquidity requirements of the sophistication employed in the Basel rules are in their relative infancy globally, especially in comparison with capital requirements. (There have been many times in the past when very simple liquidity rules were in vogue, such as requiring that 20% of all assets be deposited with the central bank. However, this is quite different from the much more sophisticated approach taken by Basel.)

Because these rules are new, and because there is a real variance across national banking sectors, there will be a need for supervisory discretion and a willingness to

revamp the rules if it turns out that they are creating systematic distortions in banking activity. At the same time, discretion must not become a backdoor way of loosening the rules simply for the sake of aiding the banks. As always, balance will be the key to good supervision.

*Counter-cyclical liquidity requirements should be considered eventually.* In theory, increasing liquidity requirements during a boom and decreasing them in a bust could help to reduce financial cycles and make the system more resilient when crises do occur. This is similar to the counter-cyclical capital buffers mandated by the Basel Committee, where capital levels are meant to increase in good times with the buffer drawn back down in bad times. Liquidity requirements could be a useful reinforcing tool to the capital buffers.

However, we should recognize that we do not yet understand liquidity requirements, and their practical effects, well enough to take this approach on anything more than a tentative and experimental basis yet. After the LCR and NSFR and stress tests have been used for a few years, it will be well worth considering this further step, but not now.